



**DEPARTMENT OF THE AIR FORCE  
377TH AIR BASE WING (AFGSC)**

17 Sep 20

Colonel Ryan Nye  
Vice Commander  
377th Air Base Wing  
2000 Wyoming Blvd SE  
Kirtland AFB NM 87117

Mr. Kevin M. Pierard, Bureau Chief  
Hazardous Waste Bureau (HWB)  
New Mexico Environment Department (NMED)  
2905 Rodeo Park Drive East, Building 1  
Santa Fe NM 87505-6303

Dear Mr. Pierard

Attached, please find the *Completion Report for Data Gap Monitoring Wells KAFB-106240, KAFB-106241, KAFB-106242, KAFB-106243, KAFB-106244, KAFB-106245, and KAFB-106246, Solid Waste Management Units ST-106/SS-111*, Dated September 2020. This report was prepared as requested in a letter from the New Mexico Environment Department Hazardous Waste Bureau dated December 9, 2019 "Request for Report for Data Gap Monitoring Well Installation, Bulk Fuels Facility, Solid Waste Management Units ST-106/SS-111, Kirtland Air Force Base, New Mexico EPA ID# NM9570024423 HWB-KAFB-19-BFFS"

If you have any questions or concerns, please contact Mr. Sheen Kottkamp at commercial line (505) 846-7674 or email sheen.kottkamp.1@us.af.mil.

Sincerely

RYAN NYE, Colonel, USAF  
Vice Commander

Attachment:

Data Gap Monitoring Wells KAFB-106240, KAFB-106241, KAFB-106242, KAFB-106243, KAFB-106244, KAFB-106245, and KAFB-106246, Solid Waste Management Units ST-106/SS-111; 2 Hard Copies/2 CDs

Cc:

NMED Resource Protection Division (Stringer), letter and CD  
NMED HWB (Cobrain), letter and CD  
NMED GWQB (Hunter), letter and CD  
EPA Region 6 (King, Ellinger), letter and CD  
COA (Ziegler), letter and CD  
ABCWUA (Agnew), letter and CD  
SAF-IEE (Lynnes), electronic only  
AFCEC/CZ (Cash, Clark, Kottkamp, Segura), electronic only  
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**KIRTLAND AIR FORCE BASE  
ALBUQUERQUE, NEW MEXICO**

**COMPLETION REPORT FOR DATA GAP  
MONITORING WELLS KAFB-106240, KAFB-106241,  
KAFB-106242, KAFB-106243, KAFB-106244,  
KAFB-106245, AND KAFB-106246  
SOLID WASTE MANAGEMENT UNITS ST-106/SS-111**

**SEPTEMBER 2020**



**377 MSG/CEI  
2050 Wyoming Boulevard SE  
Kirtland Air Force Base, New Mexico 87117-5270**

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**KIRTLAND AIR FORCE BASE  
ALBUQUERQUE, NEW MEXICO**

**Completion Report for Data Gap Monitoring Wells  
KAFB-106240, KAFB-106241, KAFB-106242, KAFB-106243,  
KAFB-106244, KAFB-106245, and KAFB-106246  
Solid Waste Management Units ST-106/SS-111  
Kirtland Air Force Base, New Mexico**

**September 2020**

**Prepared for**

Kirtland Air Force Base  
2050 Wyoming Boulevard SE  
Kirtland Air Force Base, New Mexico 87117-5270

**Prepared by**

EA Engineering, Science, and Technology, Inc., PBC  
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Contract No. W912DR-12-D-0006/Delivery Order DM01

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<b>REPORT DOCUMENTATION PAGE</b>			<i>Form Approved</i> <b>OMB No. 0704-0188</b>		
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<b>1. REPORT DATE (DD-MM-YYYY)</b> 15-09-2020		<b>2. REPORT TYPE</b> Completion Report for Monitoring Wells Installed at Solid Waste Management Units ST-106/SS-111		<b>3. DATES COVERED (From - To)</b> 06-06-2018 to 13-08-2018	
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			<b>5b. GRANT NUMBER</b>		
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			<b>5f. WORK UNIT NUMBER</b> Not applicable		
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> EA Engineering, Science, and Technology, Inc., PBC 320 Gold Avenue SW, Suite 1300 Albuquerque, New Mexico 87102			<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b> Not assigned		
<b>9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b> U.S. Army Corps of Engineers–Albuquerque District 4101 Jefferson Plaza NE Albuquerque, New Mexico 87109-3435			<b>10. SPONSOR/MONITOR'S ACRONYM(S)</b>		
			<b>11. SPONSOR/MONITOR'S REPORT NUMBER(S)</b>		
<b>12. DISTRIBUTION / AVAILABILITY STATEMENT</b>					
<b>13. SUPPLEMENTARY NOTES</b>					
<b>14. ABSTRACT</b> This report describes the installation of six new groundwater monitoring wells (KAFB-106240, KAFB-106241, KAFB-106242, KAFB-106243, KAFB-106244, and KAFB-106245) and one contingency well (KAFB-106246) at Solid Waste Management Units ST-106/SS-111 at Kirtland Air Force Base, New Mexico.					
<b>15. SUBJECT TERMS</b> Bulk Fuels Facility, Solid Waste Management Units ST-106/SS-111, RCRA, nested groundwater monitoring wells, contingency well, permit, well survey, investigation-derived waste, waste disposal					
<b>16. SECURITY CLASSIFICATION OF:</b>			<b>17. LIMITATION OF ABSTRACT</b>  ABSTRACT	<b>18. NUMBER OF PAGES</b>  988	<b>19a. NAME OF RESPONSIBLE PERSON</b> Sheen Kottkamp
<b>a. REPORT</b> UNCLASSIFIED	<b>b. ABSTRACT</b> UNCLASSIFIED	<b>c. THIS PAGE</b> UNCLASSIFIED			<b>19b. TELEPHONE NUMBER (include area code)</b> 505-846-7674

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## 40 CFR 270.11 DOCUMENT CERTIFICATION

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

  
\_\_\_\_\_  
RYAN NYE, Colonel, U.S. Air Force  
Vice Commander, 377th Air Base Wing

17 Sep 20  
Date

This document has been approved for public release.

  
\_\_\_\_\_  
KIRTLAND AIR FORCE BASE  
377th Air Base Wing Public Affairs

17 SEP 2020  
Date

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## PREFACE

This Completion Report for Monitoring Wells has been prepared by EA Engineering, Science, and Technology, Inc., PBC for Kirtland Air Force Base (AFB) under the U.S. Army Corps of Engineers Contract Number W912DR-12-D-0006, Delivery Order DM01. This report describes the installation of six nested groundwater and one contingency well associated with Solid Waste Management Units ST-106/SS-111, Bulk Fuels Facility at Kirtland AFB, New Mexico. This report was prepared in general accordance with the requirements of the Resource Conservation and Recovery Act permit issued to Kirtland AFB.

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## ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
BFF	Bulk Fuels Facility
bgs	below ground surface
EA	EA Engineering, Science, and Technology, Inc., PBC
ft	foot/feet
GWM	groundwater monitoring
IDW	investigation-derived waste
NMED	New Mexico Environment Department
OD	outside diameter
RCRA	Resource Conservation and Recovery Act
SWMU	Solid Waste Management Unit
TPH	total petroleum hydrocarbons

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## **EXECUTIVE SUMMARY**

The investigation and remediation of the Kirtland Air Force Base (AFB) Bulk Fuels Facility (BFF) release (Solid Waste Management Units [SWMUs] ST-106/SS 111) are being implemented pursuant to the Resource Conservation and Recovery Act (RCRA) corrective action provisions in Part 6 of Kirtland AFB's Hazardous Waste Treatment Facility Operating Permit (Permit Number NM9570024423 [RCRA Permit]) (New Mexico Environment Department [NMED], 2010). This completion report has been prepared to describe the installation activities associated with six nested groundwater monitoring wells (KAFB-106240, KAFB-106241, KAFB-106242, KAFB-106243, KAFB-106244, and KAFB-106245) and one contingency well (KAFB-106246). The monitoring well installation, development, and surveying of the monitoring wells included in this report took place from June 6 to September 13, 2018.

NMED requested in a letter dated December 9, 2019 that a stand-alone report containing the Data Gap Monitoring Well Installation performed in 2018 (NMED, 2019) be provided by October 1, 2020. This report combines the Data Gap well completion information into one report. It is being provided to be consistent with the requirements of Section 6.5.17.10.8 of the RCRA Permit and the December 9, 2019 NMED letter.

The installation and development of the monitoring wells were performed in accordance with the Work Plan for Data Gap Monitoring Well Installation (Kirtland AFB, 2017). This Work Plan was approved with conditions by NMED on February 28, 2018 (NMED, 2018).

These wells were located to fill data gaps in the groundwater monitoring network due to the submergence of existing well screens as the regional water table rises. The data gaps and regional water table rises are discussed in detail in the Work Plan for Data Gap Monitoring Well Installation (Kirtland AFB, 2017).

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## 1. INTRODUCTION

EA Engineering, Science, and Technology, Inc., PBC (EA) installed six nested groundwater monitoring (GWM) wells (KAFB-106240, KAFB-106241, KAFB-106242, KAFB-106243, KAFB-106244, and KAFB-106245) and one contingency well (KAFB-106246) at Solid Waste Management Units (SWMUs) ST-106/SS-111, at Kirtland Air Force Base (AFB), New Mexico (Figures 1-1 and 1-2). The work was performed under the U.S. Army Corps of Engineers Contract Number W912DR-12-D-0006, Delivery Order DM01.

The SWMUs are known as the Bulk Fuels Facility (BFF). Environmental restoration efforts at the BFF are being performed pursuant to the corrective action provisions in Part 6 of Kirtland AFB's Resource Conservation and Recovery Act (RCRA) Hazardous Waste Treatment Facility Operating Permit (Permit Number NM9570024423 –"RCRA Permit") (New Mexico Environment Department [NMED], 2010). NMED is the lead regulatory agency (NMED, 2010).

These wells were located to fill data gaps in the GWM network due to the submergence of existing well screens as the regional water table rises. The data gaps and regional water table rises are discussed in detail in the Work Plan for Data Gap Monitoring Well Installation (Kirtland AFB, 2017).

The installation and development of the monitoring wells were performed in accordance with the Work Plan for Data Gap Monitoring Well Installation (Kirtland AFB, 2017). This document is listed as KAFB4642 in the NMED Facility Records. This Work Plan was approved with conditions by NMED on February 28, 2018 (NMED, 2018). This document is listed as KAFB4657 in the NMED Facility Records. A copy of the approval with conditions letter is included in Appendix A.

Two Completion Reports for Monitoring Wells were prepared for these wells and were submitted as appendices to quarterly GWM reports. The Well Completion Report for KAFB-106240, KAFB-106243, and KAFB-106244 was submitted with the fourth quarter 2018 report. The Well Completion Report for KAFB-106241, KAFB-106242, KAFB-106245, and KAFB-106246 was submitted with the first quarter 2019 report. This document has been prepared to incorporate the drilling and installation of all of the wells into one report. The monitoring well installation, development, and surveying of the monitoring wells included in this report took place from June 6 to September 13, 2018.

NMED requested in a letter dated December 9, 2019 that a stand-alone report containing the Data Gap Monitoring Well Installation performed in 2018 (NMED, 2019) be provided by October 1, 2020. This letter is listed as KAFB4915 in the NMED Facility Records and is included in Appendix A. This report combines the Data Gap well completion information into one report. It is being provided to be consistent with the requirements of the December 9, 2019 NMED letter. It is being provided to be consistent with the requirements of Section 6.5.17.10.8 of the RCRA Permit and the December 9, 2019 NMED letter.

In addition, Kirtland AFB confirmed that NMED preferred to receive a separate deliverable for the source zone characterization wells installed during the coring activities. The revised source zone characterization report will be submitted as an "investigative report". All well construction information as required in the RCRA Permit Section 6.2.4.3 will be provided in the report as appendices.

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## 2. MONITORING WELL INSTALLATION PROGRAM

Six nested GWM wells (KAFB-106240, KAFB-106241, KAFB-106242, KAFB-106243, KAFB-106244, and KAFB-106245) and one contingency well (KAFB-106246) were installed, developed, and surveyed between June 6 and September 13, 2018 (Figure 1-2). These wells were located to fill data gaps in the GWM network due to the submergence of existing well screens as the regional water table rises.

### 2.1 Monitoring Well Installation

GWM well drilling, lithologic logging, well installation, and development were completed in accordance with the Work Plan for Data Gap Monitoring Well Installation (Kirtland AFB, 2017). Monitoring well construction details were approved by NMED prior to the installation of each well nest in various emails (Appendix A). Well KAFB-106246 was installed as a single well to replace the contingency well at KAFB-106240. This documentation is provided in Appendix A in the form of an email dated August 22, 2018 from Dennis McQuillan, Chief Scientist with NMED.

The nested GWM wells were drilled using an air rotary casing hammer system with casing advancement to install a 10.5-inch nominal outside diameter (OD) borehole. From 0 to 200 feet (ft) below ground surface (bgs), an 11.75-inch OD drive casing was installed. From 200 ft bgs to the total depth of the borehole, a 9-5/8-inch OD drive casing was used. The lithologic boring logs are included in Appendix B.

Each nested well (KAFB-106241 through KAFB-106245) is comprised of one well screened across the water table and one contingency well to function in the future with rising groundwater elevations (well construction diagrams are provided in Appendix C). Monitoring wells were constructed using 3.5-inch OD Schedule 80 polyvinyl chloride threaded casing. The water table wells were installed with a 40-ft screen length with approximately 15 ft of screen below the water table. The contingency wells were completed with a 25-ft screen length. Each well is isolated from the other using a bentonite seal. Threaded well screens with a 0.010-inch slot screen size were used. Depth to the water table was reviewed in proximal wells prior to the initiation of the drilling. Depth to the water table was gauged and confirmed during the drilling activities in the boreholes to determine the placement of the well screens.

KAFB-106246 was installed as a replacement contingency well for the plugged and abandoned contingency well in nested well KAFB-106240. The contingency well was plugged with a cement/bentonite grout to ground surface. KAFB-106246 was installed as a contingency well only, not a water table well. During the construction of the contingency well in KAFB-106240, it was found that bentonite grout had entered the well through a breach in the well casing. The cause of the breach was not definitively identified. The contingency well in KAFB-106240 was plugged and abandoned in September 2018, and replaced by KAFB-106246. Kirtland AFB provided notification to NMED regarding the KAFB-106240 contingency well failure and installed the replacement well as close to the failed well as possible. The proposed well design for KAFB-106246 was submitted to NMED on July 19, 2018, (listed as KAFB4686 in the NMED Facility Records) and approved by email on August 21, 2018 (Appendix A). A Plugging Plan of Operation was submitted to and approved by the New Mexico Office of the State Engineer. Subsequent inspection and monitoring at the water table well at KAFB-106240 has shown no issues with the well screen.

Following placement of the well string, a 10/20 silica sand filter pack was placed in the boring annulus from the bottom to approximately 2 ft above the well screen. A 5-ft thick hydrated bentonite chip seal was placed above the sand pack. Additional 10/20 silica sand was placed within the boring annulus from the bottom of the contingency well to approximately 2 ft above the well screen. Approximately 30 ft of

bentonite chips was placed within the boring annulus above the upper silica sand filter pack. The bentonite chip seal was hydrated in lifts using a potable water source.

A high solids bentonite grout was placed in the annulus that extends from the upper bentonite chip seal to approximately 30 ft bgs (any grout settling was filled with bentonite chips to 30 ft bgs). A neat cement surface seal was installed over the grout seal and extended vertically up the well annulus to approximately 1 ft bgs.

Actual volumes for the filter-packs, annular sealant, and surface sealant were not recorded for these wells. This data will be recorded and documented for future wells to be incorporated into future reports.

Six of the data gap monitoring wells (KAFB-106240, KAFB-106241, KAFB-106242, KAFB-106243, KAFB-106244, and KAFB-106246) were completed as flush-mount wells. The flush-mount wells were completed with an 18-inch diameter well vault surrounded a 4-ft × 4-ft × 4-inch thick concrete pad at the ground surface. The well pad was sloped to direct rainwater away from the well. The casings are sealed at the top with a locking well plug.

One well (KAFB-106245) was completed as an aboveground well. The aboveground well completion consisted of a 12-inch diameter steel surface casing placed to approximately 3 ft above ground surface to protect the inner well casings. The surface casing is locked with a padlock and the casings are sealed at the top with a locking well plug. The aboveground well completion was placed within a 4-ft × 4-ft × 4-inch thick concrete pad. Four protective steel bollards were installed at the corners of the pad.

Well construction details for data gap monitoring wells KAFB-106240 through KAFB-106246 are listed in Table 2-1.

## **2.2 Monitoring Well Development**

After well construction was completed, the water table wells were developed in accordance with the Work Plan (Kirtland AFB, 2017). Well development was initiated no sooner than 48 hours from setting well seals. Monitoring well development records are provided in Appendix D.

Prior to development, water levels and total depths were gauged in the wells with an electronic water level indicator. Development was accomplished by surging and bailing to minimize fines in the filter pack. Wells were developed until a minimum of five casing volumes were removed. Development water was contained in 55-gallon steel drums with water-tight lids and transferred to the EA investigation-derived waste (IDW) yard located on Kirtland AFB for waste characterization.

## **2.3 Monitoring Well Survey**

In accordance with the Work Plan (Kirtland AFB, 2017), a registered New Mexico professional land surveyor surveyed the horizontal and vertical coordinates of the top of each monitoring well casing and the ground surface elevation. Horizontal coordinates were measured relative to the New Mexico State Plane Coordinate System, Central Zone, North American Datum of 1983. Horizontal positions were measured to the nearest 0.1 ft, and vertical elevations were measured to the nearest 0.01 ft. The registered New Mexico professional land surveyor provided the coordinates listed in Table 2-2 and are provided in Appendix E. The locations of the monitoring wells are shown on Figure 1-2. Elevations of well construction materials are presented in Table 2-3.

### 3. INVESTIGATION-DERIVED WASTE MANAGEMENT

Management of IDW was performed in accordance with Section 8 of the Work Plan (Kirtland AFB, 2017) that was approved with conditions (NMED, 2018). The IDW produced during the GWM well installation consisted of soil cuttings, drilling liquids, decontamination water, and well development water. Solid and liquid IDW was segregated and placed in roll-off bins or 55-gallon drums pending characterization. Quantities of IDW are listed in Table 3-1.

#### 3.1 Drill Cuttings

One representative, five-point composite soil characterization sample was collected from each roll-off bin in accordance with the receiving waste facility requirements. The soil was tested using the Toxicity Characteristic Leaching Procedure for volatile organic compounds, semivolatile organic compounds, pesticides, herbicides, and RCRA metals as required for acceptance by the Kirtland AFB Construction and Demolition Landfill. Additional analyses were performed for total petroleum hydrocarbons (TPH)-gasoline range organics, TPH-diesel range organics, TPH-motor oil range organics, reactivity cyanide/sulfide, ignitability, and corrosiveness (pH) using U.S. Environmental Protection Agency-approved methods. Samples were analyzed by Hall Environmental Analysis Laboratory, Albuquerque, New Mexico. The laboratory analytical results are provided in Appendix F.

The soil drill cuttings from the well installation were disposed of at the Kirtland AFB Construction and Demolition Landfill. Advanced Chemical Transport, Inc. transported the roll-offs consisting of cuttings and plastic liners to the Kirtland AFB Construction and Demolition Landfill.

#### 3.2 Monitoring Well Development Water

Monitoring well development water management was performed in accordance with Section 8 of the Work Plan (Kirtland AFB, 2017). The development water was analyzed for RCRA metals; ethylene dibromide; dissolved iron and manganese; and benzene, toluene, ethylbenzene, and total xylenes. Purge water IDW samples were collected using a new disposable bailer. One composite development water sample was collected for each well using a new bailer. The samples were analyzed by Hall Environmental Analysis Laboratory. Results are provided in Appendix G. The development water was characterized and deemed non-hazardous, meeting the groundwater treatment system maximum contaminant acceptance concentrations. Development water was, therefore, treated at the BFF groundwater treatment system and discharged to the Kirtland AFB Tijeras Arroyo Golf Course. The groundwater treatment system maximum acceptance concentrations are discussed in Technical Memorandum Establishing Basis of Design Maximum Concentrations for the Kirtland BFF Groundwater Treatment System dated May 10, 2017. This document is listed as KAFB4523 in the NMED Facility Records. Water IDW disposal is also discussed in the Operations and Maintenance Plan for the Groundwater Treatment System (Kirtland AFB, 2016) that was approved by NMED (NMED, 2016). These documents are listed as KAFB4440 and KAFB4644 in the NMED Facility Records, respectively.

#### 3.3 Decontamination Wastes

Drilling equipment was decontaminated prior to the drilling and construction of each nested well. The equipment was decontaminated in a mobile decontamination pad using a high-pressure steam cleaner. The wastewater generated by the equipment decontamination process was placed in roll-off bins located at the laydown yard. The solid portion was characterized using the same method as the drill cuttings (Section 3.1) and the liquid portion was characterized using the same method as the development water (Section

3.2). Results are provided in Appendix F (solids) and Appendix G (liquid). Water that met groundwater treatment system acceptance criteria was treated through the groundwater treatment system and discharged to the Kirtland AFB Tijeras Arroyo Golf Course. The remaining non-hazardous high solids, water, mud, and sand were transported by Advanced Chemical Transport, Inc. to the Twin Enviro Services Penrose, Colorado disposal facility.

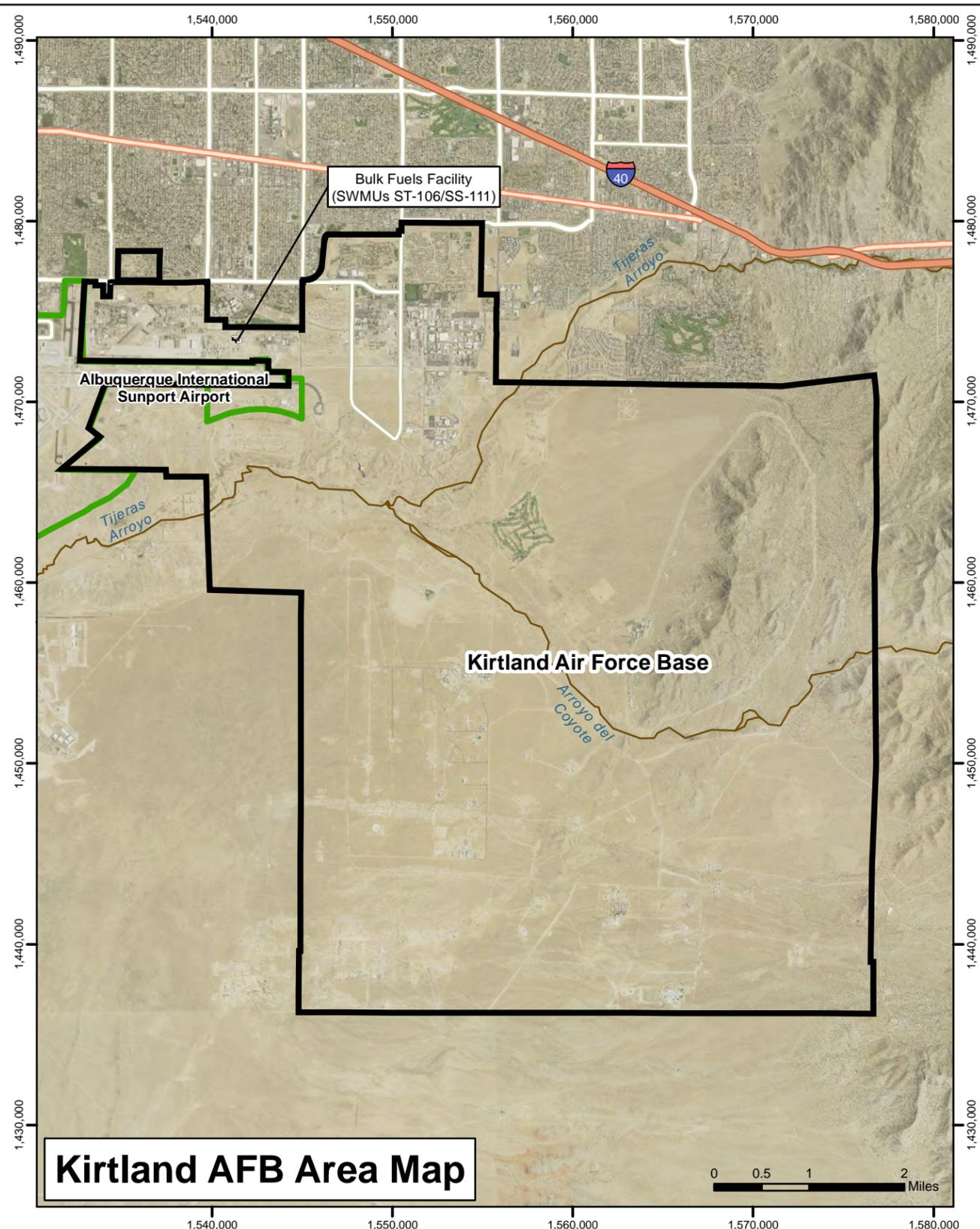
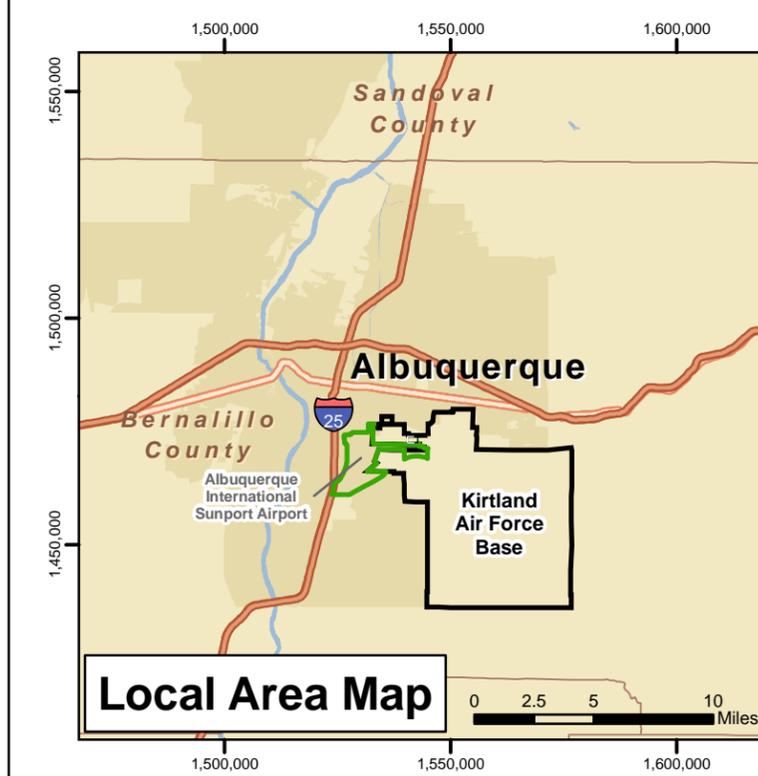
## 4. REFERENCES

- Kirtland Air Force Base (AFB). 2016. *Operations and Maintenance Plan, Groundwater Treatment System, Bulk Fuels Facility, SWMU ST-106/SS-111, Kirtland Air Force Base, New Mexico*. Prepared by EA Engineering, Science, and Technology, Inc., PBC for Kirtland AFB under USACE–Albuquerque District Contract No. W912DR-12-D-0006. August.
- Kirtland AFB. 2017. *Work Plan for Data Gap Monitoring Well Installation, Solid Waste Management Unit ST-106/SS-111*. Prepared by EA Engineering, Science, and Technology, Inc., PBC for Kirtland AFB under USACE-Albuquerque District Contract No. W912DR-12-D-0006. December.
- New Mexico Environment Department (NMED). 2010. Hazardous Waste Treatment Facility Operating Permit. U.S. Environmental Protection Agency Identification No. NM9570024423, Issued to U.S. Air Force for the Open Detonation Unit Located at Kirtland Air Force Base, Bernalillo County, New Mexico, by the NMED Hazardous Waste Bureau. July.
- NMED. 2016. Letter to Colonel Eric H. Froelich, Base Commander, and Mr. John Pike, Director, Environmental Management Services, Kirtland Air Force Base, New Mexico, regarding Operations and Maintenance Plan, Groundwater Treatment System, Bulk Fuels Facility, Solid Waste Management Unit ST-106/SS-111. December.
- NMED. 2018. Correspondence from Mr. Juan Carlos Borrego, Deputy Secretary Environment Department, to Colonel Richard W. Gibbs, Base Commander, 377 ABW/CC, Kirtland AFB, New Mexico and Mr. Chris Segura, Chief, Installation Support Section, AFCEC/CZOW, Kirtland AFB, New Mexico, regarding Work Plan for Data Gap Monitoring Well installation, Bulk Fuels Facility, Solid Waste Management Unit ST-106/SS-111, Kirtland Air Force Base. EPA ID No. NM9570024423, HWB-KAFB-13-MISC. February 28.
- NMED. 2019. Correspondence from Mr. Dave Cobrain, Program Manager to Colonel David S. Miller, Base Commander, 377 AB/CC, Kirtland AFB, NM and Lt. Wayne J. Acosta, Civil Engineer Office, 377 Civil Engineering Division, Kirtland AFB, NM, regarding Bulk Fuels Facility Spill, Solid Waste Management Unit ST-106/SS-11, Kirtland Air Force Base, EPA ID# NM9570024423, HWB-KAFB-19-MISC. December.

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## **FIGURES**

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- Legend**
- Kirtland Air Force Base Installation Boundary
  - Albuquerque International Sunport Airport
  - Major Highways
  - Highways
  - Major Roads
  - Arroyos
  - Rivers
  - Source Area

Note:  
SWMUs = solid waste management units

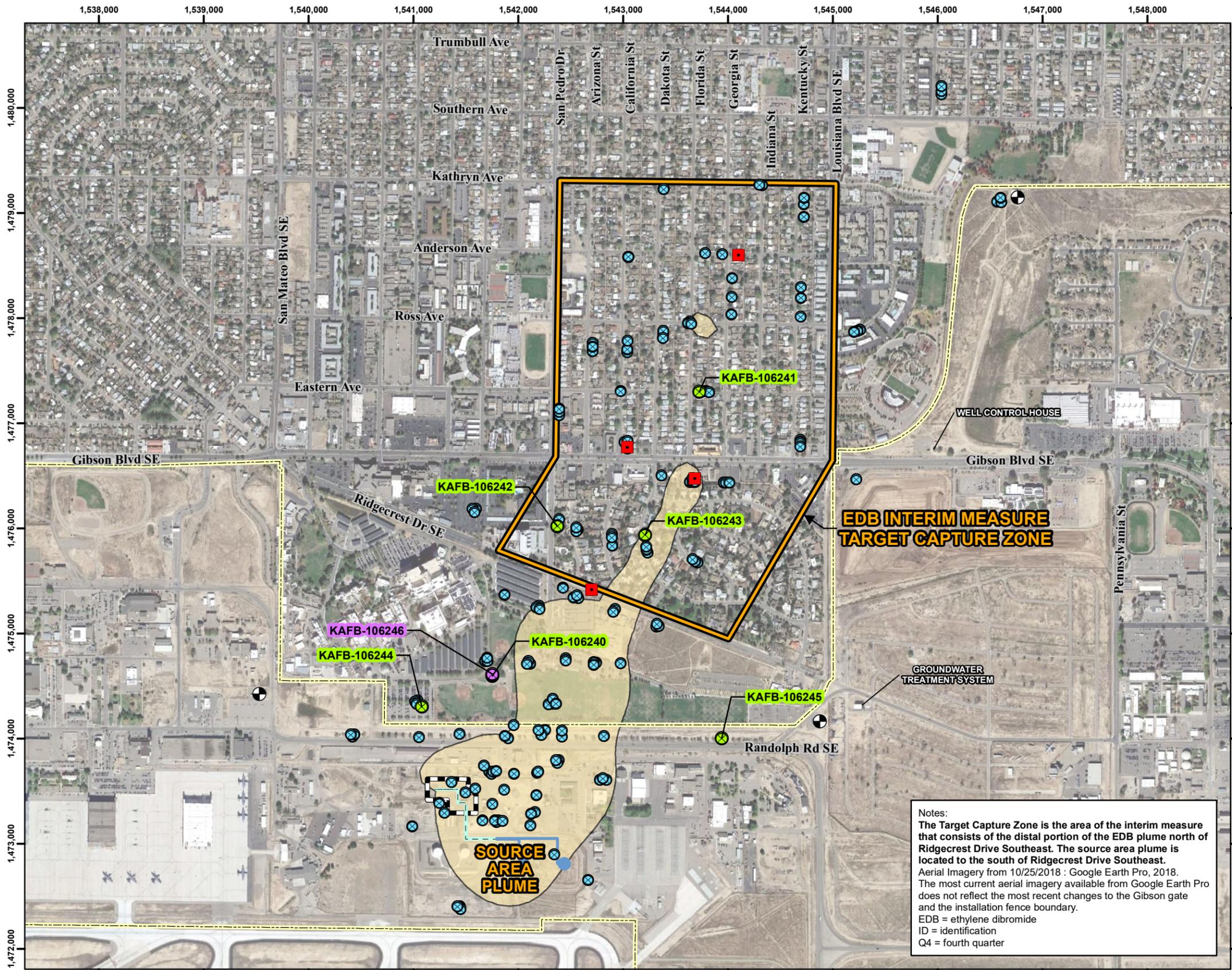


Projection: NAD83 State Plane New Mexico Central FIPS3002 Feet

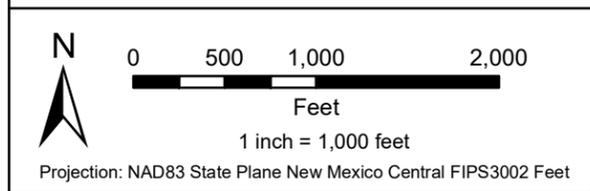
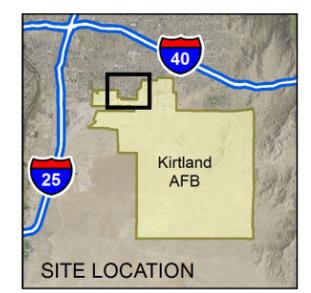
COMPLETION REPORT FOR  
DATA GAP MONITORING WELLS  
BULK FUELS FACILITY  
SOLID WASTE MANAGEMENT UNITS ST-106/SS-111  
KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 1-1

SITE LOCATION MAP



- Legend**
- Nested Data Gap Monitoring Well
  - Contingency Well
  - Groundwater Monitoring Well
  - Extraction Well
  - Drinking Water Supply Well
  - Target Capture Zone for Dissolved-Phase EDB
  - Former Buried Fuel Transfer Line
  - Installation Fence Boundary
  - Former Aboveground Fuel Transfer Line
  - Former Aboveground Storage Tank
  - Bulk Fuels Facility (SWMUs ST-106/SS-111)
  - EDB Plume Q4 2019 (> 0.05 µg/L)



Notes:  
 The Target Capture Zone is the area of the interim measure that consists of the distal portion of the EDB plume north of Ridgecrest Drive Southeast. The source area plume is located to the south of Ridgecrest Drive Southeast.  
 Aerial Imagery from 10/25/2018 : Google Earth Pro, 2018.  
 The most current aerial imagery available from Google Earth Pro does not reflect the most recent changes to the Gibson gate and the installation fence boundary.  
 EDB = ethylene dibromide  
 ID = identification  
 Q4 = fourth quarter

COMPLETION REPORT FOR  
 DATA GAP MONITORING WELLS  
 BULK FUELS FACILITY  
 SOLID WASTE MANAGEMENT UNITS ST-106/SS-111  
 KIRTLAND AIR FORCE BASE, NEW MEXICO

FIGURE 1-2

LOCATION OF DATA GAP  
 MONITORING WELLS

**TABLES**

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**Table 2-1  
Well Construction Details for Data Gap Monitoring Wells**

Well Identification		Cement Seal Interval		Hydrated Uncoated 3/8-inch Bentonite Chip Interval		High Solids Bentonite Grout Interval		TR-60 Bentonite Plug		10/20 Silica Sand		3.5-inch Outside Diameter, Schedule 80 PVC					
												Blank Casing		Screen <sup>a</sup>		Sump	
												Top <sup>b</sup>	Bottom <sup>b</sup>	Top <sup>b</sup>	Bottom <sup>b</sup>	Top <sup>b</sup>	Bottom <sup>b</sup>
KAFB-106240	KAFB-106240-449	0.5	30	NA	NA	30	383	441.6	447	447	499.9	0.5	448.9	448.9	488.9	488.9	490.9
KAFB-106241	KAFB-106241-428	0.5	29	29	31	31	360	420.3	426	426	480	0.5	428	428	468	468	470
	KAFB-106241-394							360	391.8	391.8	420.3	0.5	394	394	419	419	421
KAFB-106242	KAFB-106242-418	1	31	NA	NA	31	346	411.2	416	416	470	0.5	418	418	458	458	460
	KAFB-106242-384							346	381.5	381.5	411.2	0.5	384	384	409	409	411
KAFB-106243	KAFB-106243-425	1.5	30	30	43	43	359.7	418.25	422.1	422.1	471	0.5	425.5	425.5	465.5	465.5	467.5
	KAFB-106243-391							359.7	389.1	389.1	418.25	0.5	391.25	391.25	416.25	416.25	418.25
KAFB-106244	KAFB-106244-445	0.5	29.5	29.5	60	60	379.5	438	442.9	442.9	490	0.5	445	445	485	485	487
	KAFB-106244-411							379.5	409	409	438	0.5	411	411	436	436	438
KAFB-106245	KAFB-106245-460	1	31	31	61	61	394.3	453.8	458.6	458.6	537	-2.7	460.5	460.5	500.5	500.5	502.5
	KAFB-106245-426							394.3	424.2	424.2	453.8	-2.7	426.5	426.5	451.5	451.5	453.5
KAFB-106246	KAFB-106246-428	1	32	NA	NA	32	395.6	395.6	424.6	424.6	462.7	0.5	428	428	453	453	455

<sup>a</sup> Screen is 0.010-inch slot.

<sup>b</sup> All measurements are feet below ground surface.

NA = not applicable

PVC = polyvinyl chloride

**Table 2-2  
Survey Coordinates and Elevations for Data Gap Monitoring Wells**

Well Identification		State Plane Coordinate System (NAD83)		Elevations (NAVD88)	
		Northing (ft)	Easting (ft)	Top of PVC Casing (ft above mean sea level)	Top of Concrete (ft above mean sea level)
KAFB-106240	KAFB-106240-449	1474596.984	1541754.335	5346.94	5347.48
KAFB-106241	KAFB-106241-428	1477300.735	1543728.646	5323.29	5323.97
	KAFB-106241-394	1477300.377	1543728.523	5323.24	
KAFB-106242	KAFB-106242-418	1476020.681	1542374.289	5315.41	5316.04
	KAFB-106242-384	1476020.848	1542374.789	5315.46	
KAFB-106243	KAFB-106243-425	1475937.626	1543210.161	5319.67	5320.62
	KAFB-106243-391	1475937.67	1543209.808	5319.53	
KAFB-106244	KAFB-106244-445	1474303.943	1541081.081	5343.09	5343.44
	KAFB-106244-411	1474304.167	1541080.864	5343.05	
KAFB-106245	KAFB-106245-460	1474003.97	1543941.76	5360.42	5358.01
	KAFB-106245-426	1474004.3	1543941.4	5360.45	
KAFB-106246	KAFB-106246-428	1474612.71	1541752.79	5347.52	5347.61

ft = foot/feet

NAD83 = North American Datum of 1983

NAVD88 = North American Vertical Datum of 1988

PVC = polyvinyl chloride

**Table 2-3  
Elevations for Data Gap Monitoring Well Construction Materials**

Well Identification		Top of Ground Surface Elevation	Northing (ft)	Easting (ft)	Top of Bentonite Grout Elevation	Bottom of Bentonite Grout Elevation	Top of Casing Elevation	Bottom of Casing/Top of Screen Elevation	Bottom of Screen/Top of Sump Elevation	Bottom of Sump Elevation	Top of Bentonite Chips Elevation	Bottom of Bentonite Chips/Top of Sand Pack Elevation	Bottom of Sand Pack Elevation
KAFB-106240	KAFB-106240-449	5347.43	1474596.984	1541754.335	5317.43	4964.43	5346.94	4898.53	4858.53	4856.53	4905.83	4900.43	4847.53
KAFB-106241	KAFB-106241-428	5323.96	1477300.377	1543728.523	5292.96	4963.96	5323.29	4895.96	4855.96	4853.96	4903.66	4897.96	4843.96
	KAFB-106241-394		1477300.735	1543728.646			5323.24	4929.96	4904.96	4902.96	4963.96	4932.16	4903.66
KAFB-106242	KAFB-106242-418	5316.01	1476020.848	1542374.789	5285.01	4970.01	5315.41	4898.01	4858.01	4856.01	4904.81	4900.01	4846.01
	KAFB-106242-384		1476020.681	1542374.289			5315.46	4932.01	4907.01	4905.01	4970.01	4934.51	4904.81
KAFB-106243	KAFB-106243-425	5320.53	1475937.670	1543209.808	5277.53	4960.83	5319.67	4895.03	4855.03	4853.03	4902.28	4898.43	4849.53
	KAFB-106243-391		1475937.626	1543210.161			5319.53	4929.28	4904.28	4902.28	4960.83	4931.43	4902.28
KAFB-106244	KAFB-106244-445	5343.42	1474303.943	1541081.081	5283.42	4963.92	5343.09	4898.42	4858.42	4856.42	4905.42	4900.52	4853.42
	KAFB-106244-411		1474304.167	1541080.864			5343.05	4932.42	4907.42	4905.42	4963.92	4934.42	4905.42
KAFB-106245	KAFB-106245-460	5357.73	1474004.30	1543941.50	5296.73	4963.43	5360.42	4897.23	4857.23	4855.23	4903.93	4899.13	4820.73
	KAFB-106245-426		1474003.97	1543941.76			5360.45	4931.23	4906.23	4904.23	4963.43	4933.53	4903.93
KAFB-106246	KAFB-106246-428	5347.28	1474612.71	1541752.79	5317.28	4951.68	5347.52	4919.28	4894.28	4892.28	4951.68	4922.68	4884.58

All units in feet above mean sea level.

ft = foot/feet

NA = not applicable

**Table 3-1  
Investigation-Derived Waste Quantities**

<b>Well Identification</b>	<b>Container</b>	<b>IDW Volume</b>	<b>IDW Type</b>	<b>Characterization Determination</b>	<b>Disposal Date</b>	<b>Disposal Location</b>
KAFB-106240	Roll-off no. KAFB-106240-1	10 cubic yards	Soil	Non-Hazardous	8/17/2018	KAFB C&D
	Roll-off no. KAFB-106240-2	10 cubic yards	Soil	Non-Hazardous	8/15/2018	KAFB C&D
	Roll-off no. KAFB-106240-3	15 cubic yards	Soil	Non-Hazardous	8/16/2018	KAFB C&D
	Roll-off no. KAFB-106240-4	7 cubic yards	Soil	Non-Hazardous	8/20/2018	KAFB C&D
	Roll-off no. KAFB-106240-5	1 cubic yard	Mud	Non-Hazardous	10/11/2018	Twin Enviro Services
	Roll-off no. KAFB-106240-5	1,800 gallons	Decon Water	Non-Hazardous	9/14/2018	GWTS
	Poly drum	41 gallons	Water	Non-Hazardous	9/14/2018	GWTS
KAFB-106241	Roll-off no. 106241-1	10 cubic yards	Soil	Non-Hazardous	9/4/2018	KAFB C&D
	Roll-off no. 106241-2	14 cubic yards	Soil	Non-Hazardous	9/4/2018	KAFB C&D
	Roll-off no. 106241-3	6 cubic yards	Mud	Non-Hazardous	10/11/2018	Twin Enviro Services
	Roll-off no. 106241-3	1,000 gallons	Water	Non-Hazardous	9/26/2018	GWTS
	Poly drum no. 241-DV-1	45 gallons	Water	Non-Hazardous	10/9/2018	GWTS
	Poly drum no. 241-DV-2	35 gallons	Water	Non-Hazardous	10/9/2018	GWTS
KAFB-106242	Roll-off no. 106242-1	13 cubic yards	Soil	Non-Hazardous	9/26/2018	KAFB C&D
	Roll-off no. 106242-2	13 cubic yards	Soil	Non-Hazardous	9/27/2018	KAFB C&D
	Roll-off no. 106242-3	2 cubic yards	Mud	Non-Hazardous	10/10/2018	Twin Enviro Services
	Roll-off no. 106242-3	250 gallons	Water	Non-Hazardous	9/26/2018	GWTS
	Poly drum no. 242-DV-1	45 gallons	Water	Non-Hazardous	10/9/2018	GWTS
	Poly drum no. 252-DV-2	45 gallons	Water	Non-Hazardous	10/9/2018	GWTS
KAFB-106243	Roll-off no. KAFB-106243-1	9 cubic yards	Soil	Non-Hazardous	8/28/2018	KAFB C&D
	Roll-off no. KAFB-106243-2	12 cubic yards	Soil	Non-Hazardous	8/29/2018	KAFB C&D
	Roll-off no. KAFB-106243-3	7 cubic yards	Soil	Non-Hazardous	8/30/2018	KAFB C&D
	Roll-off no. KAFB-106243-4	1 cubic yard	Mud/Sand	Non-Hazardous	10/10/2018	Twin Enviro Services
	Roll-off no. KAFB-106243-4	60 gallons	Water	Non-Hazardous	9/14/2018	GWTS
	Poly drum	52 gallons	Water	Non-Hazardous	9/14/2018	GWTS
	Poly drum	7 gallons	Water	Non-Hazardous	9/14/2018	GWTS
KAFB-106244	Roll-off no. KAFB-106244-1	8 cubic yards	Soil	Non-Hazardous	8/22/2018	KAFB C&D
	Roll-off no. KAFB-106244-2	13 cubic yards	Soil	Non-Hazardous	8/22/2018	KAFB C&D
	Roll-off no. KAFB-106244-3	6 cubic yards	Soil	Non-Hazardous	8/17/2018	KAFB C&D
	Roll-off no. KAFB-106244-4	8 cubic yards	Soil	Non-Hazardous	8/15/2018	KAFB C&D
	Roll-off no. KAFB-106244-5	1 cubic yard	Soil	Non-Hazardous	10/2/2018	KAFB C&D
	Poly drum	53 gallons	Water	Non-Hazardous	9/14/2018	GWTS

**Table 3-1  
Investigation-Derived Waste Quantities**

<b>Well Identification</b>	<b>Container</b>	<b>IDW Volume</b>	<b>IDW Type</b>	<b>Characterization Determination</b>	<b>Disposal Date</b>	<b>Disposal Location</b>
KAFB-106245	Roll-off no. 106245-1	16 cubic yards	Soil	Non-Hazardous	10/5/2018	KAFB C&D
	Roll-off no. 106245-2	13 cubic yards	Soil	Non-Hazardous	10/2/2018	KAFB C&D
	Roll-off no. 106245-3	4 cubic yards	Mud	Non-Hazardous	10/10/2018	Twin Enviro Services
	Roll-off no. 106245-3	75 gallons	Water	Non-Hazardous	9/26/2018	GWTS
	Roll-off no. 106245-4	3 cubic yards	Mud	Non-Hazardous	10/10/2018	Twin Enviro Services
	Roll-off no. 106245-4	300 gallons	Water	Non-Hazardous	9/26/2018	GWTS
	Poly Drum no. 245-DV-1	45 gallons	Water	Non-Hazardous	10/9/2018	GWTS
	Poly Drum no. 245-DM-01	41 gallons	Water	Non-Hazardous	10/9/2018	GWTS
KAFB-106246	Roll-off no. 106246-1	12 cubic yards	Soil	Non-Hazardous	10/5/2018	KAFB C&D
	Roll-off no. 106246-2	13 cubic yards	Soil	Non-Hazardous	10/5/2018	KAFB C&D
	Roll-off no. 106246-3	3 cubic yards	Mud	Non-Hazardous	10/11/2018	Twin Enviro Services
	Roll-off no. 106246-3	1,000 gallons	Decon Water	Non-Hazardous	9/26/2018	GWTS

C&D = construction and demolition

Decon = decontamination

GWTS = groundwater treatment system

IDW = investigation-derived waste

KAFB = Kirtland Air Force Base

no. = number

## LIST OF APPENDICES

- A Regulatory Correspondence
- B Lithologic Boring Logs
- C Monitoring Well Construction Diagrams
- D Well Development Records
- E Well Survey Information
- F Investigation-Derived Soil Waste Disposal
- G Investigation-Derived Liquid Waste Disposal

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Michelle Lujan Grisham  
Governor

Howie C. Morales  
Lt. Governor

NEW MEXICO  
ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau

2905 Rodeo Park Drive East, Building 1  
Santa Fe, New Mexico 87505-6313  
Phone (505) 476-6000 Fax (505) 476-6030  
www.env.nm.gov

CERTIFIED MAIL - RETURN RECEIPT REQUESTED



James C. Kenney  
Cabinet Secretary

Jennifer J. Pruett  
Deputy Secretary

December 9, 2019

Colonel David S. Miller  
Base Commander  
377 ABW/CC  
2000 Wyoming Blvd SE  
Kirtland AFB, NM 87117

Lt. Colonel Wayne J. Acosta  
Civil Engineer Office  
377 Civil Engineering Division  
2050 Wyoming Blvd SE, Suite 116  
Kirtland AFB, NM 87117

**RE: REQUEST FOR REPORT  
FOR DATA GAP MONITORING WELL INSTALLATION  
BULK FUELS FACILITY  
SOLID WASTE MANAGEMENT UNIT ST-106/SS-111  
KIRTLAND AIR FORCE BASE, NEW MEXICO  
EPA ID # NM9570024423  
HWB-KAFB-19-BFFS**

Dear Colonel Miller and Lt. Colonel Acosta:

The New Mexico Environment Department (NMED) received the Kirtland Air Force Base ("KAFB" or "Permittee") *Work Plan for Data Gap Monitoring Well Installation* ("Work Plan"), dated December 20, 2017, which was approved with conditions by NMED on February 28, 2018 ("Approval Letter").

NMED is aware that this scope of work has been completed. NMED acknowledges that the well installation reports for this work have been incorporated into two Quarterly Reports as appendices; however, the titles of the reports, the cover pages of the reports, and the abstracts of the reports give no indication that this information is in these reports. As a result, this information is difficult to locate in the administrative record.

A deliverable for the approved Work Plan consisting of a consolidated report for the installation of the data gap monitoring wells is required in order to maintain a transparent administrative record and to facilitate the review of critical future technical documents related to the Bulk

KAFB4915



Fuels Facility Spill.

The Permittee must submit all information related to the Data Gap Monitoring Well Installation in a stand-alone report. The Permittee must submit the Data Gap Monitoring Well Installation Report to NMED for review and approval no later than October 1, 2020.

If you have any questions regarding this letter, please contact Ben Wear at (505) 476-6041.

Sincerely,



Dave Cobrain  
Program Manager  
Hazardous Waste Bureau

cc: B. Wear, NMED HWB  
R. Murphy, NMED HWB  
M. Suzuki, NMED HWB  
L. King, EPA Region 6 (6LCRRC)  
S. Clark, KAFB

File: KAFB 2019 and Reading



SUSANA MARTINEZ  
Governor  
JOHN A. SANCHEZ  
Lieutenant Governor

**NEW MEXICO  
ENVIRONMENT DEPARTMENT**

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BUTCH TONGATE  
Cabinet Secretary  
J. C. BORREGO  
Deputy Secretary

**CERTIFIED MAIL – RETURN RECEIPT REQUESTED**

February 28, 2018

Colonel Richard W. Gibbs  
Base Commander  
377 ABW/CC  
2000 Wyoming Blvd SE  
Kirtland AFB, NM 87117-5606

Mr. Chris Segura  
Chief, Installation Support Section  
AFCEC/CZOW  
2050 Wyoming Blvd SE, Suite 124  
Kirtland AFB, NM 87117-5270

**RE: WORK PLAN FOR DATA GAP MONITORING WELL INSTALLATION  
BULK FUELS FACILITY  
SOLID WASTE MANAGEMENT UNIT ST-106/SS-111  
KIRTLAND AIR FORCE BASE  
EPA ID# NM9570024423, HWB-KAFB-13-MISC**

Dear Colonel Gibbs and Mr. Segura:

The New Mexico Environment Department (“NMED”) is in receipt of the Kirtland Air Force Base (“KAFB”) (“Permittee”) *Work Plan for Data Gap Monitoring Well Installation* (“Work Plan”), dated December 20, 2017. The Work Plan proposes activities to be performed at the Bulk Fuels Facility (“BFF”) site, including:

- Installation of six (6) groundwater monitoring wells;
- Incorporation of six (6) existing wells into the groundwater quality monitoring network for quarterly sampling (i.e., groundwater monitoring wells and soil vapor monitoring wells that were previously dry and that now have water in the screens due to the rising water table);
- Incorporation of twelve (12) existing wells into the groundwater quality monitoring network for quarterly gauging depths to groundwater and light non-aqueous phase liquid

Col. Gibbs and Mr. Segura  
February 28, 2018  
Page 2

(“LNAPL”), including the six (6) wells previously mentioned for incorporation into the groundwater quality monitoring network for quarterly sampling;

- Gauging, sampling, and maintenance of the newly added wells; and
- Reporting of the data collected for the newly added wells, including groundwater elevations, LNAPL thickness, groundwater geochemical data, and well installation details.

Increased water conservation by Water Authority consumers, and use of river water as a source of public water supply has resulted in decreased pumping of Water Authority wells, and an ongoing rise in the groundwater table. Water levels have risen to elevations above the top of well screens in a number of monitoring wells, rendering them unsuitable to monitor groundwater quality in the uppermost aquifer. The objective of the Work Plan is to address data gaps created by the submergence of monitoring well screens. Specifically, the Work Plan proposes to install groundwater monitoring wells that are screened across the current water table elevations. The Work Plan addresses tasks supporting monitoring well installation and baseline water quality sampling and is the procedural guidance document for activities to be executed as part of the Resource Conservation and Recovery Act (“RCRA”) corrective action process. The data collected under the Work Plan will be critical to completing the RCRA Facility Investigation Report (“RFI”), which will then support the Corrective Measures Evaluation (“CME”).

The Work Plan is hereby approved subject to the following conditions:

1. The Permittee and NMED have agreed to move well KAFB-106240 to a location east of the VA Hospital supply well, as shown on the attached map. Subject to NMED approval, the Permittee shall propose the specific location, based on accessibility for drilling vehicles and equipment.
2. For each day of active drilling, the Permittee shall provide NMED with an email containing a copy of lithologic logs and an update summary of daily and planned activities. A well approval form with the proposed screen intervals for groundwater monitoring well completions must be submitted for NMED approval prior to the start of well construction. NMED understands the importance of no field delays and will return the approved well form within one (1) working day of receipt.
3. NMED may require the installation of additional groundwater monitoring wells if the six wells installed pursuant to this Work Plan do not sufficiently address the data gaps.

If you have any questions regarding this letter, please contact NMED Chief Scientist Dennis McQuillan at (505) 827-2140.

Col. Gibbs and Mr. Segura  
February 28, 2018  
Page 3

Sincerely,

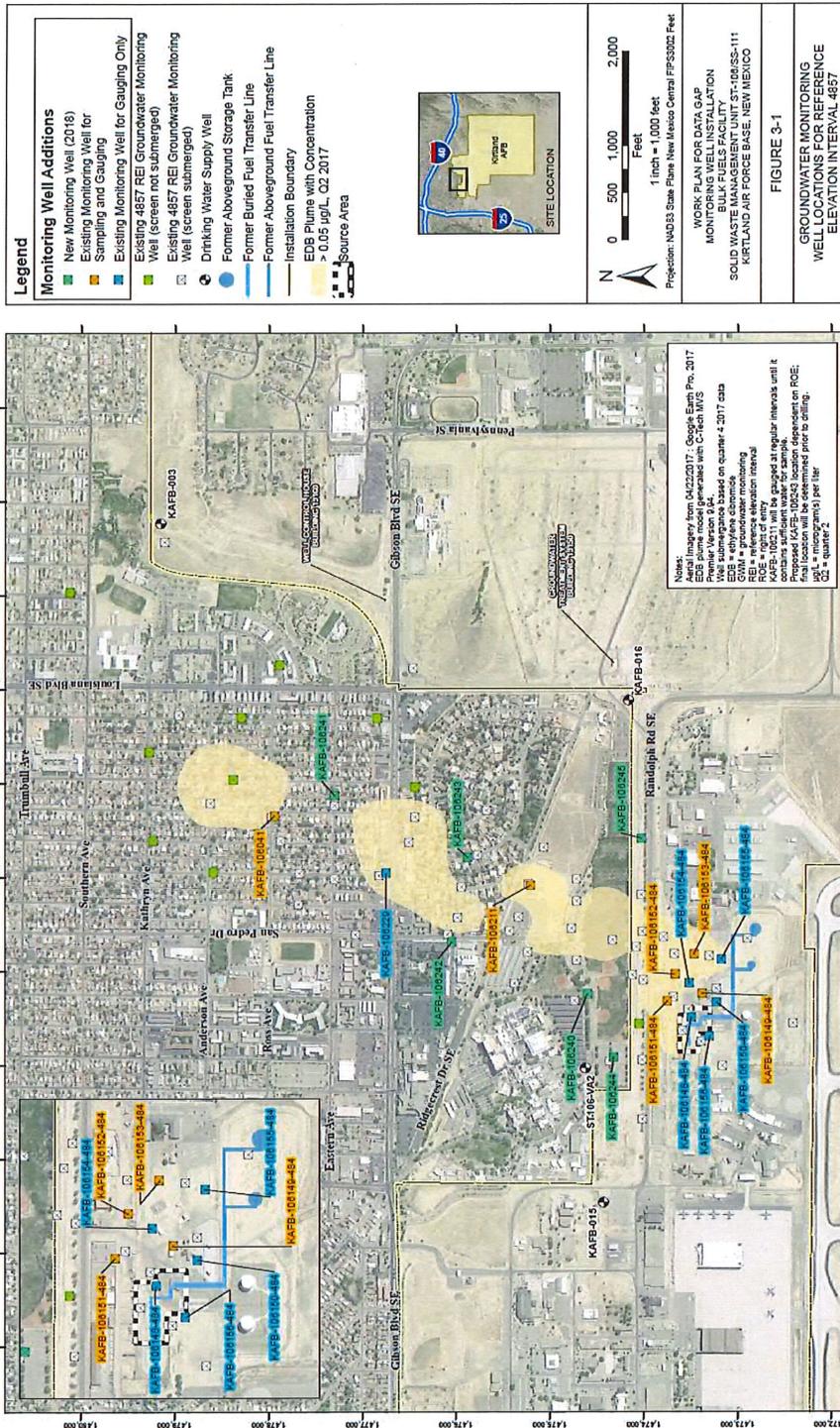


Juan Carlos Borrego  
Deputy Secretary  
Environment Department

cc: Col. M. Harner, KAFB  
K. Lynnes, KAFB  
B. Renaghan, AFCEC  
S. Clark, KAFB-AFCEC  
H. O'Grady, KAFB-AFCEC  
T. Simpler, USACE  
Bart Faris, AEHD  
F. Shean, ABCWUA  
L. King, EPA-Region 6 (6PD-N)  
J. Kieling, NMED-HWB  
B. Salem, NMED-HWB  
S. Pullen, NMED-GWQB  
M. Hunter, NMED-GWQB  
D. McQuillan, NMED-OOTS

File: KAFB 2018 Bulk Fuels Facility Spill

Col. Gibbs and Mr. Segura  
 February 28, 2018  
 Page 4



**From:** [CLARK, SCOTT C GS-13 USAF AFCEC/CZO](#)  
**To:** [Jercinovic, Devon](#); [Moayyad, Behnaum CIV USARMY CESPA \(US\)](#); [CORDOVA, AMY ELIZABETH CIV USARMY CESPA \(US\)](#); [Salazar, Carlos F CIV USARMY CESPA \(US\)](#); [Dreeland, Linda F CIV USARMY CESPA \(US\)](#); [Phaneuf, Mark J SPA \(Mark.J.Phaneuf@usace.army.mil\)](#); [KOTTKAMP, SHEEN T GS-12 USAF AFCEC AFCEC/CZOW](#)  
**Cc:** [LYNNES, KATHRYN D HQE USAF AFGSC 377 MSG/SAF/IEE](#)  
**Subject:** FW: Kirtland BFF - Confirming submittal of Data Gap Well Replacement KAFB-106246 to NMED  
**Date:** Wednesday, August 22, 2018 3:19:26 PM  
**Attachments:** [\[Redacted\]](#)

---

Hi All,

FYI – see below. Great news.

Thanks!  
 Scott

---

**From:** McQuillan, Dennis, NMENV <dennis.mcquillan@state.nm.us>  
**Sent:** Tuesday, August 21, 2018 2:33 PM  
**To:** CLARK, SCOTT C GS-13 USAF AFCEC/CZO <scott.clark@us.af.mil>  
**Subject:** [Non-DoD Source] RE: Kirtland BFF - Confirming submittal of Data Gap Well Replacement KAFB-106246 to NMED

Scott,

Data Gap Well Replacement KAFB-106246 is approved.

Thanks!

***Dennis McQuillan***

Chief Scientist  
 New Mexico Environment Department  
 1190 St. Francis Dr.  
 PO Box 5469  
 Santa Fe, NM 87502  
 505-827-2140 desk  
 505-660-1592 cell  
[dennis.mcquillan@state.nm.us](mailto:dennis.mcquillan@state.nm.us)




---

**From:** CLARK, SCOTT C GS-13 USAF AFCEC/CZO <[scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)>  
**Sent:** Monday, August 20, 2018 11:31 AM

**To:** McQuillan, Dennis, NMENV <[dennis.mcquillan@state.nm.us](mailto:dennis.mcquillan@state.nm.us)>  
**Subject:** FW: Kirtland BFF - Confirming submittal of Data Gap Well Replacement KAFB-106246 to NMED

Hi Dennis,

FYI – should help you find it.

Thanks!  
Scott

---

**From:** Jercinovic, Devon <[djercinovic@eaest.com](mailto:djercinovic@eaest.com)>  
**Sent:** Tuesday, July 24, 2018 4:15 AM  
**To:** CLARK, SCOTT C GS-13 USAF AFCEC/CZO <[scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)>; KOTTKAMP, SHEEN T GS-12 USAF AFCEC AFCEC/CZOW <[sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)>; RENAGHAN, BRIAN J GS-13 USAF AFMC AFCEC/CZRX <[brian.renaghan@us.af.mil](mailto:brian.renaghan@us.af.mil)>; LYNNES, KATHRYN D HQE USAF AFGSC 377 MSG/SAF/IEE <[kathryn.lynnes@us.af.mil](mailto:kathryn.lynnes@us.af.mil)>; PINO, ANTIONETTE R CTR USAF AFCEC AFCEC/CZOW <[antionette.pino.ctr@us.af.mil](mailto:antionette.pino.ctr@us.af.mil)>  
**Cc:** Moayyad, Behnaum CIV USARMY CESPA (US) <[Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)>; CORDOVA, AMY ELIZABETH CIV USARMY CESPA (US) <[Amy.E.Cordova@usace.army.mil](mailto:Amy.E.Cordova@usace.army.mil)>; Linda Dreeland <[Linda.Dreeland@usace.army.mil](mailto:Linda.Dreeland@usace.army.mil)>; Phaneuf, Mark J SPA (<[Mark.J.Phaneuf@usace.army.mil](mailto:Mark.J.Phaneuf@usace.army.mil)> <[Mark.J.Phaneuf@usace.army.mil](mailto:Mark.J.Phaneuf@usace.army.mil)>; <[carlos.f.salazar@usace.army.mil](mailto:carlos.f.salazar@usace.army.mil)>  
**Subject:** [Non-DoD Source] Kirtland BFF - Confirming submittal of Data Gap Well Replacement KAFB-106246 to NMED

#### AFCEC TEAM

Attached for your files is the letter work plan submitted yesterday to NMED proposing to replace the failed contingency well from location KAFB-106240 to a new location KAFB-106246 (30 ft west of KAFB-106624). I have also attached the stamped letters from NMED HWB and the NMED GWQB.

The letter and stamped versions from NMED HWB and GWQB have also been posted to the Portage FTP site: <https://www.portageinc.com/apps/Kirtland/> at the following location:

**Name:** Data Gap Well Replacement WP\_KAFB-106246  
**Path:** EA BFF GWTS Expansion Document Review (AF, USACE) > Data Gap Well Replacement WP\_KAFB-106246

The AR hard copy will be delivered before Friday, 27JUL18.

If you have any questions, please contact me.

Thank you, Devon

Devon E. Jercinovic, PG, PMP

**EA Engineering, Science, and Technology, Inc., PBC**

Program Manager II

320 Gold Ave. SW, Suite 1300

Albuquerque, NM 87102

Cell: 505.401.1181

Office: 505.715.4248

Email: [djercinovic@eaest.com](mailto:djercinovic@eaest.com)

[www.eaest.com](http://www.eaest.com)



**DEPARTMENT OF THE AIR FORCE  
377TH AIR BASE WING (AFGSC)**

**JUL 19 2018**

Colonel Richard W. Gibbs, USAF  
Commander  
377th Air Base Wing  
2000 Wyoming Blvd SE  
Kirtland AFB NM 87117

Mr. John Kieling, Bureau Chief  
Hazardous Waste Bureau (HWB)  
New Mexico Environment Department (NMED)  
2905 Rodeo Park Drive East, Building 1  
Santa Fe NM 87505-6303

Dear Mr. Kieling

Attached please find the proposed well design for a replacement contingency well for the KAFB-106240 location as approved in the *Work Plan for Data Gap Monitoring Well Installation, Bulk Fuels Facility, Solid Waste Management Unit (SWMU) ST-106/SS-111, Kirtland Air Force Base, New Mexico, dated December 2017*. This work plan was approved on February 28, 2018 for two-well nests comprised of a water table well and a contingency well (to monitor higher water table elevations in the future). As notified to NMED on June 22, 2018, the contingency well was compromised during the grout emplacement in the final stage of well construction. The water table well was completed and functions as designed at this location. The compromised contingency well will be plugged in accordance with a New Mexico Office of the State Engineer approved Well Plugging Plan of Operations. A replacement contingency well, designated KAFB-106246 is planned approximately 30 feet west of the original KAFB-106240 location with a single well casing and screen that will overlap the top five feet of the new water table well screen at KAFB-106240.

If you have any questions or concerns, please contact Mr. Scott Clark at (505) 846-9017 or at [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil); or Mr. Sheen Kottkamp at (505) 846-7674 or at [sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)

Sincerely

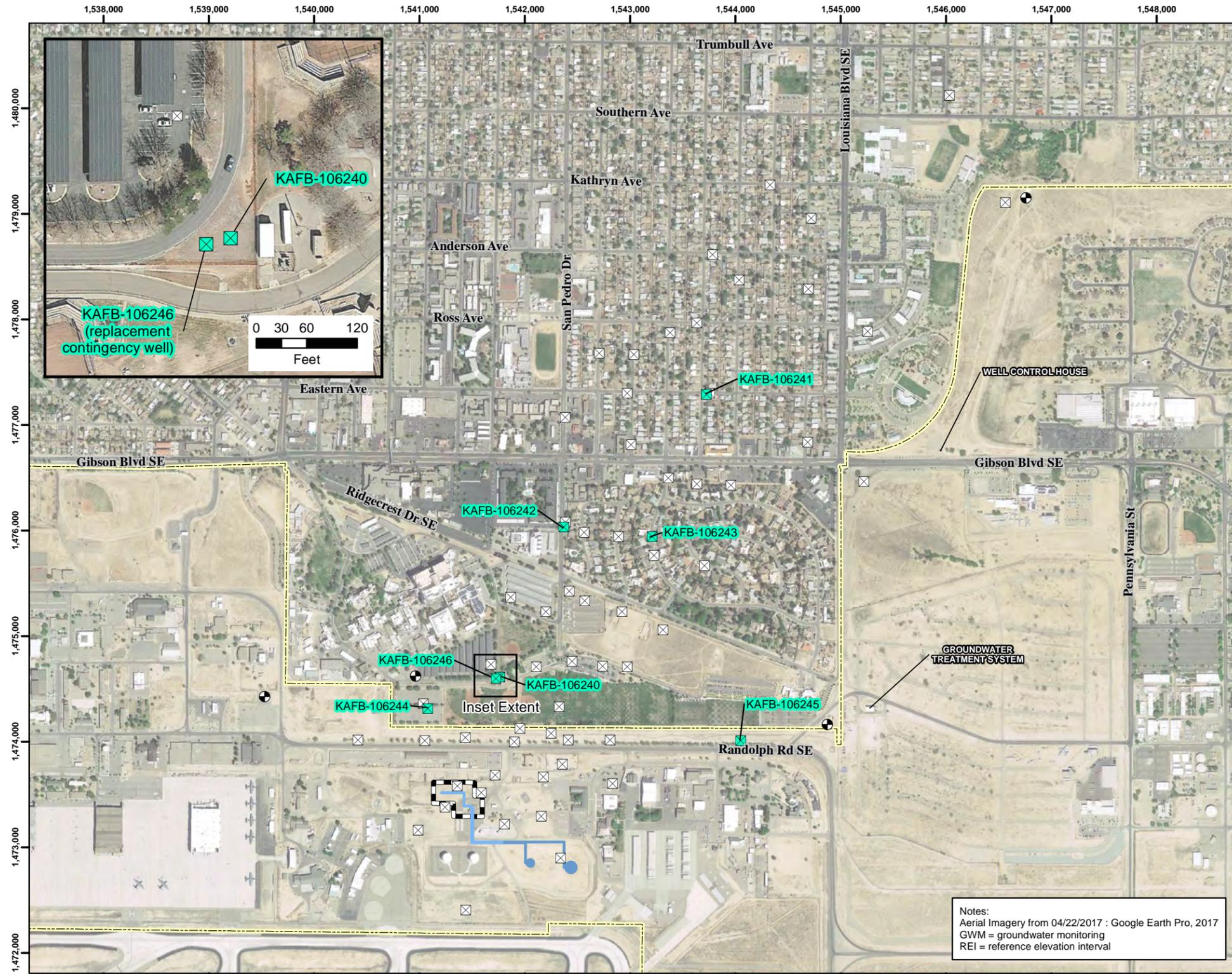
RICHARD W. GIBBS, Colonel, USAF  
Commander

Attachments:

Figure 1, Location of KAFB-106246 Replacement Contingency Well for KAFB-106240  
Figure 2, Data Gap Groundwater Monitoring Well Construction KAFB-106246

cc:

NMED (Borrogo) letter  
NMED-OOTS (McQuillan), letter and CD  
NMED GWQB (Hunter), letter and CD  
EPA Region 6 (King, Ellinger), letter and CD  
SAF-IEE (Lynnes), electronic only  
AFCEC/CZ (Renaghan, Clark, Kottkamp, Segura), electronic only  
USACE-ABQ District Office (Moayyad, Phaneuf, Dreeland, Sanchez, Salazar), electronic only  
Public Info Repository, Administrative Record/Information Repository (AR/IR) and File



**Legend**

- X New Monitoring Well (2018)
- X Existing 4857 REI Groundwater Monitoring Well (screen submerged)
- Drinking Water Supply Well
- Former Aboveground Storage Tank
- Former Buried Fuel Transfer Line
- Former Aboveground Fuel Transfer Line
- Installation Boundary
- Source Area

SITE LOCATION

0 500 1,000 2,000  
Feet  
1 inch = 1,000 feet

Projection: NAD83 State Plane New Mexico Central FIPS3002 Feet

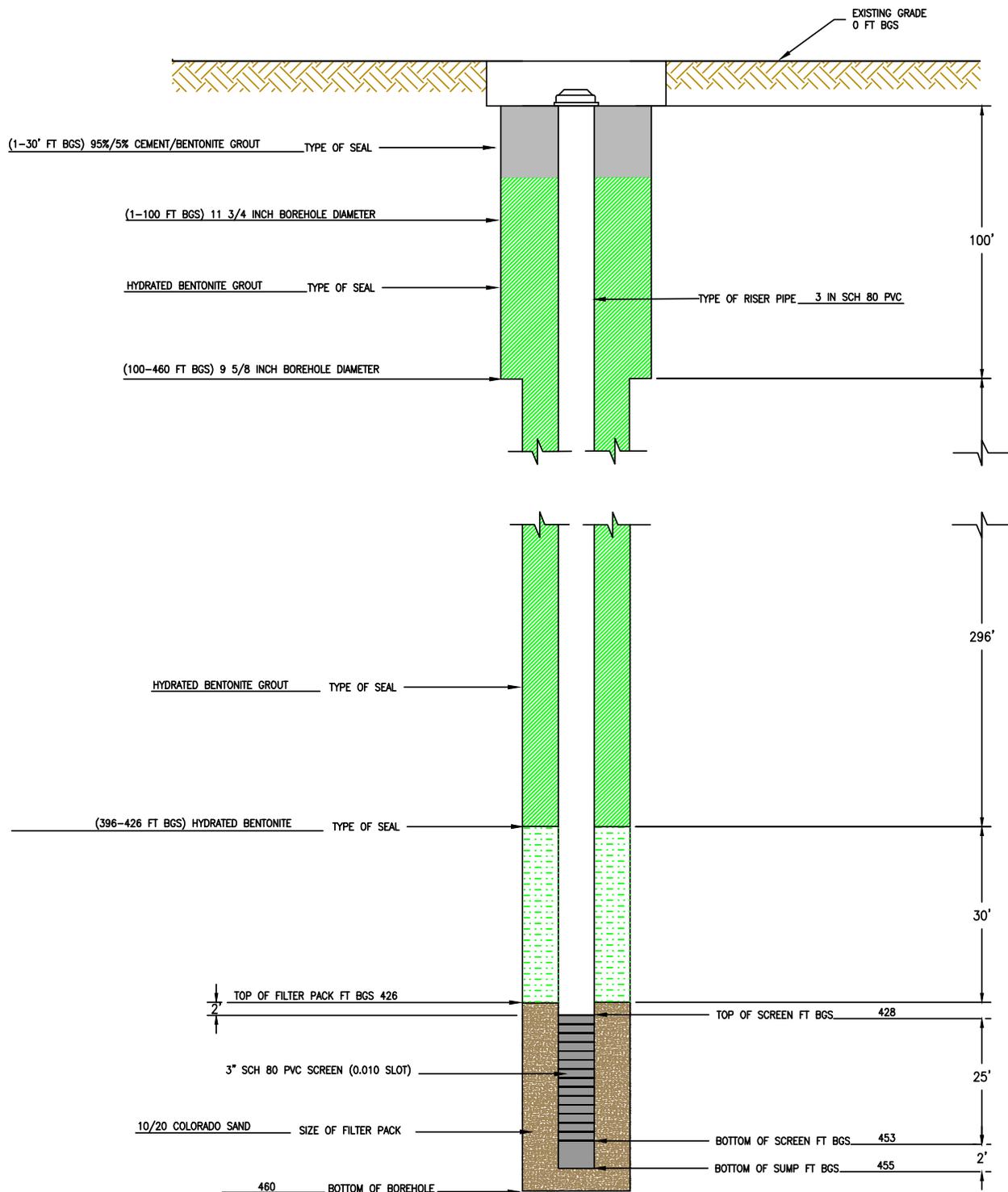
DATA GAP  
MONITORING WELL INSTALLATION  
BULK FUELS FACILITY  
SOLID WASTE MANAGEMENT UNIT ST-106/SS-111  
KIRTLAND AIR FORCE BASE, NEW MEXICO

**FIGURE 1**

LOCATION OF KAFB-106246 REPLACEMENT  
CONTINGENCY WELL FOR KAFB-106240

P:\gis\Projects\Kirtland\Figures\DataGapWellsWorkPlan\New GWM Well Locations 246 Addition.mxd 6/27/2018 EA eomalia

FIGURE 2 - DATA GAP GROUNDWATER MONITORING WELL CONSTRUCTION  
KFB-106240



NOTE: ALL DEPTHS REFERENCE IN FEET BELOW GROUND SURFACE.  
Water table 474 bgs June 2018; Top of screen KAFB-106240 is 449 bgs.

NOT TO SCALE  
BGS = BELOW GROUND SURFACE  
FT-FEET

FILE PATH: \\BARQ\PROJECTS\ACTIVE PROJECTS\62599DM01 KIRTLAND BFF\_USACE\01\_WORK PLAN\19.0 DATA GAP WELLS\APPENDICES\APPENDIX B - MW CONST DIAGRAMS\KAFB-106240\WELL COMPLETION DIAGRAM-KAFB-106240.DWG 7/10/2018 3:37 PM



320 Gold Eagle SW Site 1300  
Kirtland AFB NM 80502  
Phone: 505-224-9013

KIRTLAND AIR FORCE BASE

INSTALLATION START DATE/TIME:

INSTALLATION END DATE/TIME:

PROJECT NO.:

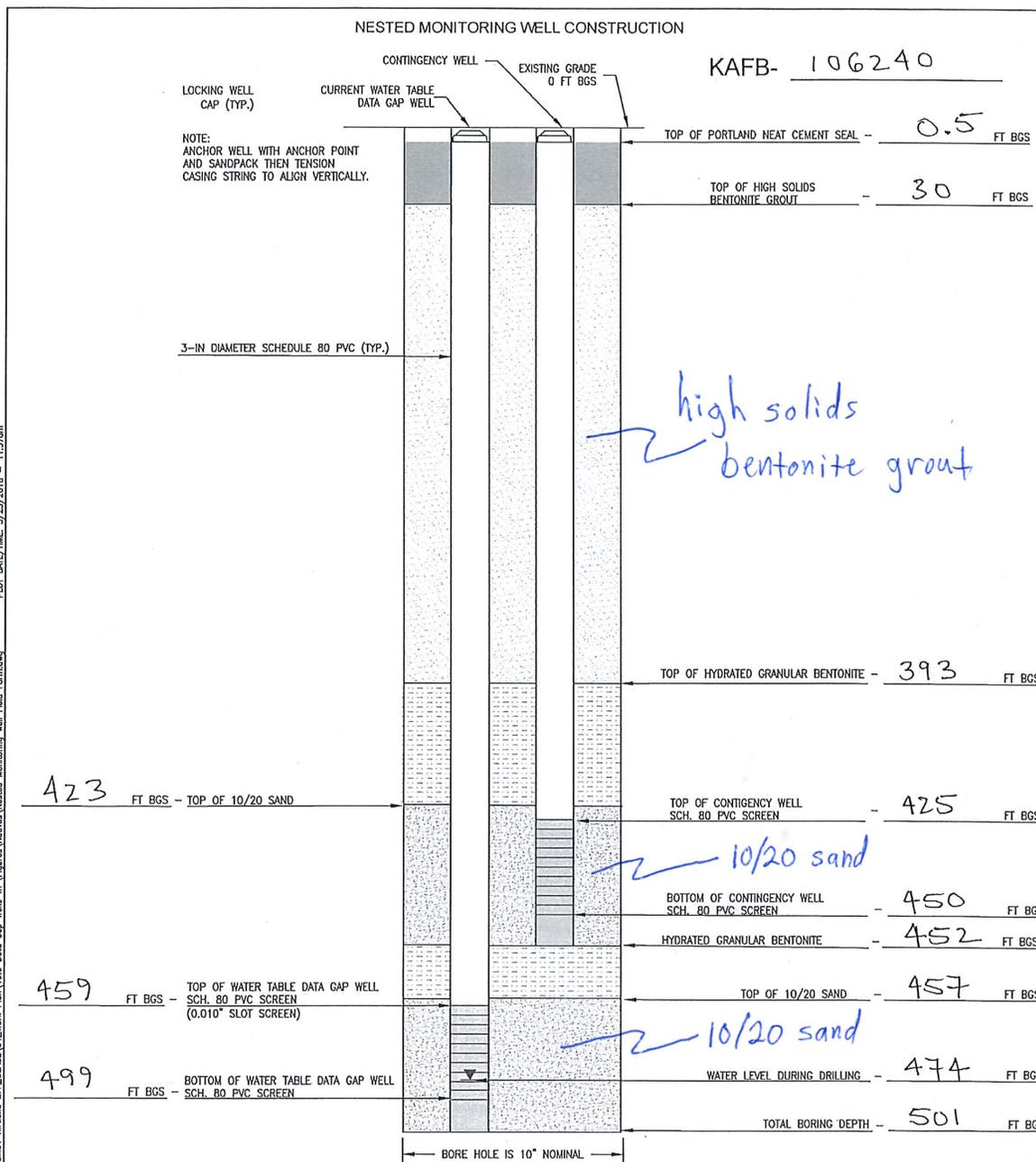
2599DM01

WELL ID:

KFB-106240

GEOLOGIST:

DRILLER:



Approved: Dennis McQuillan, NMED, June 11, 2018



320 Gold Avenue, SW Suite 1300  
Albuquerque, NM 87102  
Phone: (505) 224-9013  
Fax: (505) 224-9016

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC., PBC

KIRTLAND AIR FORCE BASE

INSTALLATION START DATE/TIME:

INSTALLATION END DATE/TIME:

PROJECT NO.:

WELL ID:

GEOLOGIST:

DRILLER:

**Bracht, Ginny**

---

**From:** Jercinovic, Devon  
**Sent:** Friday, May 15, 2020 13:07  
**To:** Bockisch, Bernard; Bracht, Ginny  
**Subject:** FW: BFF KAFB 106241 Proposed Construction Diagram

Here you go. Please add to file folders for posterity.

Devon E. Jercinovic, PG, PMP  
**EA Engineering, Science, and Technology, Inc., PBC**  
 Program Manager II  
 320 Gold Ave. SW, Suite 1300  
 Albuquerque, NM 87102  
 Cell: 505.401.1181  
 Email: [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
[www.eaest.com](http://www.eaest.com)

---

**From:** CLARK, SCOTT C GS-13 USAF AFCEC/CZO <[scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)>  
**Sent:** Thursday, August 09, 2018 9:06 AM  
**To:** McQuillan, Dennis, NMENV <[dennis.mcquillan@state.nm.us](mailto:dennis.mcquillan@state.nm.us)>  
**Cc:** Jercinovic, Devon <[djercinovic@eaest.com](mailto:djercinovic@eaest.com)>; KOTTKAMP, SHEEN T GS-12 USAF AFCEC AFCEC/CZOW <[sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)>; LYNNES, KATHRYN D HQE USAF AFGSC 377 MSG/SAF/IEE <[kathryn.lynnes@us.af.mil](mailto:kathryn.lynnes@us.af.mil)>; RENAGHAN, BRIAN J GS-13 USAF AFMC AFCEC/CZRX <[brian.renaghan@us.af.mil](mailto:brian.renaghan@us.af.mil)>; CORDOVA, AMY ELIZABETH CIV USARMY CESPA (US) <[Amy.E.Cordova@usace.army.mil](mailto:Amy.E.Cordova@usace.army.mil)>; Moayyad, Behnaum CIV USARMY CESPA (US) <[Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)>; Phaneuf, Mark J SPA (Mark.J.Phaneuf@usace.army.mil) <[Mark.J.Phaneuf@usace.army.mil](mailto:Mark.J.Phaneuf@usace.army.mil)>; Dreeland, Linda E CIV USARMY CESPA (US) <[Linda.E.Dreeland@usace.army.mil](mailto:Linda.E.Dreeland@usace.army.mil)>; Salazar, Carlos F CIV USARMY CESPA (US) <[Carlos.F.Salazar@usace.army.mil](mailto:Carlos.F.Salazar@usace.army.mil)>; Morse, Earl <[emorse@eaest.com](mailto:emorse@eaest.com)>; Bockisch, Bernard <[bbockisch@eaest.com](mailto:bbockisch@eaest.com)>; Julie McNeill <[jmcneill@northwindgrp.com](mailto:jmcneill@northwindgrp.com)>  
**Subject:** RE: BFF KAFB 106241 Proposed Construction Diagram

Hi Dennis,

Thanks for this, we appreciate it. Didn't realize you were having issues with AMRDEC, so yeah, I think we can put stuff on the Portage site if that makes it easier.

Julie, can you create a high level folder for Well Completion Diagrams? Or if there is already a folder where this sort of thing would fit, just let us know where we should post these going forward.

Thanks!  
 Scott

---

**From:** McQuillan, Dennis, NMENV <[dennis.mcquillan@state.nm.us](mailto:dennis.mcquillan@state.nm.us)>  
**Sent:** Wednesday, August 8, 2018 4:24 PM  
**To:** CLARK, SCOTT C GS-13 USAF AFCEC/CZO <[scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)>  
**Cc:** Jercinovic, Devon ([djercinovic@eaest.com](mailto:djercinovic@eaest.com)) <[djercinovic@eaest.com](mailto:djercinovic@eaest.com)>; KOTTKAMP, SHEEN T GS-12 USAF AFCEC AFCEC/CZOW <[sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)>; LYNNES, KATHRYN D HQE USAF AFGSC 377 MSG/SAF/IEE <[kathryn.lynnes@us.af.mil](mailto:kathryn.lynnes@us.af.mil)>; RENAGHAN, BRIAN J GS-13 USAF AFMC AFCEC/CZRX <[brian.renaghan@us.af.mil](mailto:brian.renaghan@us.af.mil)>; CORDOVA, AMY ELIZABETH CIV USARMY CESPA (US) <[Amy.E.Cordova@usace.army.mil](mailto:Amy.E.Cordova@usace.army.mil)>; Moayyad, Behnaum CIV

1

USARMY CESPAs (US) <[Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)>; Phaneuf, Mark J SPA ([Mark.J.Phaneuf@usace.army.mil](mailto:Mark.J.Phaneuf@usace.army.mil)) <[Mark.J.Phaneuf@usace.army.mil](mailto:Mark.J.Phaneuf@usace.army.mil)>; Dreeland, Linda E CIV USARMY CESPAs (US) <[Linda.E.Dreeland@usace.army.mil](mailto:Linda.E.Dreeland@usace.army.mil)>; Salazar, Carlos F CIV USARMY CESPAs (US) <[Carlos.F.Salazar@usace.army.mil](mailto:Carlos.F.Salazar@usace.army.mil)>; Morse, Earl <[emorse@eaest.com](mailto:emorse@eaest.com)>; Bockisch, Bernard <[bbockisch@eaest.com](mailto:bbockisch@eaest.com)>  
**Subject:** [Non-DoD Source] RE: BFF KAFB 106241 Proposed Construction Diagram

Greetings,

The approved Nested Monitoring Well Construction for KAFB-106241 is attached.

AMRDEC has been tricky and takes me 2 or 3 attempts to get in, sometimes causing my computer to freeze up. Do you think the Portage FTP site might be easier to post all the construction diagrams and supporting docs?

Thanks,

*Dennis McQuillan*

Chief Scientist  
 New Mexico Environment Department  
 1190 St. Francis Dr.  
 PO Box 5469  
 Santa Fe, NM 87502  
 505-827-2140 desk  
 505-660-1592 cell  
[dennis.mcquillan@state.nm.us](mailto:dennis.mcquillan@state.nm.us)




---

**From:** CLARK, SCOTT C GS-13 USAF AFCEC/CZO <[scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)>  
**Sent:** Wednesday, August 8, 2018 2:16 PM  
**To:** McQuillan, Dennis, NMENV <[dennis.mcquillan@state.nm.us](mailto:dennis.mcquillan@state.nm.us)>  
**Cc:** Jercinovic, Devon ([djercinovic@eaest.com](mailto:djercinovic@eaest.com)) <[djercinovic@eaest.com](mailto:djercinovic@eaest.com)>; KOTTKAMP, SHEEN T GS-12 USAF AFCEC AFCEC/CZOW <[sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)>; LYNNEs, KATHRYN D HQE USAF AFGSC 377 MSG/SAF/IEE <[kathryn.lynnes@us.af.mil](mailto:kathryn.lynnes@us.af.mil)>; RENAGHAN, BRIAN J GS-13 USAF AFMC AFCEC/CZR <[brian.renaghan@us.af.mil](mailto:brian.renaghan@us.af.mil)>; CORDOVA, AMY ELIZABETH CIV USARMY CESPAs (US) <[Amy.E.Cordova@usace.army.mil](mailto:Amy.E.Cordova@usace.army.mil)>; Moayyad, Behnaum CIV USARMY CESPAs (US) <[Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)>; Phaneuf, Mark J SPA ([Mark.J.Phaneuf@usace.army.mil](mailto:Mark.J.Phaneuf@usace.army.mil)) <[Mark.J.Phaneuf@usace.army.mil](mailto:Mark.J.Phaneuf@usace.army.mil)>; Dreeland, Linda E CIV USARMY CESPAs (US) <[Linda.E.Dreeland@usace.army.mil](mailto:Linda.E.Dreeland@usace.army.mil)>; Salazar, Carlos F CIV USARMY CESPAs (US) <[Carlos.F.Salazar@usace.army.mil](mailto:Carlos.F.Salazar@usace.army.mil)>; Morse, Earl <[emorse@eaest.com](mailto:emorse@eaest.com)>; Bockisch, Bernard <[bbockisch@eaest.com](mailto:bbockisch@eaest.com)>  
**Subject:** FW: BFF KAFB 106241 Proposed Construction Diagram

Hi Dennis,

Attached is the proposed construction diagram for monitoring well KAFB-106241. Supporting documentation will be sent via AMRDEC since attachments had 9 digit numbers and our system flagged it and I couldn't email (ergh..), and Devon has elaborated more fully below. If you have issues with AMRDEC, just let me know.

Feel free to reply to all with any questions or approval, and thanks for your continued quick turns on these – we appreciate it.

Thanks!  
Scott

//SIGNED//

Scott Clark  
Restoration Program Manager  
Kirtland ISS, AFCEC/CZO  
505-846-9017  
DSN 246-9017  
Mobile 505-385-3679  
[scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)

---

**From:** Jercinovic, Devon <[djercinovic@eaest.com](mailto:djercinovic@eaest.com)>  
**Sent:** Wednesday, August 8, 2018 1:47 PM  
**To:** CLARK, SCOTT C GS-13 USAF AFCEC/CZO <[scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)>; KOTTKAMP, SHEEN T GS-12 USAF AFCEC AFCEC/CZOW <[sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)>; LYNNES, KATHRYN D HQE USAF AFGSC 377 MSG/SAF/IEE <[kathryn.lynnes@us.af.mil](mailto:kathryn.lynnes@us.af.mil)>; RENAGHAN, BRIAN J GS-13 USAF AFMC AFCEC/CZRX <[brian.renaghan@us.af.mil](mailto:brian.renaghan@us.af.mil)>; CORDOVA, AMY ELIZABETH CIV USARMY CESP (US) <[Amy.E.Cordova@usace.army.mil](mailto:Amy.E.Cordova@usace.army.mil)>; Moayyad, Behnaum CIV USARMY CESP (US) <[Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)>; Linda Dreeland <[Linda.Dreeland@usace.army.mil](mailto:Linda.Dreeland@usace.army.mil)>; Phaneuf, Mark J SPA ([Mark.J.Phaneuf@usace.army.mil](mailto:Mark.J.Phaneuf@usace.army.mil)) <[Mark.J.Phaneuf@usace.army.mil](mailto:Mark.J.Phaneuf@usace.army.mil)>; Salazar, Carlos F SPA <[Carlos.F.Salazar@usace.army.mil](mailto:Carlos.F.Salazar@usace.army.mil)>  
**Cc:** Morse, Earl <[emorse@eaest.com](mailto:emorse@eaest.com)>; Bockisch, Bernard <[bbockisch@eaest.com](mailto:bbockisch@eaest.com)>  
**Subject:** [Non-DoD Source] BFF KAFB 106241 Proposed Construction Diagram

Please forward to NMED for review/approval.

#### NMED TEAM

Drillers are already at total depth on KAFB-106241 drilling (486 ft bgs includes rathole). EA is requesting permission to construct the well per Condition 2 of the approval for the *Work Plan for Data Gap Monitoring Installation* (approved by NMED on February 28, 2017). We have existing monitoring wells located immediately east of this location at 35 feet (KAFB-106055), 64 feet (KAFB-106057), and 96 feet (KAFB-106058) from our current drilling location at KAFB-106241. The attached proposed well construction is based on the following information:

- 1) EA collected a depth to water measurement on Tuesday (7AUG18) from KAFB-106057 (452.95 ft bgs) and from KAFB-106058 (453.52). Due to drilling rig placement over the KAFB-106055 location, no measurement was available yesterday. Based on the measurements yesterday and the Q3 2018 measurements collected 24JUL18 (attached), the approximate depth to water at this location should be approximately 453 ft bgs.
- 2) The field lithologic log for KAFB-106241 is attached. This log is very similar to the lithologic logs at KAFB-106055, KAFB-106057, and KAFB-106058 with alternating well graded and poorly graded sands to total depth between the screen interval of 428 ft bgs to 468 ft bgs. Silts or clays are not present at this interval.

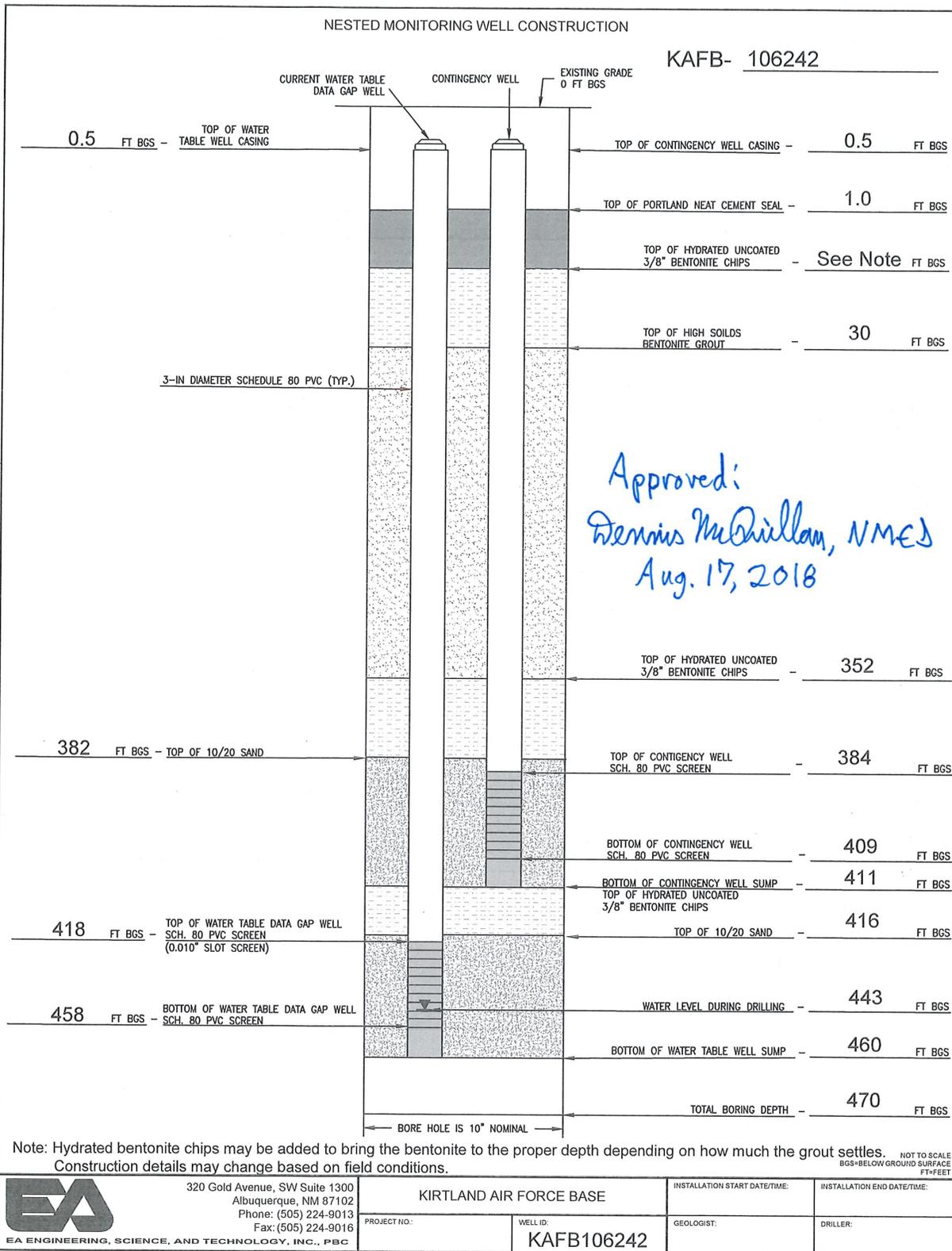
Attached:

- Completed field lithologic log for KAFB-106241 to depth 485 ft bgs
- Proposed well construction with depth to water (453 feet bgs)
- Lithologic logs for KAFB-106055, KAFB-106057, and KAFB-106058

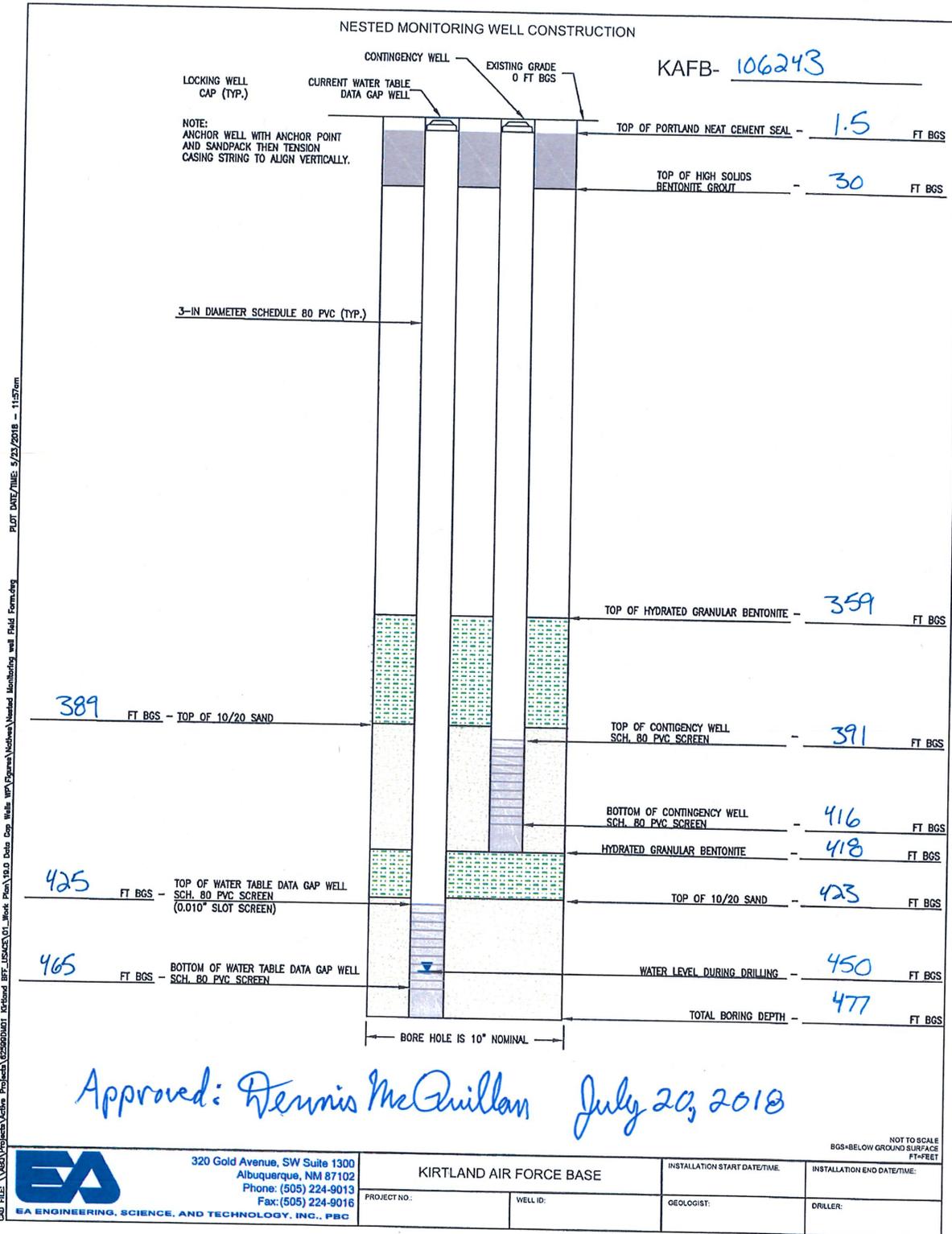
- Current well gauging measurements and Q3 2018 well gauging measurements for nearby wells
- Well Map (Figure 3-1)

Please let us know if you have any questions.

Devon E. Jercinovic, PG, PMP  
**EA Engineering, Science, and Technology, Inc., PBC**  
Program Manager II  
320 Gold Ave. SW, Suite 1300  
Albuquerque, NM 87102  
Cell: 505.401.1181  
Office: 505.715.4248  
Email: [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
[www.eaest.com](http://www.eaest.com)



QAD FILE: \\s01\Projects\Active Projects\62599D101 Kirtland BFF\_USACE\01\_Work Plan\19.0\_Data Gap Wells (WPA\Figures\Nested Monitoring Well Field Form.dwg) PLOT DATE/TIME: 8/8/2018 - 11:39am



CADD FILE: \\BEO\Projects\Active Projects\225200001 Kirtland BFF\USACE\01\_Week Plans\20.0 Data Gap Wells\Wells\Kirtland\Nested Monitoring Well Field Form.dwg  
 PLOT DATE/TIME: 4/23/2018 - 11:57am

**From:** [Moayyad, Behnaum CIV USARMY CESPA \(US\)](#)  
**To:** [Jercinovic, Devon](#)  
**Cc:** [Dreeland, Linda E CIV USARMY CESPA \(US\)](#); [CORDOVA, AMY ELIZABETH CIV USARMY CESPA \(US\)](#)  
**Subject:** FW: KAFB BFF Monitoring Well 106244 construction notification (UNCLASSIFIED)  
**Date:** Friday, June 29, 2018 4:30:57 PM

---

CLASSIFICATION: UNCLASSIFIED

Devon - you are good to go with well construction!

NMED approved.

Ben Moayyad  
 USACE-Albuquerque  
 505-342-3104

-----Original Message-----

From: McQuillan, Dennis, NMENV [<mailto:dennis.mcquillan@state.nm.us>]  
 Sent: Friday, June 29, 2018 4:22 PM  
 To: [brian.renaghan@us.af.mil](mailto:brian.renaghan@us.af.mil)  
 Cc: Salazar, Carlos F CIV USARMY CESPA (US) <[Carlos.F.Salazar@usace.army.mil](mailto:Carlos.F.Salazar@usace.army.mil)>; SCOTT C GS-12 USAF AFMC 377 MSG/CEIR CLARK <[scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)>; Hunter, Michelle, NMENV <[Michelle.Hunter@state.nm.us](mailto:Michelle.Hunter@state.nm.us)>; CORDOVA, AMY ELIZABETH CIV USARMY CESPA (US) <[Amy.E.Cordova@usace.army.mil](mailto:Amy.E.Cordova@usace.army.mil)>; LYNNES, KATHRYN D HQE USAF AFGSC 377 MSG/SAF/IEE <[kathryn.lynnes@us.af.mil](mailto:kathryn.lynnes@us.af.mil)>; SEGURA, CHRISTOPHER G GS-13 USAF AFCEC/CZO <[christopher.segura.2@us.af.mil](mailto:christopher.segura.2@us.af.mil)>; Dreeland, Linda E CIV USARMY CESPA (US) <[Linda.E.Dreeland@usace.army.mil](mailto:Linda.E.Dreeland@usace.army.mil)>; Phaneuf, Mark J CIV USARMY CESPA (US) <[Mark.J.Phaneuf@usace.army.mil](mailto:Mark.J.Phaneuf@usace.army.mil)>; Moayyad, Behnaum CIV USARMY CESPA (US) <[Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)>; Yurdin, Bruce, NMENV <[Bruce.Yurdin@state.nm.us](mailto:Bruce.Yurdin@state.nm.us)>  
 Subject: [Non-DoD Source] RE: KAFB BFF Monitoring Well 106244 construction notification (UNCLASSIFIED)

Well construction is approved. Thanks Brian!

Sent from my Verizon Wireless 4G LTE DROID On Jun 29, 2018 1:24 PM, "RENAGHAN, BRIAN J GS-13 USAF AFMC AFCEC/CZRXX" <[brian.renaghan@us.af.mil](mailto:brian.renaghan@us.af.mil)> wrote:

Dennis the well will built according to the work plan design and if anything changes from the expected an email will be sent. Please let us know if the well construction can proceed Saturday.

Expected depth to groundwater is 470 feet bgs. Currently approximate depth is 400 ft bgs, the log is from yesterday's drilling at 355 ft bgs.

Thanks  
 Brian

//SIGNED//  
 Brian Renaghan  
 AFCEC/CZRXX  
 Bldg 1650  
 DSN 969-0710 no voice mail  
 210-395-0710 no voice mail  
 PLEASE NOTE NEW ALT PHONE #

CELL 210-241-6276

-----Original Message-----

From: Moayyad, Behnaum CIV USARMY CESP (US) [<mailto:Behnaum.Moayyad@usace.army.mil>]  
 Sent: Friday, June 29, 2018 2:11 PM  
 To: dennis.mcquillan@state.nm.us; Bruce.Yurdin@state.nm.us; Michelle.Hunter@state.nm.us  
 Cc: RENAGHAN, BRIAN J GS-13 USAF AFMC AFCEC/CZRX <brian.renaghan@us.af.mil>; Dreeland, Linda E CIV USARMY CESP (US) <Linda.E.Dreeland@usace.army.mil>; CORDOVA, AMY ELIZABETH CIV USARMY CESP (US) <Amy.E.Cordova@usace.army.mil>; Phaneuf, Mark J CIV USARMY CESP (US) <Mark.J.Phaneuf@usace.army.mil>; Salazar, Carlos F CIV USARMY CESP (US) <Carlos.F.Salazar@usace.army.mil>; CLARK, SCOTT C GS-13 USAF AFCEC/CZO <scott.clark@us.af.mil>; SEGURA, CHRISTOPHER G GS-13 USAF AFCEC/CZO <christopher.segura.2@us.af.mil>; LYNNES, KATHRYN D HQE USAF AFGSC 377 MSG/SAF/IEE <kathryn.lynnes@us.af.mil>  
 Subject: KAFB BFF Monitoring Well 106244 construction notification (UNCLASSIFIED)  
 Importance: High

CLASSIFICATION: UNCLASSIFIED

Mr. McQuillan,

NOTE: THIS IS EMAIL 2 OF 2, IF YOU DO NOT RECEIVE BOTH EMAILS, PLEASE CONTACT ME ASAP.

The Corps of Engineers is providing information on behalf of the Air Force (including AFCEC) for monitoring well KAFB-106244. This notification is provided for your information with documentation that will allow NMED to ensure that the well is being constructed according to the work plan. This information is provided per NMED request.

The borehole for monitoring well KAFB-106244 will be installed to depth after working hours today. The drilling team plans to begin construction of the monitoring well over the weekend and go on break starting Sunday 1 July. Completion of the well to above the water table on Saturday will minimize the potential for hole collapse.

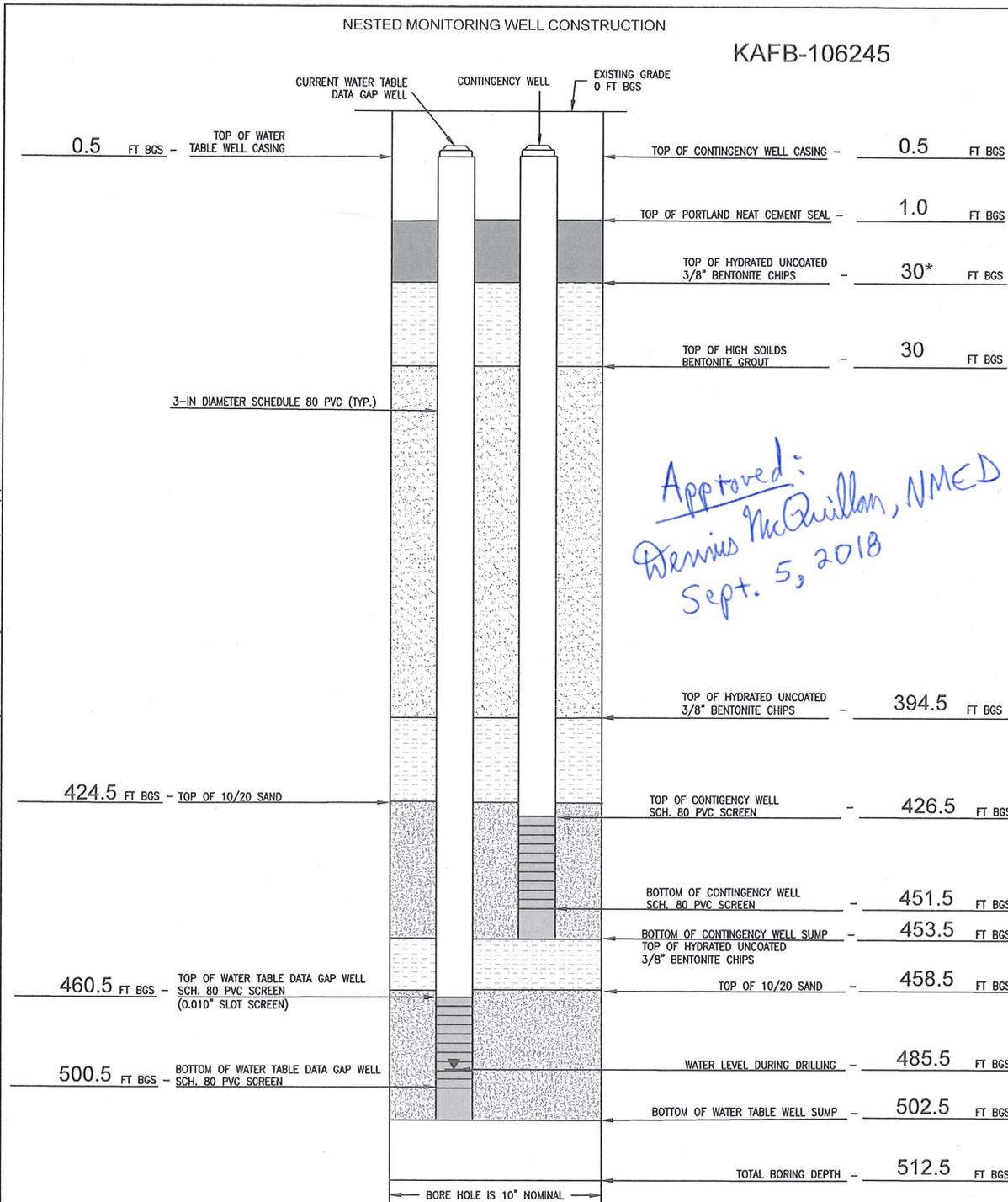
Attached:

\* Completed lithologic log for KAFB-106244 to depth 355 ft bgs (Email #2)

Ben  
 Behnaum Moayyad, PG.  
 Project Manager  
 U.S. Army Corps of Engineers  
 4101 Jefferson Plaza  
 Albuquerque, NM 87109  
 Office: (505) 342-3104  
 Mobile: (505) 639-3195

CLASSIFICATION: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED



\*Bentonite chips to be added to make up for settlement of bentonite grout.

NOT TO SCALE  
BGS=BELOW GROUND SURFACE  
FT=FEET

OLD FILE: \\BEN\Projects\Active Projects\22590101\_Kirtland BFF\_USACE\01\_Work Plan\19.0 Data Gap Wells\WP\Figures\Nested Monitoring Well Field Form.dwg  
 PLOT DATE/TIME: 9/2/2018 - 11:38am



320 Gold Avenue, SW Suite 1300  
 Albuquerque, NM 87102  
 Phone: (505) 224-9013  
 Fax: (505) 224-9016

KIRTLAND AIR FORCE BASE		INSTALLATION START DATE/TIME:	INSTALLATION END DATE/TIME:
PROJECT NO.:	WELL ID: KAFB106245	GEOLOGIST:	DRILLER:

**Bockisch, Bernard**

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**From:** Jercinovic, Devon  
**Sent:** Wednesday, August 22, 2018 3:22 PM  
**To:** CLARK, SCOTT C GS-13 USAF AFCEC/CZO; Moayyad, Behnaum CIV USARMY CESPA (US); CORDOVA, AMY ELIZABETH CIV USARMY CESPA (US); Salazar, Carlos F CIV USARMY CESPA (US); Dreeland, Linda E CIV USARMY CESPA (US); Phaneuf, Mark J SPA (Mark.J.Phaneuf@usace.army.mil); KOTTKAMP, SHEEN T GS-12 USAF AFCEC AFCEC/CZOW  
**Cc:** LYNNES, KATHRYN D HQE USAF AFGSC 377 MSG/SAF/IEE  
**Subject:** RE: Kirtland BFF - Confirming submittal of Data Gap Well Replacement KAFB-106246 to NMED

Excellent! Just made our day. Thank you.

Sounds like dig permit is very close too, but we won't commit drillers to the 106246 site until both are in hand.

Devon E. Jercinovic, PG, PMP  
**EA Engineering, Science, and Technology, Inc., PBC**  
 Program Manager II  
 320 Gold Ave. SW, Suite 1300  
 Albuquerque, NM 87102  
 Cell: 505.401.1181  
 Office: 505.715.4248  
 Email: [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
[www.eaest.com](http://www.eaest.com)

---

**From:** CLARK, SCOTT C GS-13 USAF AFCEC/CZO [mailto:scott.clark@us.af.mil]  
**Sent:** Wednesday, August 22, 2018 3:19 PM  
**To:** Jercinovic, Devon <djercinovic@eaest.com>; Moayyad, Behnaum CIV USARMY CESPA (US) <Behnaum.Moayyad@usace.army.mil>; CORDOVA, AMY ELIZABETH CIV USARMY CESPA (US) <Amy.E.Cordova@usace.army.mil>; Salazar, Carlos F CIV USARMY CESPA (US) <Carlos.F.Salazar@usace.army.mil>; Dreeland, Linda E CIV USARMY CESPA (US) <Linda.E.Dreeland@usace.army.mil>; Phaneuf, Mark J SPA (Mark.J.Phaneuf@usace.army.mil) <Mark.J.Phaneuf@usace.army.mil>; KOTTKAMP, SHEEN T GS-12 USAF AFCEC AFCEC/CZOW <sheen.kottkamp.1@us.af.mil>  
**Cc:** LYNNES, KATHRYN D HQE USAF AFGSC 377 MSG/SAF/IEE <kathryn.lynnes@us.af.mil>  
**Subject:** FW: Kirtland BFF - Confirming submittal of Data Gap Well Replacement KAFB-106246 to NMED

Hi All,

FYI – see below. Great news.

Thanks!  
Scott

---

**From:** McQuillan, Dennis, NMENV <[dennis.mcquillan@state.nm.us](mailto:dennis.mcquillan@state.nm.us)>  
**Sent:** Tuesday, August 21, 2018 2:33 PM  
**To:** CLARK, SCOTT C GS-13 USAF AFCEC/CZO <[scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)>  
**Subject:** [Non-DoD Source] RE: Kirtland BFF - Confirming submittal of Data Gap Well Replacement KAFB-106246 to NMED

Scott,

Data Gap Well Replacement KAFB-106246 is approved.

Thanks!

*Dennis McQuillan*

Chief Scientist  
New Mexico Environment Department  
1190 St. Francis Dr.  
PO Box 5469  
Santa Fe, NM 87502  
505-827-2140 desk  
505-660-1592 cell  
[dennis.mcquillan@state.nm.us](mailto:dennis.mcquillan@state.nm.us)



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**From:** CLARK, SCOTT C GS-13 USAF AFCEC/CZO <[scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)>  
**Sent:** Monday, August 20, 2018 11:31 AM  
**To:** McQuillan, Dennis, NMENV <[dennis.mcquillan@state.nm.us](mailto:dennis.mcquillan@state.nm.us)>  
**Subject:** FW: Kirtland BFF - Confirming submittal of Data Gap Well Replacement KAFB-106246 to NMED

Hi Dennis,

FYI – should help you find it.

Thanks!  
Scott

---

**From:** Jercinovic, Devon <[djercinovic@eaest.com](mailto:djercinovic@eaest.com)>  
**Sent:** Tuesday, July 24, 2018 4:15 AM  
**To:** CLARK, SCOTT C GS-13 USAF AFCEC/CZO <[scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)>; KOTTKAMP, SHEEN T GS-12 USAF AFCEC AFCEC/CZOW <[sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)>; RENAGHAN, BRIAN J GS-13 USAF AFMC AFCEC/CZR <[brian.renaghan@us.af.mil](mailto:brian.renaghan@us.af.mil)>; LYNNEs, KATHRYN D HQE USAF AFGSC 377 MSG/SAF/IEE <[kathryn.lynnes@us.af.mil](mailto:kathryn.lynnes@us.af.mil)>; PINO, ANTIONETTE R CTR USAF AFCEC AFCEC/CZOW <[antionette.pino.ctr@us.af.mil](mailto:antionette.pino.ctr@us.af.mil)>  
**Cc:** Moayyad, Behnaum CIV USARMY CESP (US) <[Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)>; CORDOVA, AMY ELIZABETH CIV USARMY CESP (US) <[Amy.E.Cordova@usace.army.mil](mailto:Amy.E.Cordova@usace.army.mil)>; Linda Dreeland <[Linda.Dreeland@usace.army.mil](mailto:Linda.Dreeland@usace.army.mil)>; Phaneuf, Mark J SPA <[Mark.J.Phaneuf@usace.army.mil](mailto:Mark.J.Phaneuf@usace.army.mil)> <[Mark.J.Phaneuf@usace.army.mil](mailto:Mark.J.Phaneuf@usace.army.mil)>; [carlos.f.salazar@usace.army.mil](mailto:carlos.f.salazar@usace.army.mil)  
**Subject:** [Non-DoD Source] Kirtland BFF - Confirming submittal of Data Gap Well Replacement KAFB-106246 to NMED

#### AFCEC TEAM

Attached for your files is the letter work plan submitted yesterday to NMED proposing to replace the failed contingency well from location KAFB-106240 to a new location KAFB-106246 (30 ft west of KAFB-106624). I have also attached the stamped letters from NMED HWB and the NMED GWQB.

The letter and stamped versions from NMED HWB and GWQB have also been posted to the Portage FTP site: <https://www.portageinc.com/apps/Kirtland/> at the following location:

**Name:** Data Gap Well Replacement WP\_KAFB-106246  
**Path:** EA BFF GWTS Expansion Document Review (AF, USACE) > Data Gap Well Replacement WP\_KAFB-106246

The AR hard copy will be delivered before Friday, 27JUL18.

If you have any questions, please contact me.

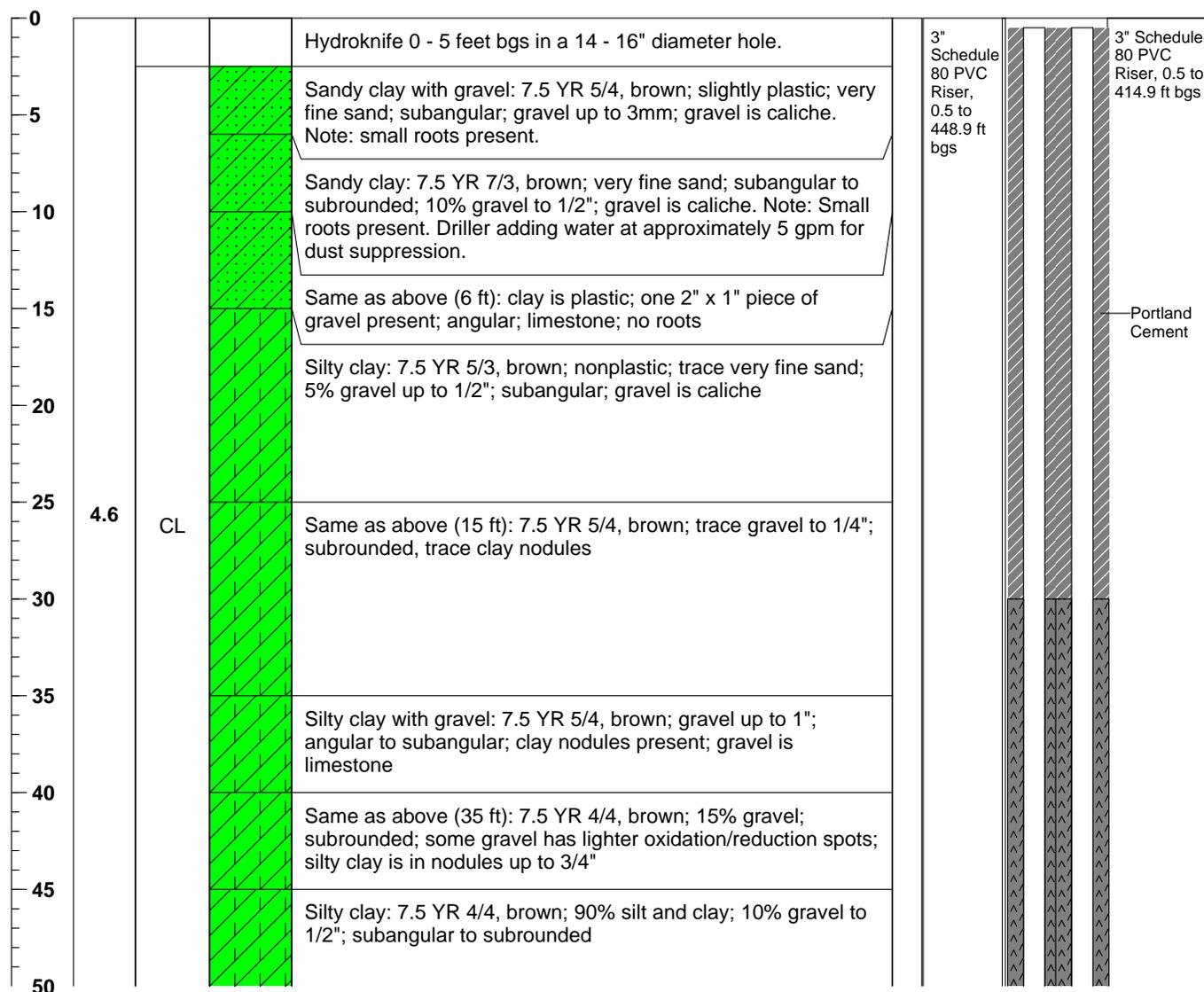
Thank you, Devon

Devon E. Jercinovic, PG, PMP  
**EA Engineering, Science, and Technology, Inc., PBC**  
 Program Manager II  
 320 Gold Ave. SW, Suite 1300

Albuquerque, NM 87102  
Cell: 505.401.1181  
Office: 505.715.4248  
Email: [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
[www.eaest.com](http://www.eaest.com)

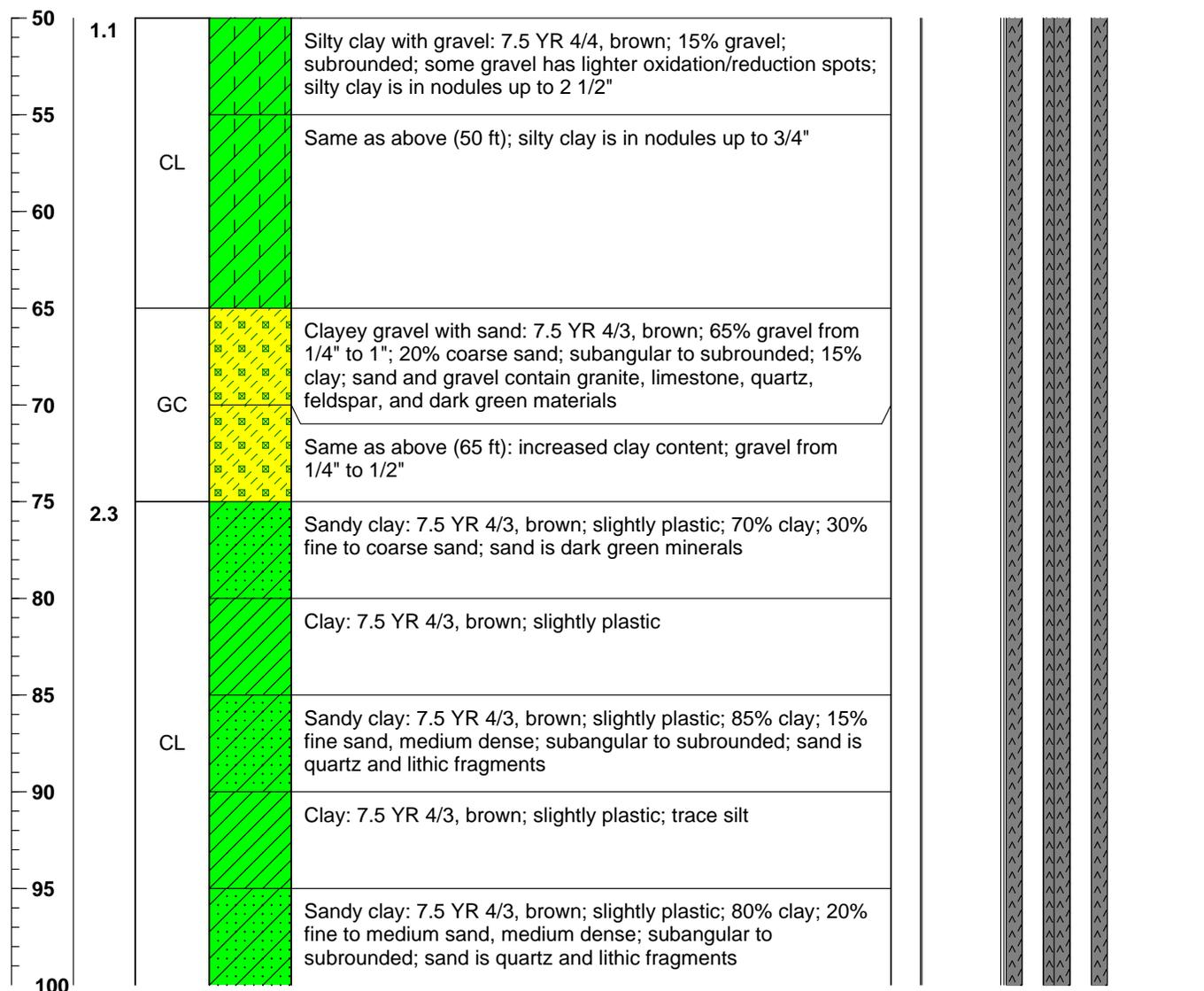
	Project: <b>62599DM01.1017</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>6/6/2018</b> Completion Date: <b>6/14/18</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106240</b> Page: <b>1 of 11</b>	
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>John Chavez</b> Geologist: <b>Lane Address</b>	Boring Depth (ft): <b>510.0</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>474.94</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft) PID (ppmv) USCS Lithology	Sample Description		Completion Details

(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

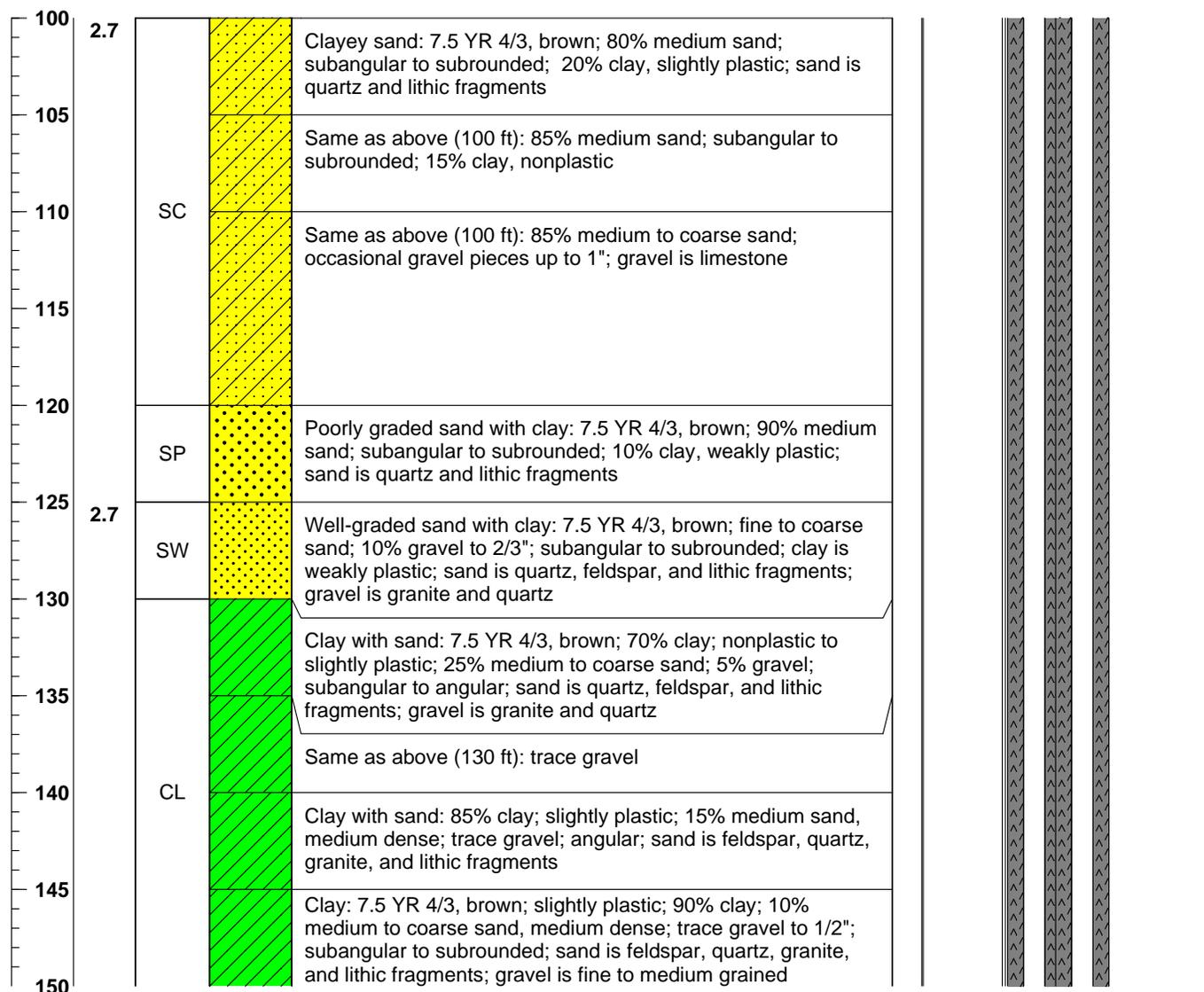
	Project: <b>62599DM01.1017</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>6/6/2018</b> Completion Date: <b>6/14/18</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106240</b> Page: <b>2 of 11</b>	
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>John Chavez</b> Geologist: <b>Lane Address</b>	Boring Depth (ft): <b>510.0</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>474.94</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft) PID (ppmv) USCS Lithology	Sample Description		Completion Details (1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
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  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>6/6/2018</b> Completion Date: <b>6/14/18</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106240</b> Page: <b>3 of 11</b>	
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>John Chavez</b> Geologist: <b>Lane Address</b>	Boring Depth (ft): <b>510.0</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>474.94</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft) PID (ppmv) USCS Lithology	Sample Description		Completion Details

(1) (2)

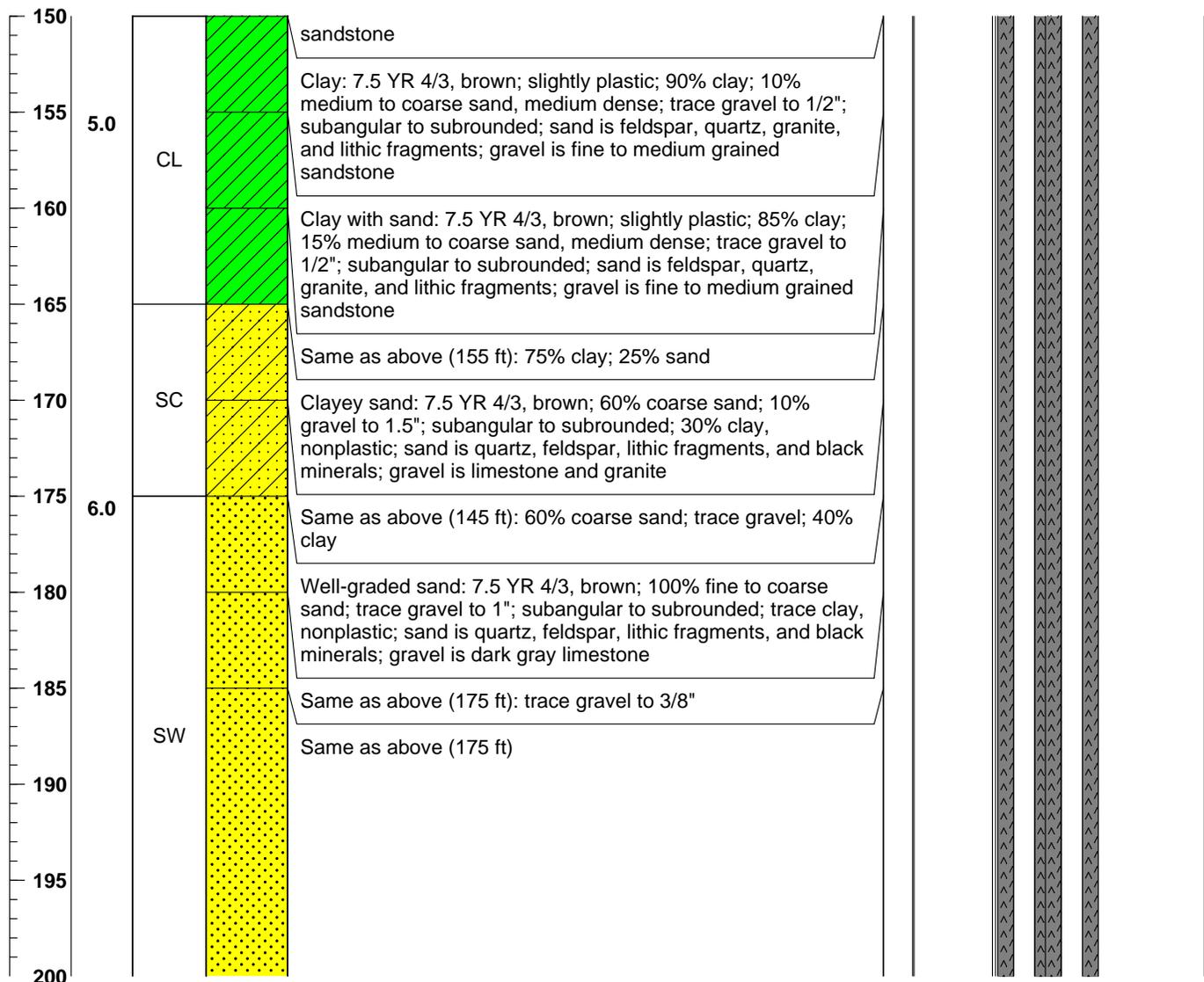


- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>6/6/2018</b> Completion Date: <b>6/14/18</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106240</b> Page: <b>4 of 11</b>
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>John Chavez</b> Geologist: <b>Lane Address</b>	Boring Depth (ft): <b>510.0</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>474.94</b> Riser Material: <b>3" Sch. 80 PVC</b>

Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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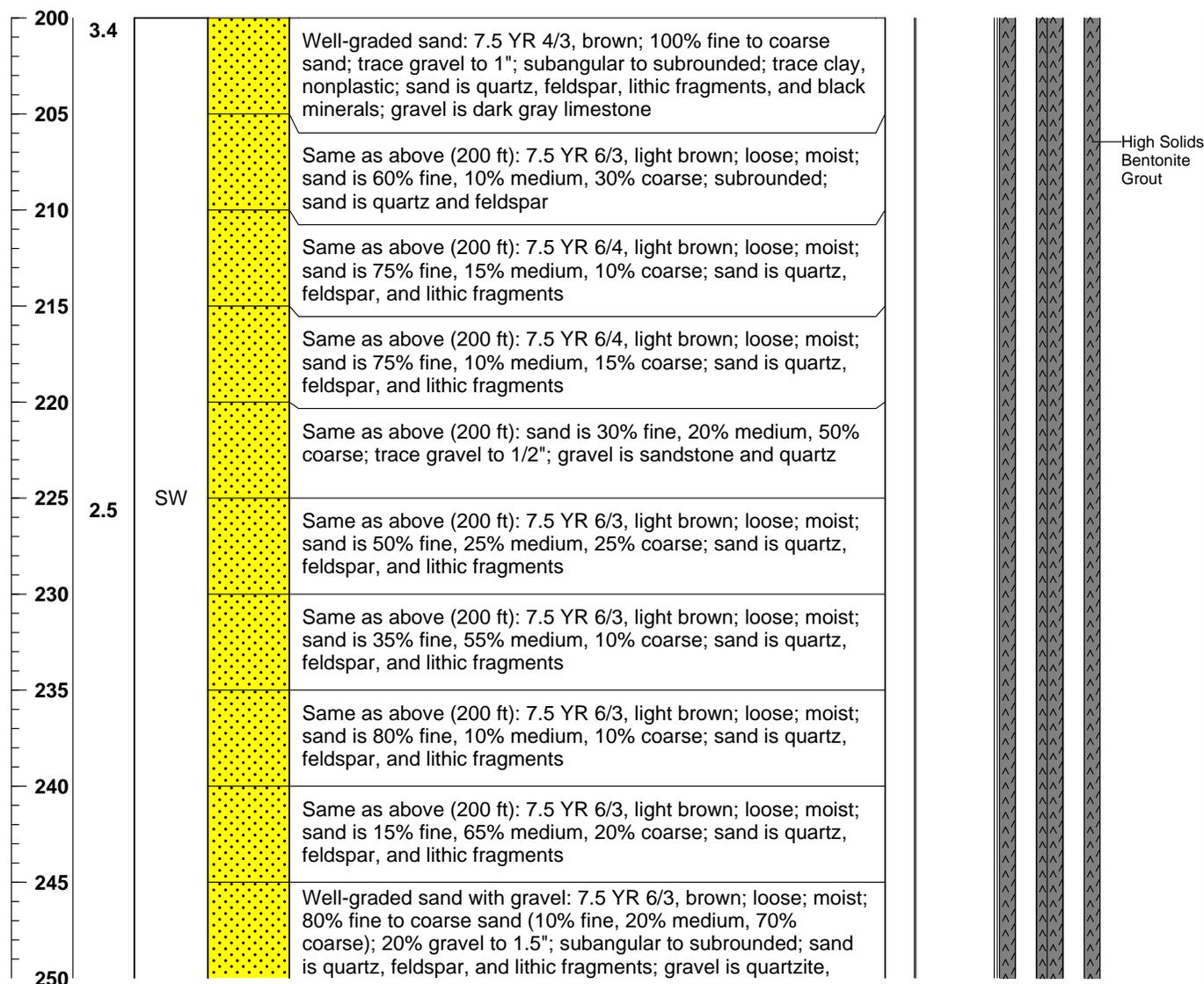
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>6/6/2018</b> Completion Date: <b>6/14/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106240</b> Page: <b>5 of 11</b>			
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>John Chavez</b> Geologist: <b>Lane Address</b>		Boring Depth (ft): <b>510.0</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>474.94</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>	
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details	

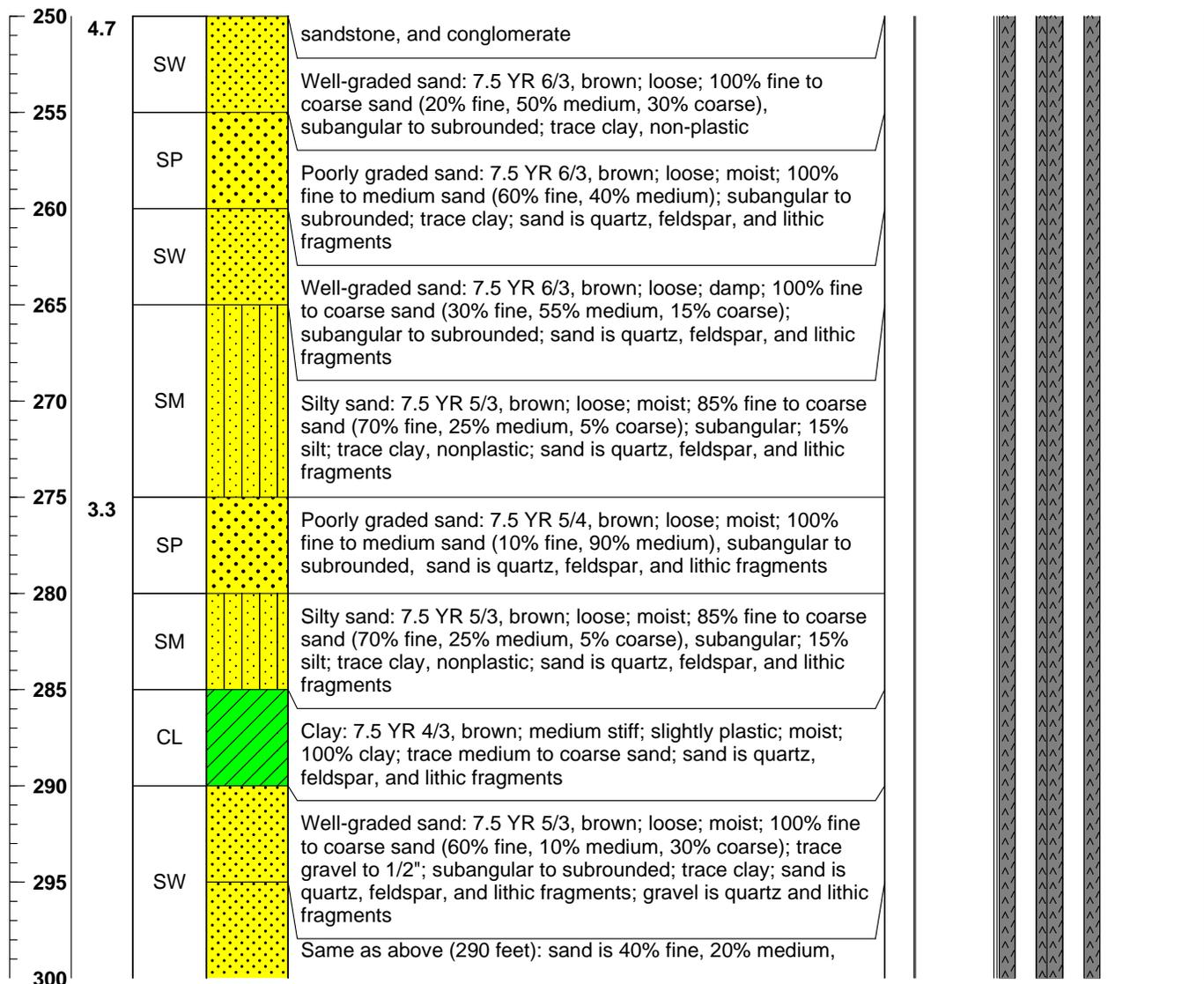
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
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  - (3) Hydro-knifing used for utility clearance
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	Project: <b>62599DM01.1017</b>	<h2 style="margin: 0;">WELL LOG</h2>			
	Location: <b>Kirtland AFB, New Mexico</b>		Well ID: <b>KAFB-106240</b>		
	Start Date: <b>6/6/2018</b>	Page: <b>6 of 11</b>			
	Completion Date: <b>6/14/18</b>				
Drilling Company: <b>Yellow Jacket Drilling</b>	Boring Depth (ft): <b>510.0</b>	<b>Screen Material: 3" Sch. 80 PVC 0.010" Slot Screen</b> <b>Seal Material(s): Cement; Bentonite; High Solids Bentonite Grout</b> <b>Filter Pack: 10/20 Silica Sand</b>			
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>11.75/9.625</b>				
Drill Bit: <b>Tricone</b>	Well Diameter: <b>3" ID</b>				
Driller: <b>John Chavez</b>	DTW After Completion (ft): <b>474.94</b>				
Geologist: <b>Lane Address</b>	Riser Material: <b>3" Sch. 80 PVC</b>				
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

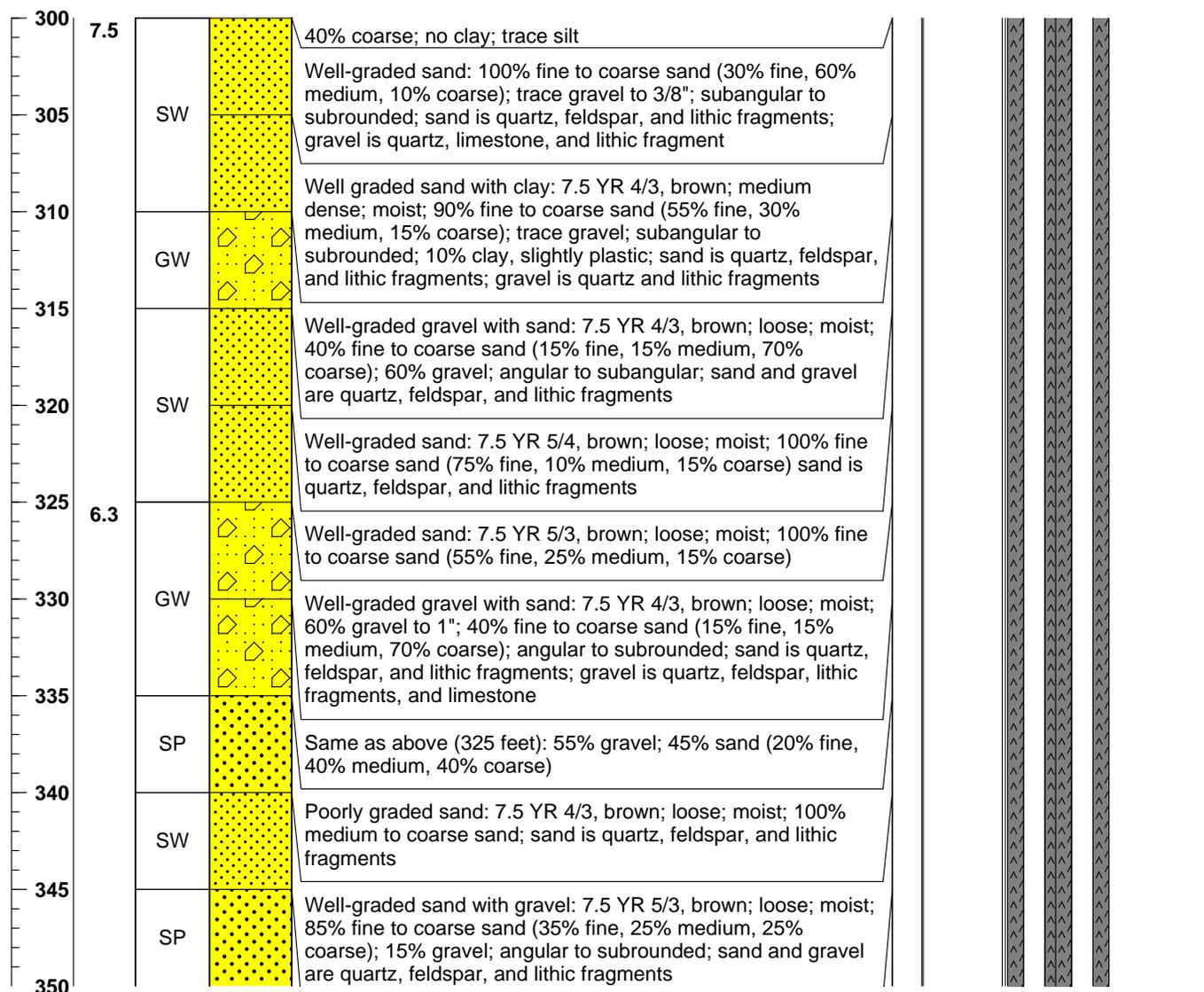
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>6/6/2018</b> Completion Date: <b>6/14/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106240</b> Page: <b>7 of 11</b>		
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>John Chavez</b> Geologist: <b>Lane Address</b>		Boring Depth (ft): <b>510.0</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>474.94</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

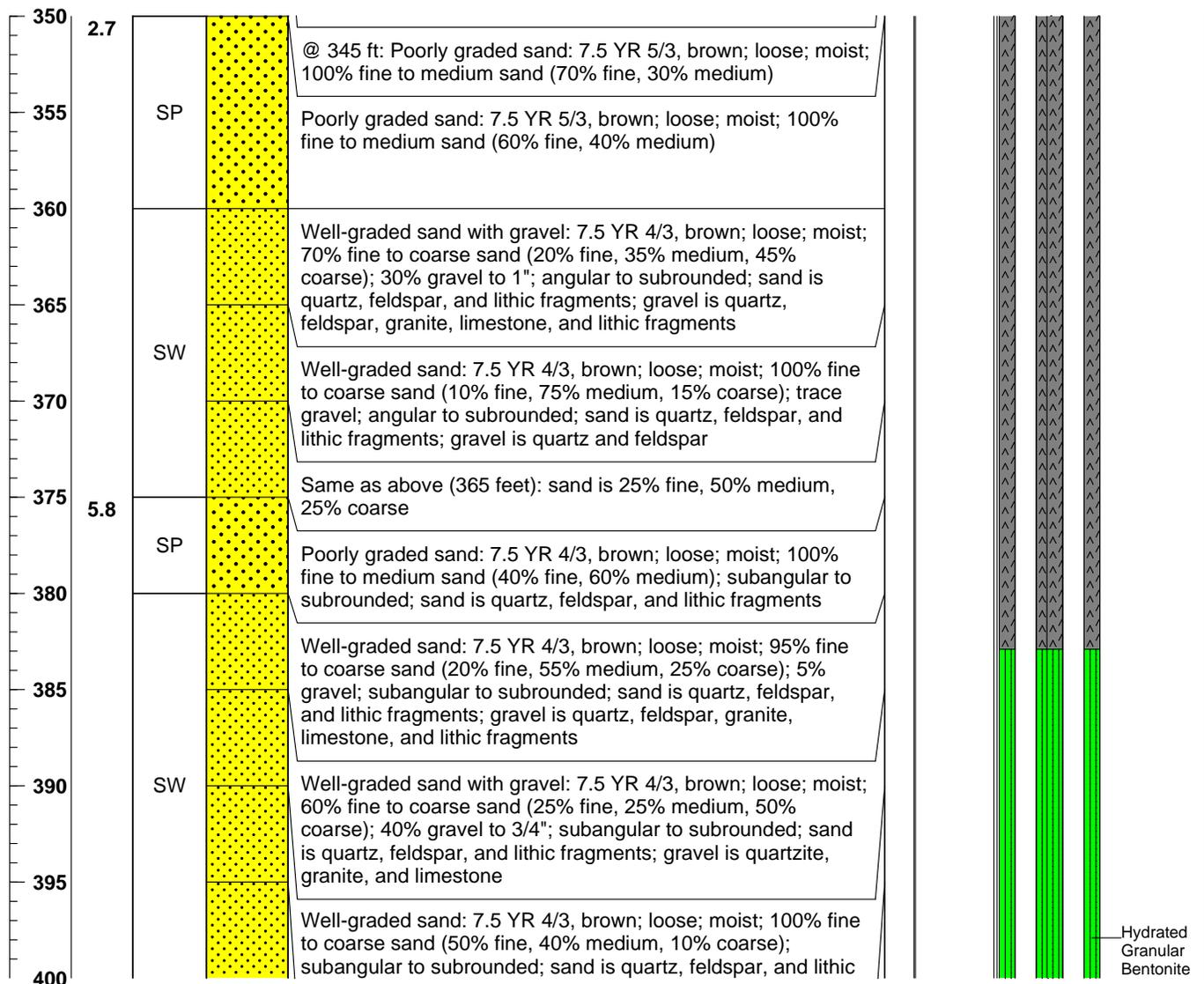
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106240</b> Page: <b>8 of 11</b>			
	Location: <b>Kirtland AFB, New Mexico</b>				
	Start Date: <b>6/6/2018</b>				
	Completion Date: <b>6/14/18</b>				
Drilling Company: <b>Yellow Jacket Drilling</b>	Boring Depth (ft): <b>510.0</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b>			
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>11.75/9.625</b>	Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b>			
Drill Bit: <b>Tricone</b>	Well Diameter: <b>3" ID</b>	Filter Pack: <b>10/20 Silica Sand</b>			
Driller: <b>John Chavez</b>	DTW After Completion (ft): <b>474.94</b>				
Geologist: <b>Lane Address</b>	Riser Material: <b>3" Sch. 80 PVC</b>				
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

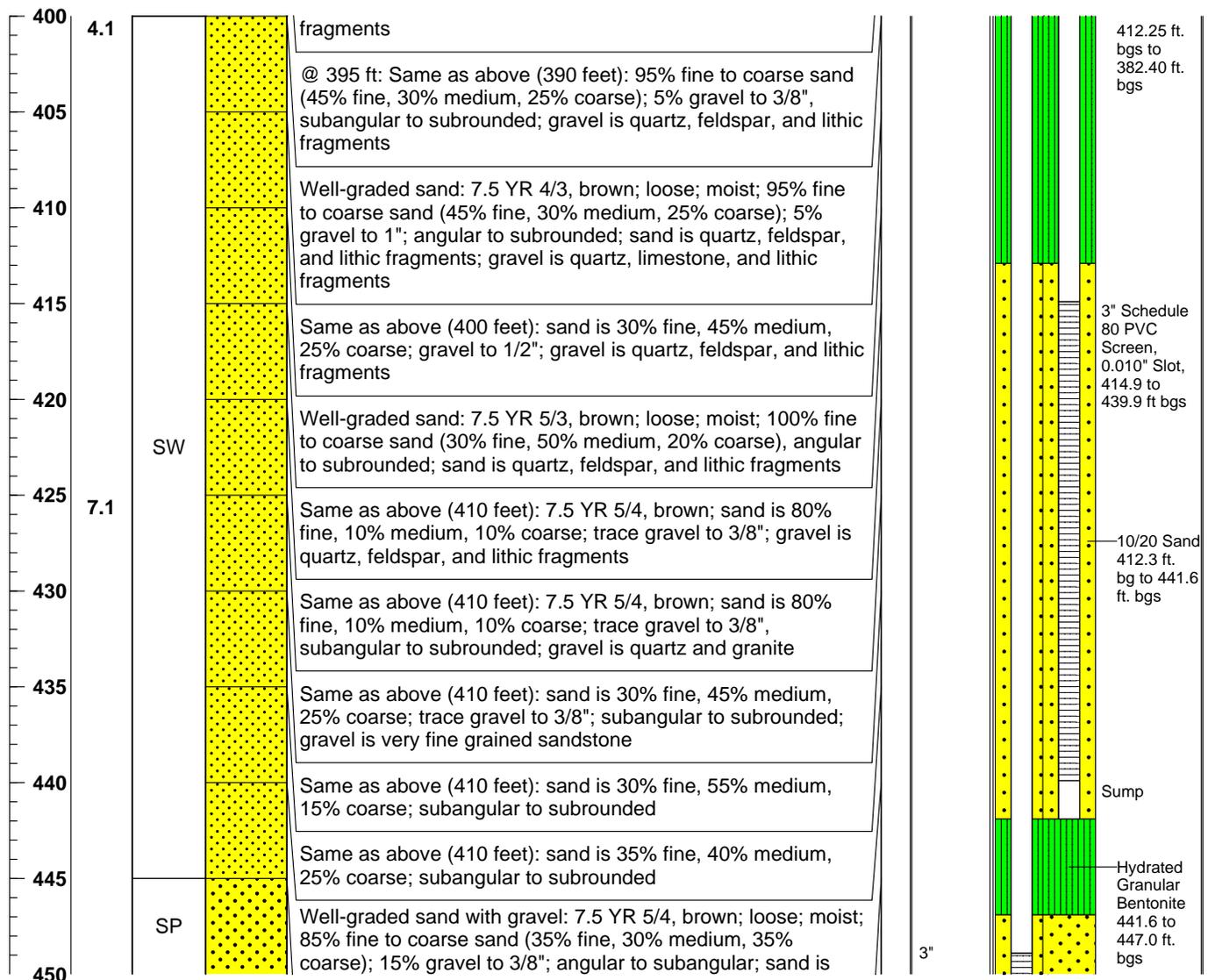
(1) (2)



- Notes:
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  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106240</b> Page: <b>9 of 11</b>			
	Location: <b>Kirtland AFB, New Mexico</b>				
Drilling Company: <b>Yellow Jacket Drilling</b>	Boring Depth (ft): <b>510.0</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>			
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>11.75/9.625</b>				
Drill Bit: <b>Tricone</b>	Well Diameter: <b>3" ID</b>				
Driller: <b>John Chavez</b>	DTW After Completion (ft): <b>474.94</b>				
Geologist: <b>Lane Address</b>	Riser Material: <b>3" Sch. 80 PVC</b>				
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

(1) (2)

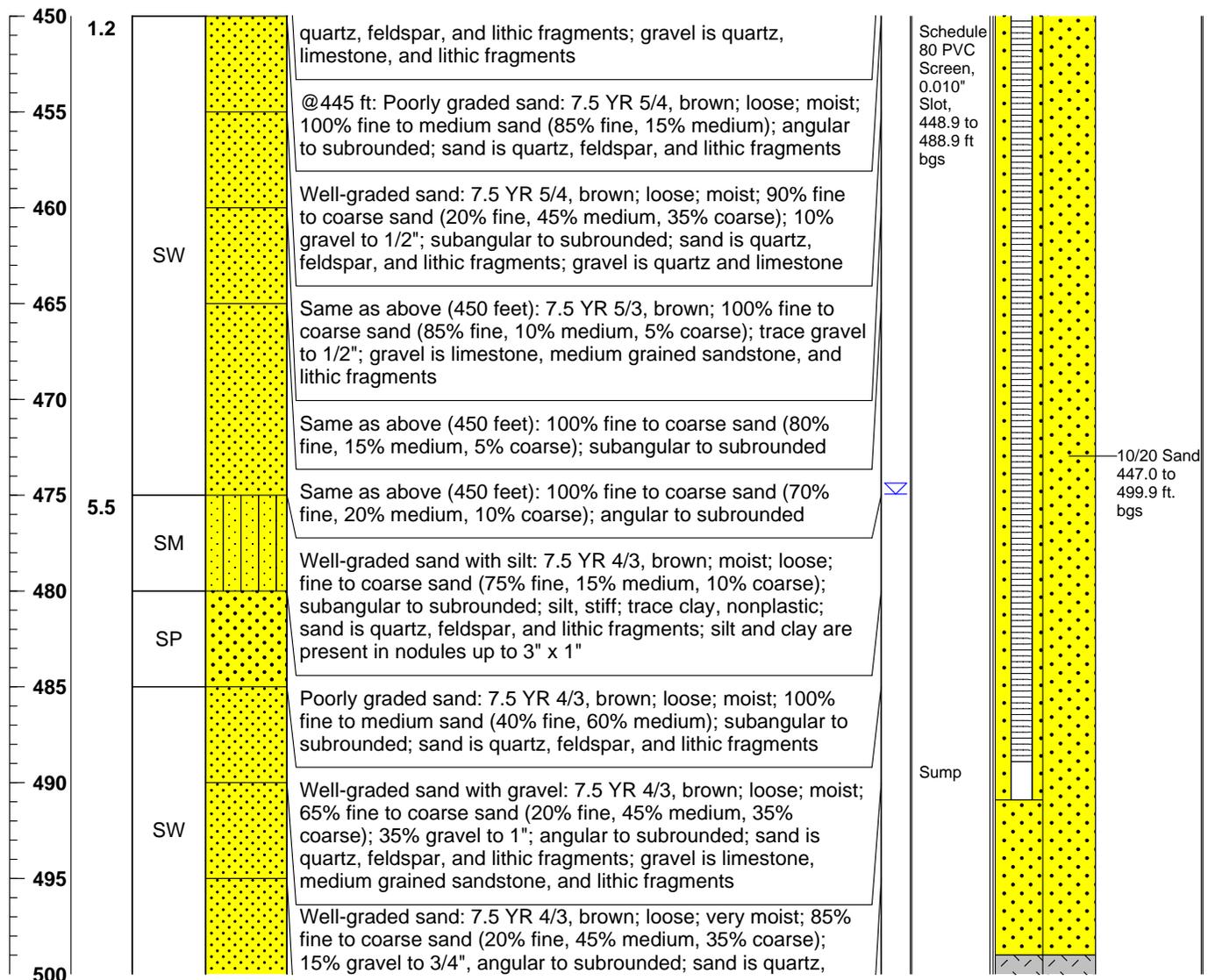


- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>6/6/2018</b> Completion Date: <b>6/14/18</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106240</b> Page: <b>10 of 11</b>
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>John Chavez</b> Geologist: <b>Lane Address</b>	Boring Depth (ft): <b>510.0</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>474.94</b> Riser Material: <b>3" Sch. 80 PVC</b>

Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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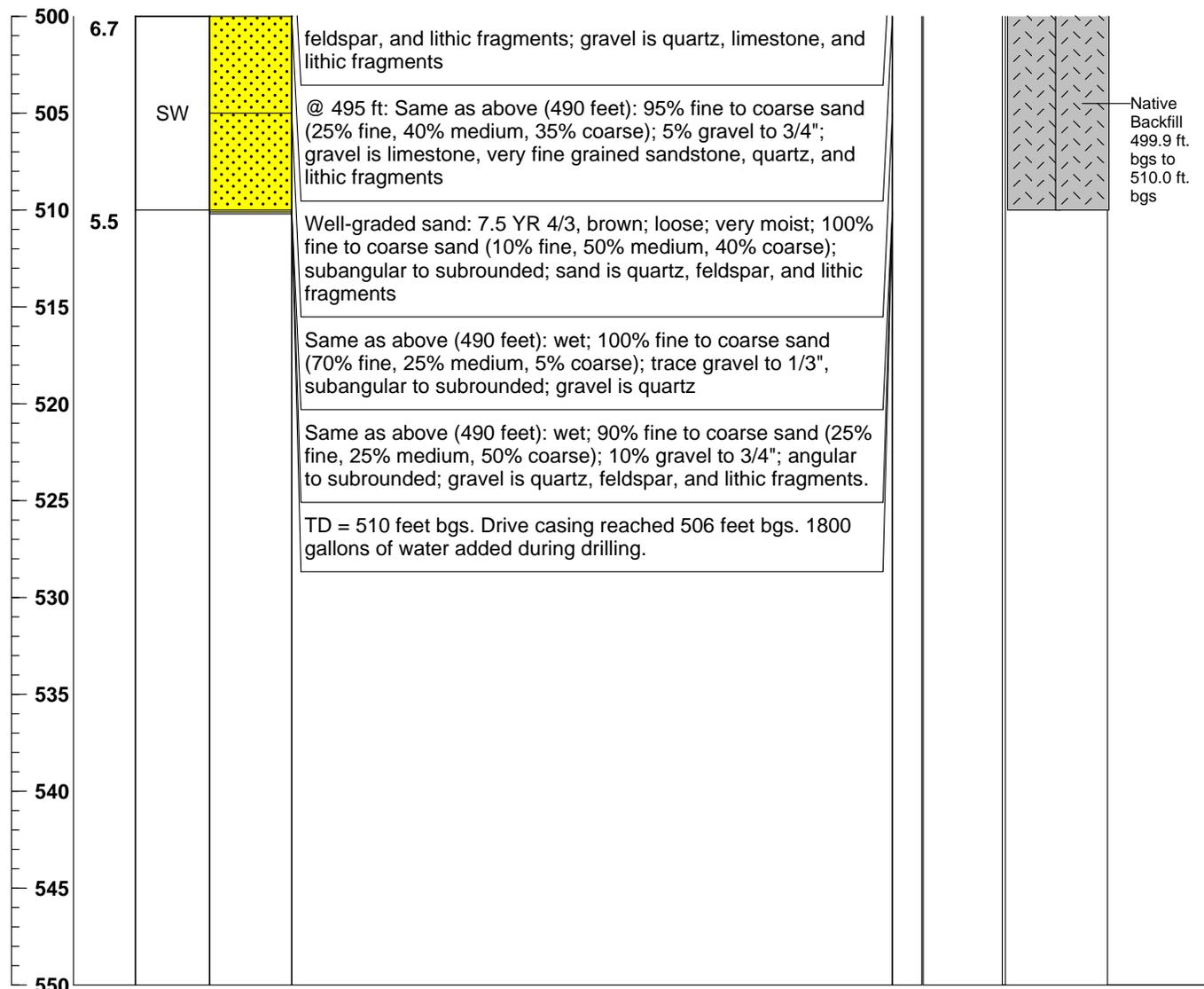
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ⚡ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>6/6/2018</b> Completion Date: <b>6/14/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106240</b> Page: <b>11 of 11</b>		
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>John Chavez</b> Geologist: <b>Lane Address</b>		Boring Depth (ft): <b>510.0</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>474.94</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

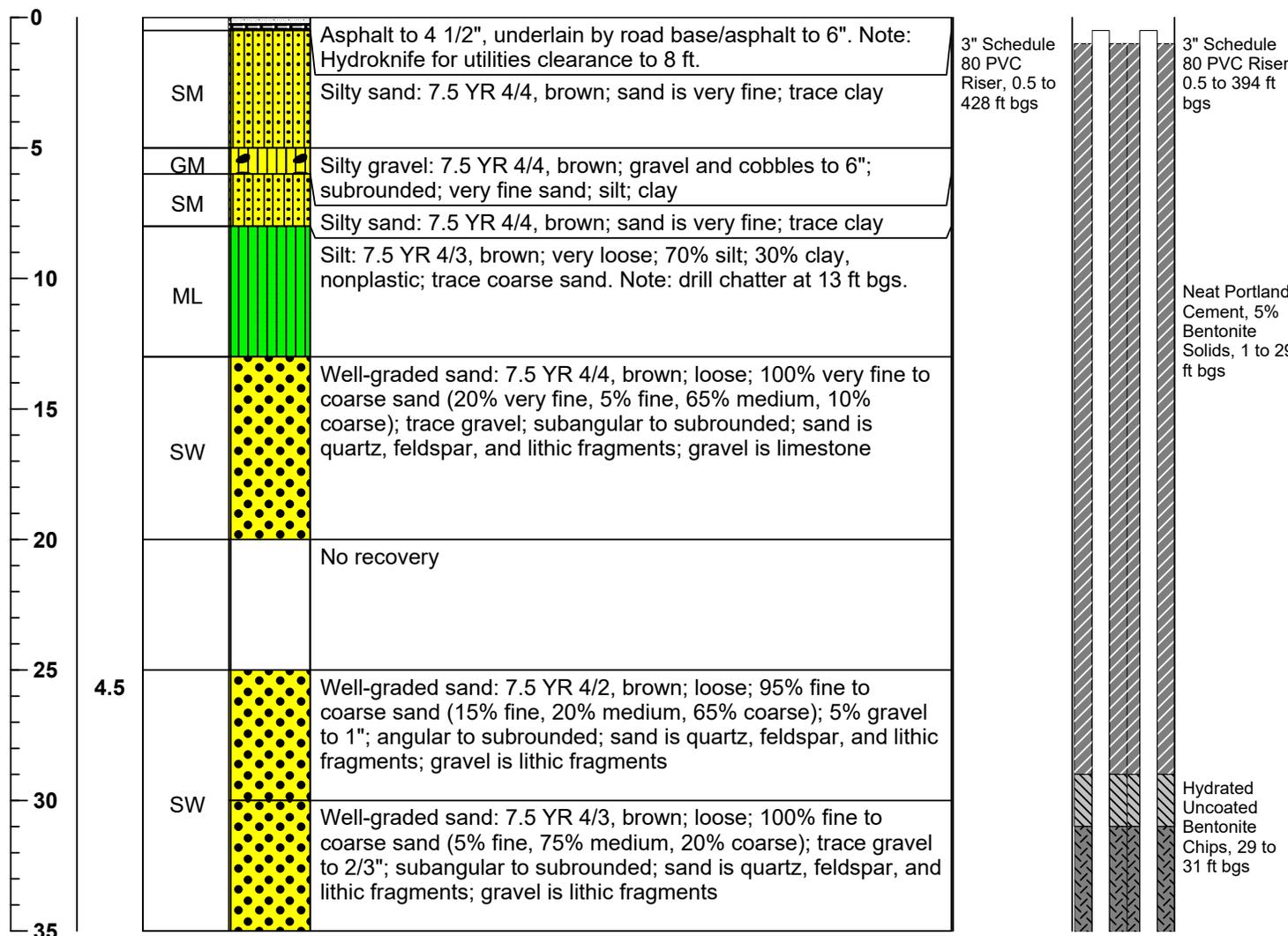
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

		Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/6/18</b> Completion Date: <b>8/16/18</b>		<h3 style="text-align: center;">WELL LOG</h3> Well ID: <b>KAFB-106241</b> Page: <b>1 of 14</b>			
Drilling Company: <b>Cascade</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw, 8.5" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Lane Andress, Carlos Montoya</b>			Boring Depth (ft): <b>485</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>452.41</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>		
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description		Completion Details	

(1) (2)



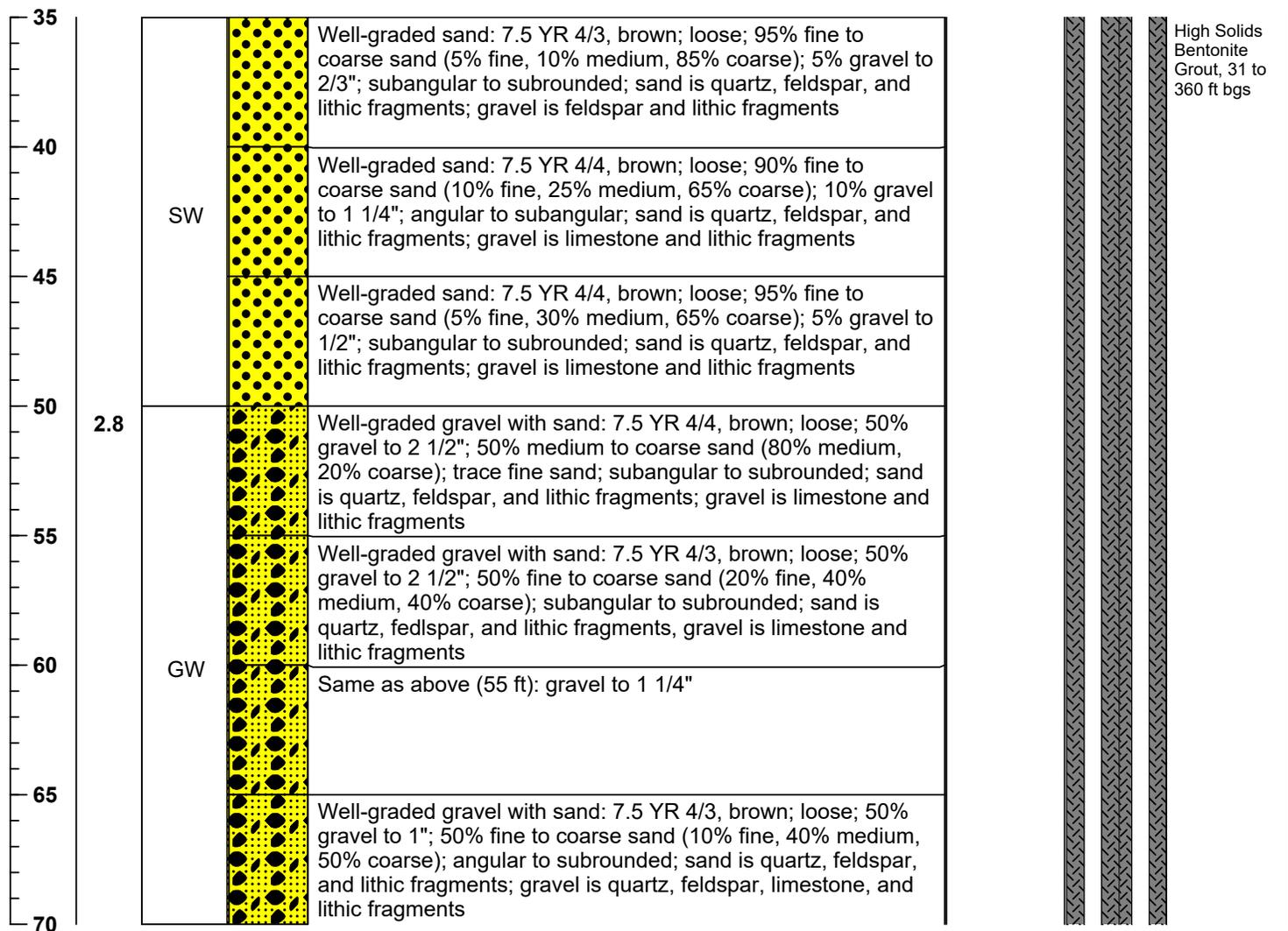
- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106241</b> Page: <b>2 of 14</b>
	Location: <b>Kirtland AFB, New Mexico</b>	
	Start Date: <b>8/6/18</b>	
	Completion Date: <b>8/16/18</b>	

Drilling Company: <b>Cascade</b>	Boring Depth (ft): <b>485</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b>
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>11.75/9.625</b>	Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b>
Drill Bit: <b>Ken Claw, 8.5" and 10 5/8"</b>	Well Diameter: <b>3" ID</b>	Filter Pack: <b>10/20 Silica Sand</b>
Driller: <b>Mark Green</b>	DTW After Completion (ft): <b>452.41</b>	
Geologist: <b>Lane Andress, Carlos Montoya</b>	Riser Material: <b>3" Sch. 80 PVC</b>	

Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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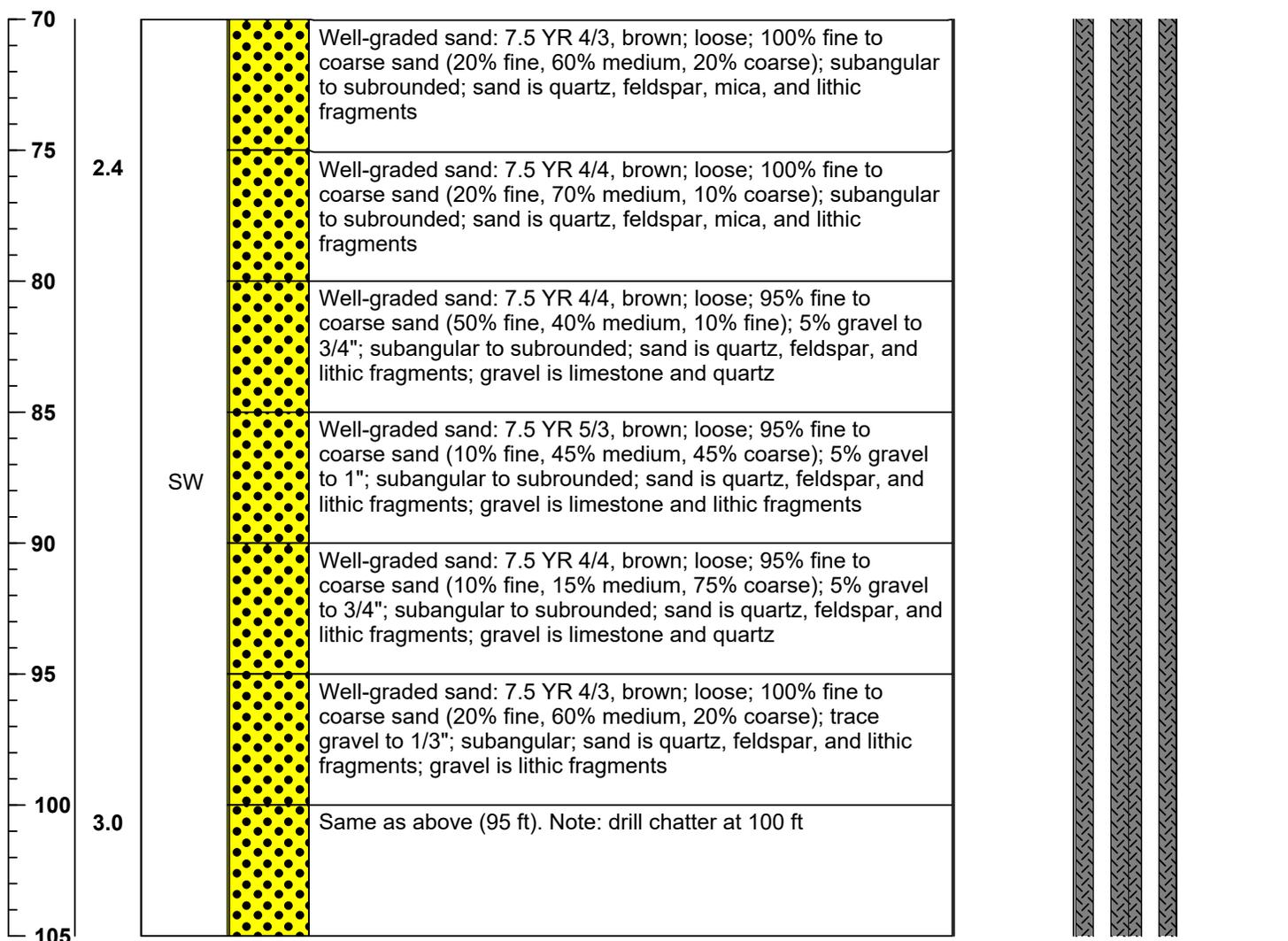
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
- Z = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/6/18</b> Completion Date: <b>8/16/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106241</b> Page: <b>3 of 14</b>		
	Drilling Company: <b>Cascade</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw, 8.5" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Lane Andress, Carlos Montoya</b>		Boring Depth (ft): <b>485</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>452.41</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

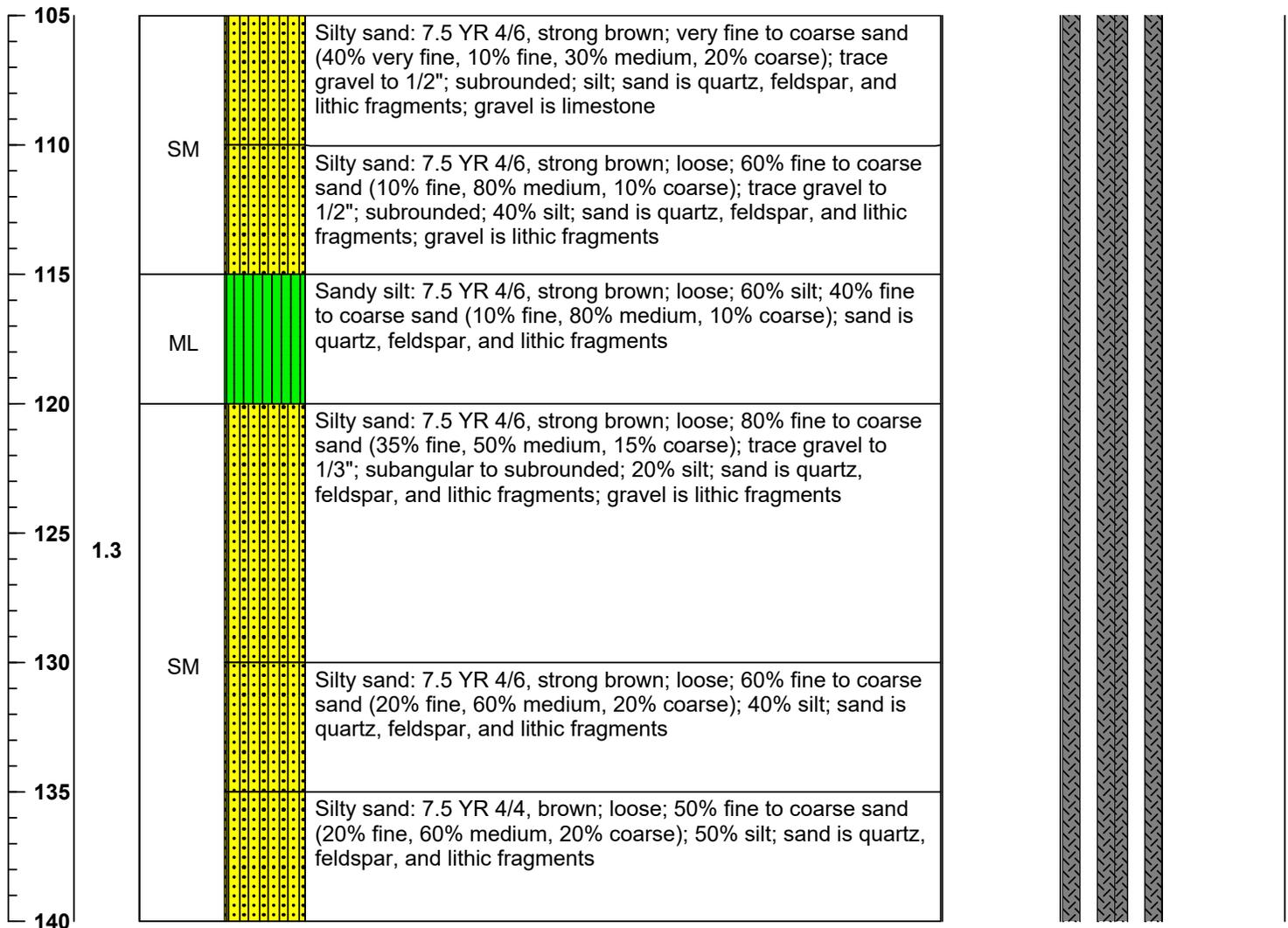
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

		Project: <b>62599DM01.1017.3</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106241</b> Page: <b>4 of 14</b>			
		Location: <b>Kirtland AFB, New Mexico</b>				Start Date: <b>8/6/18</b>	
		Completion Date: <b>8/16/18</b>					
Drilling Company: <b>Cascade</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw, 8.5" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Lane Andress, Carlos Montoya</b>			Boring Depth (ft): <b>485</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>452.41</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>		
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description		Completion Details	

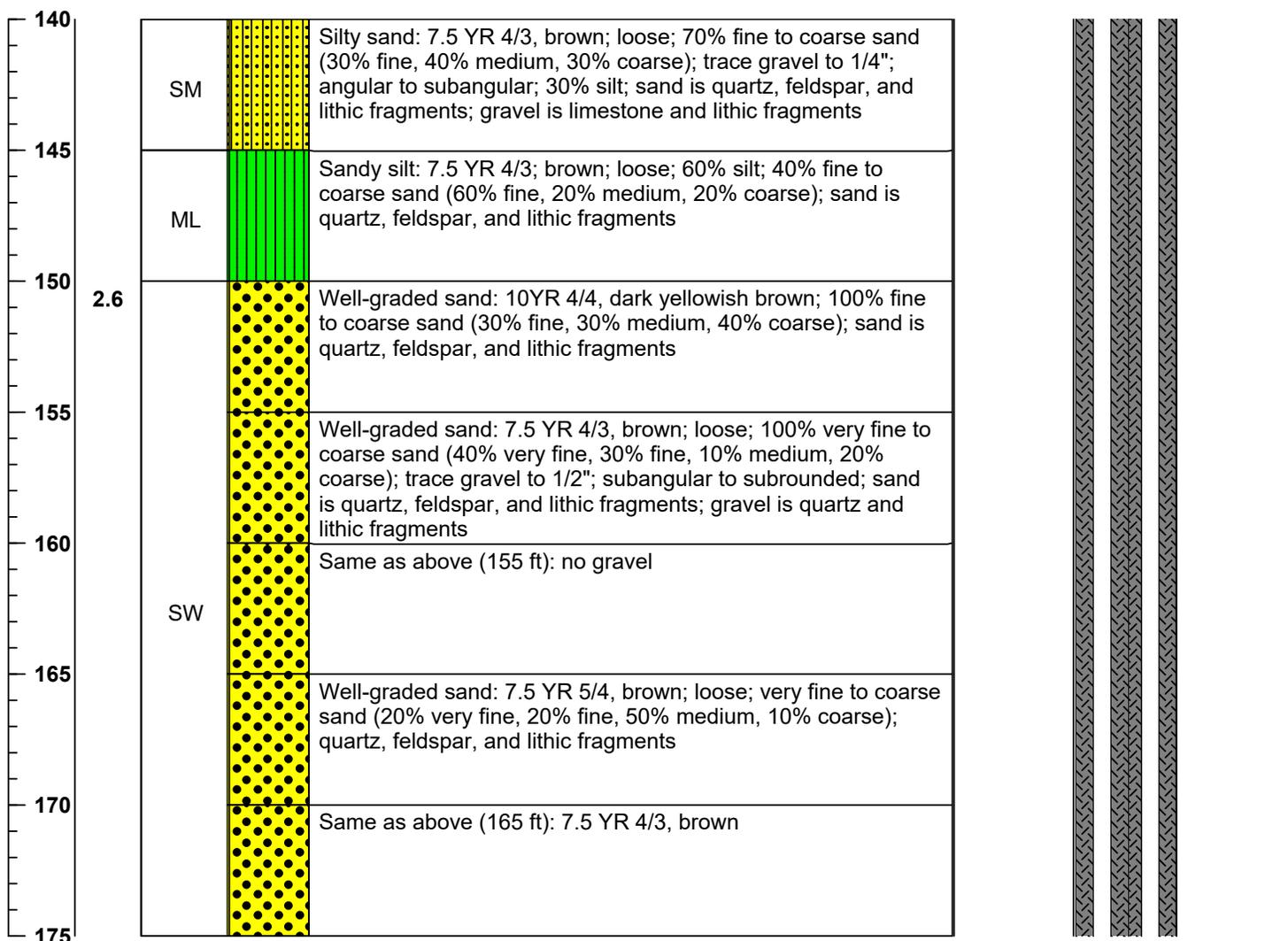
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/6/18</b> Completion Date: <b>8/16/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106241</b> Page: <b>5 of 14</b>		
	Drilling Company: <b>Cascade</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw, 8.5" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Lane Andress, Carlos Montoya</b>		Boring Depth (ft): <b>485</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>452.41</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

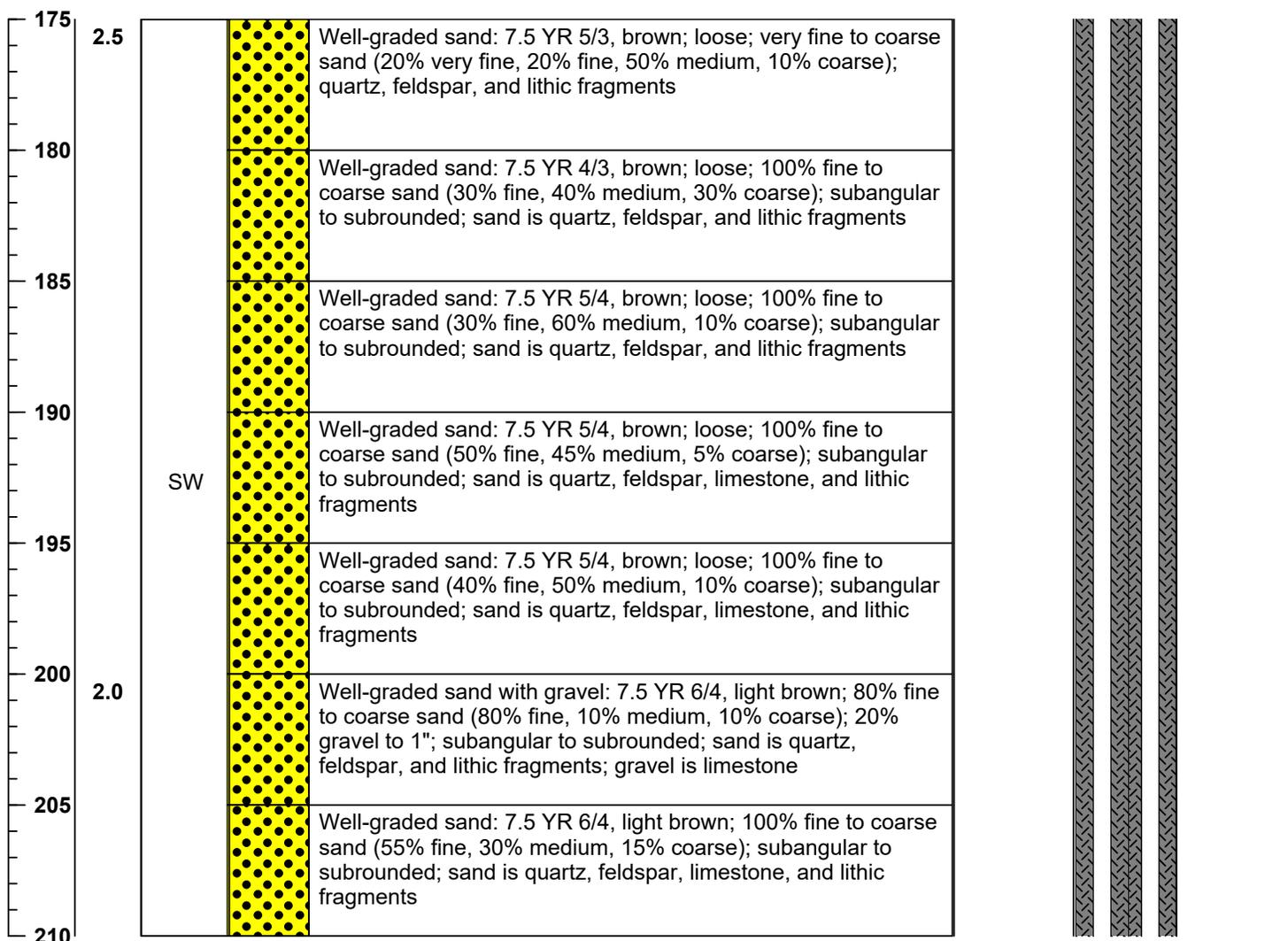
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/6/18</b> Completion Date: <b>8/16/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106241</b> Page: <b>6 of 14</b>		
	Drilling Company: <b>Cascade</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw, 8.5" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Lane Andress, Carlos Montoya</b>		Boring Depth (ft): <b>485</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>452.41</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

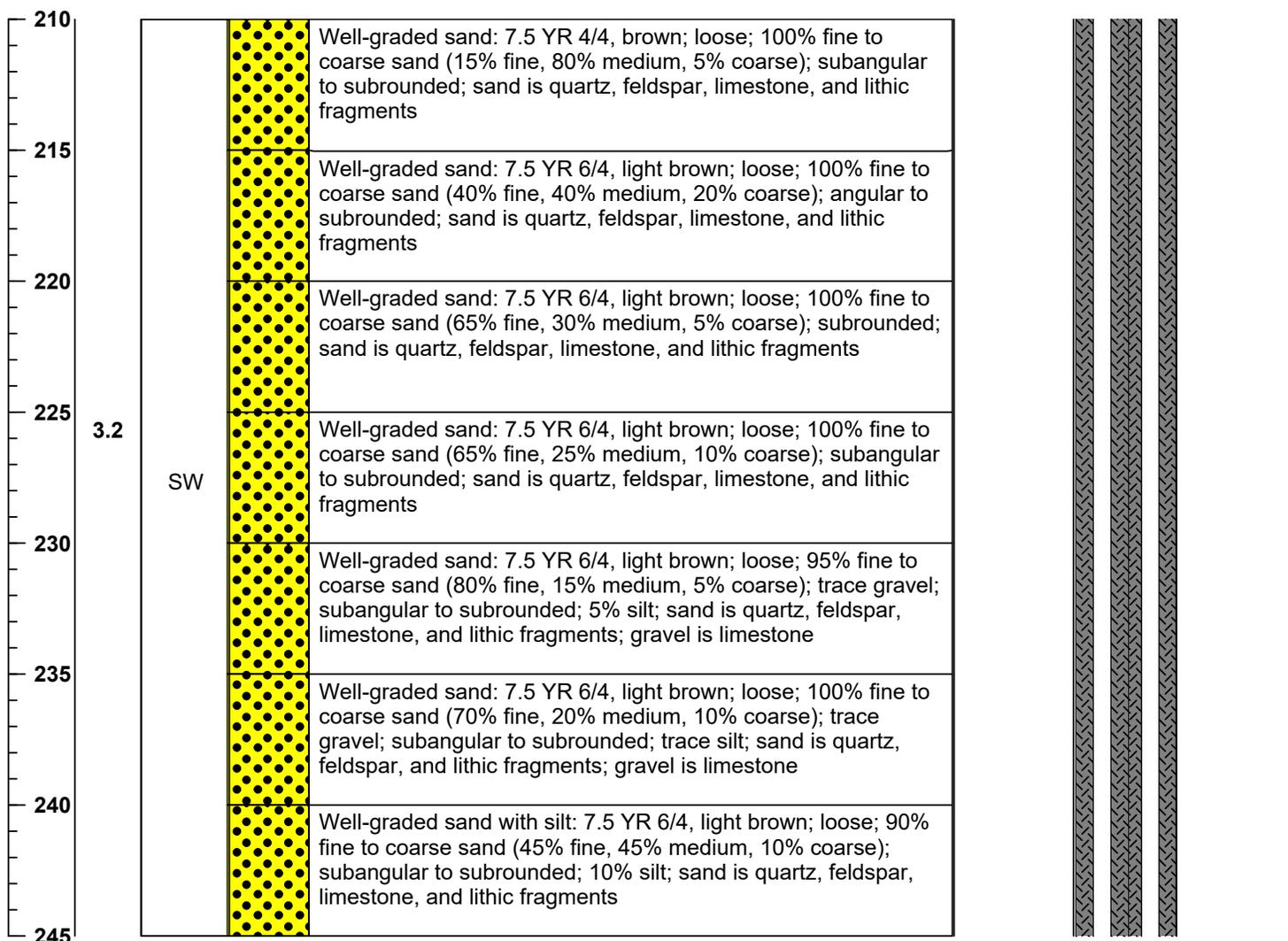
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
-  = Depth to water after completion, taken from the measuring reference point (MRP).

		Project: <b>62599DM01.1017.3</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106241</b> Page: <b>7 of 14</b>			
		Location: <b>Kirtland AFB, New Mexico</b>				Start Date: <b>8/6/18</b>	
		Completion Date: <b>8/16/18</b>					
Drilling Company: <b>Cascade</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw, 8.5" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Lane Andress, Carlos Montoya</b>			Boring Depth (ft): <b>485</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>452.41</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>		
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description		Completion Details	

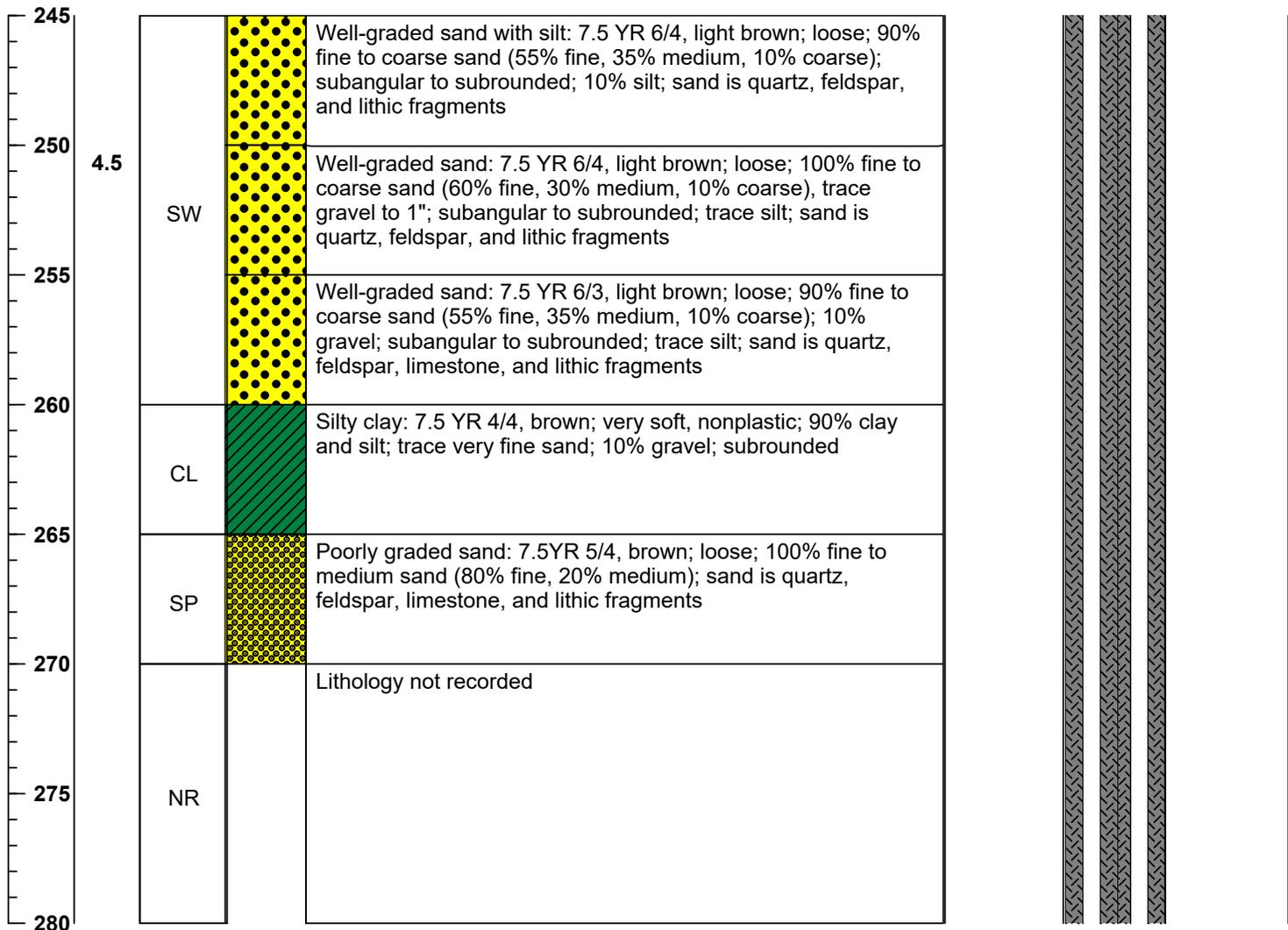
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

		Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/6/18</b> Completion Date: <b>8/16/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106241</b> Page: <b>8 of 14</b>			
		Drilling Company: <b>Cascade</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw, 8.5" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Lane Andress, Carlos Montoya</b>		Boring Depth (ft): <b>485</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>452.41</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>	
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description		Completion Details	

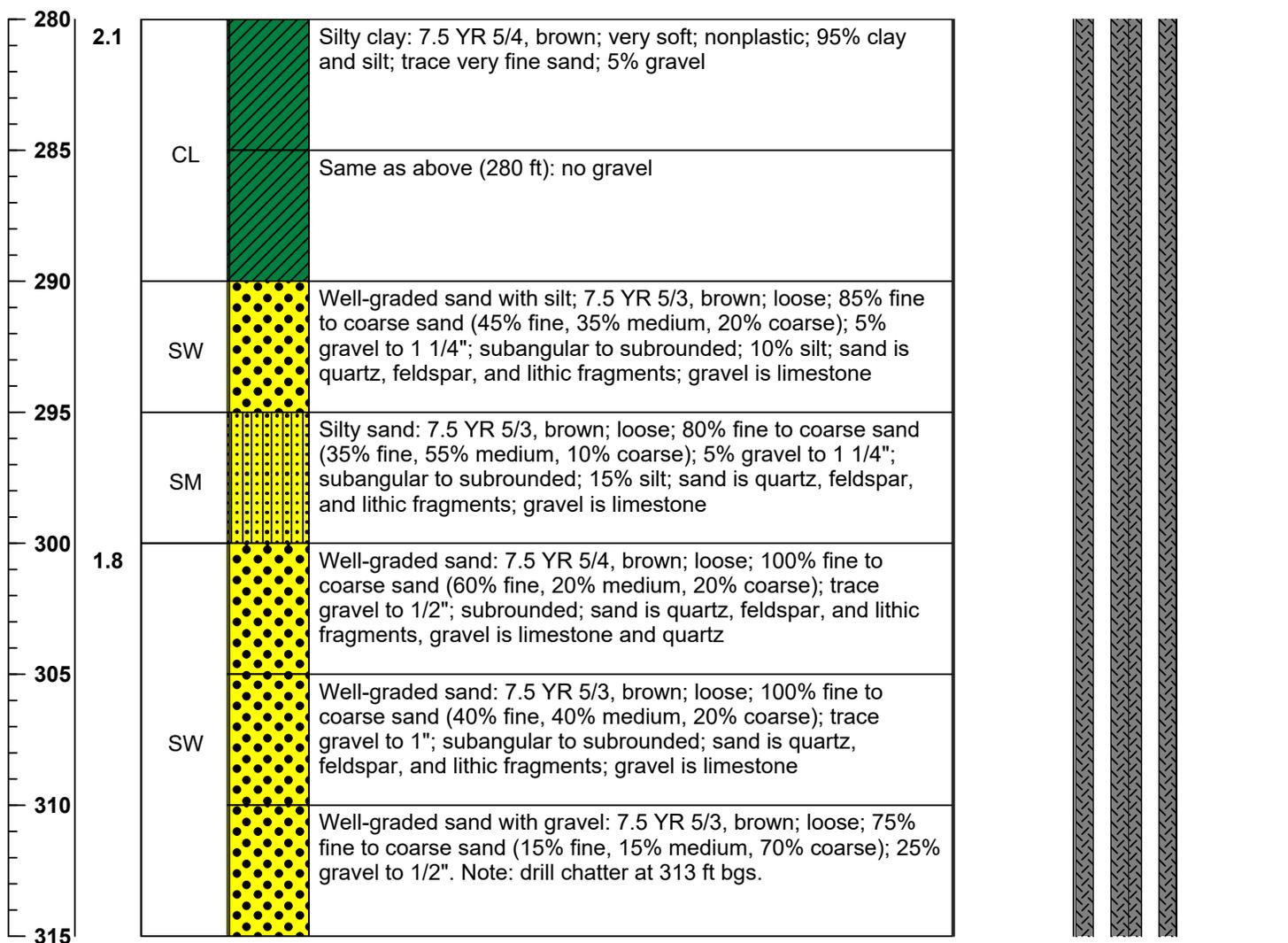
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/6/18</b> Completion Date: <b>8/16/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106241</b> Page: <b>9 of 14</b>		
	Drilling Company: <b>Cascade</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw, 8.5" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Lane Andress, Carlos Montoya</b>		Boring Depth (ft): <b>485</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>452.41</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

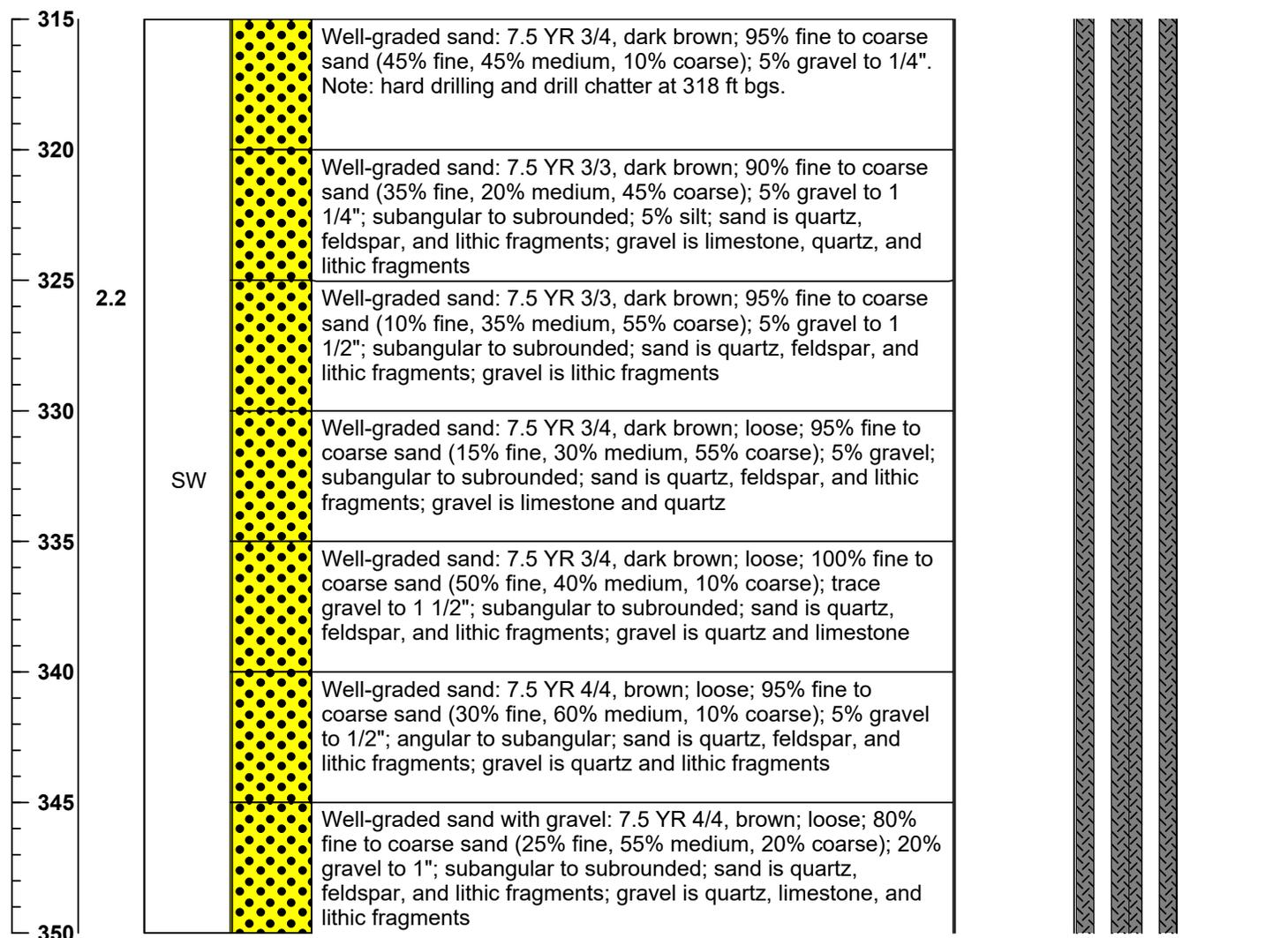
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

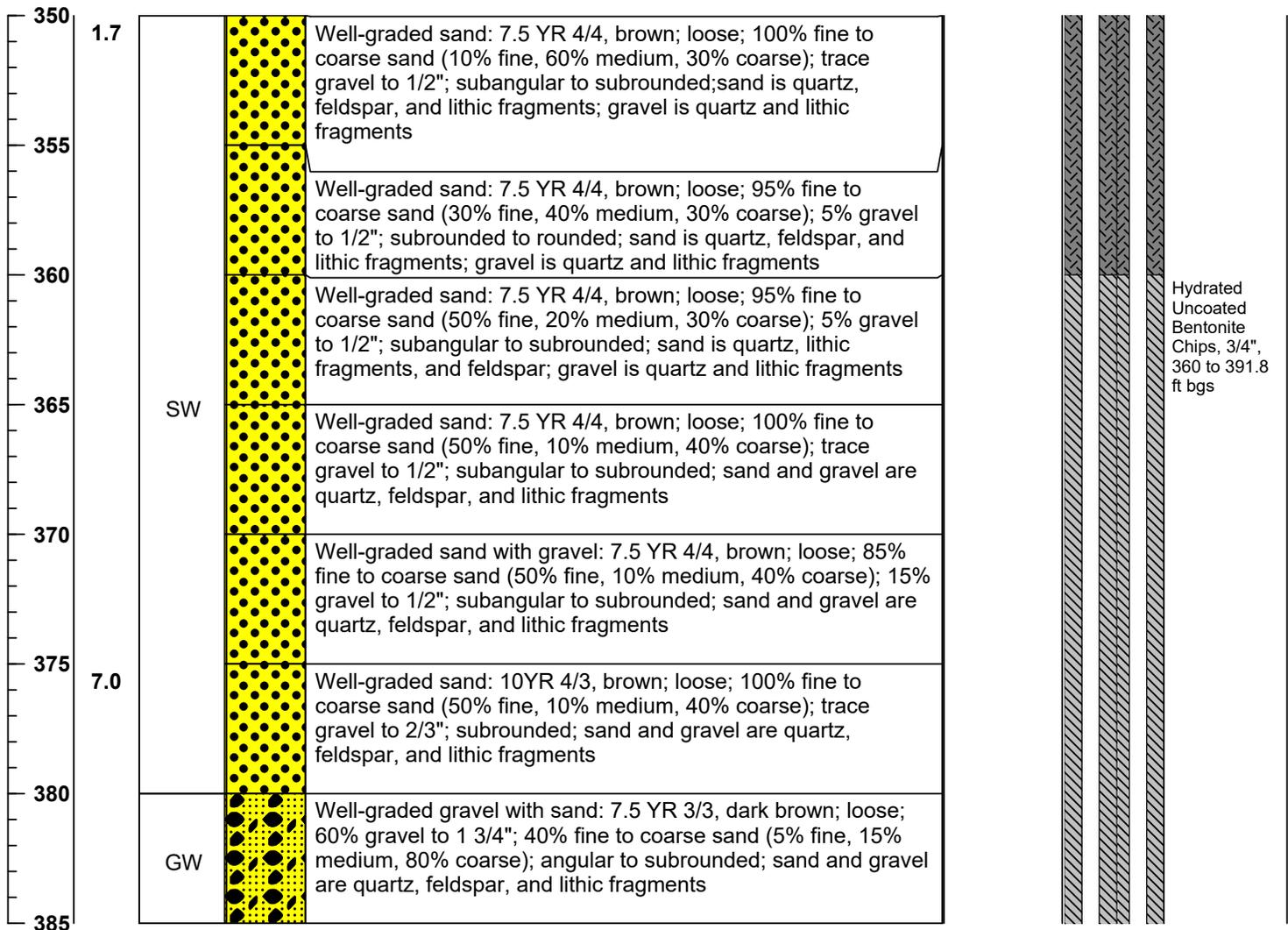
		Project: <b>62599DM01.1017.3</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106241</b> Page: <b>10 of 14</b>			
		Location: <b>Kirtland AFB, New Mexico</b>				Start Date: <b>8/6/18</b>	
		Completion Date: <b>8/16/18</b>					
Drilling Company: <b>Cascade</b>			Boring Depth (ft): <b>485</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b>		
Drilling Method: <b>Air Rotary Casing Hammer</b>			Boring Diameter (in): <b>11.75/9.625</b>		Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b>		
Drill Bit: <b>Ken Claw, 8.5" and 10 5/8"</b>			Well Diameter: <b>3" ID</b>		Filter Pack: <b>10/20 Silica Sand</b>		
Driller: <b>Mark Green</b>			DTW After Completion (ft): <b>452.41</b>				
Geologist: <b>Lane Andress, Carlos Montoya</b>			Riser Material: <b>3" Sch. 80 PVC</b>				
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description		Completion Details	

(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
- = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>		<h2 style="margin: 0;">WELL LOG</h2> Well ID: <b>KAFB-106241</b> Page: <b>11 of 14</b>		
	Location: <b>Kirtland AFB, New Mexico</b>				
	Start Date: <b>8/6/18</b>				
	Completion Date: <b>8/16/18</b>				
Drilling Company: <b>Cascade</b>		Boring Depth (ft): <b>485</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b>		
Drilling Method: <b>Air Rotary Casing Hammer</b>		Boring Diameter (in): <b>11.75/9.625</b>	Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b>		
Drill Bit: <b>Ken Claw, 8.5" and 10 5/8"</b>		Well Diameter: <b>3" ID</b>	Filter Pack: <b>10/20 Silica Sand</b>		
Driller: <b>Mark Green</b>		DTW After Completion (ft): <b>452.41</b>			
Geologist: <b>Lane Andress, Carlos Montoya</b>		Riser Material: <b>3" Sch. 80 PVC</b>			
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
					(1) (2)



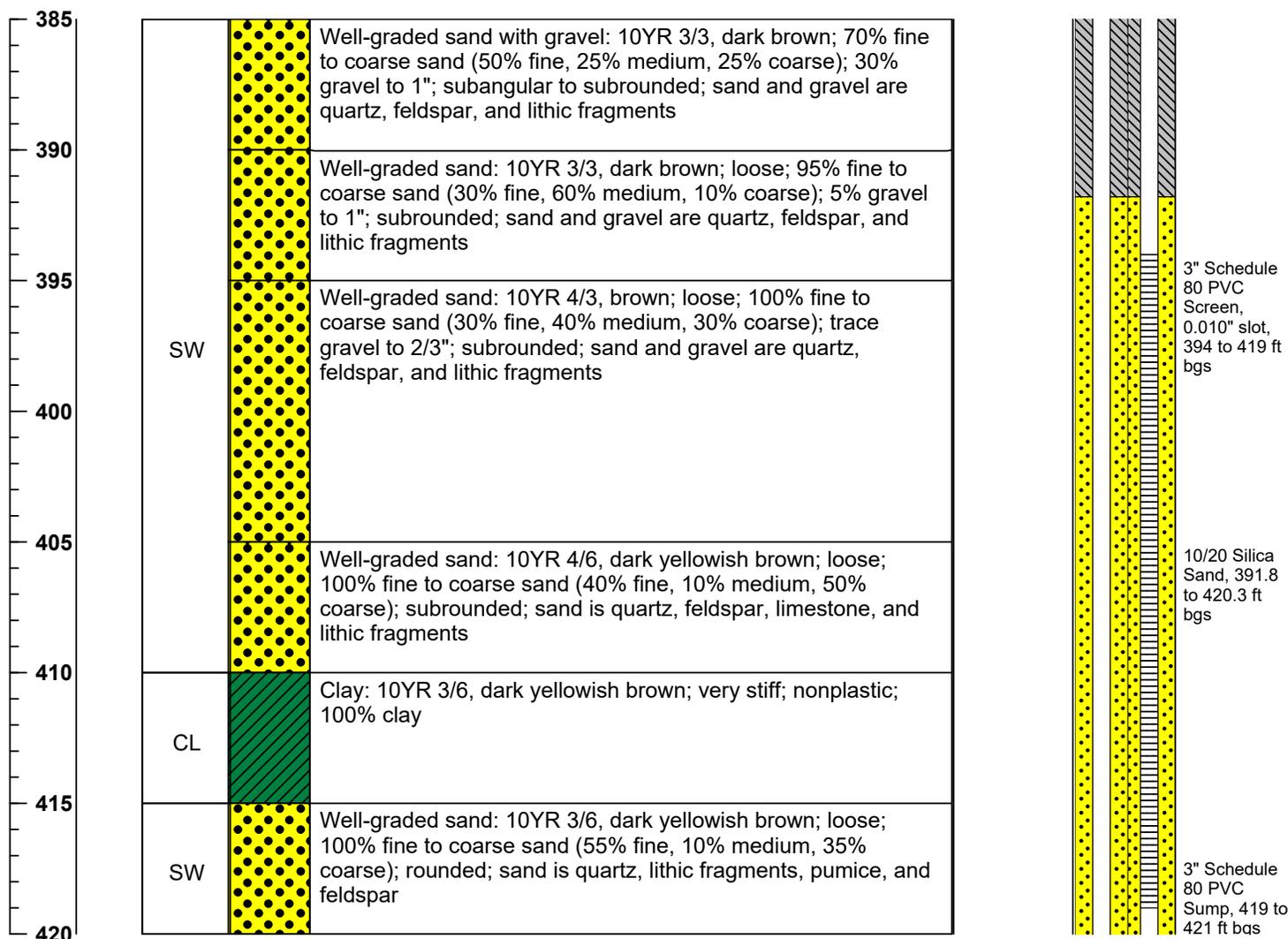
- Notes: (1) Current Water Table Data Gap Well  
 (2) Contingency Well  
 (3) Hydro-knifing used for utility clearance  
 (4) See Table 2-3 for well construction elevations  
 ▽ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>	<h2 style="margin: 0;">WELL LOG</h2> Well ID: <b>KAFB-106241</b> Page: <b>12 of 14</b>
	Location: <b>Kirtland AFB, New Mexico</b>	
	Start Date: <b>8/6/18</b>	
	Completion Date: <b>8/16/18</b>	

Drilling Company: <b>Cascade</b>	Boring Depth (ft): <b>485</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b>
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>11.75/9.625</b>	Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b>
Drill Bit: <b>Ken Claw, 8.5" and 10 5/8"</b>	Well Diameter: <b>3" ID</b>	Filter Pack: <b>10/20 Silica Sand</b>
Driller: <b>Mark Green</b>	DTW After Completion (ft): <b>452.41</b>	
Geologist: <b>Lane Andress, Carlos Montoya</b>	Riser Material: <b>3" Sch. 80 PVC</b>	

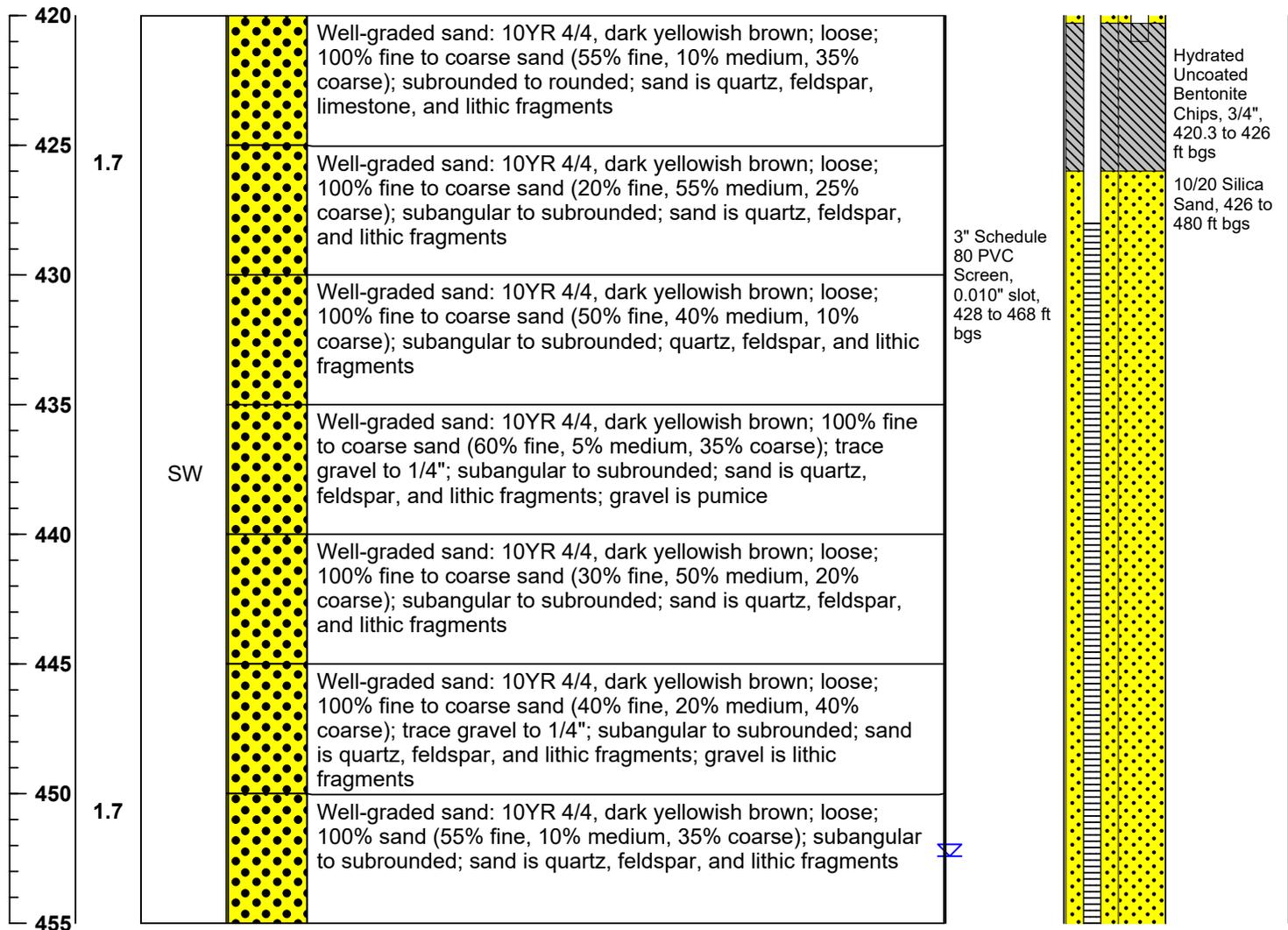
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
- ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>	<h2>WELL LOG</h2> Well ID: <b>KAFB-106241</b> Page: <b>13 of 14</b>			
	Location: <b>Kirtland AFB, New Mexico</b>				
	Start Date: <b>8/6/18</b>				
	Completion Date: <b>8/16/18</b>				
Drilling Company: <b>Cascade</b>	Boring Depth (ft): <b>485</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b>			
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>11.75/9.625</b>	Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b>			
Drill Bit: <b>Ken Claw, 8.5" and 10 5/8"</b>	Well Diameter: <b>3" ID</b>	Filter Pack: <b>10/20 Silica Sand</b>			
Driller: <b>Mark Green</b>	DTW After Completion (ft): <b>452.41</b>				
Geologist: <b>Lane Andress, Carlos Montoya</b>	Riser Material: <b>3" Sch. 80 PVC</b>				
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
					(1) (2)



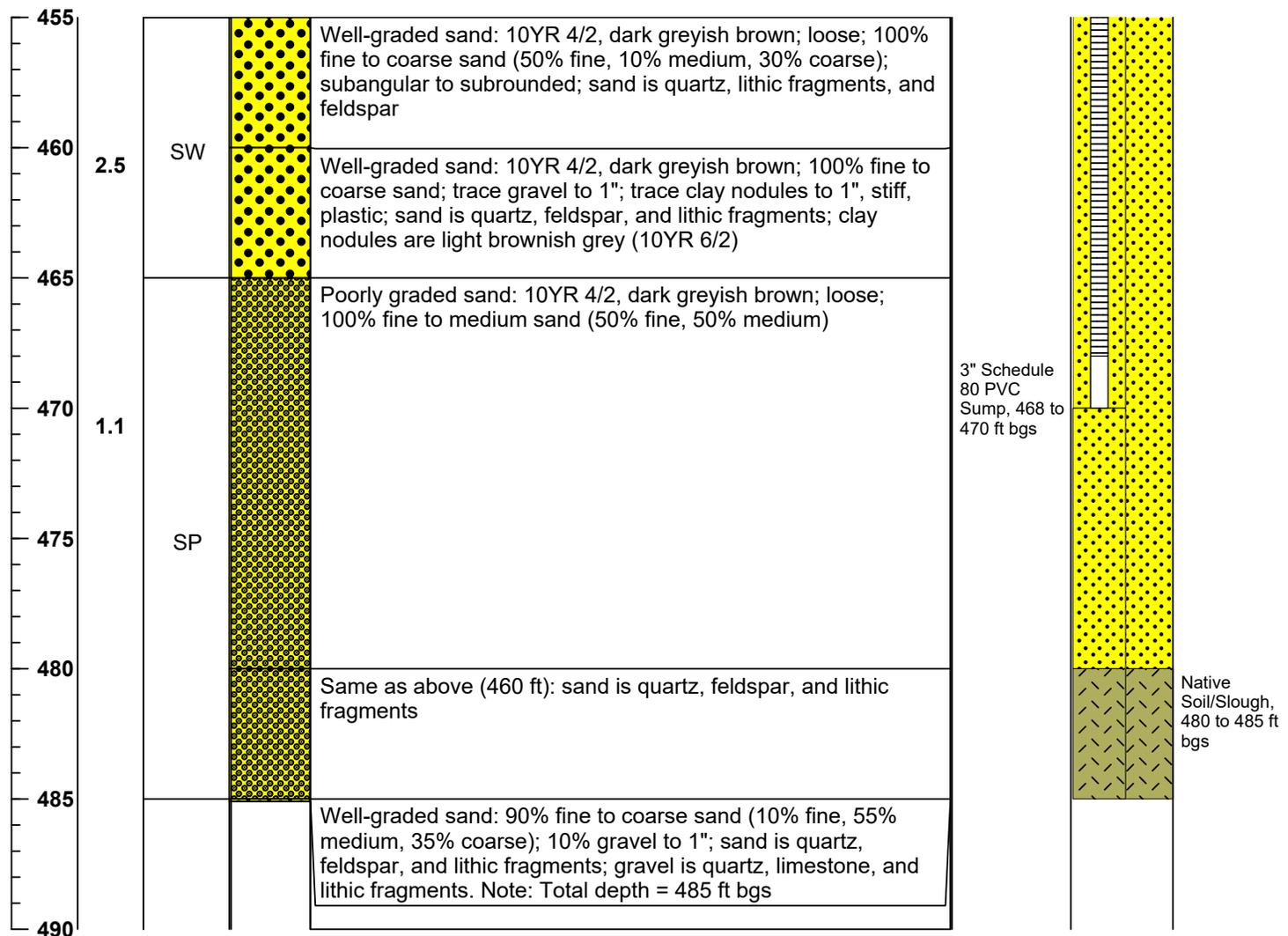
- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
- ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>	<h2>WELL LOG</h2>	
	Location: <b>Kirtland AFB, New Mexico</b>		Well ID: <b>KAFB-106241</b>
	Start Date: <b>8/6/18</b>		Page: <b>14 of 14</b>
	Completion Date: <b>8/16/18</b>		

Drilling Company: <b>Cascade</b>	Boring Depth (ft): <b>485</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b>
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>11.75/9.625</b>	Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b>
Drill Bit: <b>Ken Claw, 8.5" and 10 5/8"</b>	Well Diameter: <b>3" ID</b>	Filter Pack: <b>10/20 Silica Sand</b>
Driller: <b>Mark Green</b>	DTW After Completion (ft): <b>452.41</b>	
Geologist: <b>Lane Andress, Carlos Montoya</b>	Riser Material: <b>3" Sch. 80 PVC</b>	

Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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(1) (2)



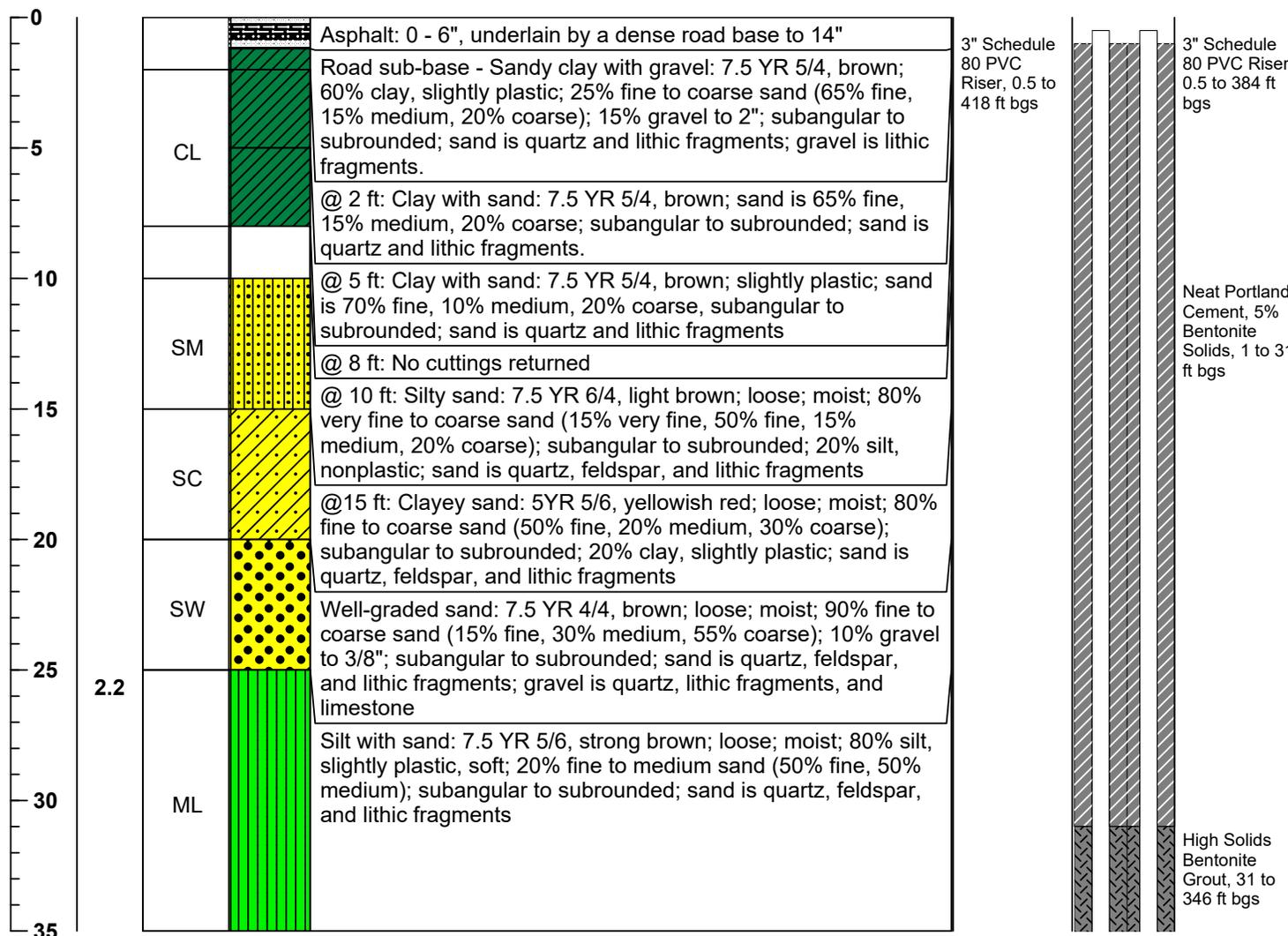
- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
- ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>	<h2 style="margin: 0;">WELL LOG</h2> Well ID: <b>KAFB-106242</b> Page: <b>1 of 14</b>
	Location: <b>Kirtland AFB, New Mexico</b>	
	Start Date: <b>8/17/18</b>	
	Completion Date: <b>8/23/18</b>	

Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Joshua Messenger</b>	Boring Depth (ft): <b>476</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>443.6</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
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Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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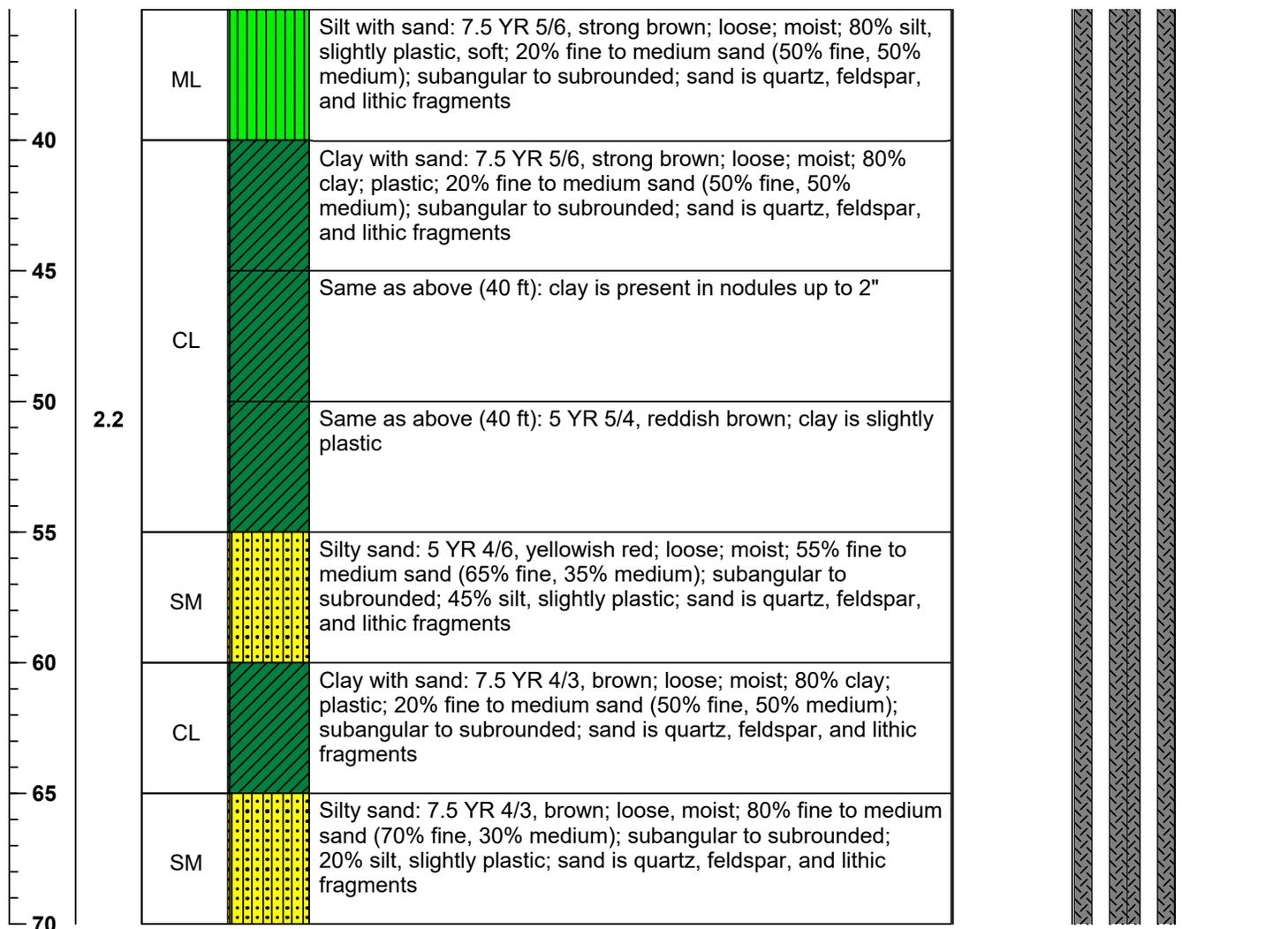
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/17/18</b> Completion Date: <b>8/23/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106242</b> Page: <b>2 of 14</b>		
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Joshua Messenger</b>		Boring Depth (ft): <b>476</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>443.6</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

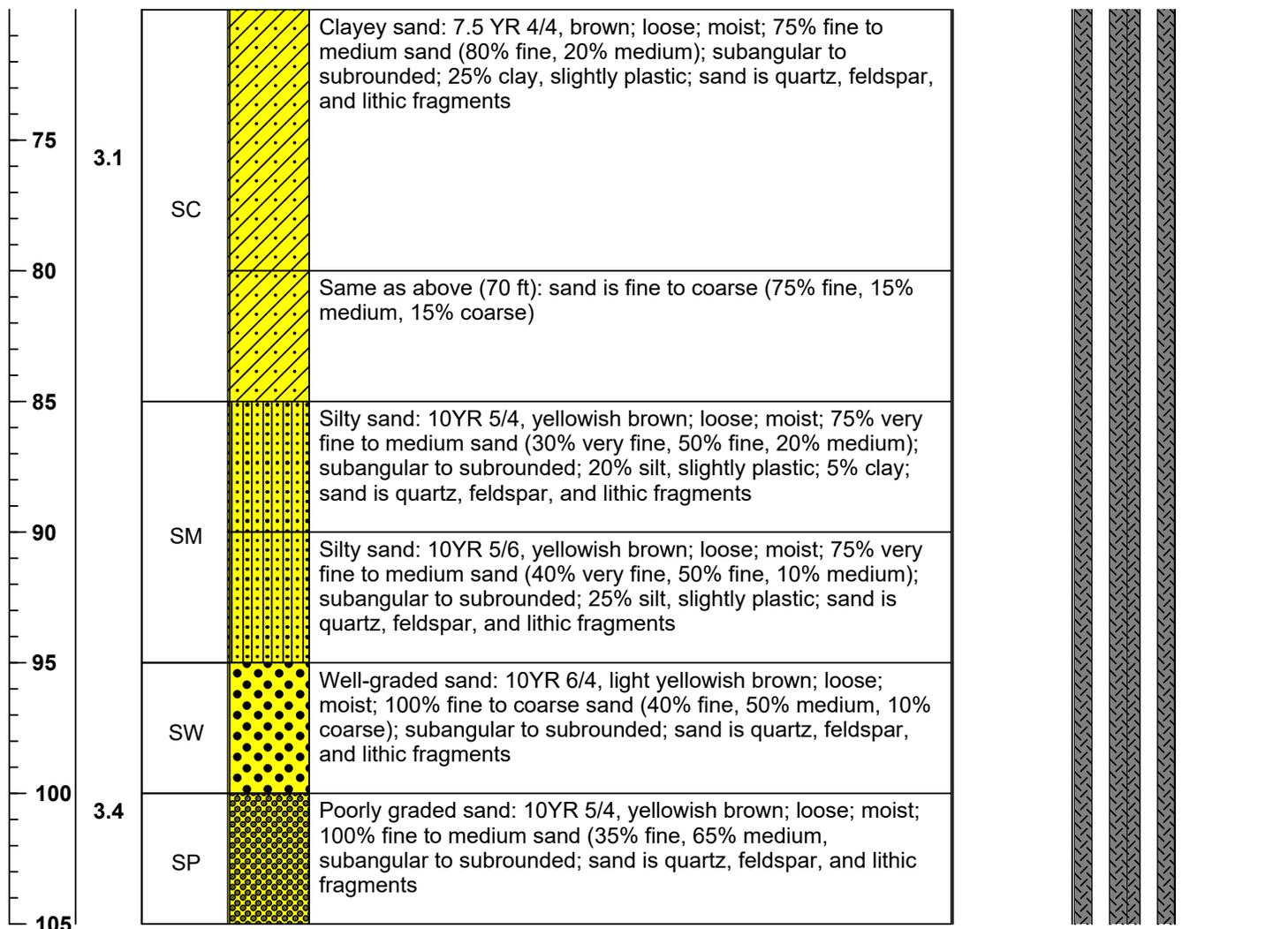
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/17/18</b> Completion Date: <b>8/23/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106242</b> Page: <b>3 of 14</b>				
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Joshua Messenger</b>		Boring Depth (ft): <b>476</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>443.6</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>		
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description		Completion Details	

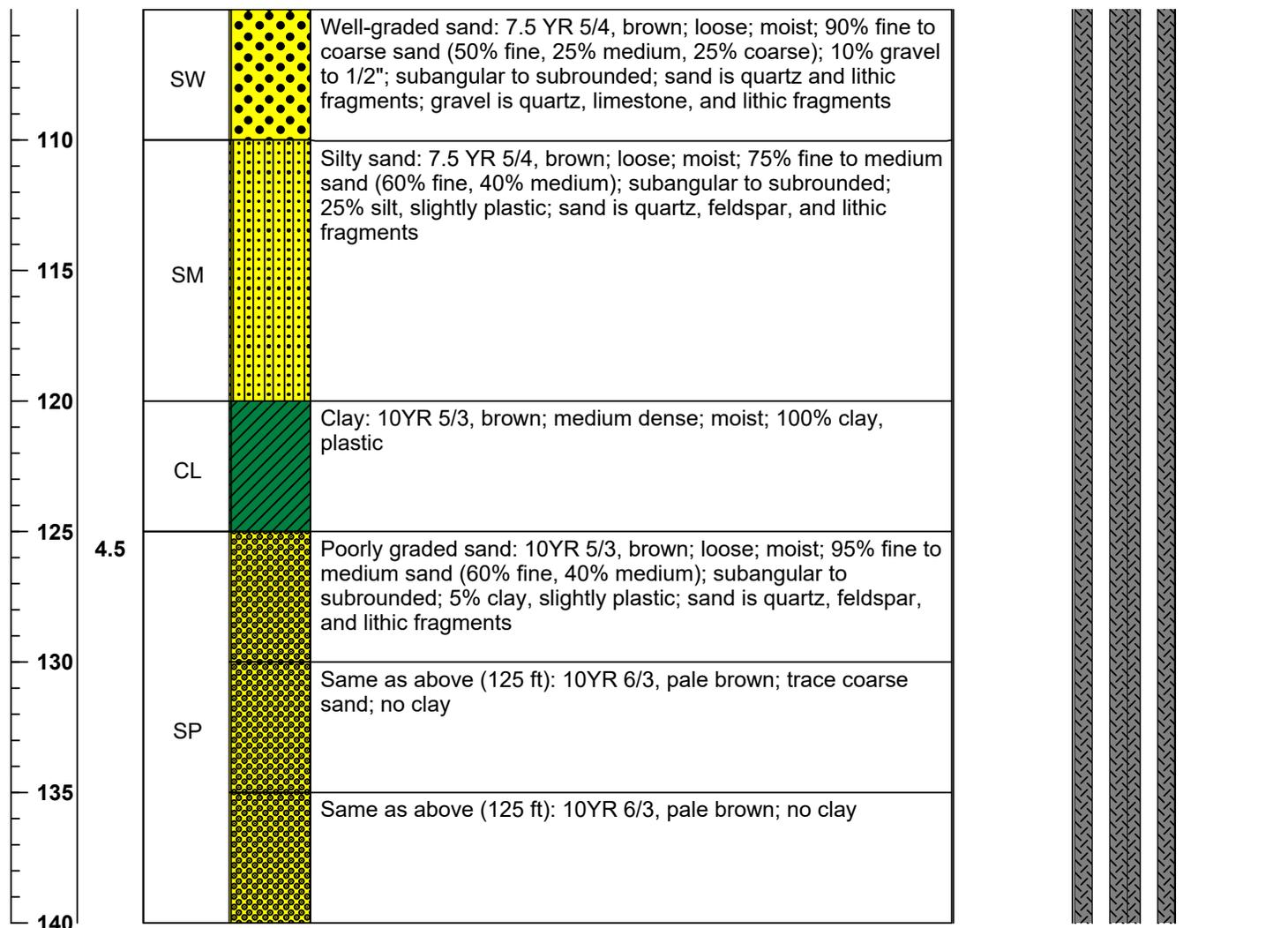
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ▽ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/17/18</b> Completion Date: <b>8/23/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106242</b> Page: <b>4 of 14</b>				
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Joshua Messenger</b>		Boring Depth (ft): <b>476</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>443.6</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>		
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description		Completion Details	

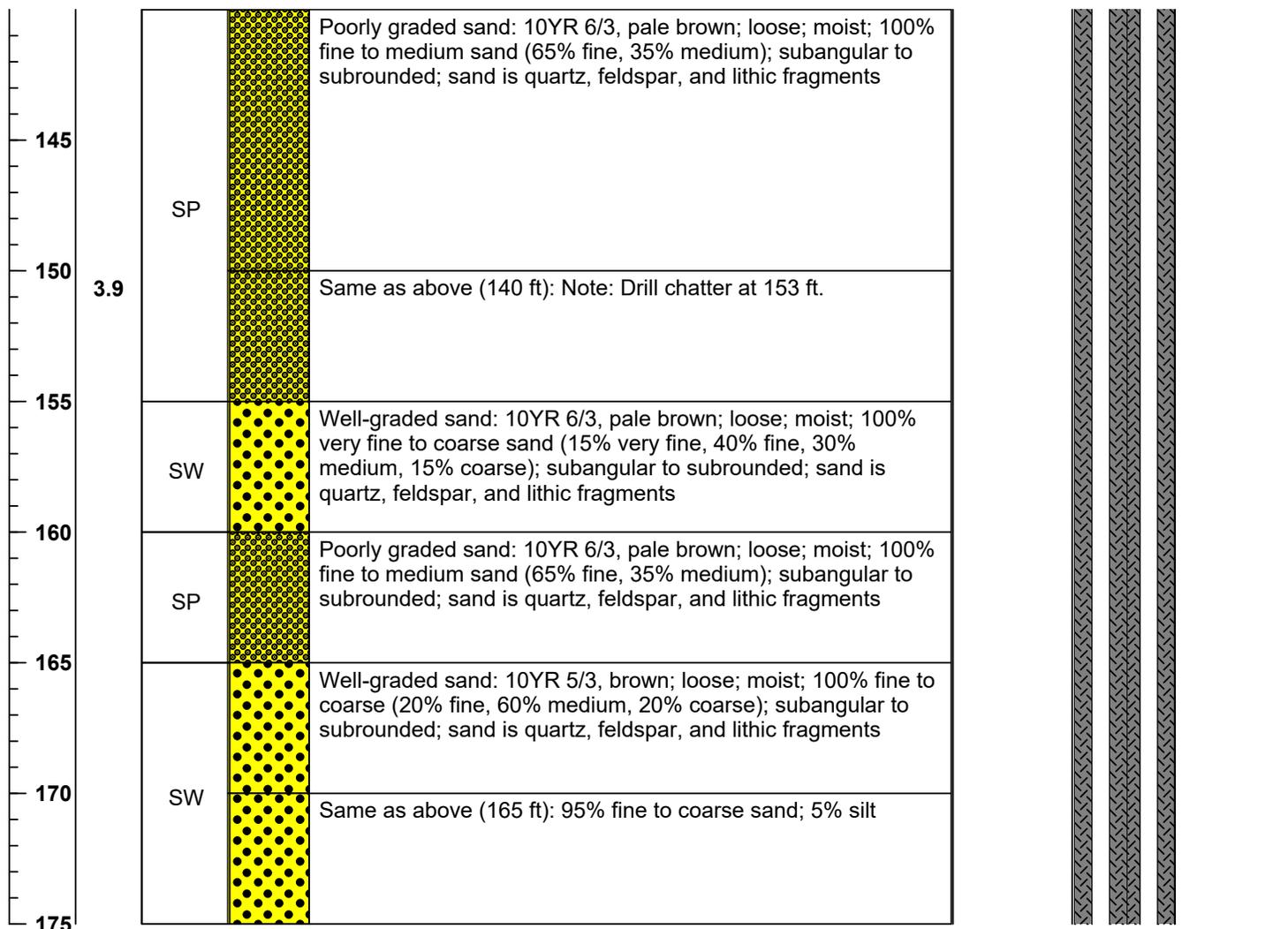
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
-  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/17/18</b> Completion Date: <b>8/23/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106242</b> Page: <b>5 of 14</b>				
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Joshua Messenger</b>		Boring Depth (ft): <b>476</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>443.6</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>		
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description		Completion Details	

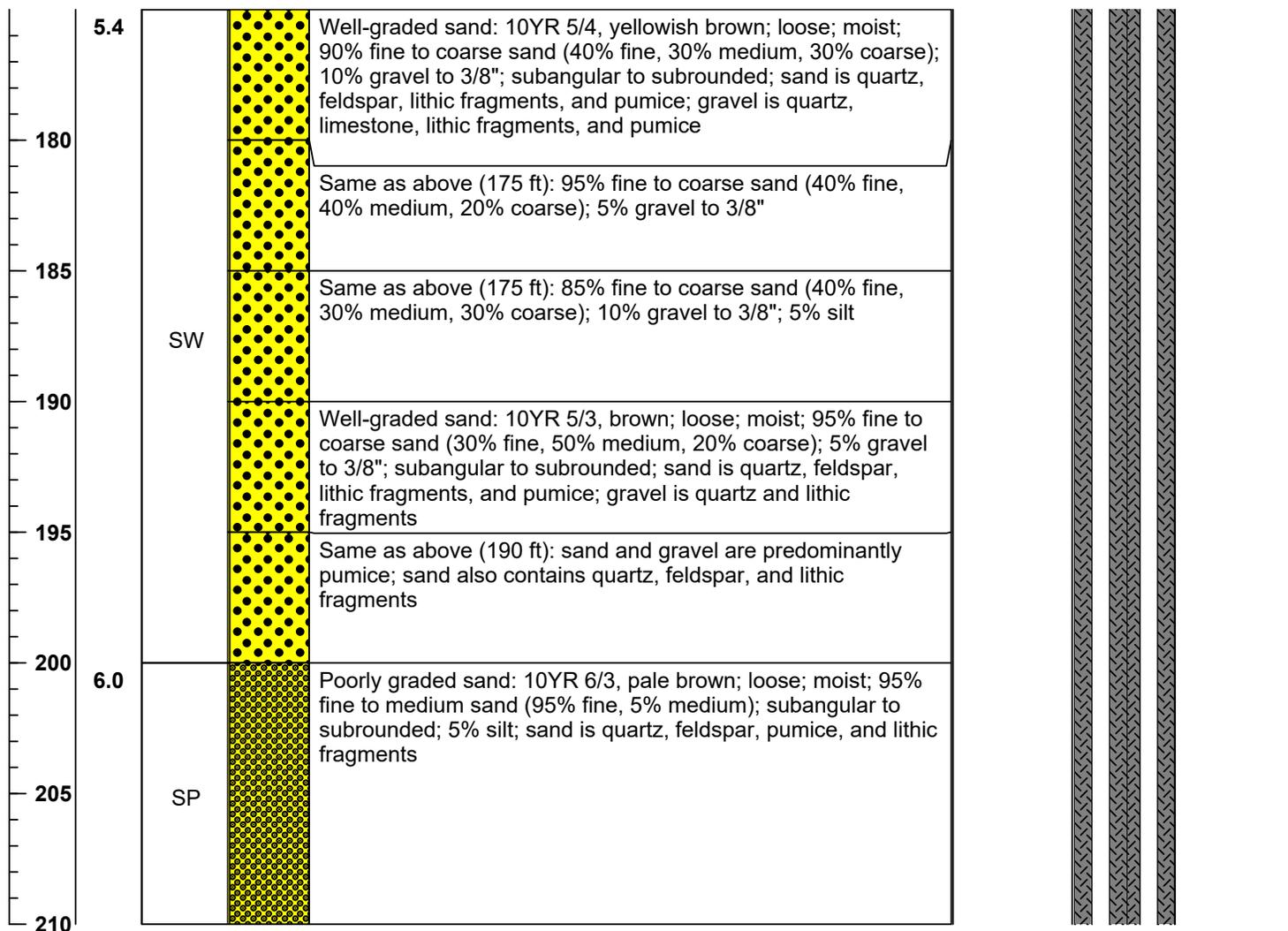
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - v = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/17/18</b> Completion Date: <b>8/23/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106242</b> Page: <b>6 of 14</b>		
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Joshua Messenger</b>		Boring Depth (ft): <b>476</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>443.6</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

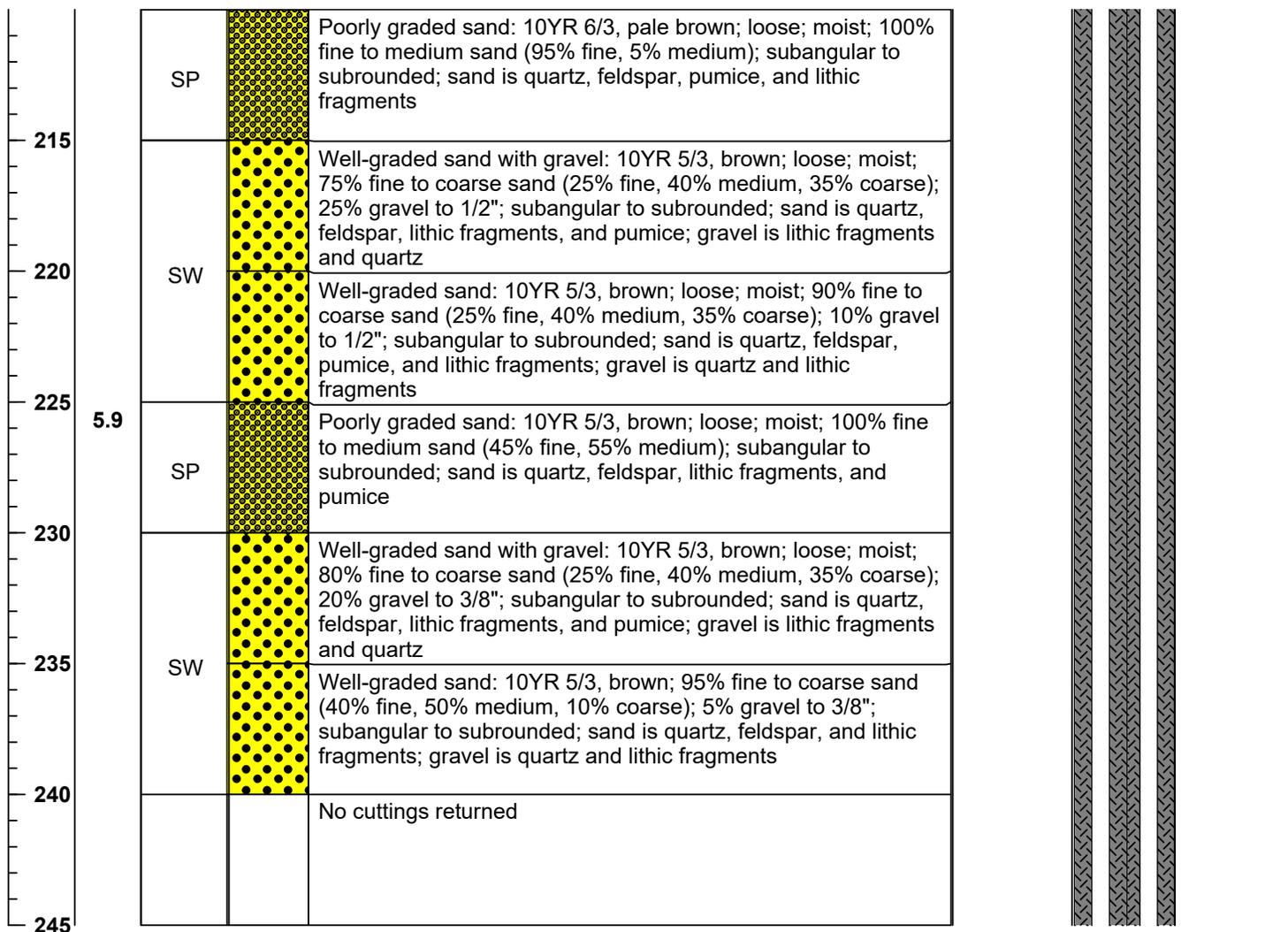
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/17/18</b> Completion Date: <b>8/23/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106242</b> Page: <b>7 of 14</b>			
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Joshua Messenger</b>		Boring Depth (ft): <b>476</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>443.6</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>	
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details	

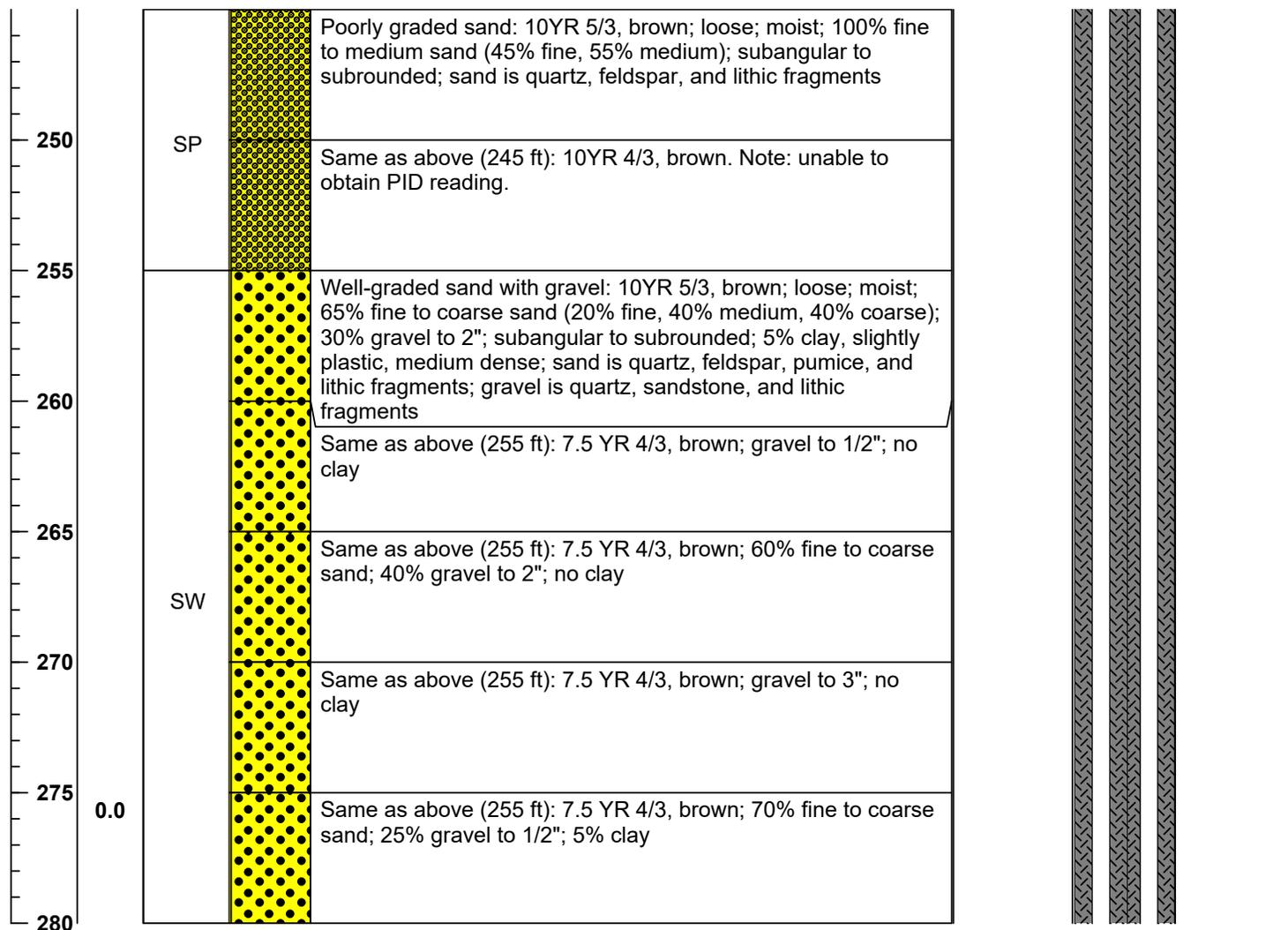
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/17/18</b> Completion Date: <b>8/23/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106242</b> Page: <b>8 of 14</b>		
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Joshua Messenger</b>		Boring Depth (ft): <b>476</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>443.6</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

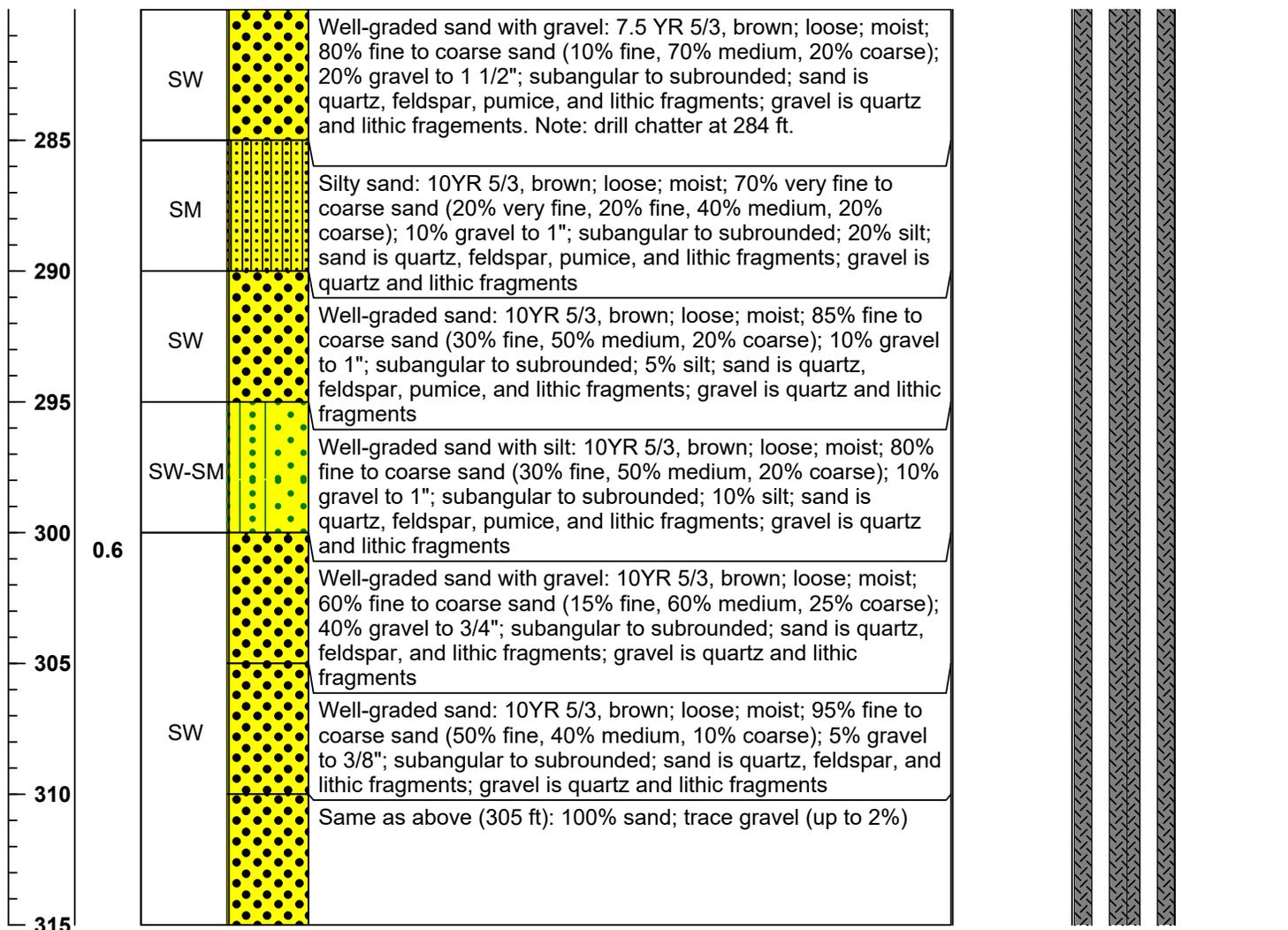
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/17/18</b> Completion Date: <b>8/23/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106242</b> Page: <b>9 of 14</b>		
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Joshua Messenger</b>		Boring Depth (ft): <b>476</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>443.6</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

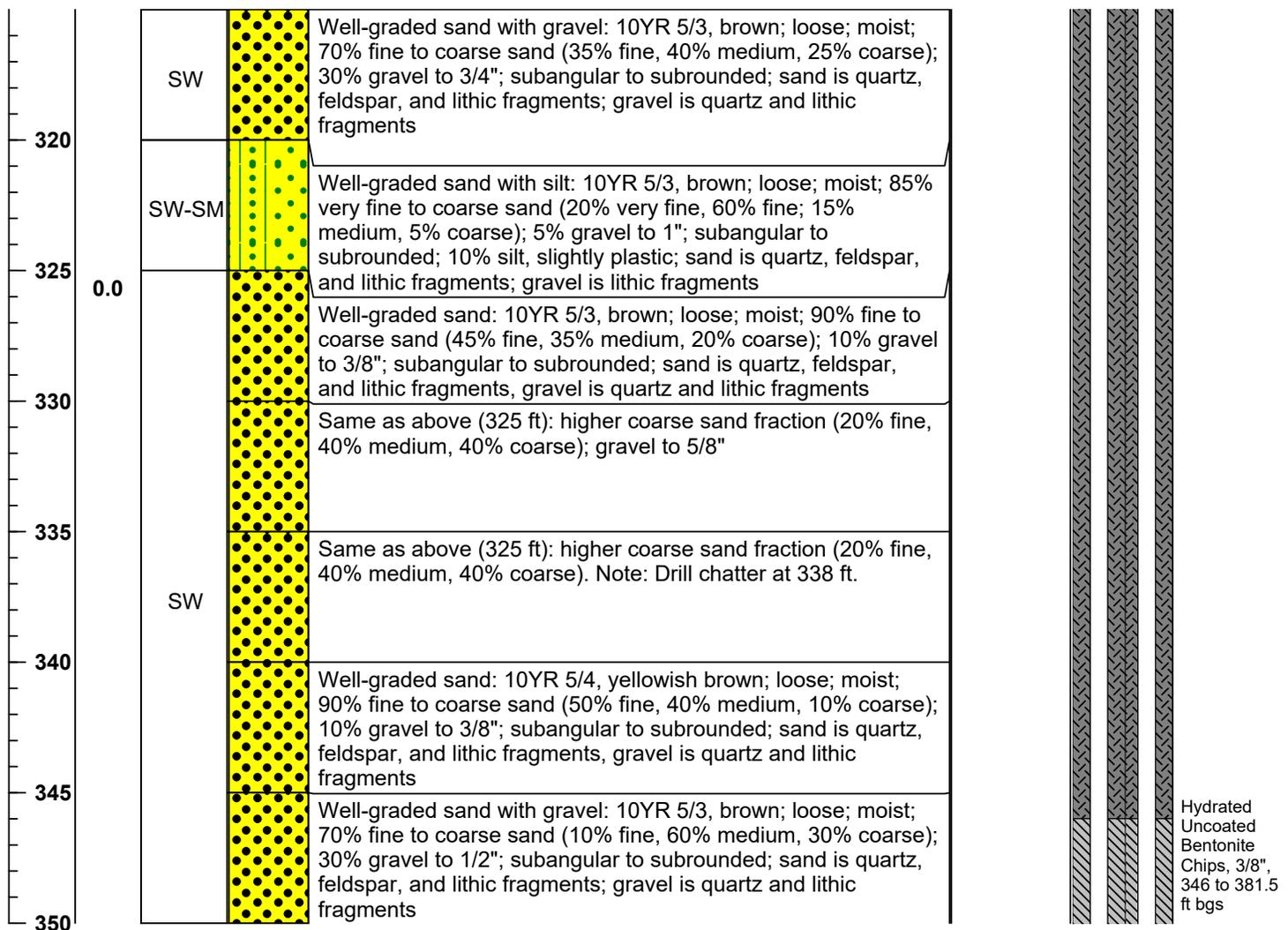
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>	<h3 style="text-align: center;">WELL LOG</h3> Well ID: <b>KAFB-106242</b> Page: <b>10 of 14</b>			
	Location: <b>Kirtland AFB, New Mexico</b>				
	Start Date: <b>8/17/18</b>				
	Completion Date: <b>8/23/18</b>				
Drilling Company: <b>Cascade Drilling</b>	Boring Depth (ft): <b>476</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b>			
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>9 5/8 and 11 3/4</b>	Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b>			
Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b>	Well Diameter: <b>3" ID</b>	Filter Pack: <b>10/20 Silica Sand</b>			
Driller: <b>Mark Green</b>	DTW After Completion (ft): <b>443.6</b>				
Geologist: <b>Joshua Messinger</b>	Riser Material: <b>3" Sch. 80 PVC</b>				
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

(1) (2)



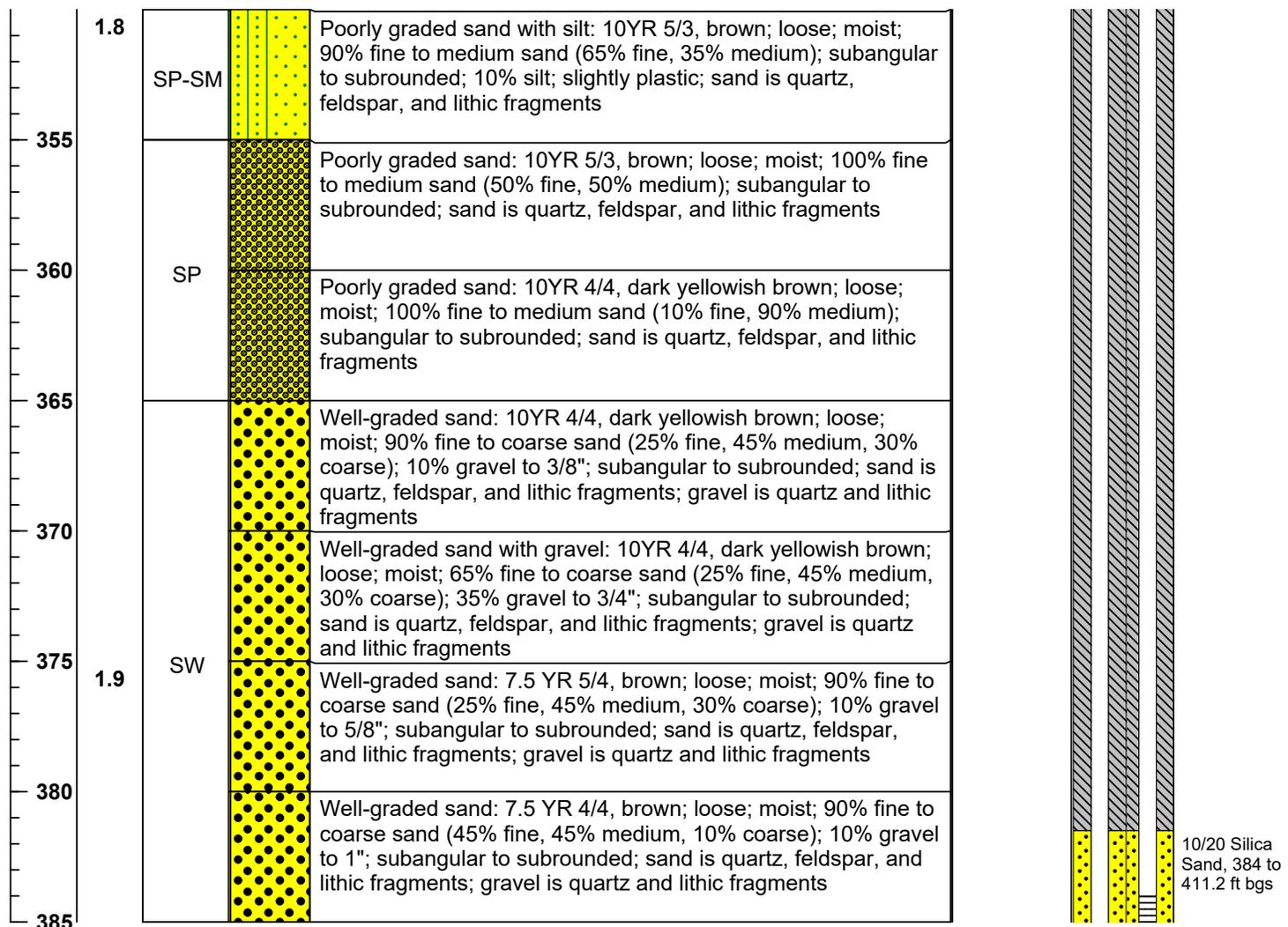
- Notes: (1) Current Water Table Data Gap Well  
 (2) Contingency Well  
 (3) Hydro-knifing used for utility clearance  
 (4) See Table 2-3 for well construction elevations  
 ▽ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>	<h2 style="margin: 0;">WELL LOG</h2> Well ID: <b>KAFB-106242</b> Page: <b>11 of 14</b>
	Location: <b>Kirtland AFB, New Mexico</b>	
	Start Date: <b>8/17/18</b>	
	Completion Date: <b>8/23/18</b>	

Drilling Company: <b>Cascade Drilling</b>	Boring Depth (ft): <b>476</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b>
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>9 5/8 and 11 3/4</b>	Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b>
Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b>	Well Diameter: <b>3" ID</b>	Filter Pack: <b>10/20 Silica Sand</b>
Driller: <b>Mark Green</b>	DTW After Completion (ft): <b>443.6</b>	
Geologist: <b>Joshua Messenger</b>	Riser Material: <b>3" Sch. 80 PVC</b>	

Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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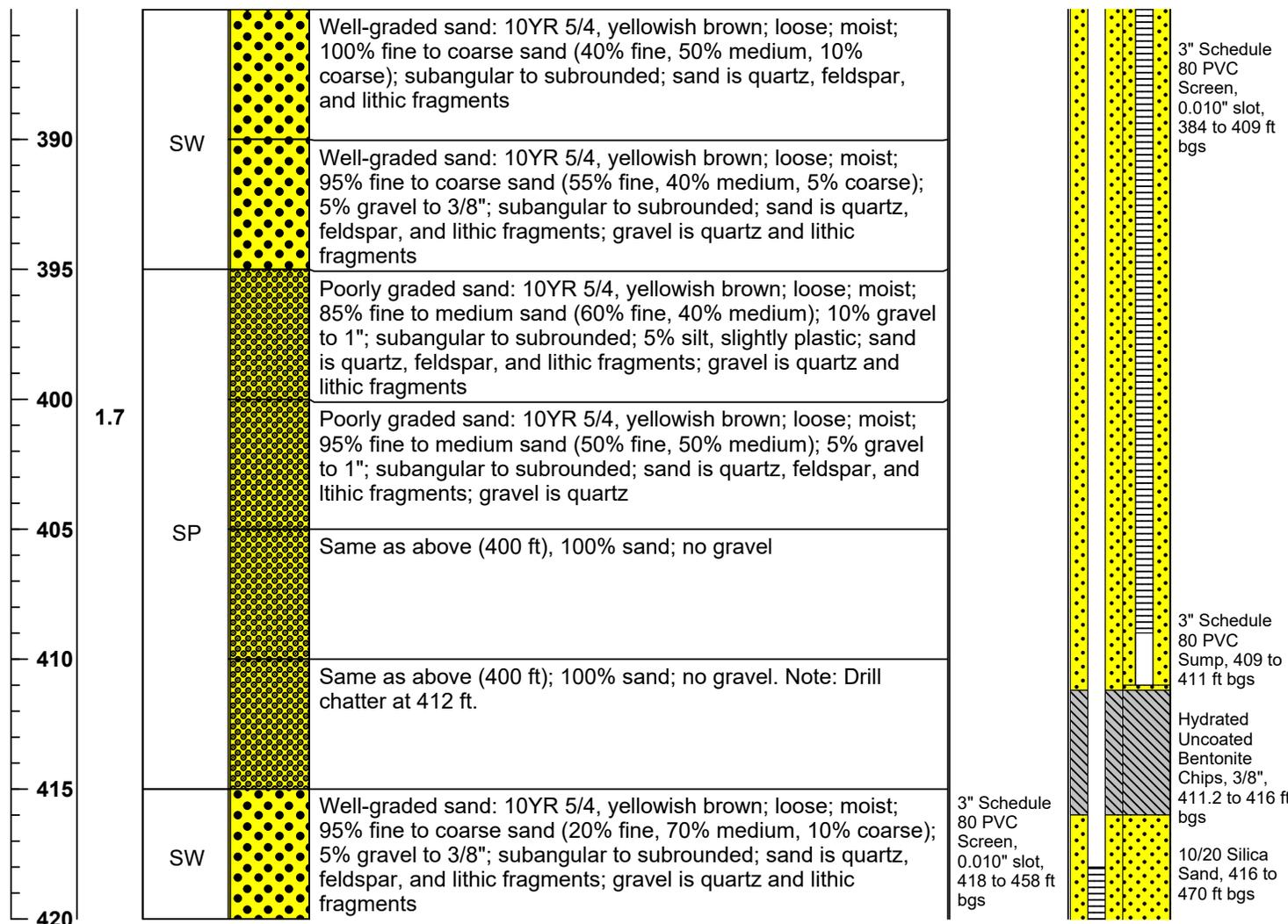
(1) (2)



- Notes: (1) Current Water Table Data Gap Well  
 (2) Contingency Well  
 (3) Hydro-knifing used for utility clearance  
 (4) See Table 2-3 for well construction elevations  
 ▽ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/17/18</b> Completion Date: <b>8/23/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106242</b> Page: <b>12 of 14</b>			
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Joshua Messenger</b>		Boring Depth (ft): <b>476</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>443.6</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>	
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details	

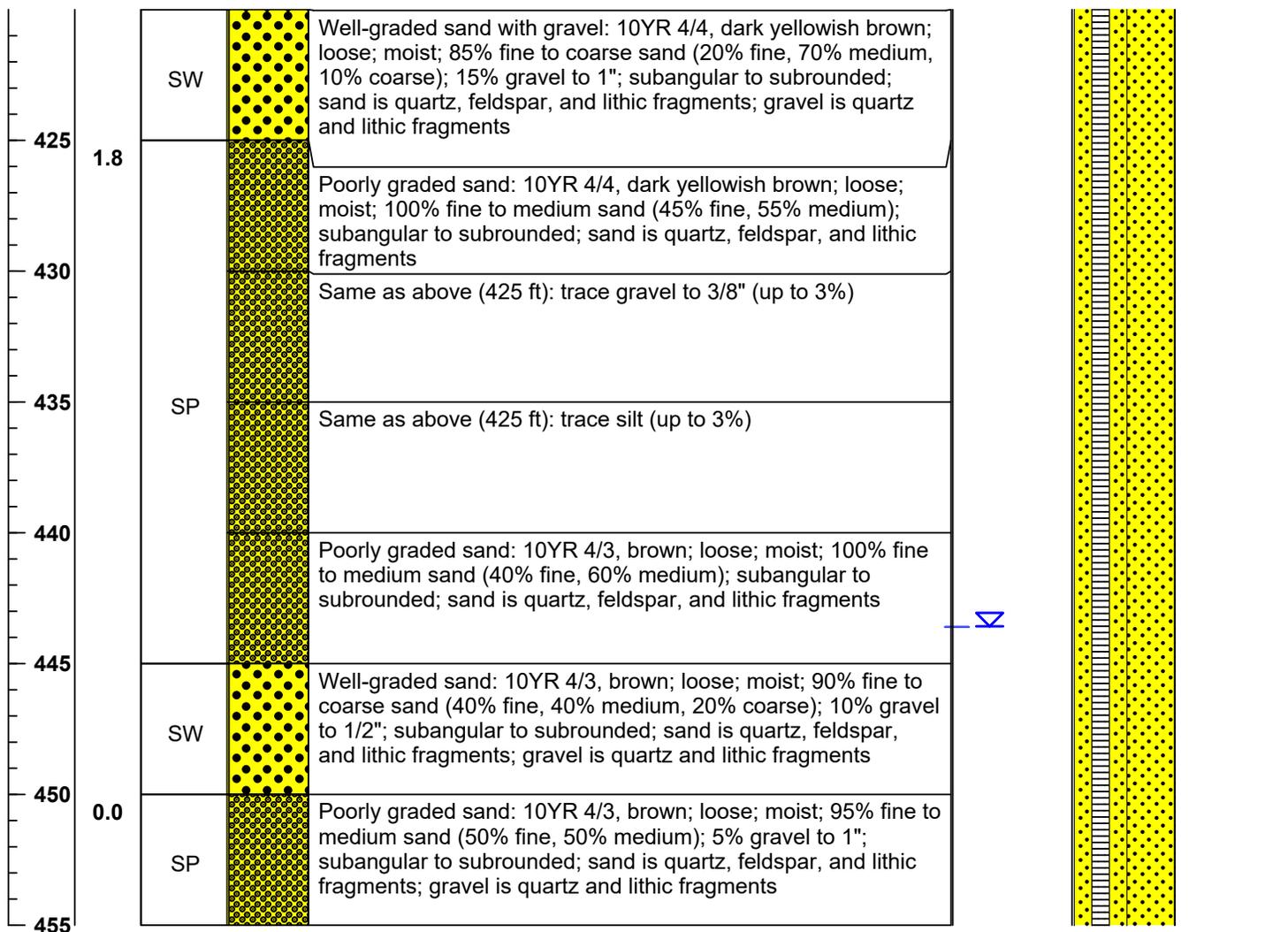
(1) (2)



- Notes: (1) Current Water Table Data Gap Well  
 (2) Contingency Well  
 (3) Hydro-knifing used for utility clearance  
 (4) See Table 2-3 for well construction elevations  
 ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/17/18</b> Completion Date: <b>8/23/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106242</b> Page: <b>13 of 14</b>		
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Joshua Messenger</b>		Boring Depth (ft): <b>476</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>443.6</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

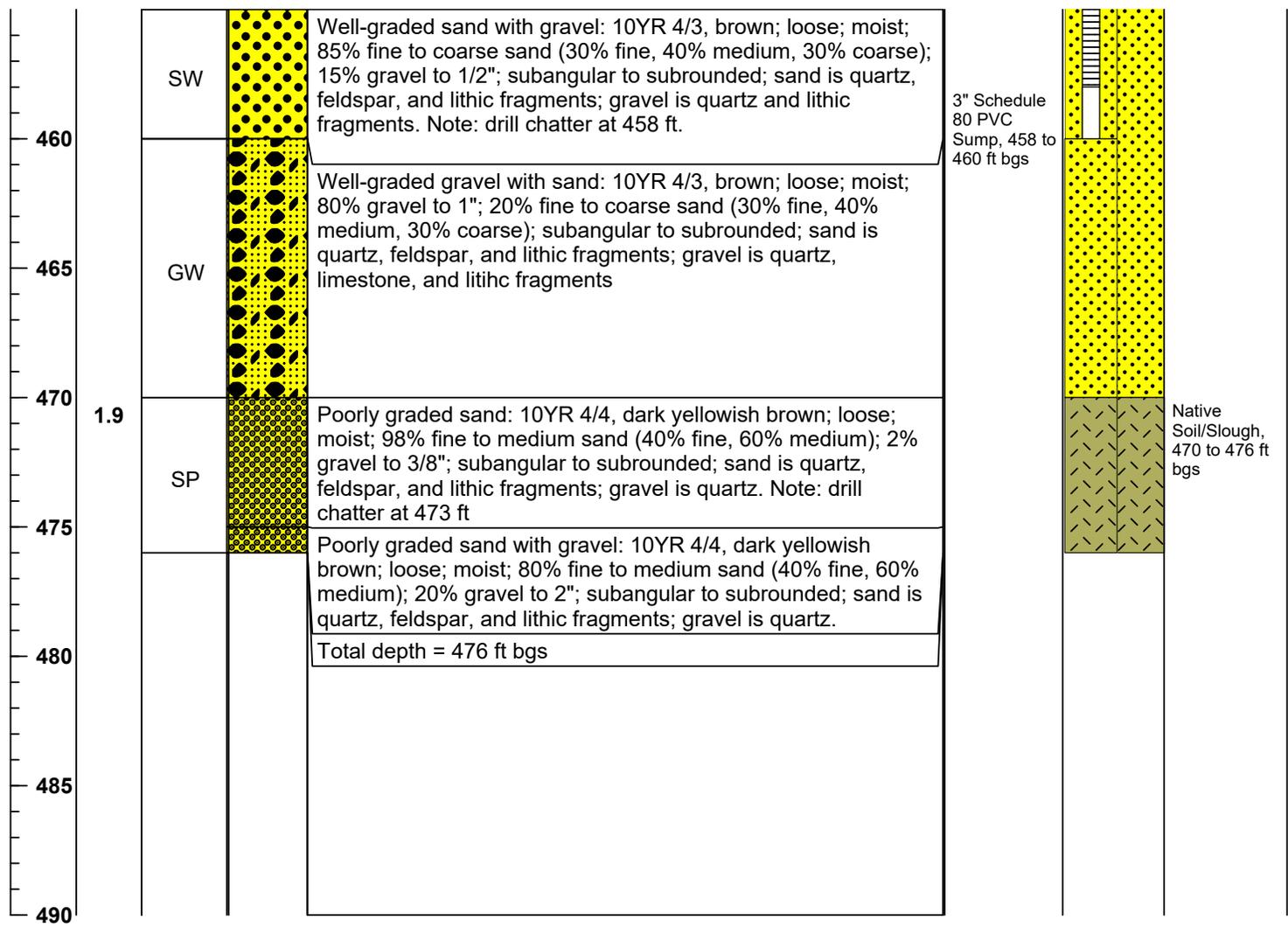
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ▽ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/17/18</b> Completion Date: <b>8/23/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106242</b> Page: <b>14 of 14</b>			
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>Joshua Messenger</b>		Boring Depth (ft): <b>476</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>443.6</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>	
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details	

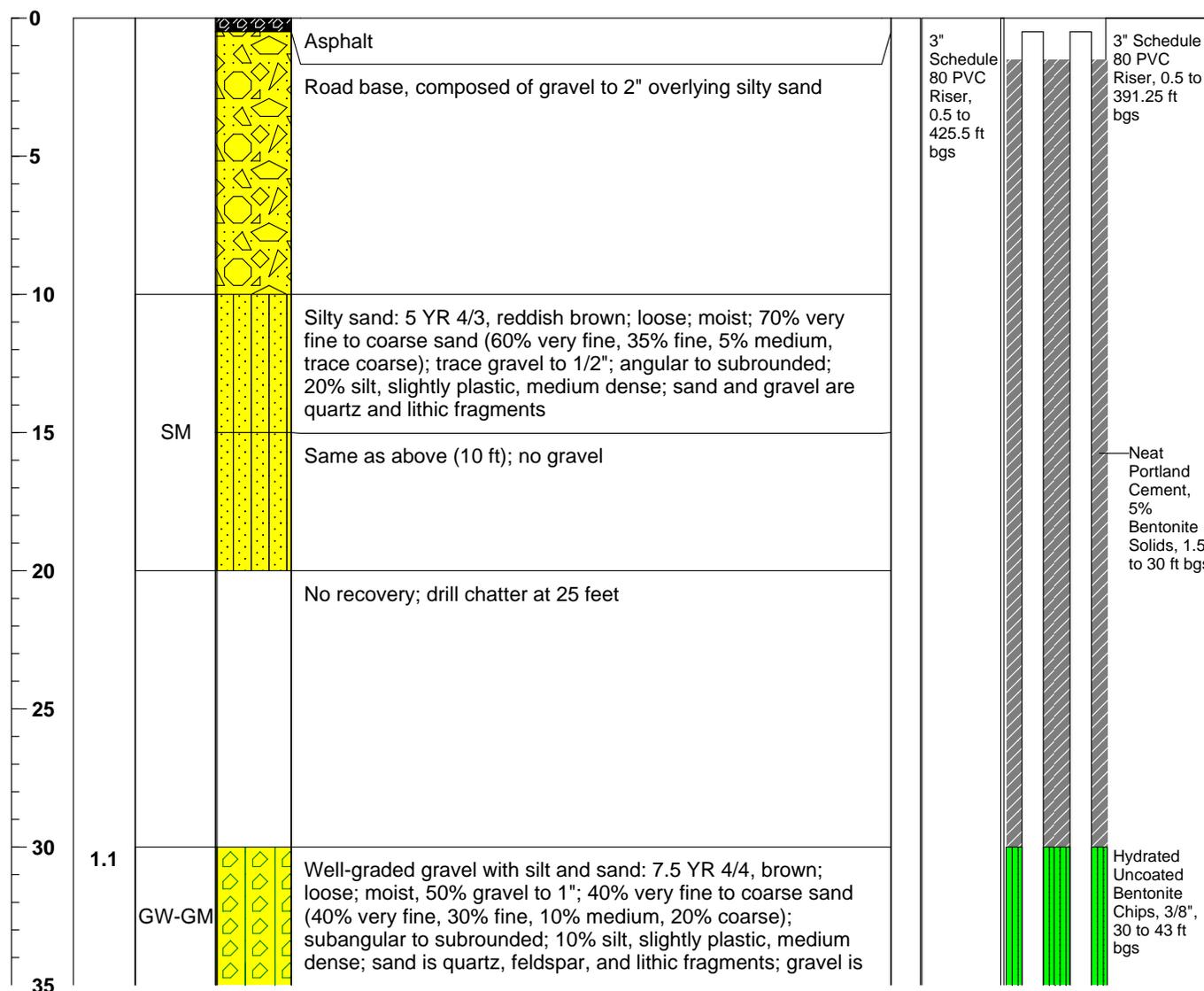
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
- ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>7/18/18</b> Completion Date: <b>7/27/18</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106243</b> Page: <b>1 of 14</b>	
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Joshua Messenger</b>	Boring Depth (ft): <b>477</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>448.28</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft) PID (ppmv) USCS Lithology	Sample Description		Completion Details

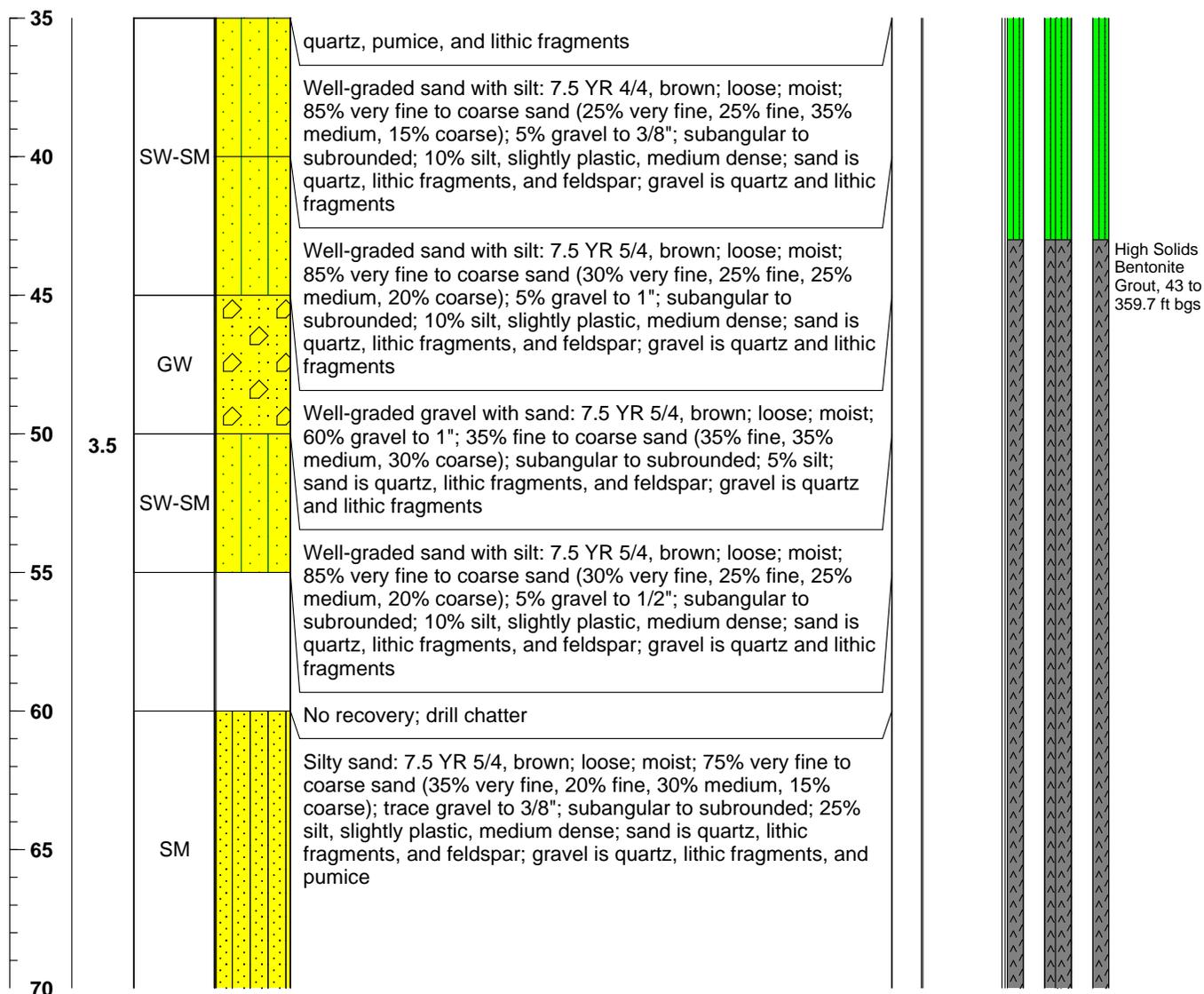
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b>			
	Location: <b>Kirtland AFB, New Mexico</b>		Well ID: <b>KAFB-106243</b>		
	Start Date: <b>7/18/18</b>	Page: <b>2 of 14</b>			
	Completion Date: <b>7/27/18</b>				
Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Joshua Messenger</b>		Boring Depth (ft): <b>477</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>448.28</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>	
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

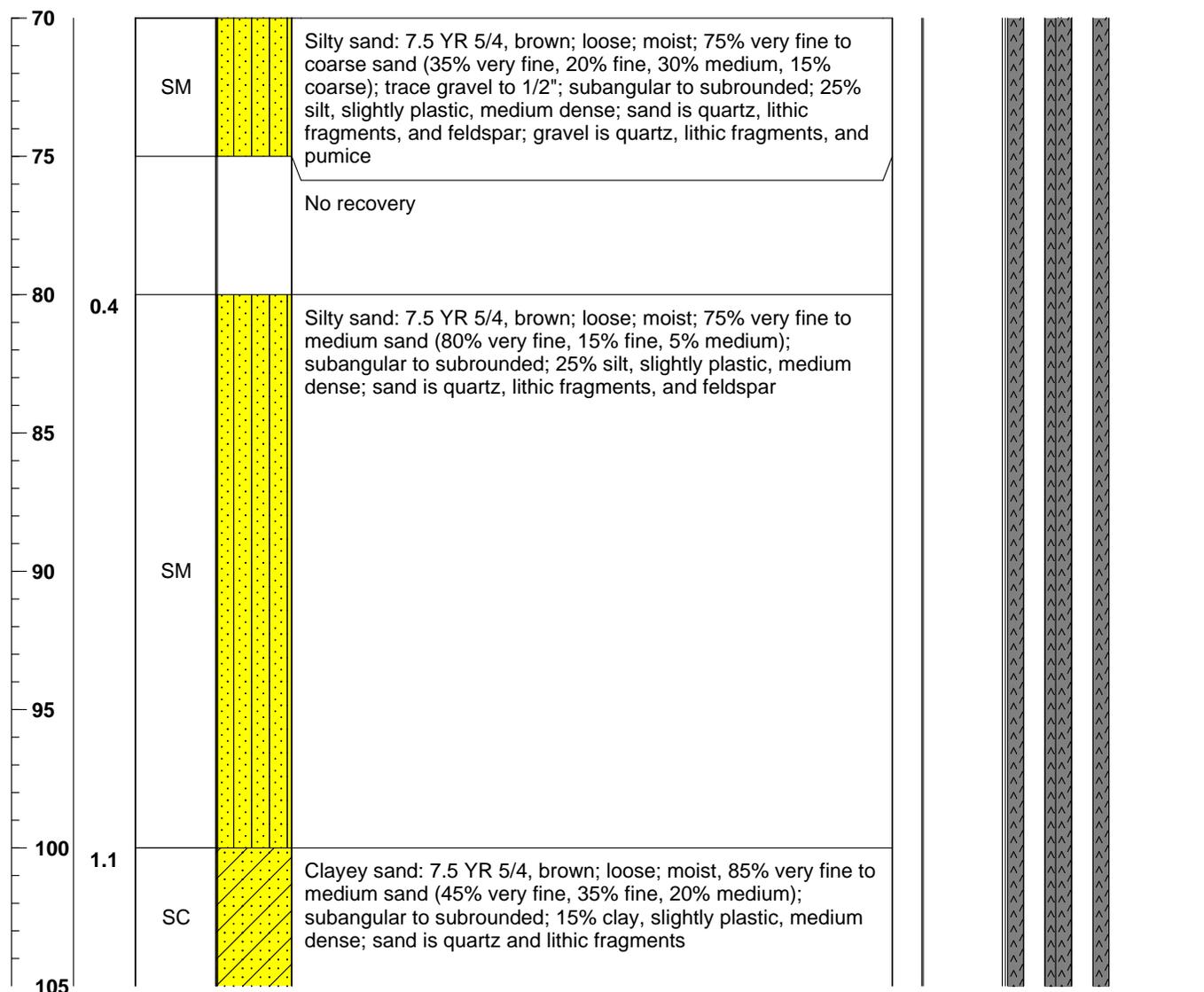
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>7/18/18</b> Completion Date: <b>7/27/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106243</b> Page: <b>3 of 14</b>			
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Joshua Messenger</b>		Boring Depth (ft): <b>477</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>448.28</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>	
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details	

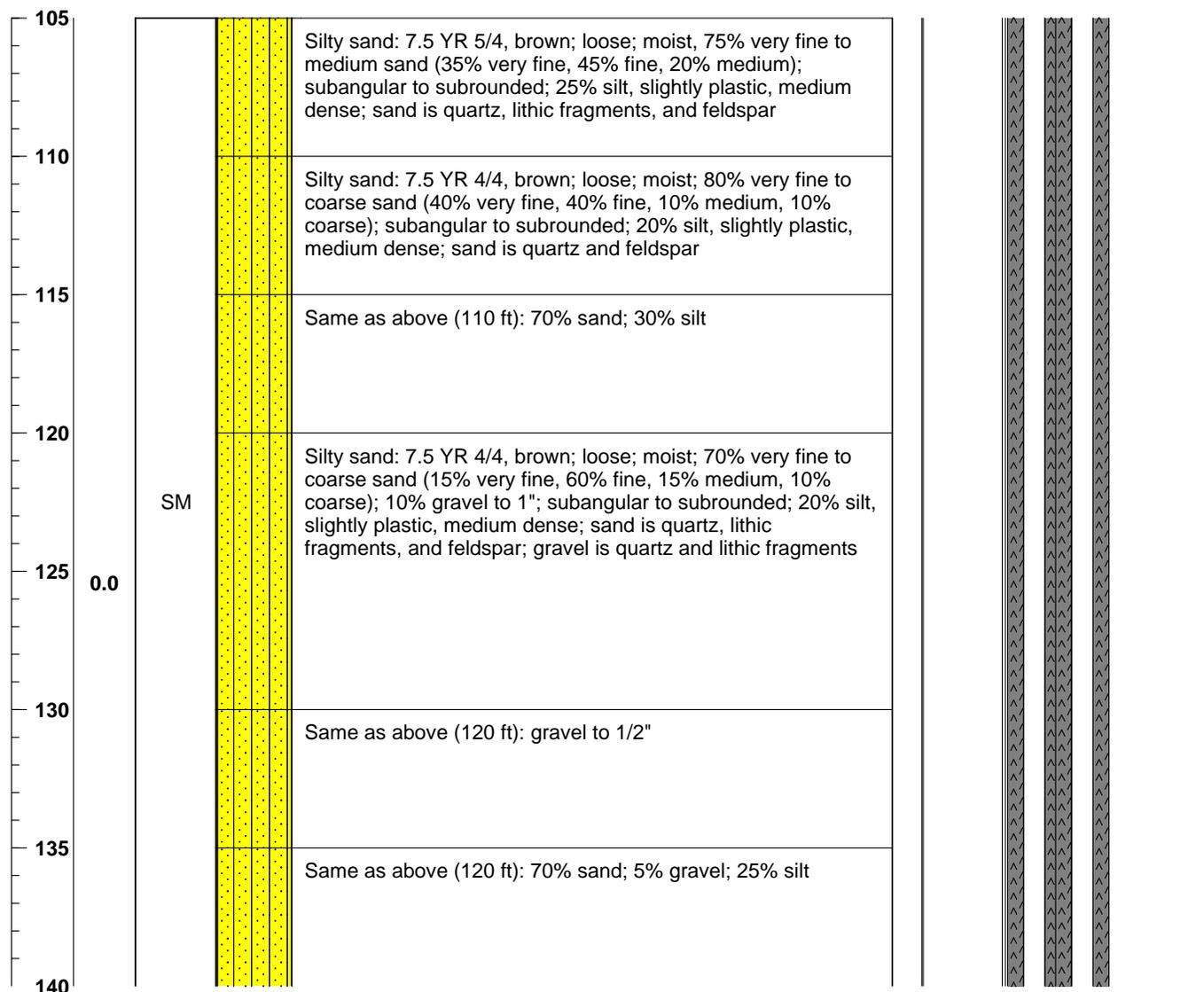
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>7/18/18</b> Completion Date: <b>7/27/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106243</b> Page: <b>4 of 14</b>		
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Joshua Messenger</b>		Boring Depth (ft): <b>477</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>448.28</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

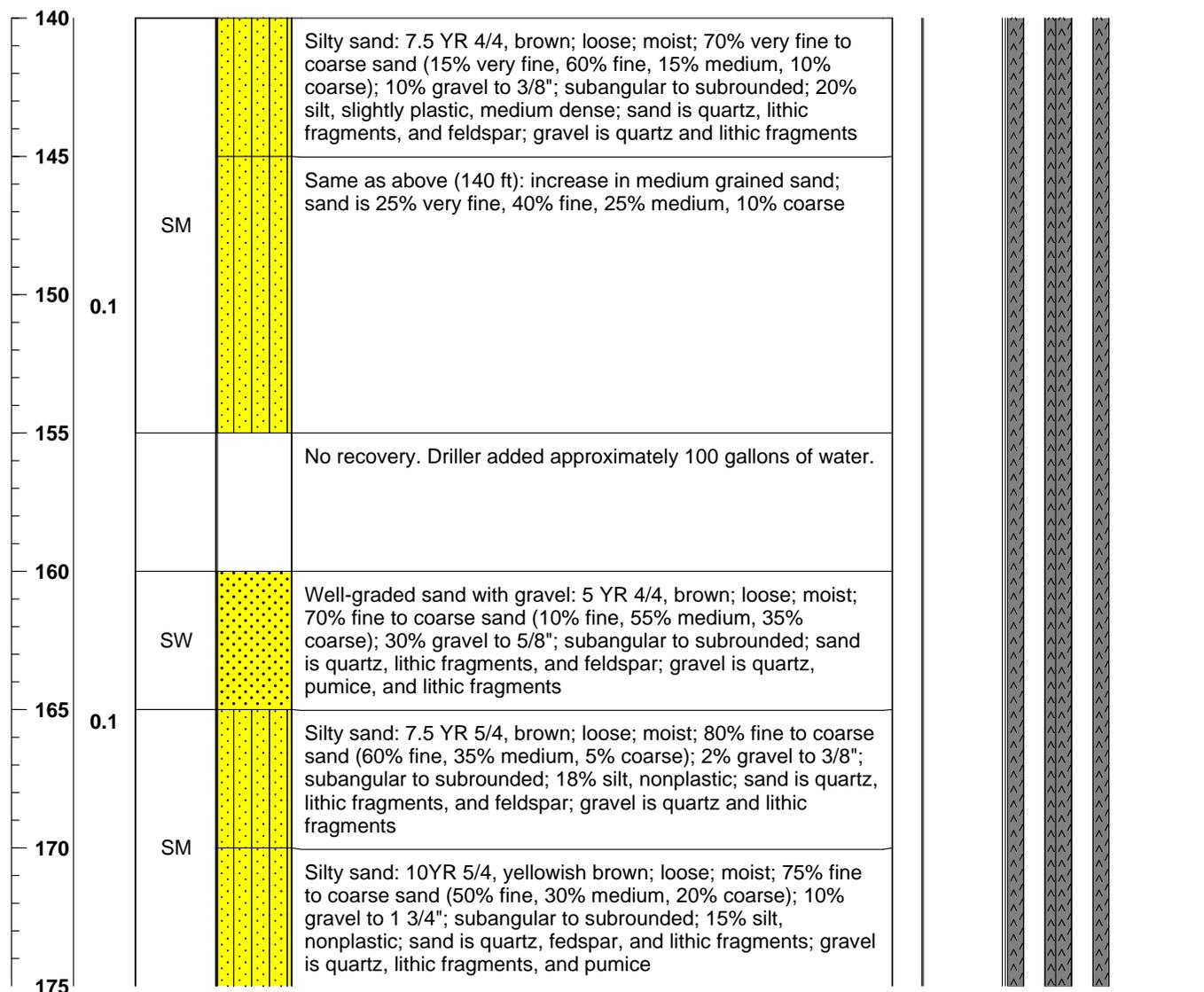
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>7/18/18</b> Completion Date: <b>7/27/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106243</b> Page: <b>5 of 14</b>		
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Joshua Messenger</b>		Boring Depth (ft): <b>477</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>448.28</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

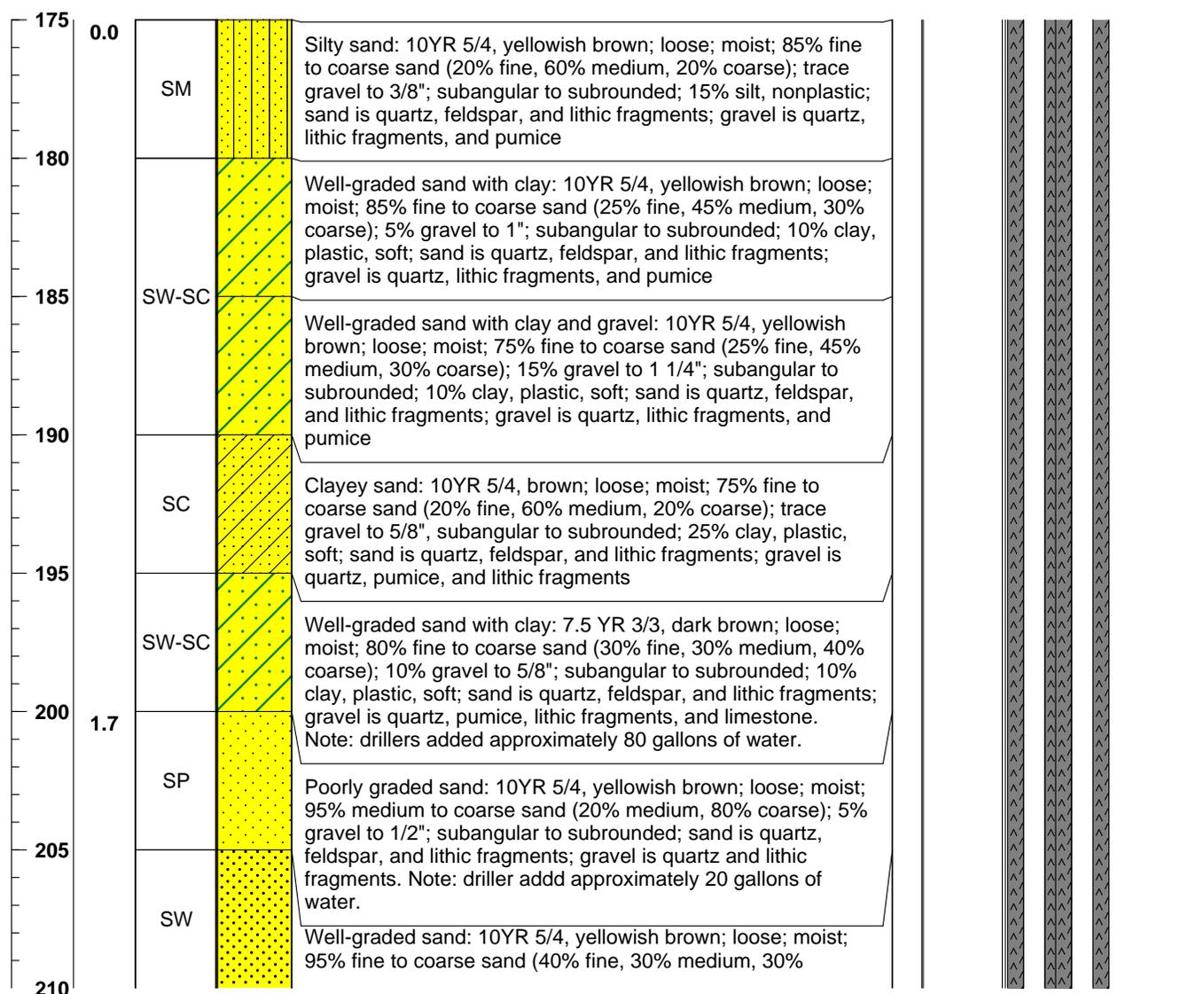
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106243</b> Page: <b>6 of 14</b>			
	Location: <b>Kirtland AFB, New Mexico</b>				
Drilling Company: <b>Yellow Jacket Drilling</b>	Boring Depth (ft): <b>477</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>			
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>11.75/9.625</b>				
Drill Bit: <b>Tricone</b>	Well Diameter: <b>3" ID</b>				
Driller: <b>Gerry Woods</b>	DTW After Completion (ft): <b>448.28</b>				
Geologist: <b>Joshua Messenger</b>	Riser Material: <b>3" Sch. 80 PVC</b>				
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

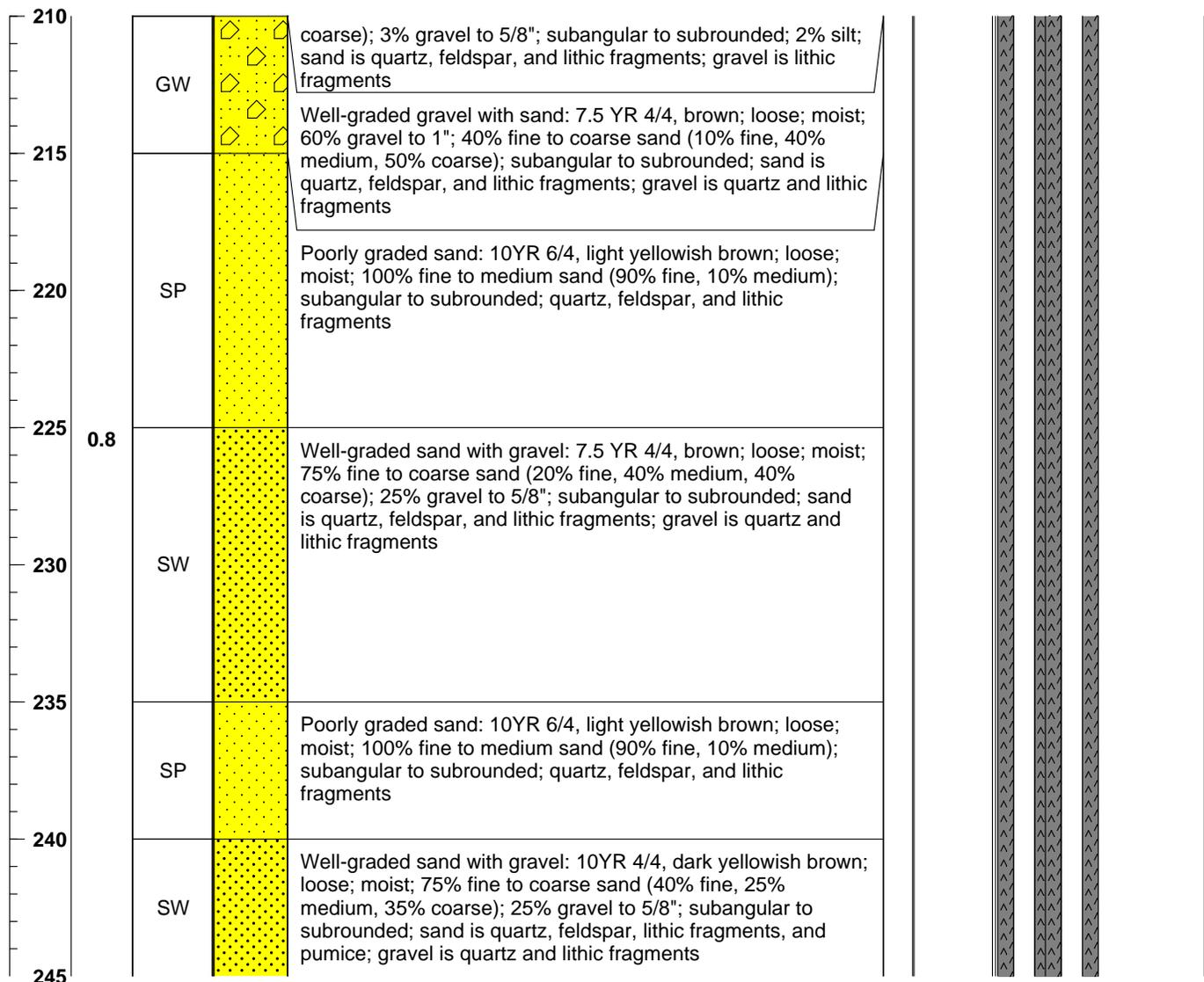
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106243</b> Page: <b>7 of 14</b>			
	Location: <b>Kirtland AFB, New Mexico</b>				
Drilling Company: <b>Yellow Jacket Drilling</b>	Boring Depth (ft): <b>477</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>			
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>11.75/9.625</b>				
Drill Bit: <b>Tricone</b>	Well Diameter: <b>3" ID</b>				
Driller: <b>Gerry Woods</b>	DTW After Completion (ft): <b>448.28</b>				
Geologist: <b>Joshua Messenger</b>	Riser Material: <b>3" Sch. 80 PVC</b>				
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

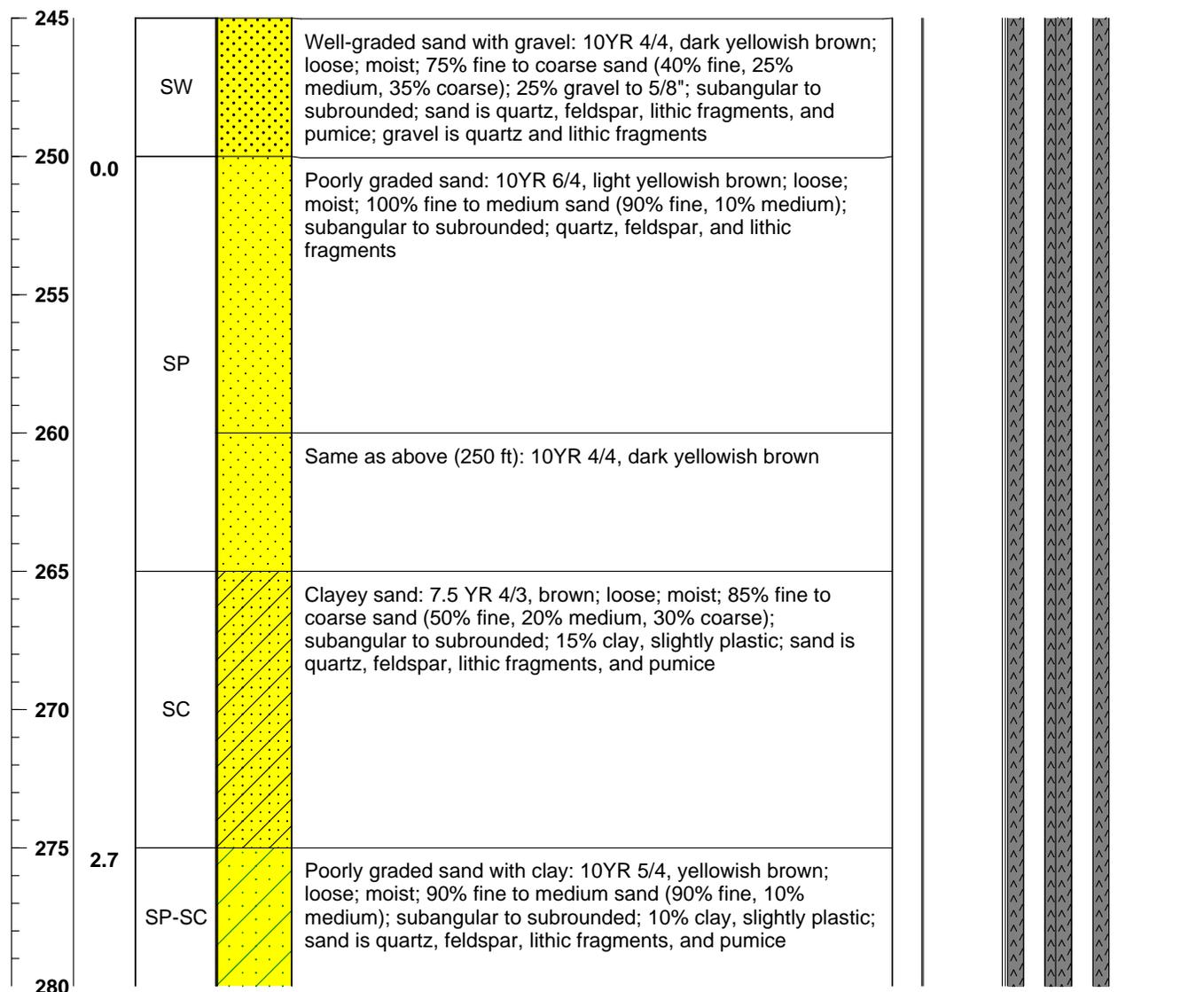
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>7/18/18</b> Completion Date: <b>7/27/18</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106243</b> Page: <b>8 of 14</b>	
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Joshua Messenger</b>	Boring Depth (ft): <b>477</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>448.28</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft) PID (ppmv) USCS Lithology	Sample Description		Completion Details

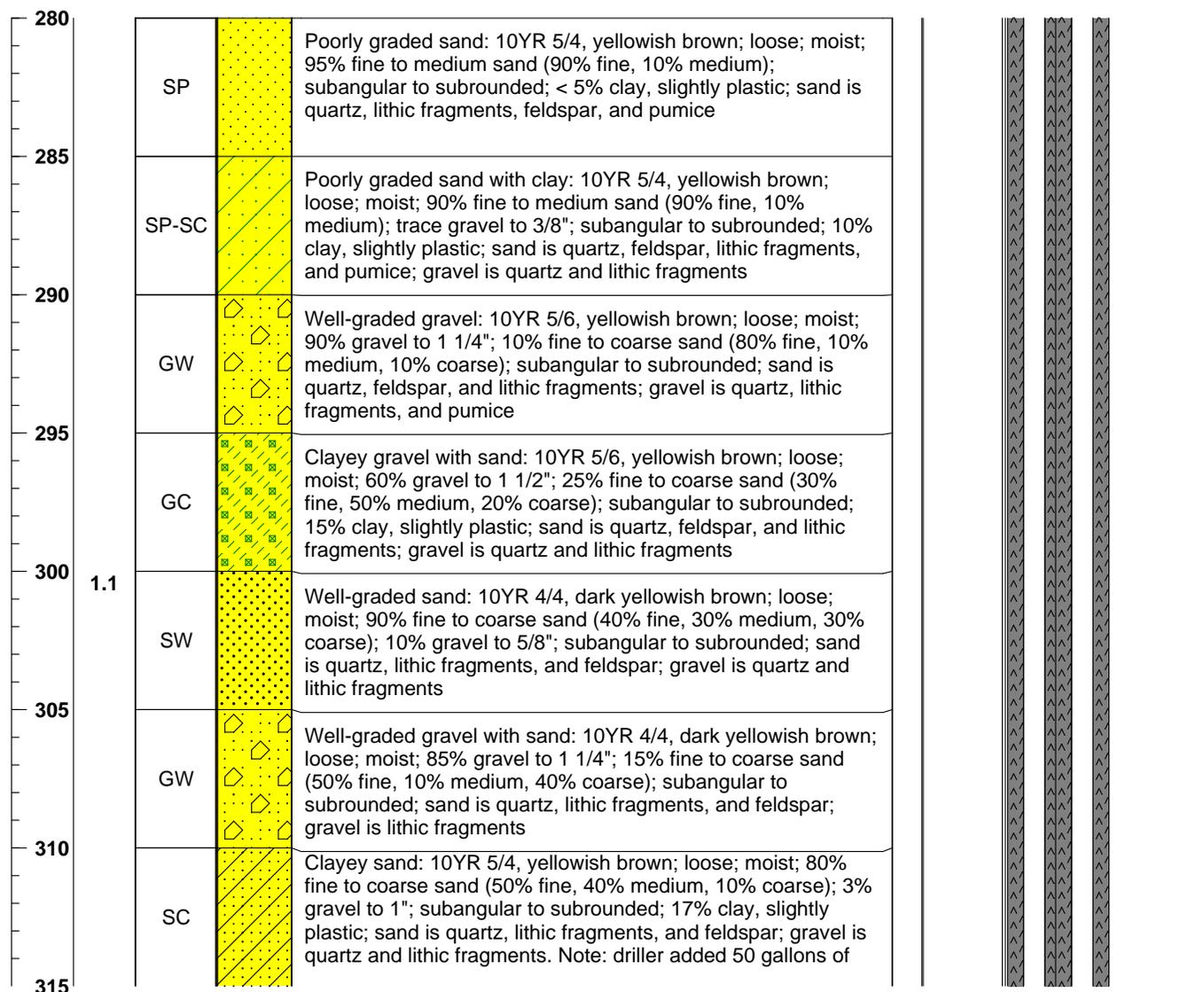
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ☒ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>7/18/18</b> Completion Date: <b>7/27/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106243</b> Page: <b>9 of 14</b>		
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Joshua Messenger</b>		Boring Depth (ft): <b>477</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>448.28</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

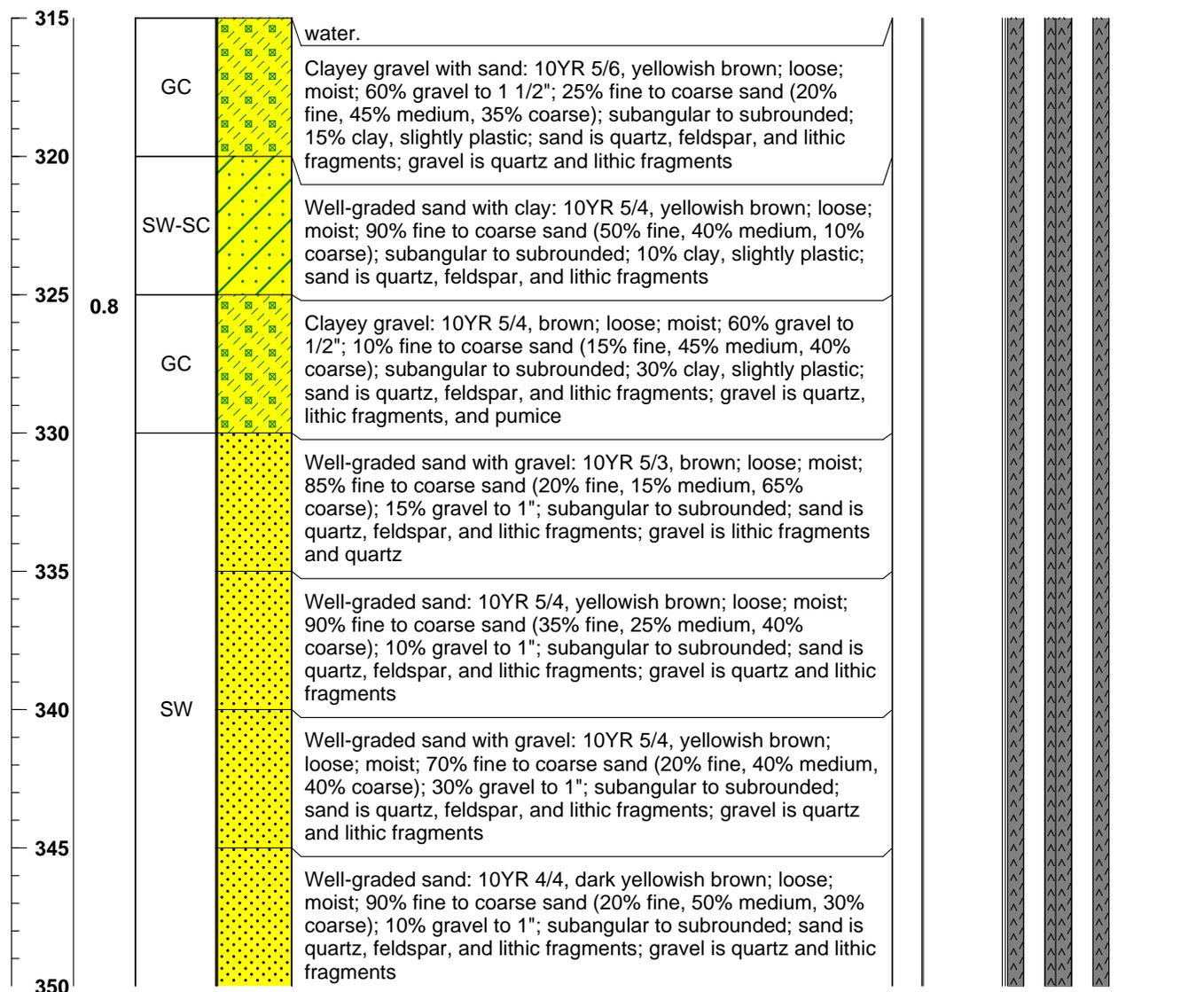
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>7/18/18</b> Completion Date: <b>7/27/18</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106243</b> Page: <b>10 of 14</b>	
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Joshua Messenger</b>	Boring Depth (ft): <b>477</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>448.28</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft) PID (ppmv) USCS Lithology	Sample Description		Completion Details

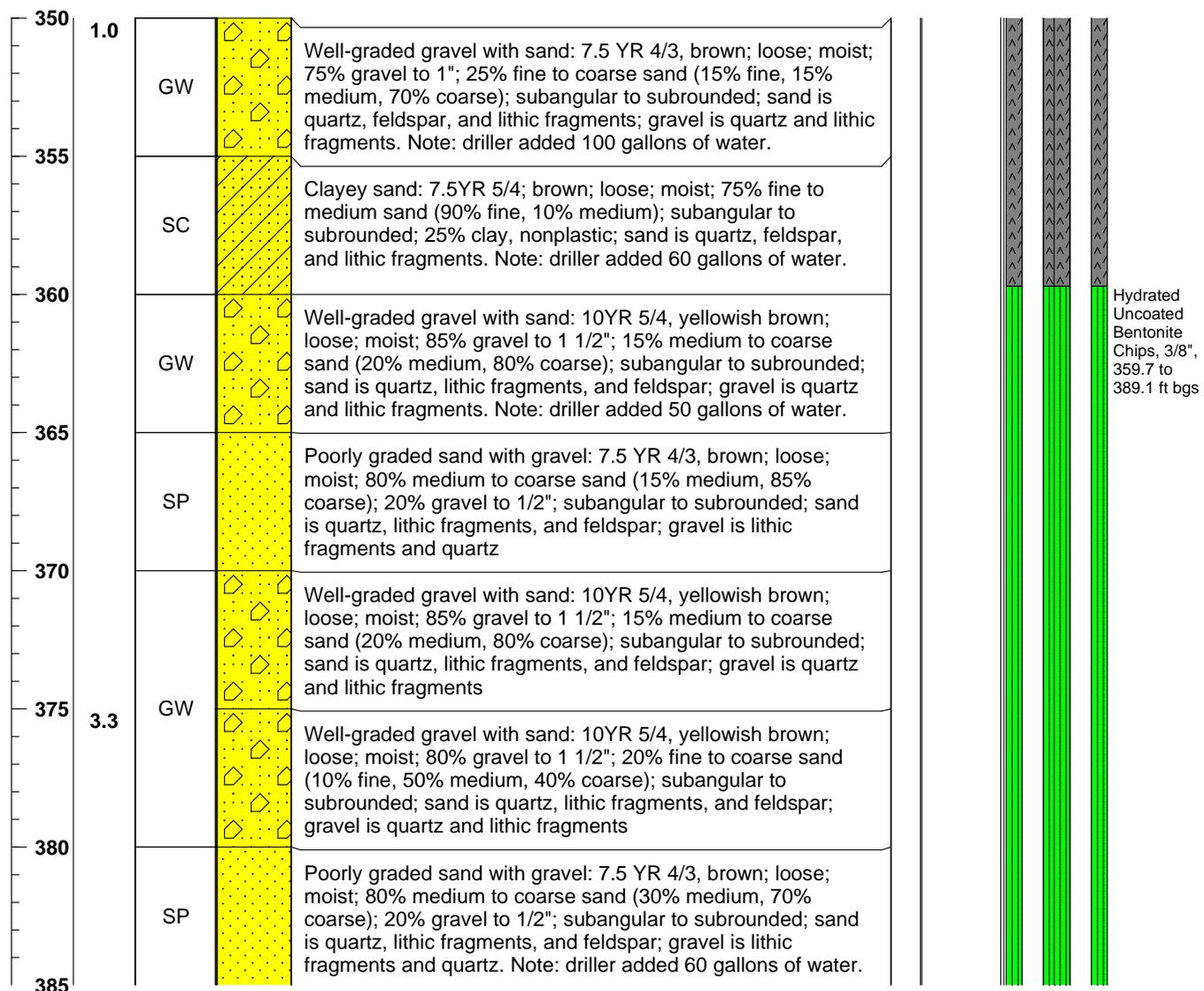
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b>			
	Location: <b>Kirtland AFB, New Mexico</b>		Well ID: <b>KAFB-106243</b>		
	Start Date: <b>7/18/18</b>	Page: <b>11 of 14</b>			
	Completion Date: <b>7/27/18</b>				
Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Joshua Messenger</b>		Boring Depth (ft): <b>477</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>448.28</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>	
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

(1) (2)

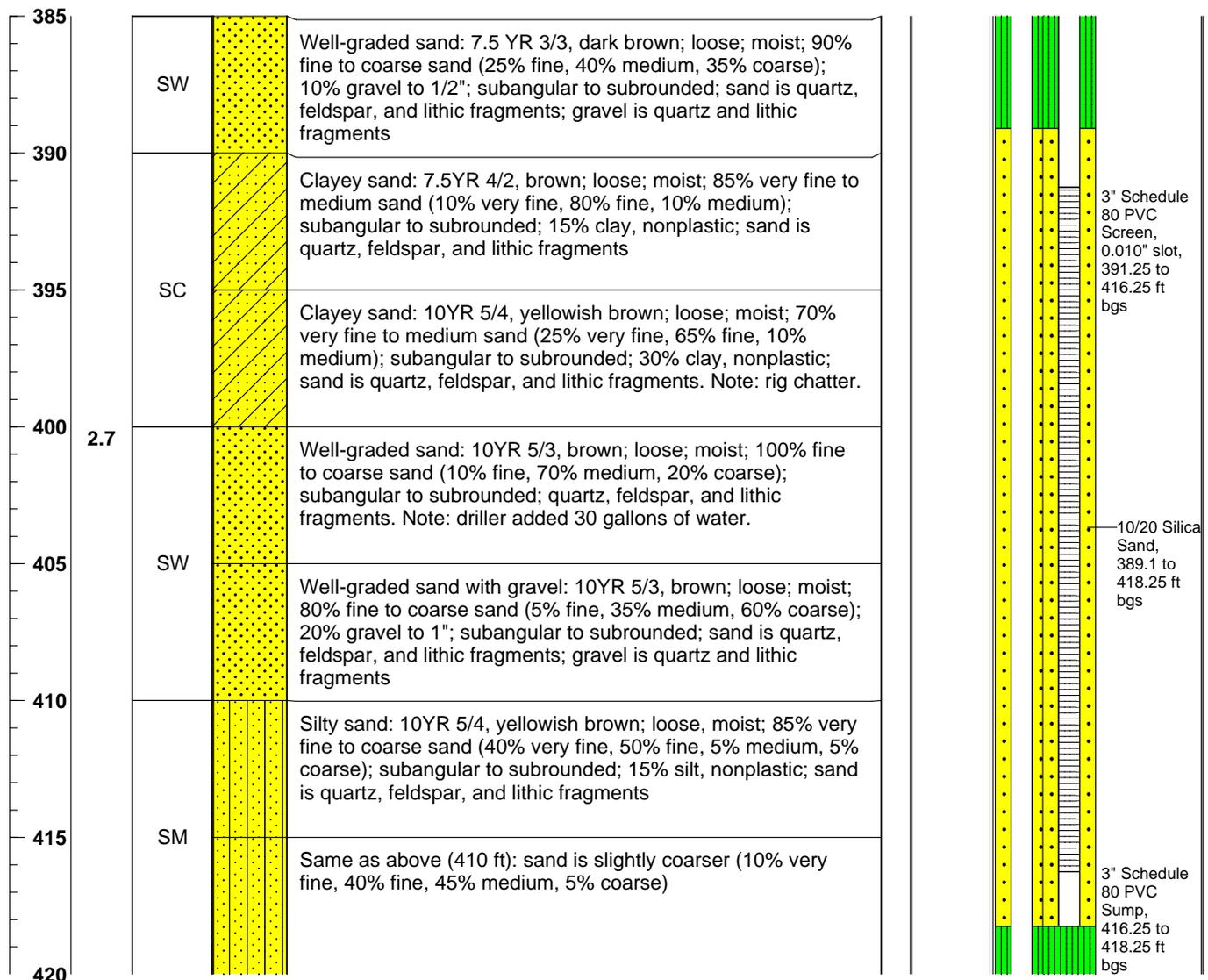


- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>7/18/18</b> Completion Date: <b>7/27/18</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106243</b> Page: <b>12 of 14</b>
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Joshua Messenger</b>	Boring Depth (ft): <b>477</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>448.28</b> Riser Material: <b>3" Sch. 80 PVC</b>

Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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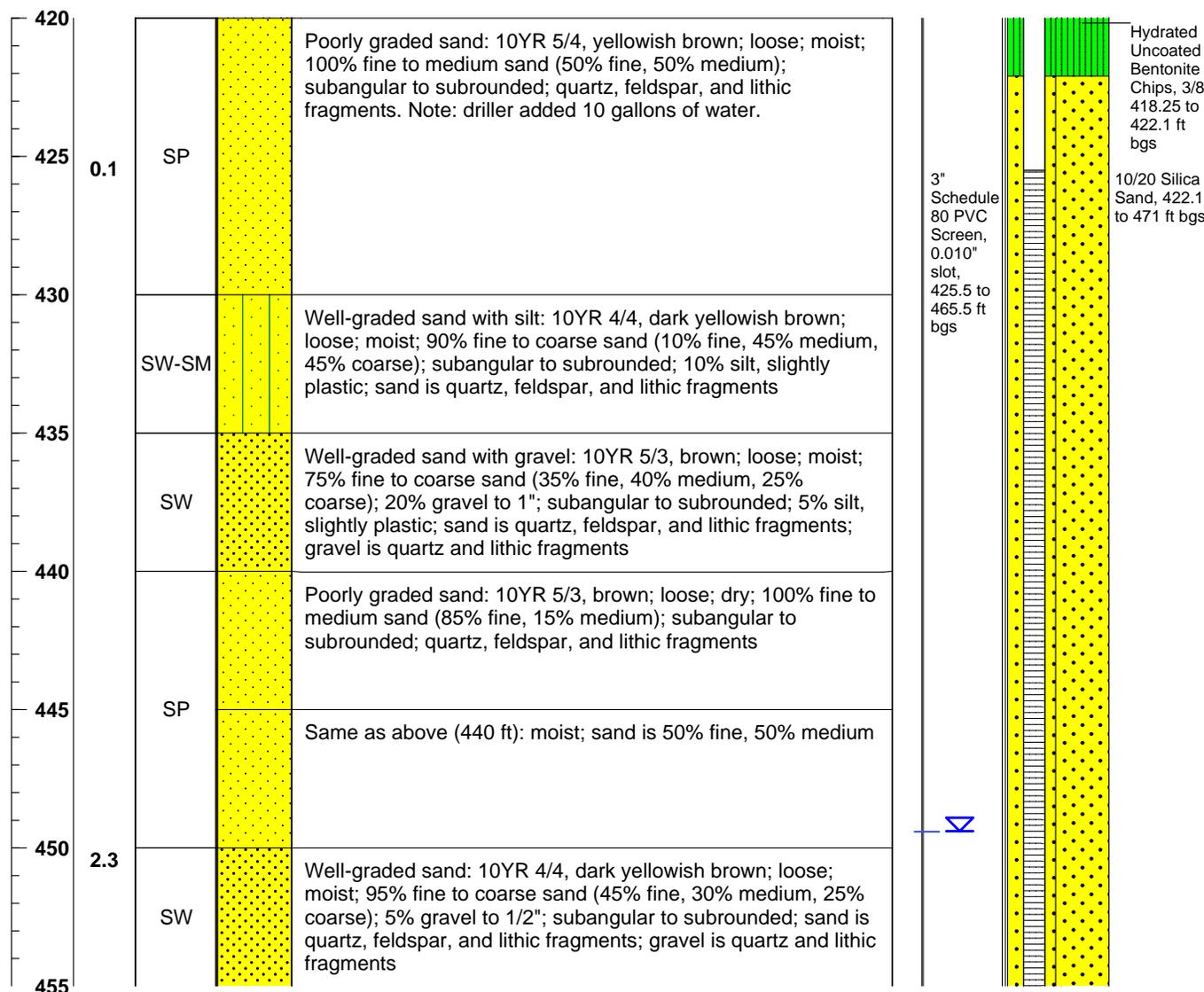
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>7/18/18</b> Completion Date: <b>7/27/18</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106243</b> Page: <b>13 of 14</b>	
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Joshua Messenger</b>	Boring Depth (ft): <b>477</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>448.28</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft) PID (ppmv) USCS Lithology	Sample Description		Completion Details

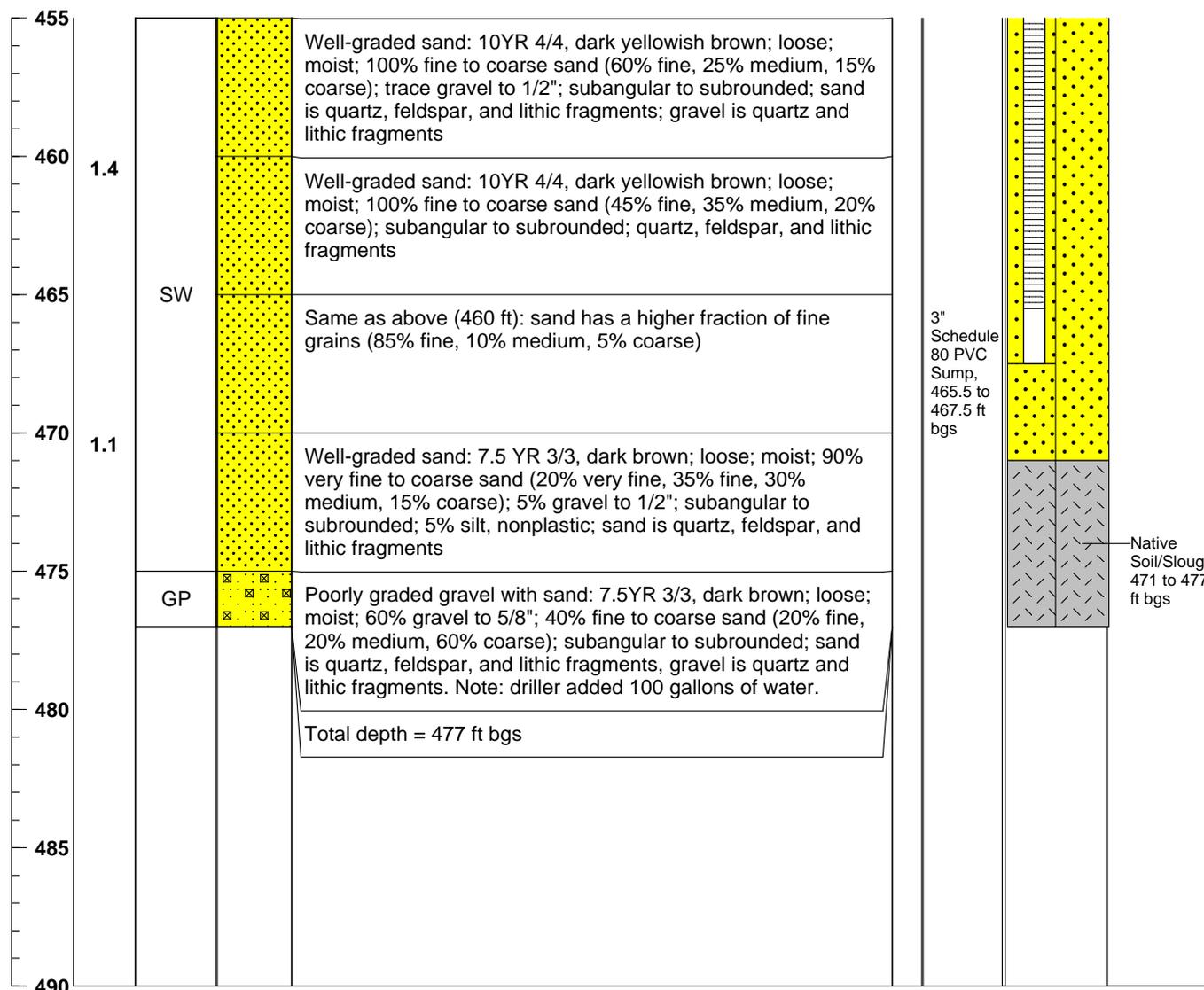
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b>			
	Location: <b>Kirtland AFB, New Mexico</b>		Well ID: <b>KAFB-106243</b>		
	Start Date: <b>7/18/18</b>	Page: <b>14 of 14</b>			
	Completion Date: <b>7/27/18</b>				
Drilling Company: <b>Yellow Jacket Drilling</b>	Boring Depth (ft): <b>477</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b>			
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>11.75/9.625</b>	Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b>			
Drill Bit: <b>Tricone</b>	Well Diameter: <b>3" ID</b>	Filter Pack: <b>10/20 Silica Sand</b>			
Driller: <b>Gerry Woods</b>	DTW After Completion (ft): <b>448.28</b>				
Geologist: <b>Joshua Messenger</b>	Riser Material: <b>3" Sch. 80 PVC</b>				
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

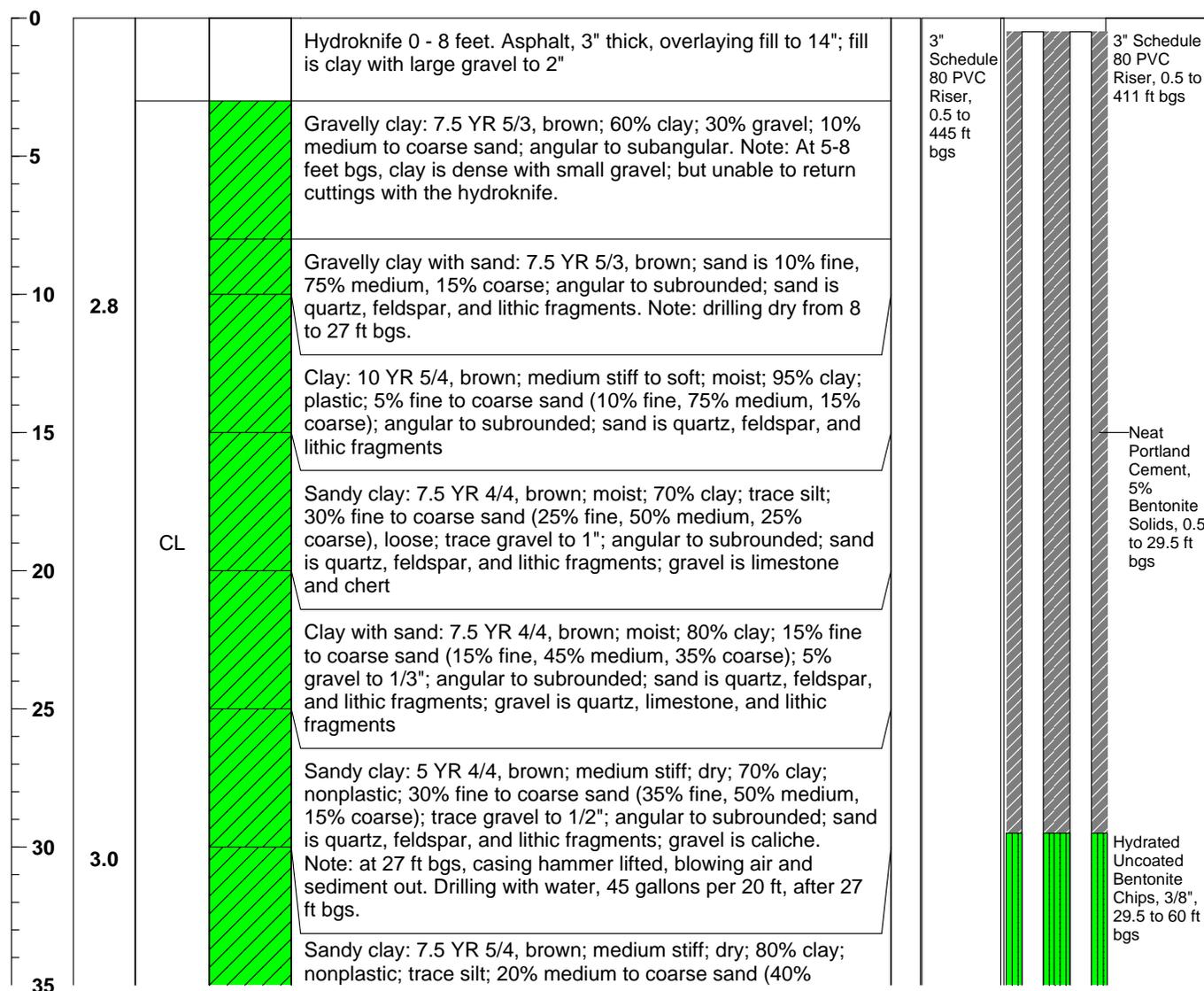
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b>			
	Location: <b>Kirtland AFB, New Mexico</b>		Well ID: <b>KAFB-106244</b>		
	Start Date: <b>6/28/18</b>	Page: <b>1 of 15</b>			
	Completion Date: <b>7/12/18</b>				
Drilling Company: <b>Yellow Jacket Drilling</b>	Boring Depth (ft): <b>496</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b>			
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>11.75/9.625</b>	Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b>			
Drill Bit: <b>Tricone</b>	Well Diameter: <b>3" ID</b>	Filter Pack: <b>10/20 Silica Sand</b>			
Driller: <b>Gerry Woods</b>	DTW After Completion (ft): <b>470.38</b>				
Geologist: <b>Lane Adress/Joshua Messenger</b>	Riser Material: <b>3" Sch. 80 PVC</b>				
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

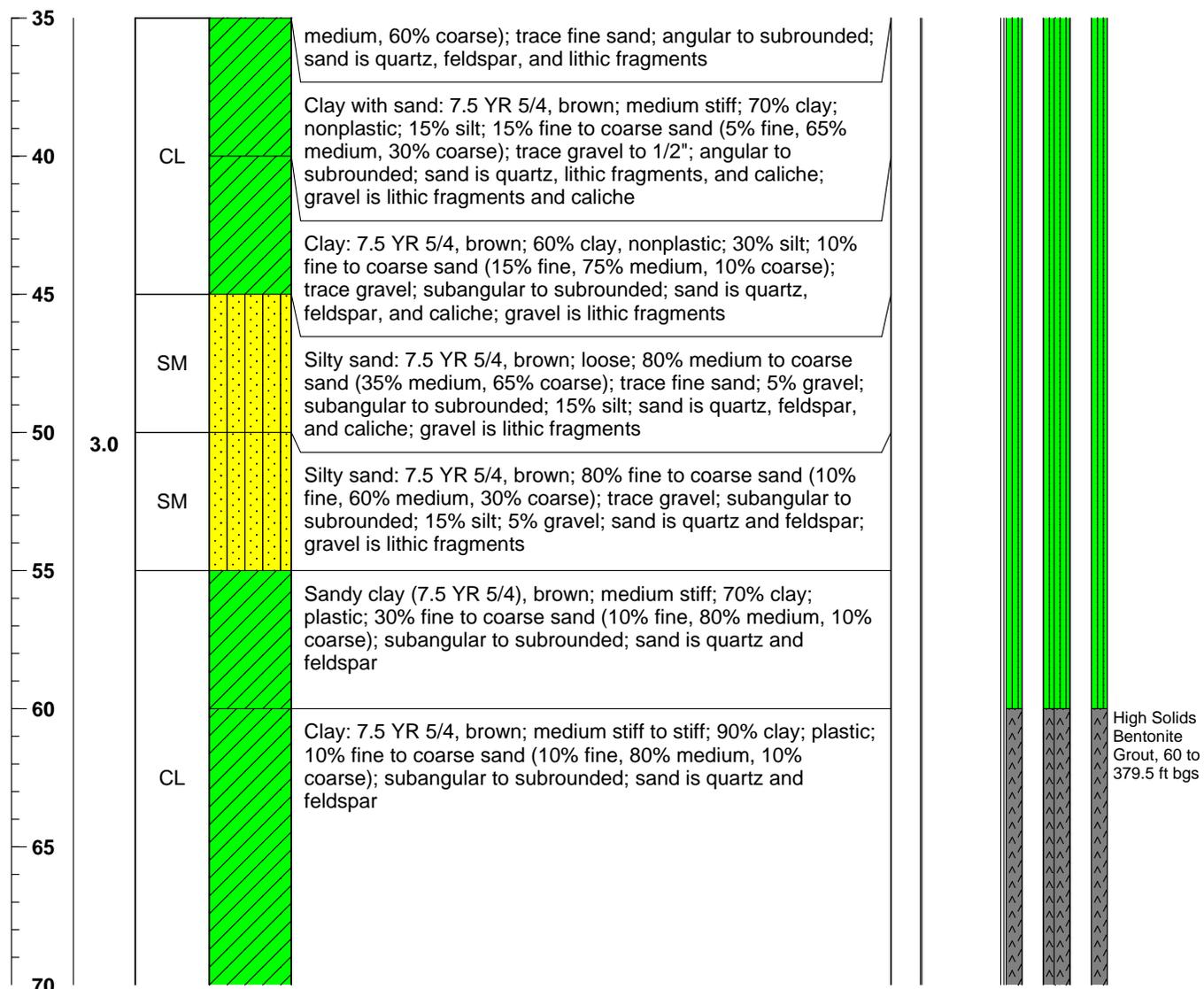
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ☒ = Depth to water after completion, taken from the measuring reference point (MRP).

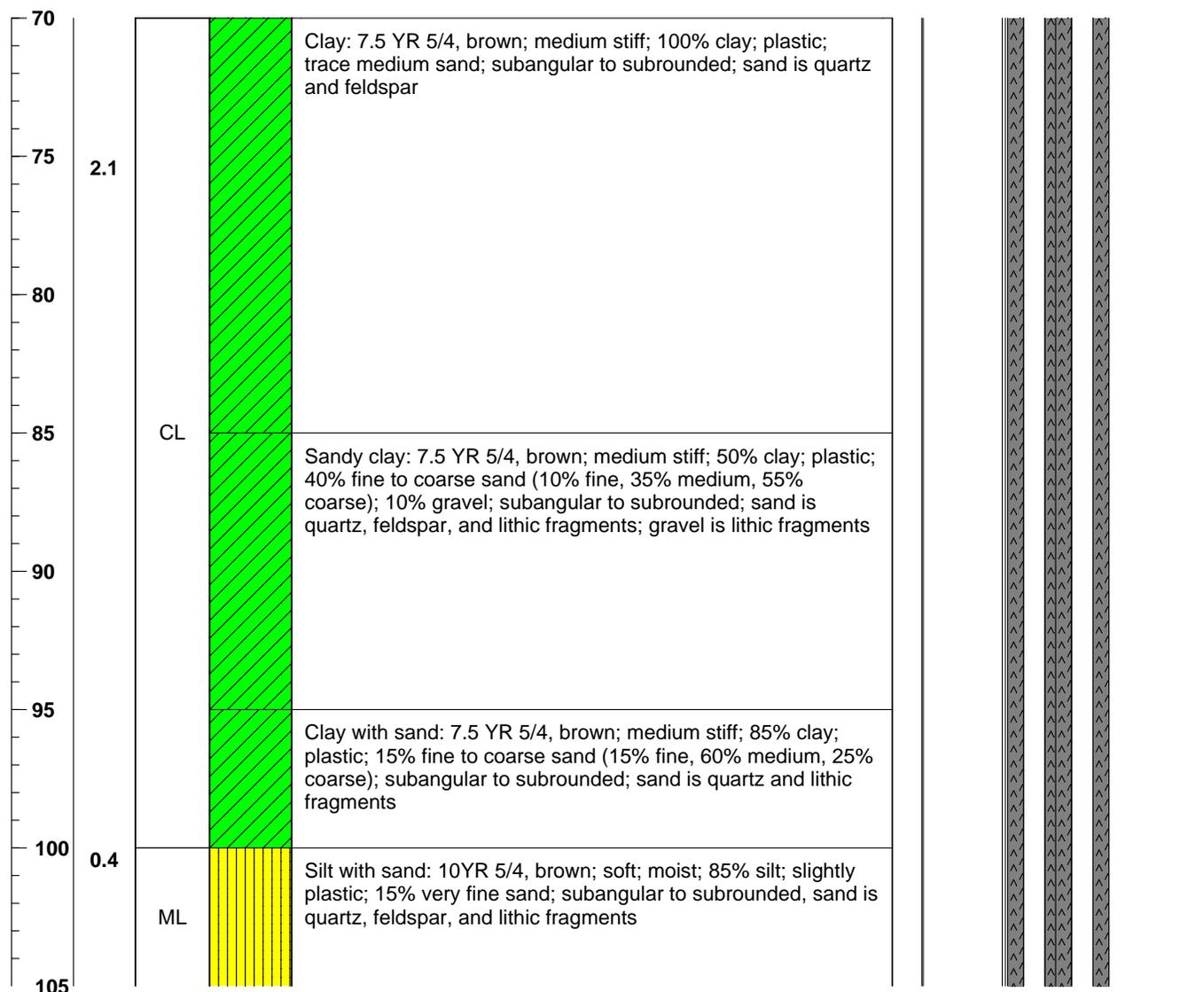
	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106244</b> Page: <b>2 of 15</b>			
	Location: <b>Kirtland AFB, New Mexico</b>				
Drilling Company: <b>Yellow Jacket Drilling</b>	Boring Depth (ft): <b>496</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>			
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>11.75/9.625</b>				
Drill Bit: <b>Tricone</b>	Well Diameter: <b>3" ID</b>				
Driller: <b>Gerry Woods</b>	DTW After Completion (ft): <b>470.38</b>				
Geologist: <b>Lane Adress/Joshua Messenger</b>	Riser Material: <b>3" Sch. 80 PVC</b>				
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

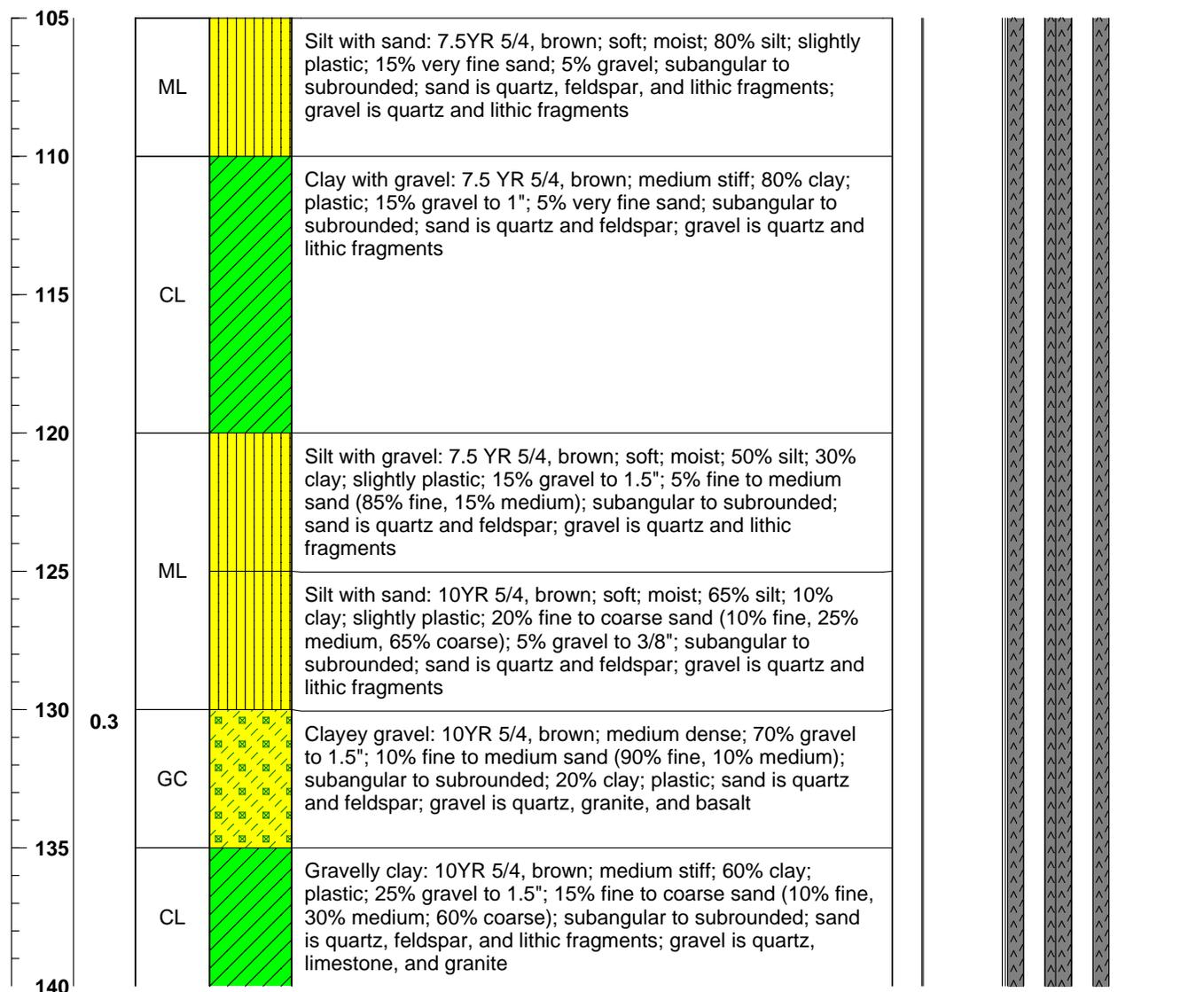
	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>6/28/18</b> Completion Date: <b>7/12/18</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106244</b> Page: <b>3 of 15</b>	
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Lane Adress/Joshua Messenger</b>	Boring Depth (ft): <b>496</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>470.38</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft) PID (ppmv) USCS Lithology	Sample Description		Completion Details (1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106244</b> Page: <b>4 of 15</b>			
	Location: <b>Kirtland AFB, New Mexico</b>				
Drilling Company: <b>Yellow Jacket Drilling</b>	Boring Depth (ft): <b>496</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>			
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>11.75/9.625</b>				
Drill Bit: <b>Tricone</b>	Well Diameter: <b>3" ID</b>				
Driller: <b>Gerry Woods</b>	DTW After Completion (ft): <b>470.38</b>				
Geologist: <b>Lane Adress/Joshua Messenger</b>	Riser Material: <b>3" Sch. 80 PVC</b>				
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

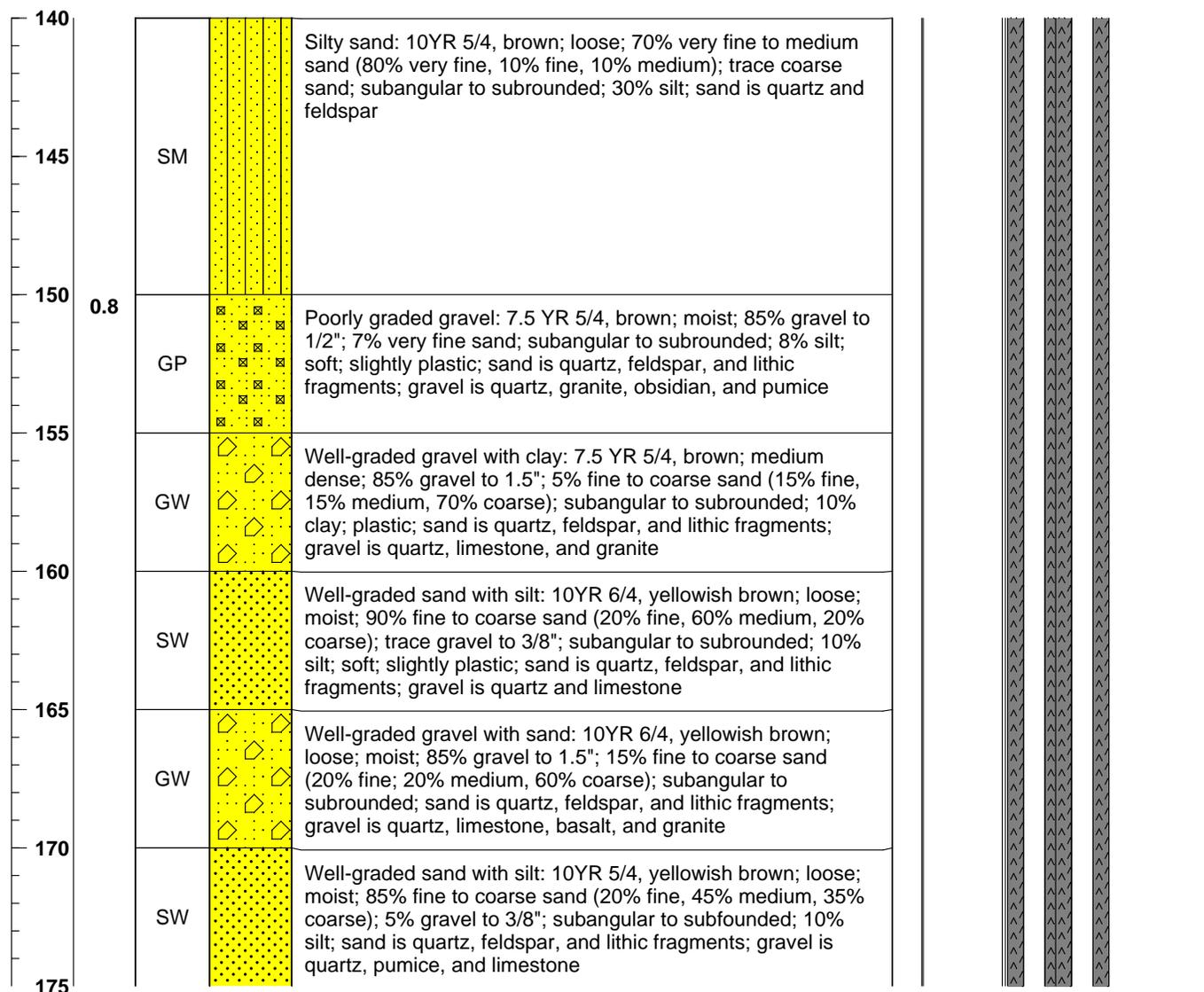
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106244</b> Page: <b>5 of 15</b>			
	Location: <b>Kirtland AFB, New Mexico</b>				
Drilling Company: <b>Yellow Jacket Drilling</b>	Boring Depth (ft): <b>496</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>			
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>11.75/9.625</b>				
Drill Bit: <b>Tricone</b>	Well Diameter: <b>3" ID</b>				
Driller: <b>Gerry Woods</b>	DTW After Completion (ft): <b>470.38</b>				
Geologist: <b>Lane Adress/Joshua Messenger</b>	Riser Material: <b>3" Sch. 80 PVC</b>				
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

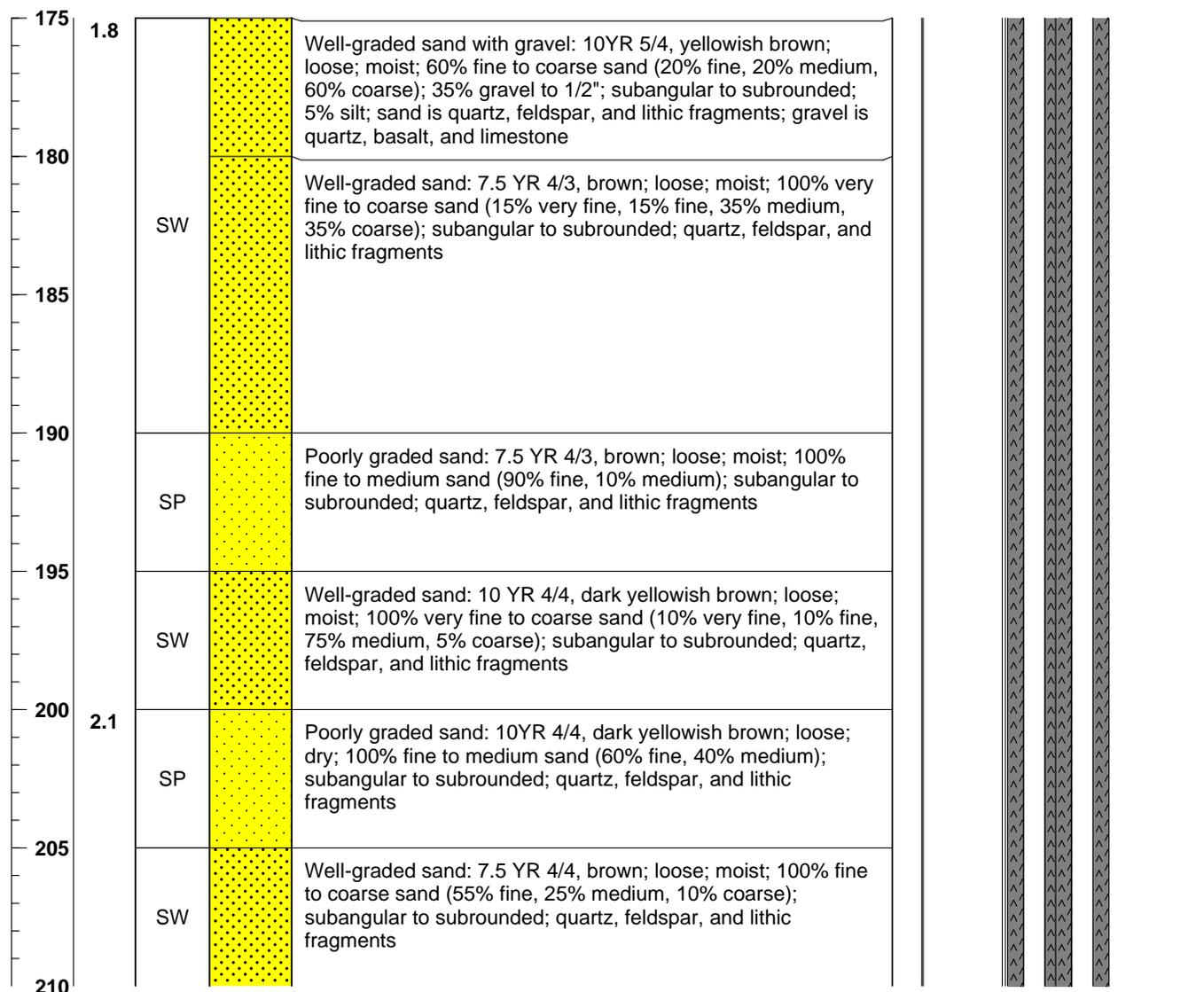
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>6/28/18</b> Completion Date: <b>7/12/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106244</b> Page: <b>6 of 15</b>			
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Lane Adress/Joshua Messenger</b>		Boring Depth (ft): <b>496</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>470.38</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>	
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details	

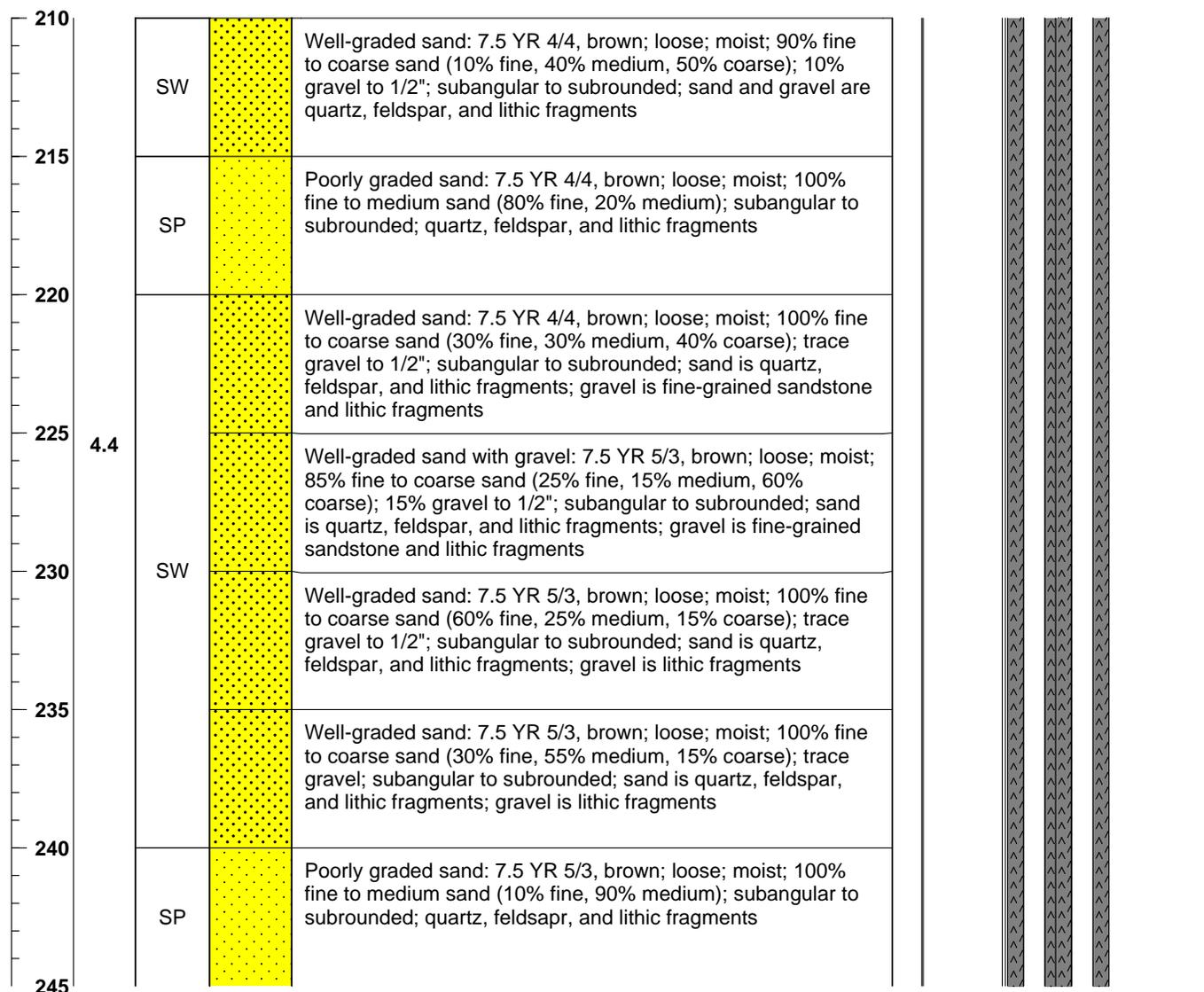
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>6/28/18</b> Completion Date: <b>7/12/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106244</b> Page: <b>7 of 15</b>		
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Lane Adress/Joshua Messenger</b>		Boring Depth (ft): <b>496</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>470.38</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

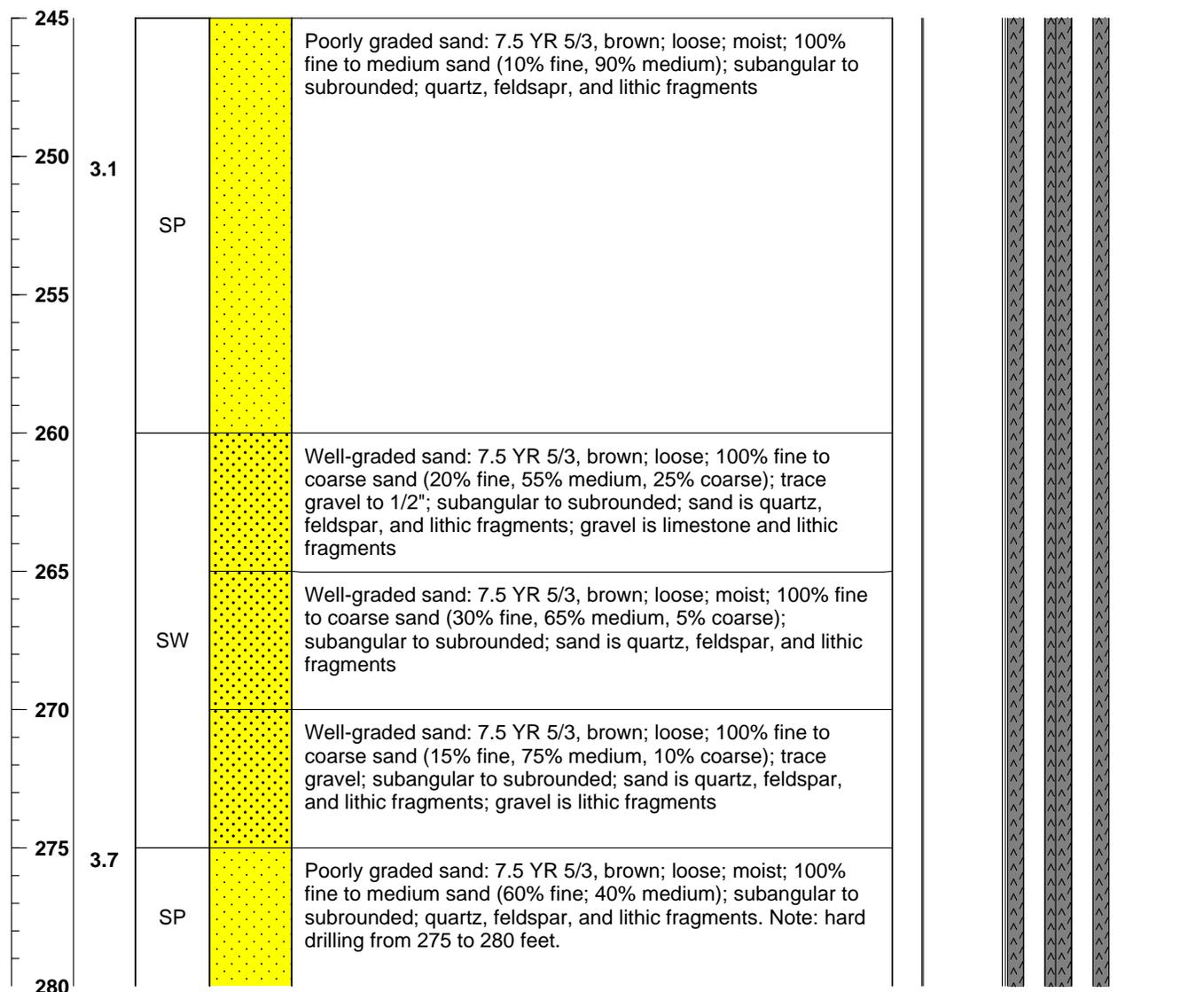
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106244</b> Page: <b>8 of 15</b>			
	Location: <b>Kirtland AFB, New Mexico</b>				
	Start Date: <b>6/28/18</b>				
	Completion Date: <b>7/12/18</b>				
Drilling Company: <b>Yellow Jacket Drilling</b>	Boring Depth (ft): <b>496</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b>			
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>11.75/9.625</b>	Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b>			
Drill Bit: <b>Tricone</b>	Well Diameter: <b>3" ID</b>	Filter Pack: <b>10/20 Silica Sand</b>			
Driller: <b>Gerry Woods</b>	DTW After Completion (ft): <b>470.38</b>				
Geologist: <b>Lane Adress/Joshua Messenger</b>	Riser Material: <b>3" Sch. 80 PVC</b>				
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

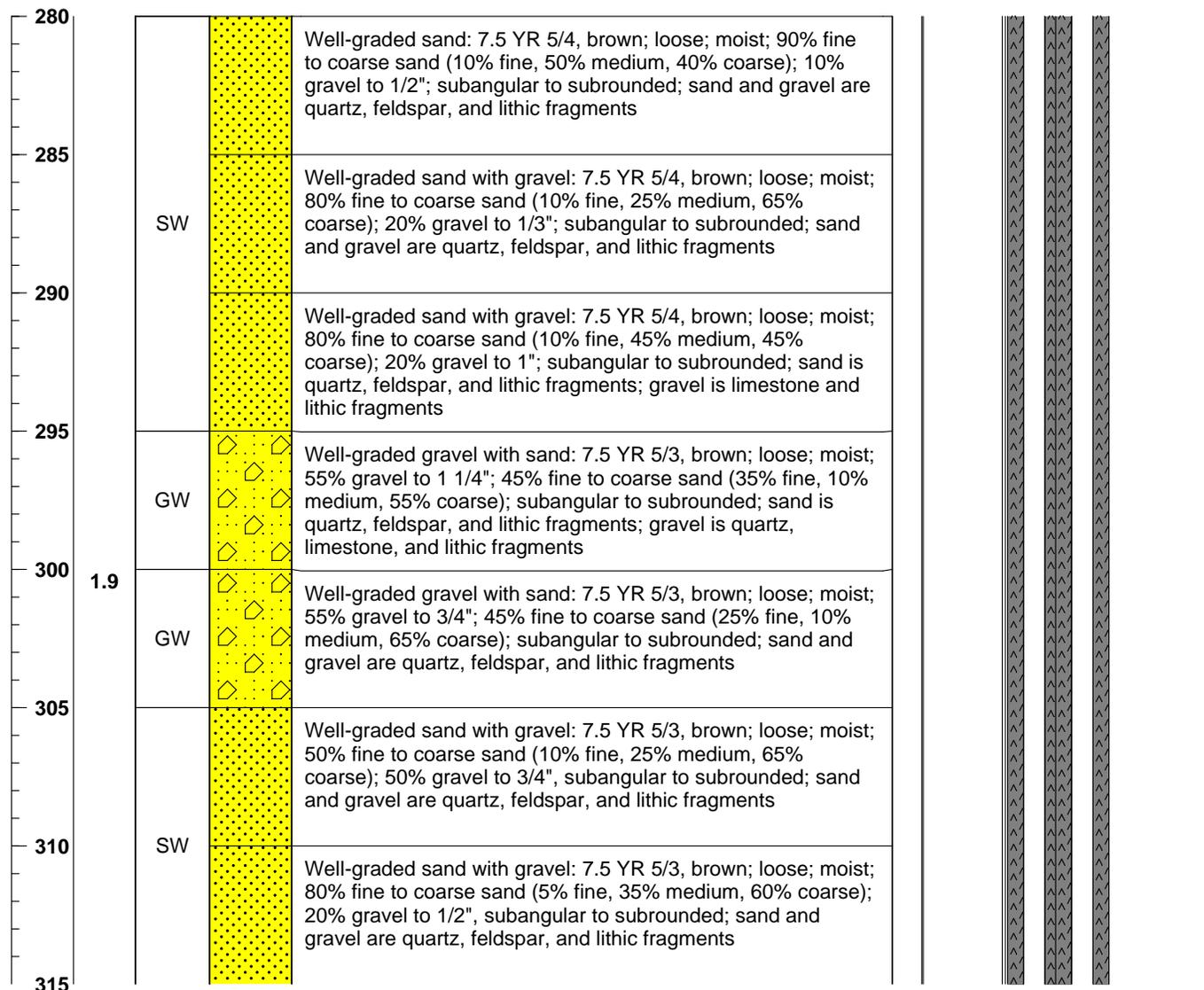
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>6/28/18</b> Completion Date: <b>7/12/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106244</b> Page: <b>9 of 15</b>		
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Lane Adress/Joshua Messenger</b>		Boring Depth (ft): <b>496</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>470.38</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

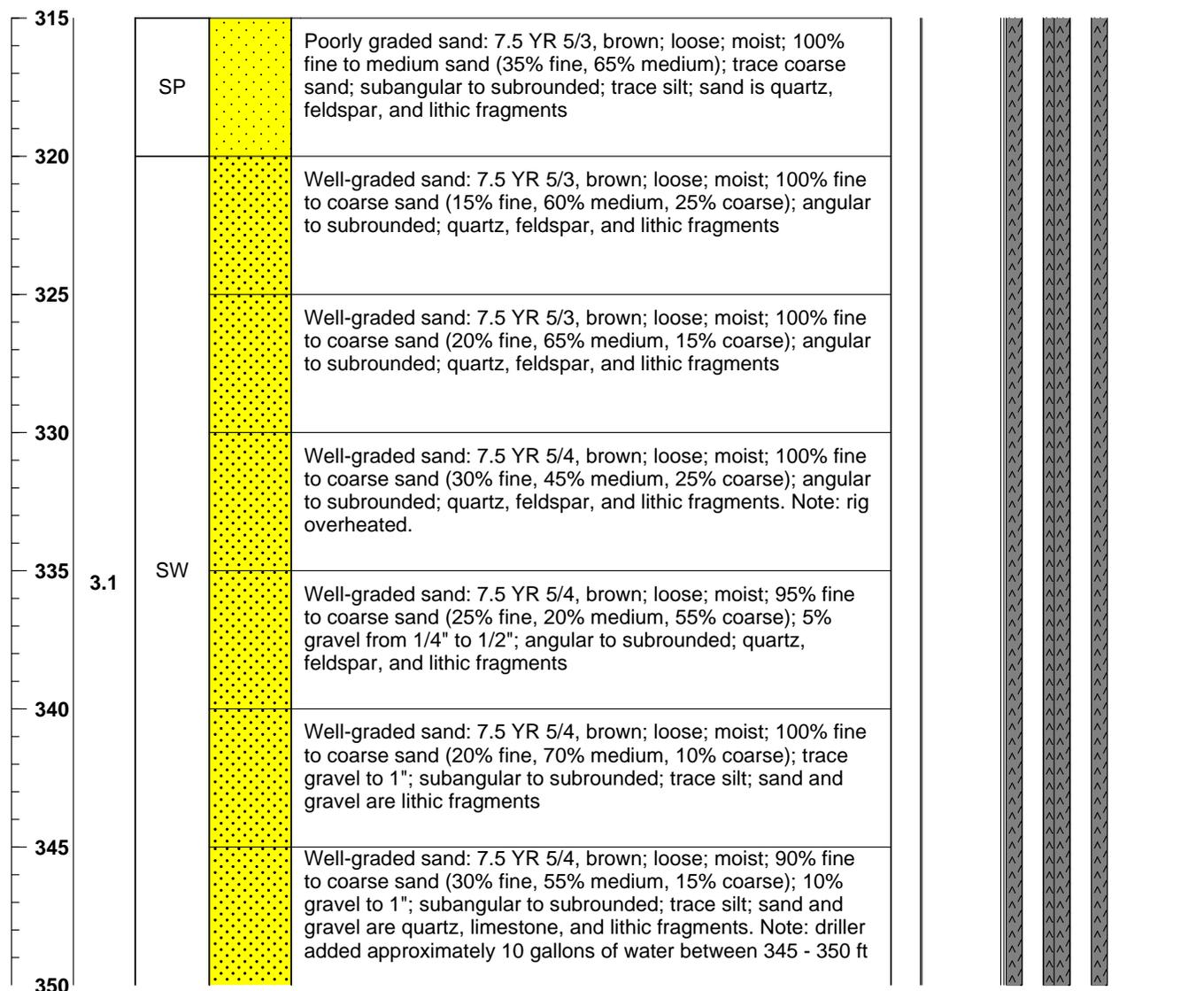
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>6/28/18</b> Completion Date: <b>7/12/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106244</b> Page: <b>10 of 15</b>		
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Lane Adress/Joshua Messenger</b>		Boring Depth (ft): <b>496</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>470.38</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

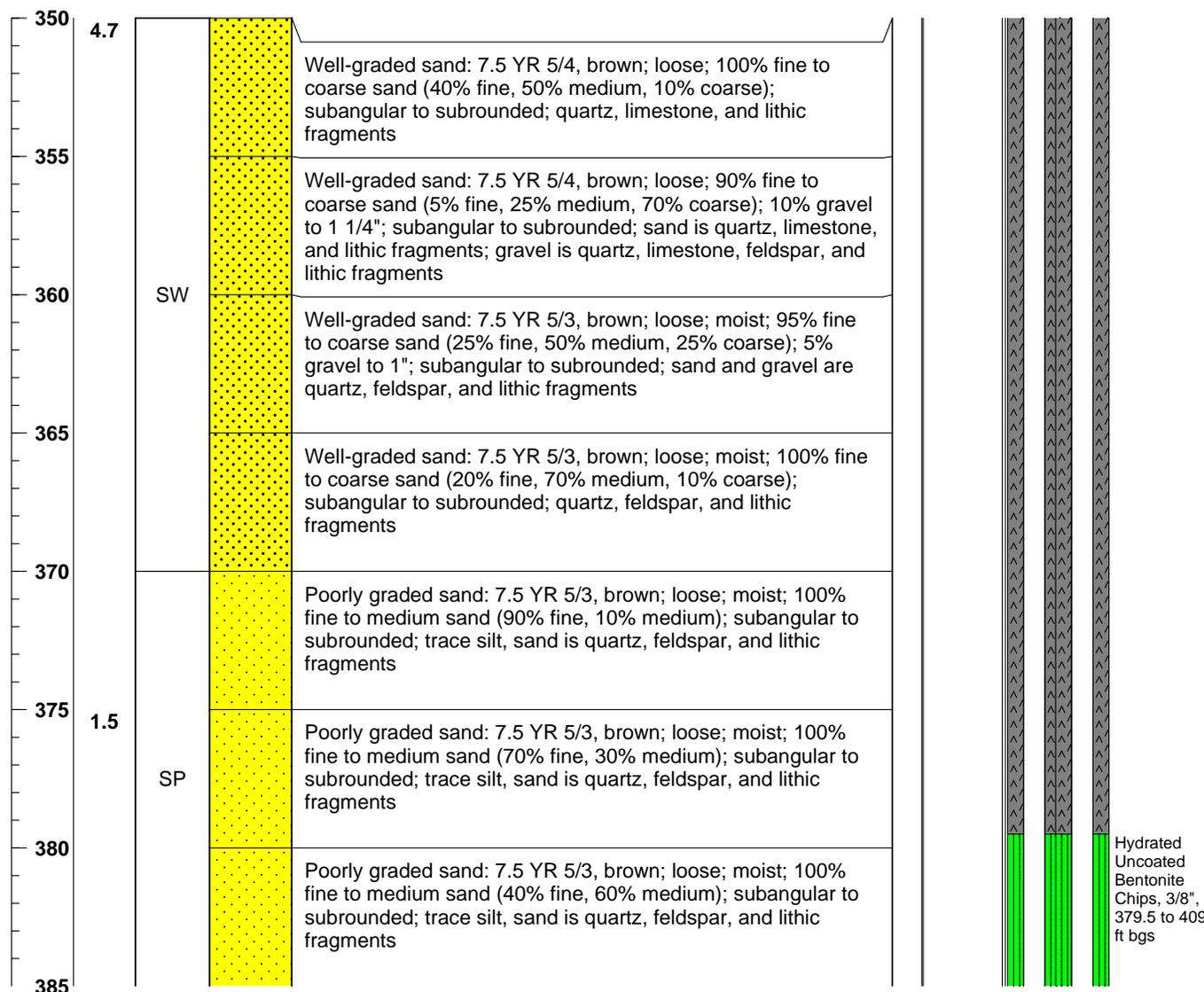
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106244</b> Page: <b>11 of 15</b>			
	Location: <b>Kirtland AFB, New Mexico</b>				
	Start Date: <b>6/28/18</b>				
	Completion Date: <b>7/12/18</b>				
Drilling Company: <b>Yellow Jacket Drilling</b>	Boring Depth (ft): <b>496</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b>			
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>11.75/9.625</b>	Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b>			
Drill Bit: <b>Tricone</b>	Well Diameter: <b>3" ID</b>	Filter Pack: <b>10/20 Silica Sand</b>			
Driller: <b>Gerry Woods</b>	DTW After Completion (ft): <b>470.38</b>				
Geologist: <b>Lane Adress/Joshua Messenger</b>	Riser Material: <b>3" Sch. 80 PVC</b>				
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

(1) (2)

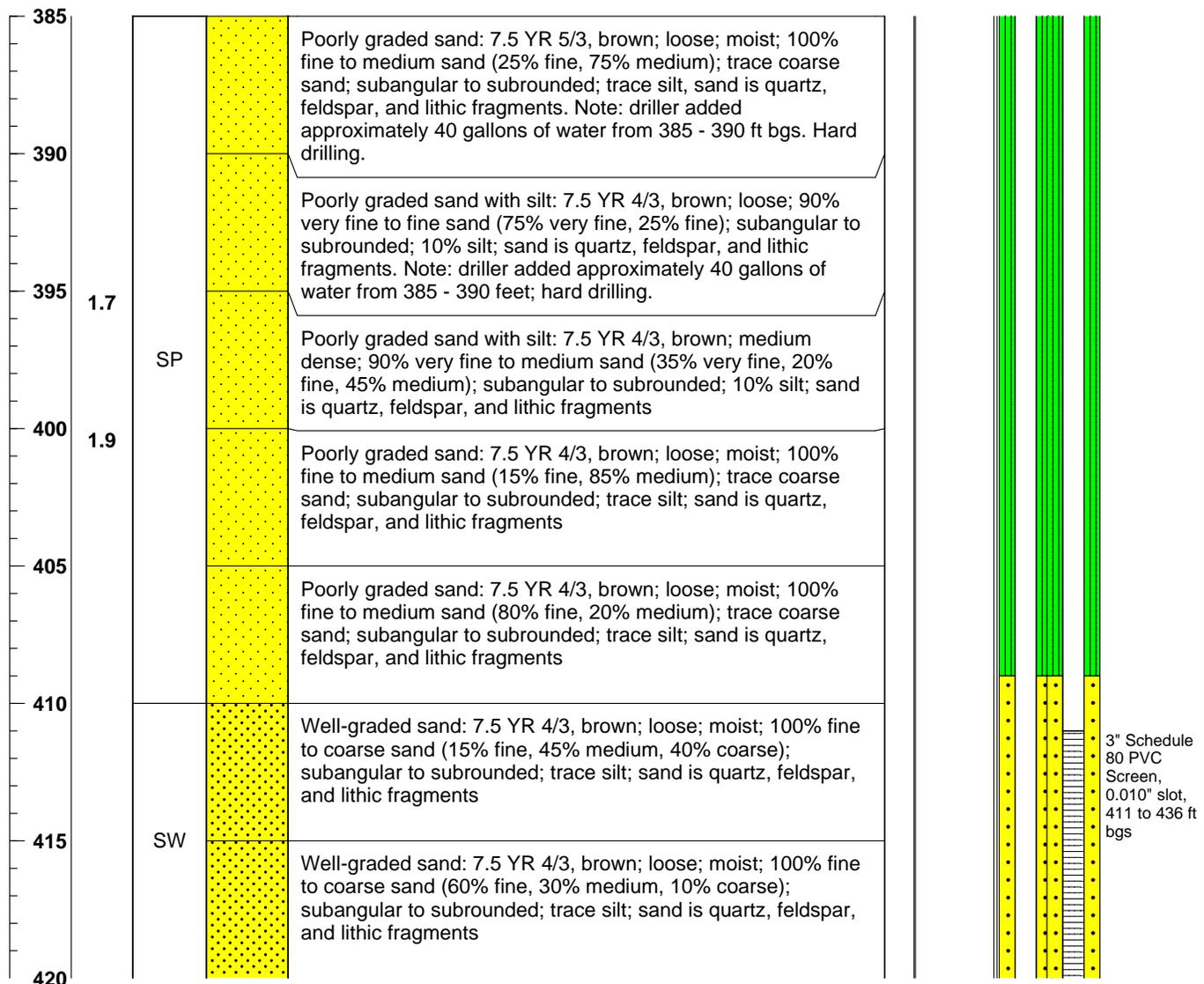


- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>6/28/18</b> Completion Date: <b>7/12/18</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106244</b> Page: <b>12 of 15</b>
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Lane Adress/Joshua Messenger</b>	Boring Depth (ft): <b>496</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>470.38</b> Riser Material: <b>3" Sch. 80 PVC</b>

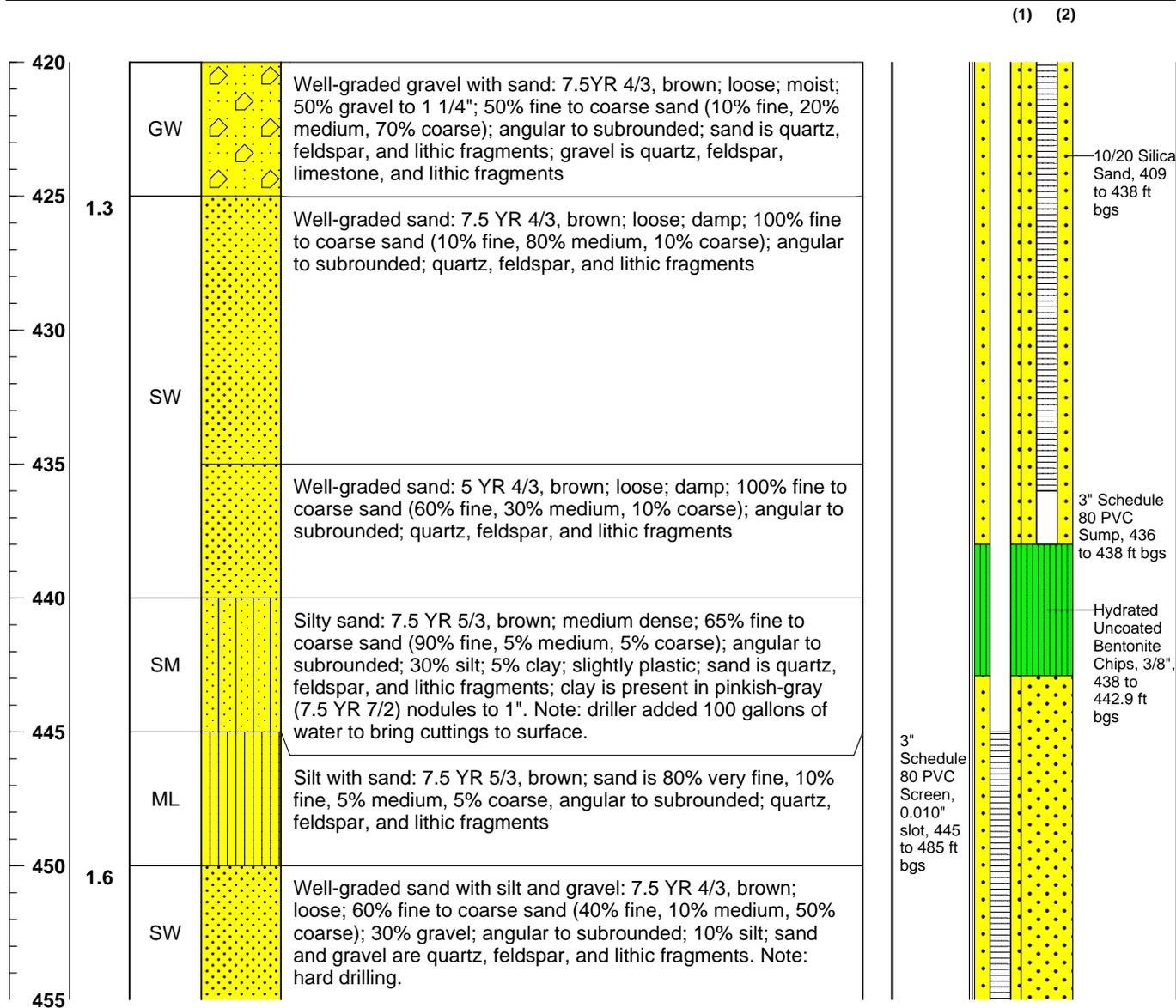
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

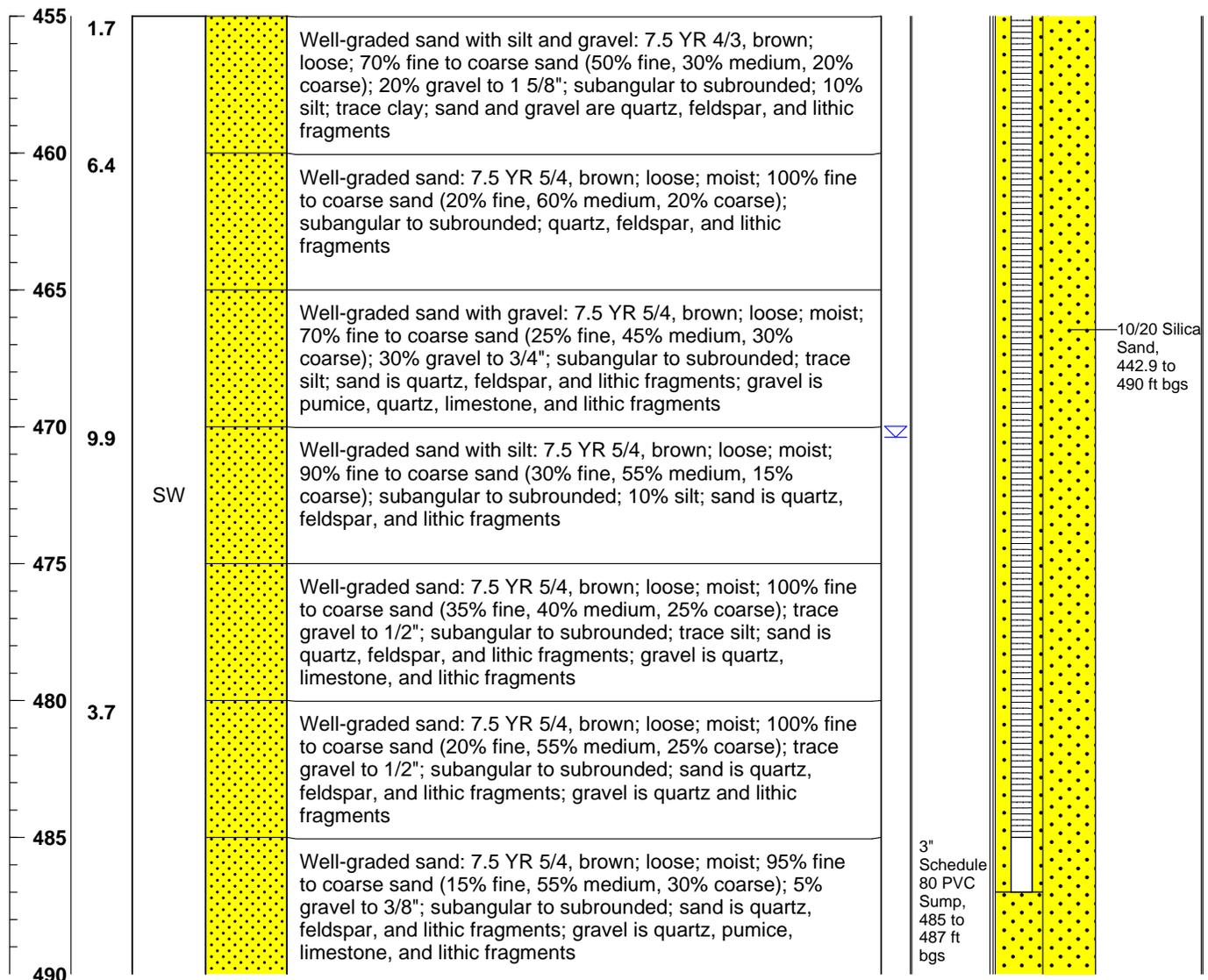
	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>6/28/18</b> Completion Date: <b>7/12/18</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106244</b> Page: <b>13 of 15</b>
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Lane Adress/Joshua Messenger</b>	Boring Depth (ft): <b>496</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>470.38</b> Riser Material: <b>3" Sch. 80 PVC</b>



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>6/28/18</b> Completion Date: <b>7/12/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106244</b> Page: <b>14 of 15</b>		
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Lane Adress/Joshua Messenger</b>		Boring Depth (ft): <b>496</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>470.38</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

(1) (2)

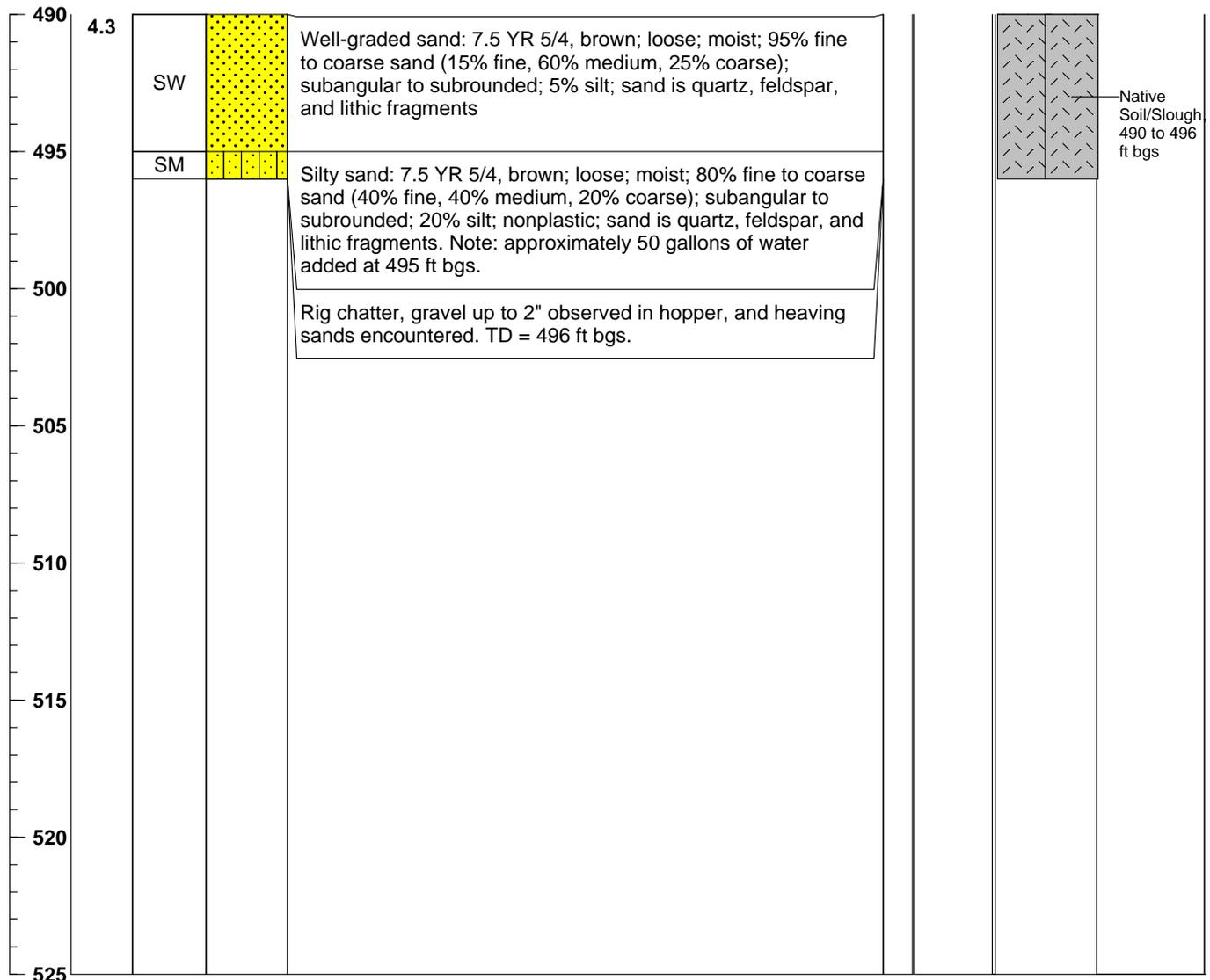


- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>6/28/18</b> Completion Date: <b>7/12/18</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106244</b> Page: <b>15 of 15</b>
	Drilling Company: <b>Yellow Jacket Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Tricone</b> Driller: <b>Gerry Woods</b> Geologist: <b>Lane Adress/Joshua Messenger</b>	Boring Depth (ft): <b>496</b> Boring Diameter (in): <b>11.75/9.625</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>470.38</b> Riser Material: <b>3" Sch. 80 PVC</b>

Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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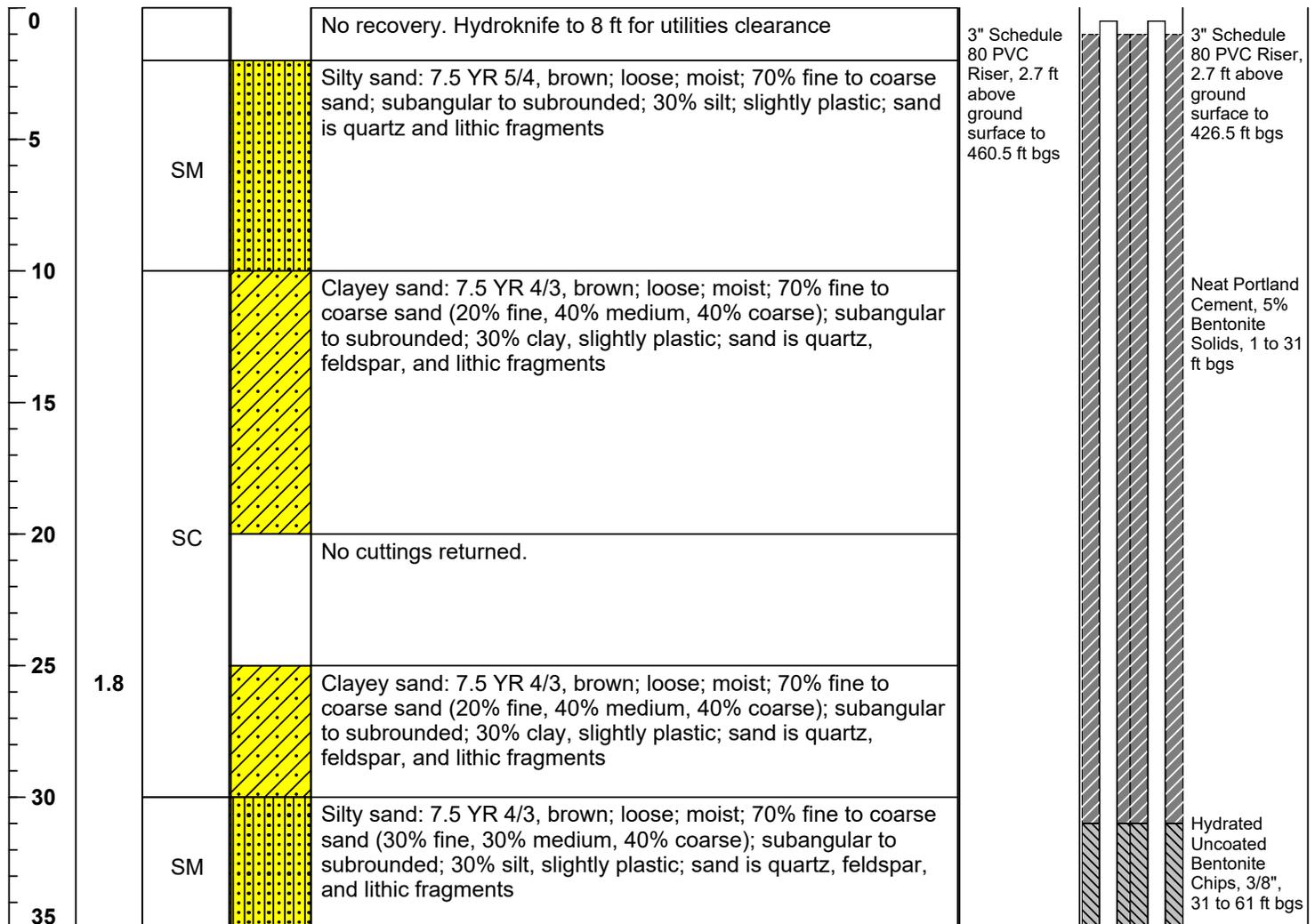
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
-  = Depth to water after completion, taken from the measuring reference point (MRP).

		Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/28/18</b> Completion Date: <b>9/7/18</b>		<h2 style="text-align: center;">WELL LOG</h2> Well ID: <b>KAFB-106245</b> Page: <b>1 of 16</b>	
Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>		Boring Depth (ft): <b>537</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft bgs): <b>485.62</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>	
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

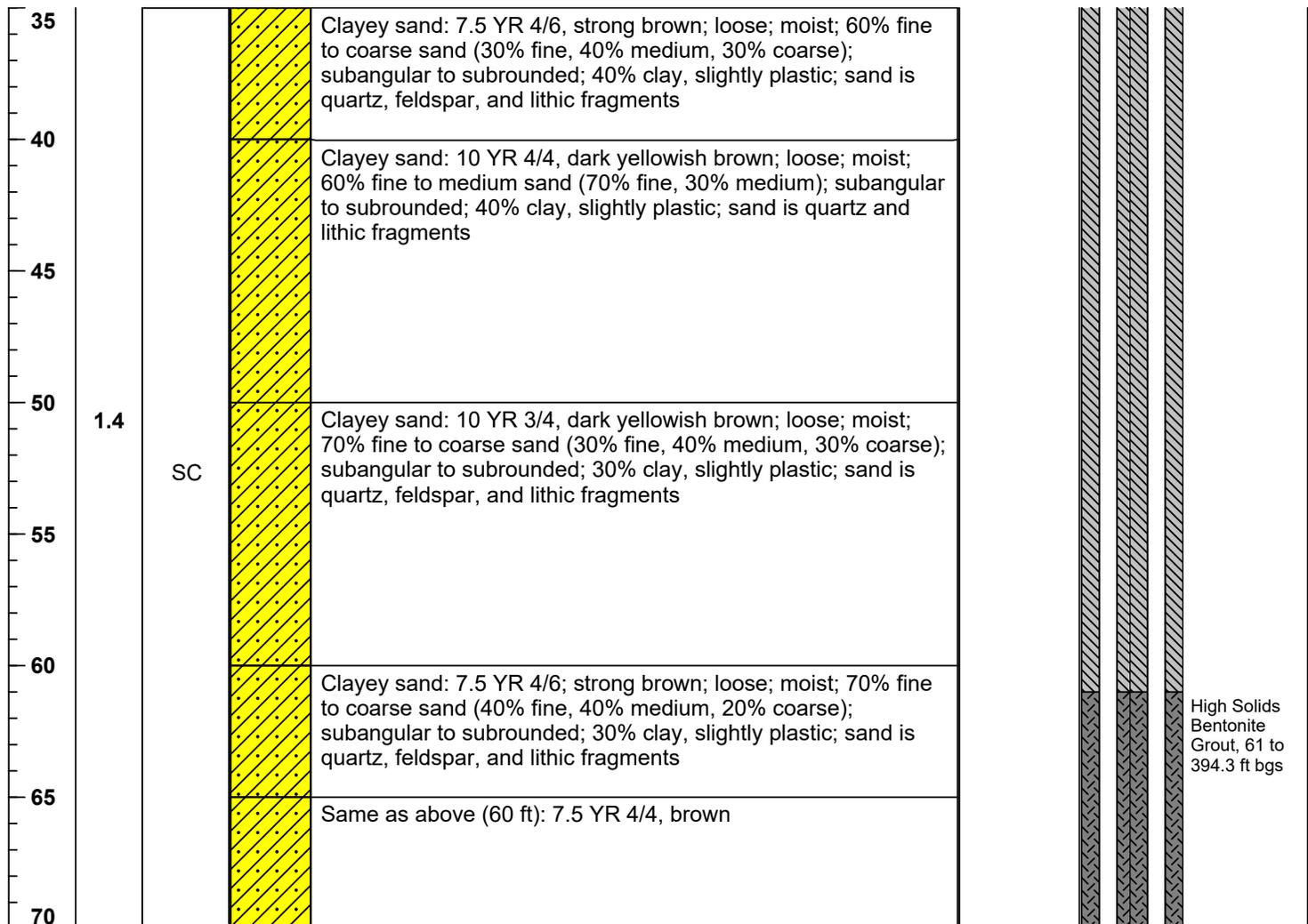
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

		Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/28/18</b> Completion Date: <b>9/7/18</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106245</b> Page: <b>2 of 16</b>		
Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>		Boring Depth (ft): <b>537</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft bgs): <b>485.62</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>		
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

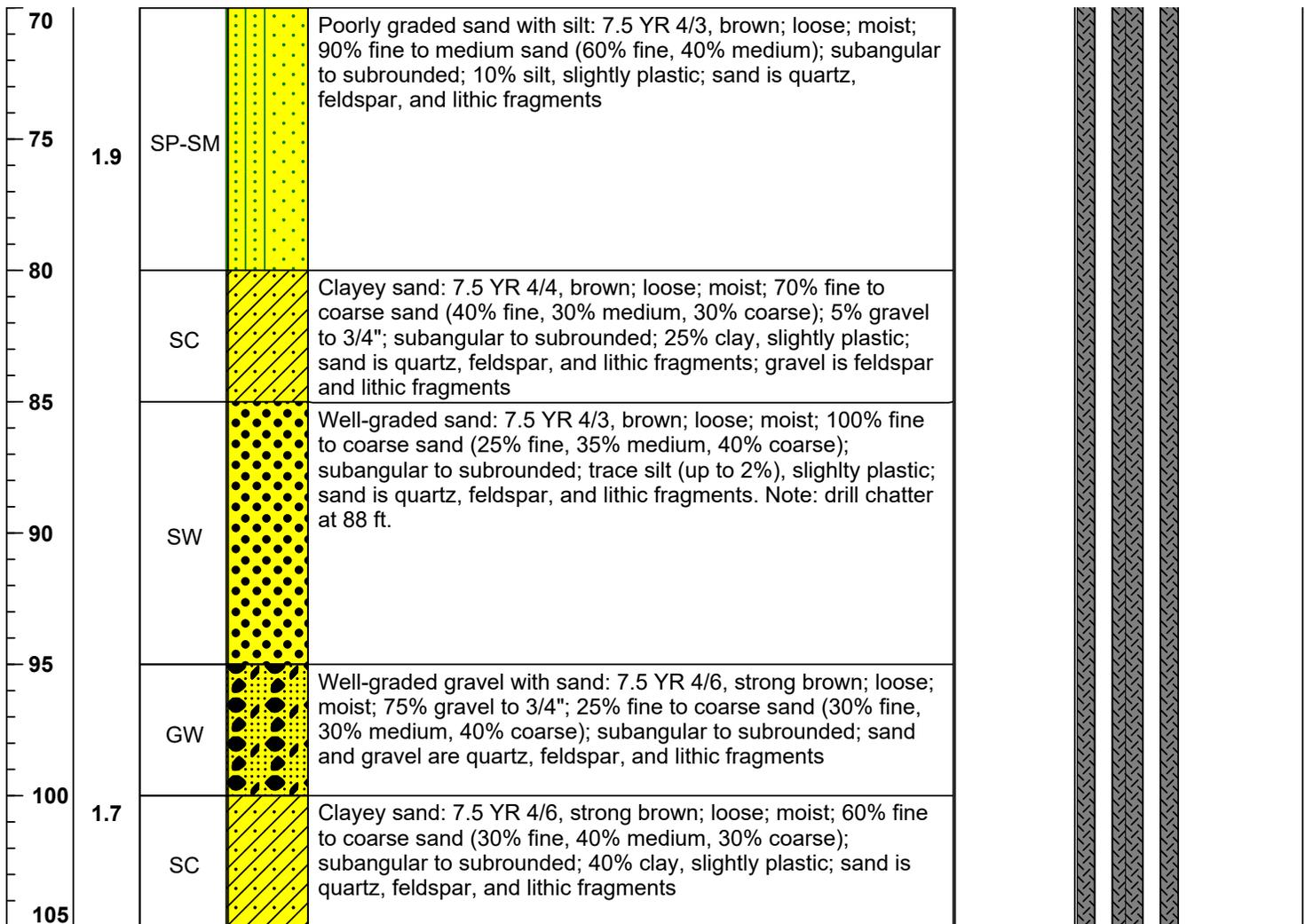
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ☒ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/28/18</b> Completion Date: <b>9/7/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106245</b> Page: <b>3 of 16</b>		
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>		Boring Depth (ft): <b>537</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft bgs): <b>485.62</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

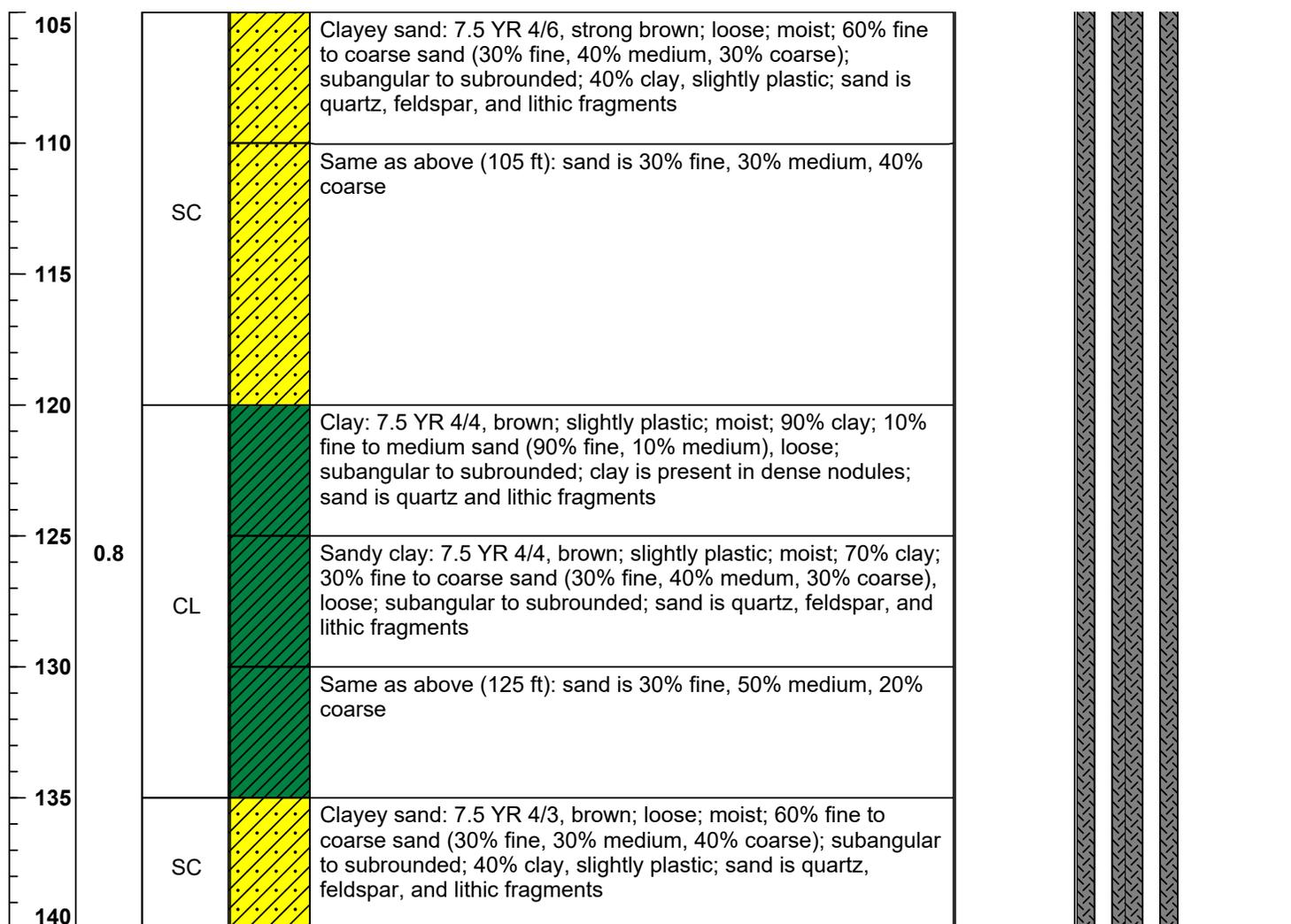
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/28/18</b> Completion Date: <b>9/7/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106245</b> Page: <b>4 of 16</b>		
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>		Boring Depth (ft): <b>537</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft bgs): <b>485.62</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

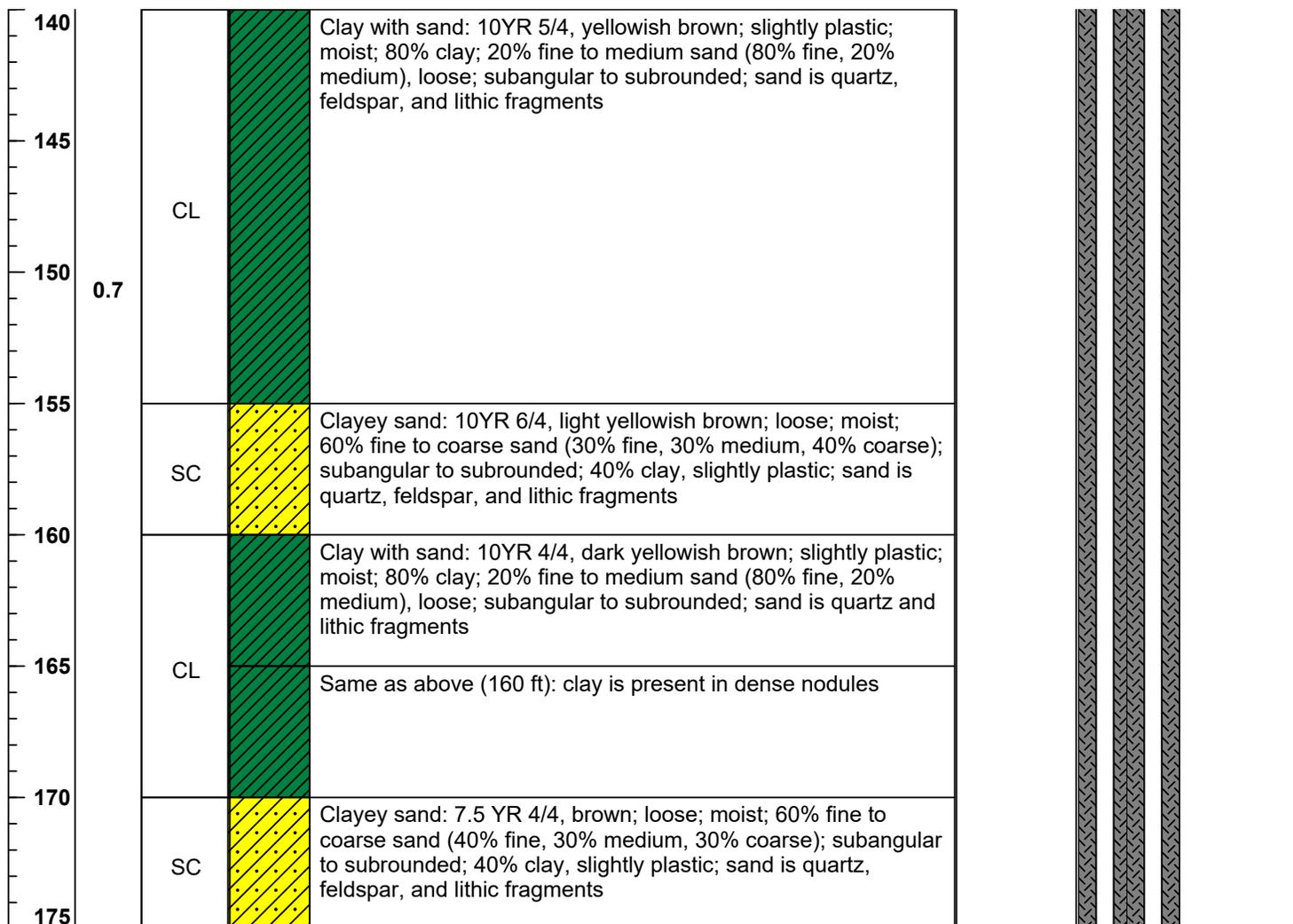
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/28/18</b> Completion Date: <b>9/7/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106245</b> Page: <b>5 of 16</b>		
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>		Boring Depth (ft): <b>537</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft bgs): <b>485.62</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

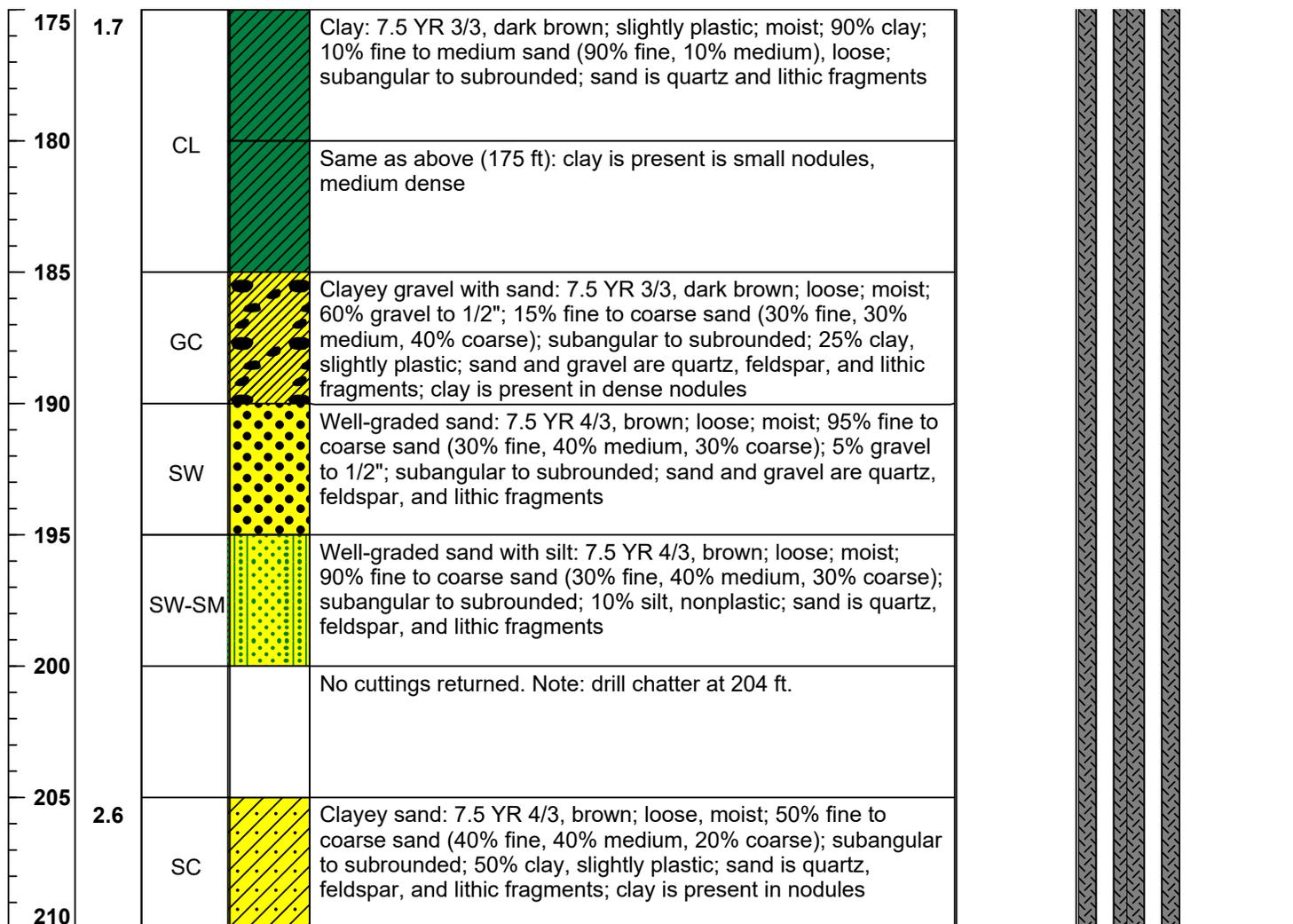
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/28/18</b> Completion Date: <b>9/7/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106245</b> Page: <b>6 of 16</b>			
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>		Boring Depth (ft): <b>537</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft bgs): <b>485.62</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>	
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details	

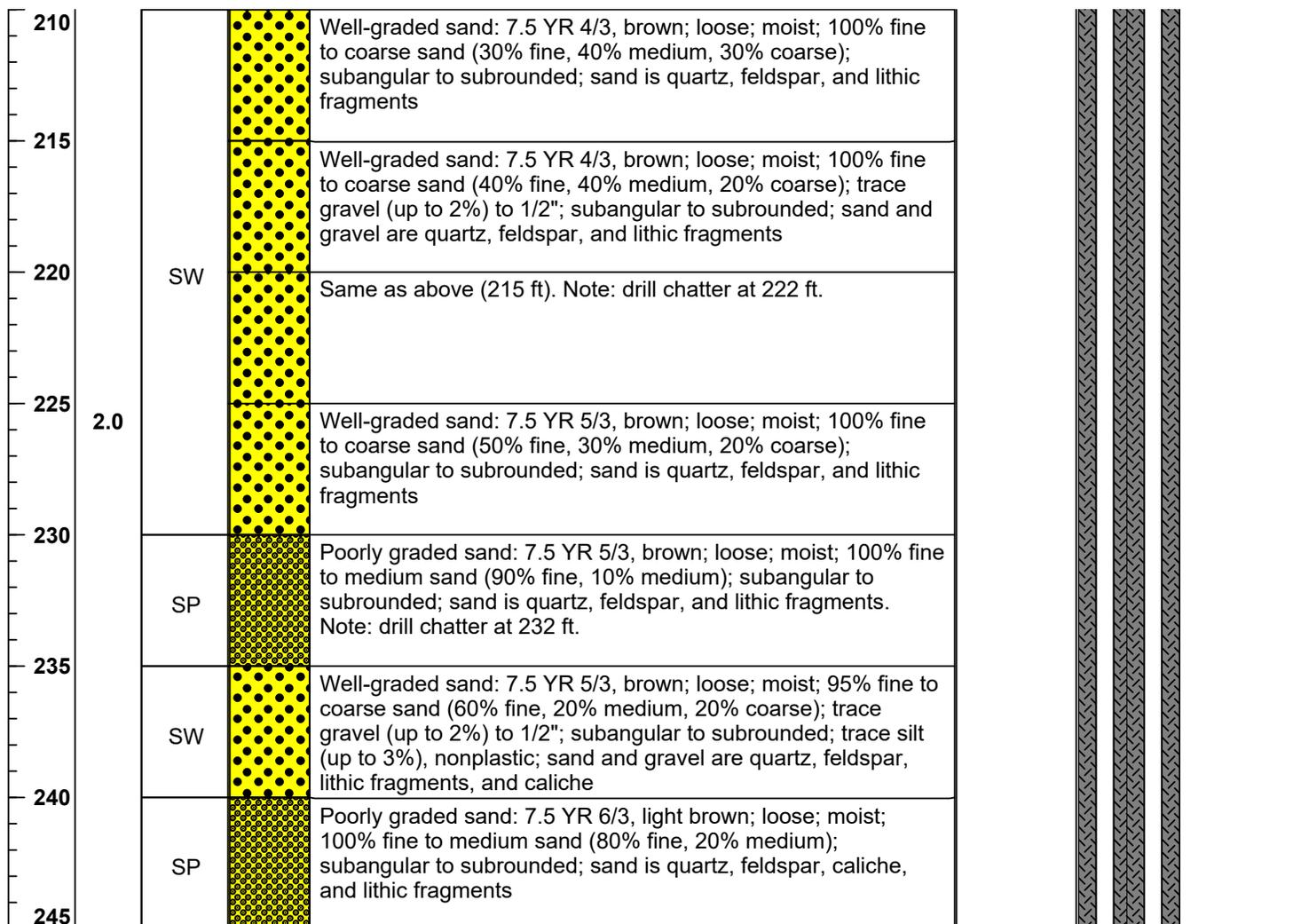
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
-  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/28/18</b> Completion Date: <b>9/7/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106245</b> Page: <b>7 of 16</b>		
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>		Boring Depth (ft): <b>537</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft bgs): <b>485.62</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

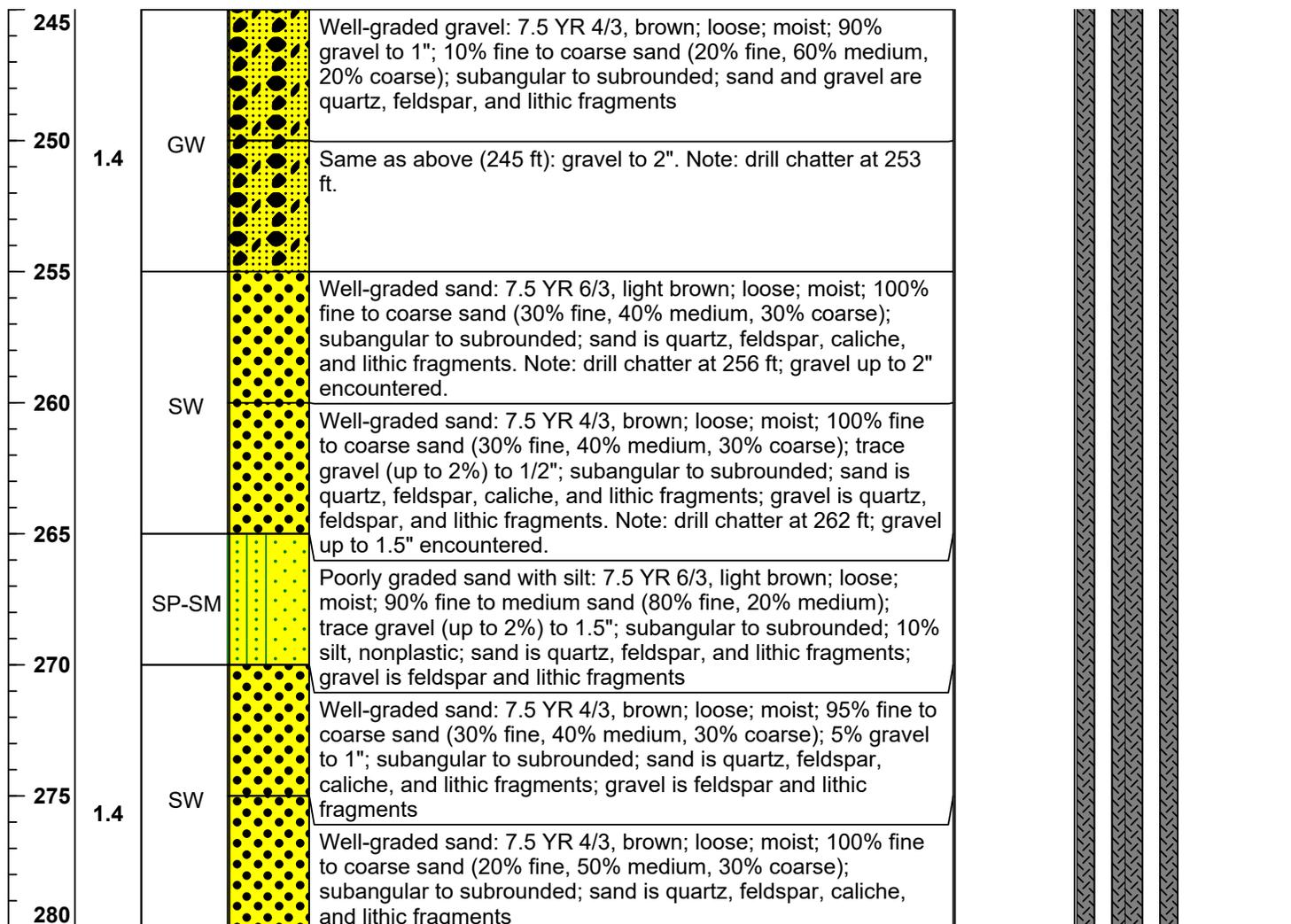
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/28/18</b> Completion Date: <b>9/7/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106245</b> Page: <b>8 of 16</b>		
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>		Boring Depth (ft): <b>537</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft bgs): <b>485.62</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

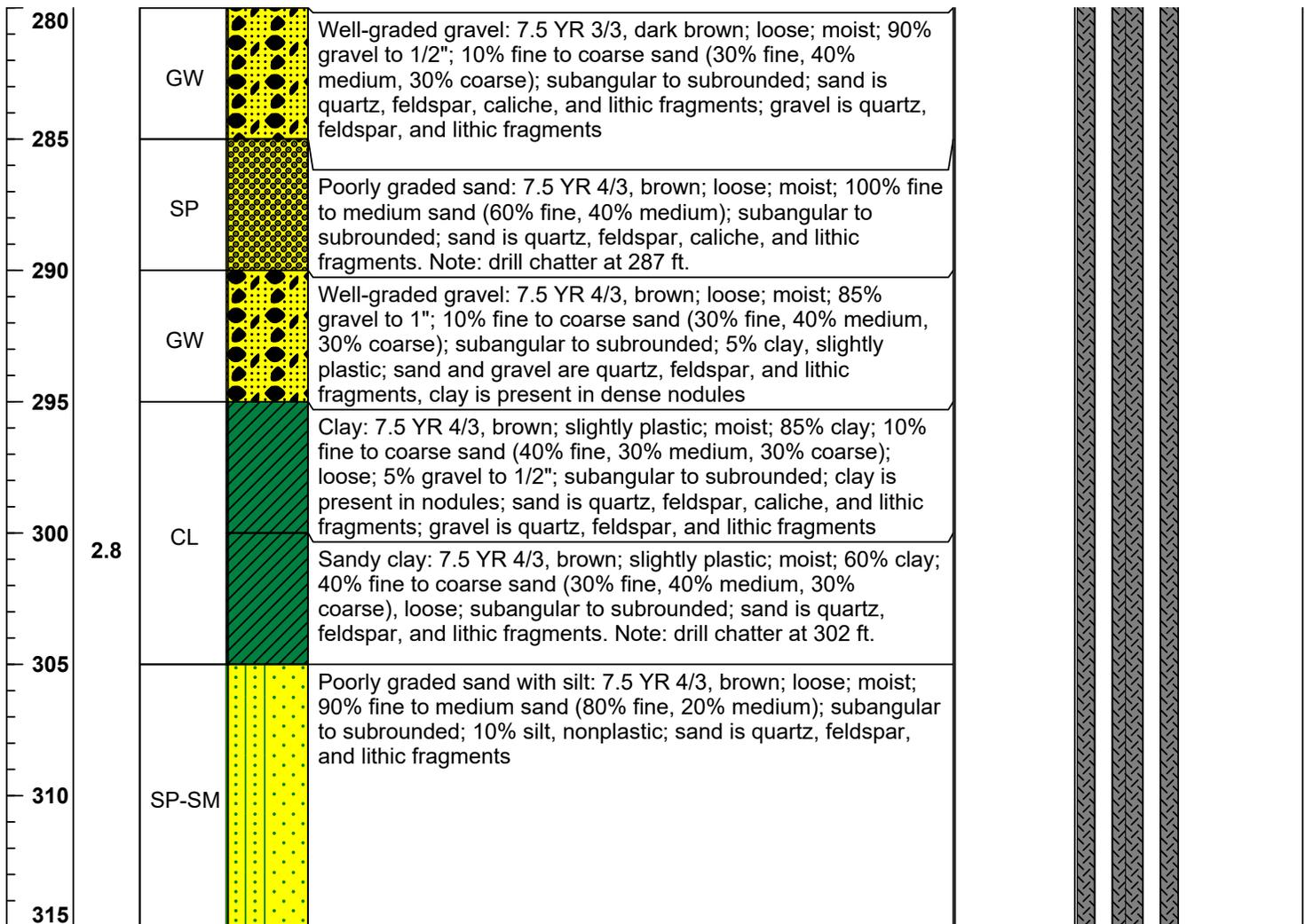
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/28/18</b> Completion Date: <b>9/7/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106245</b> Page: <b>9 of 16</b>		
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>		Boring Depth (ft): <b>537</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft bgs): <b>485.62</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

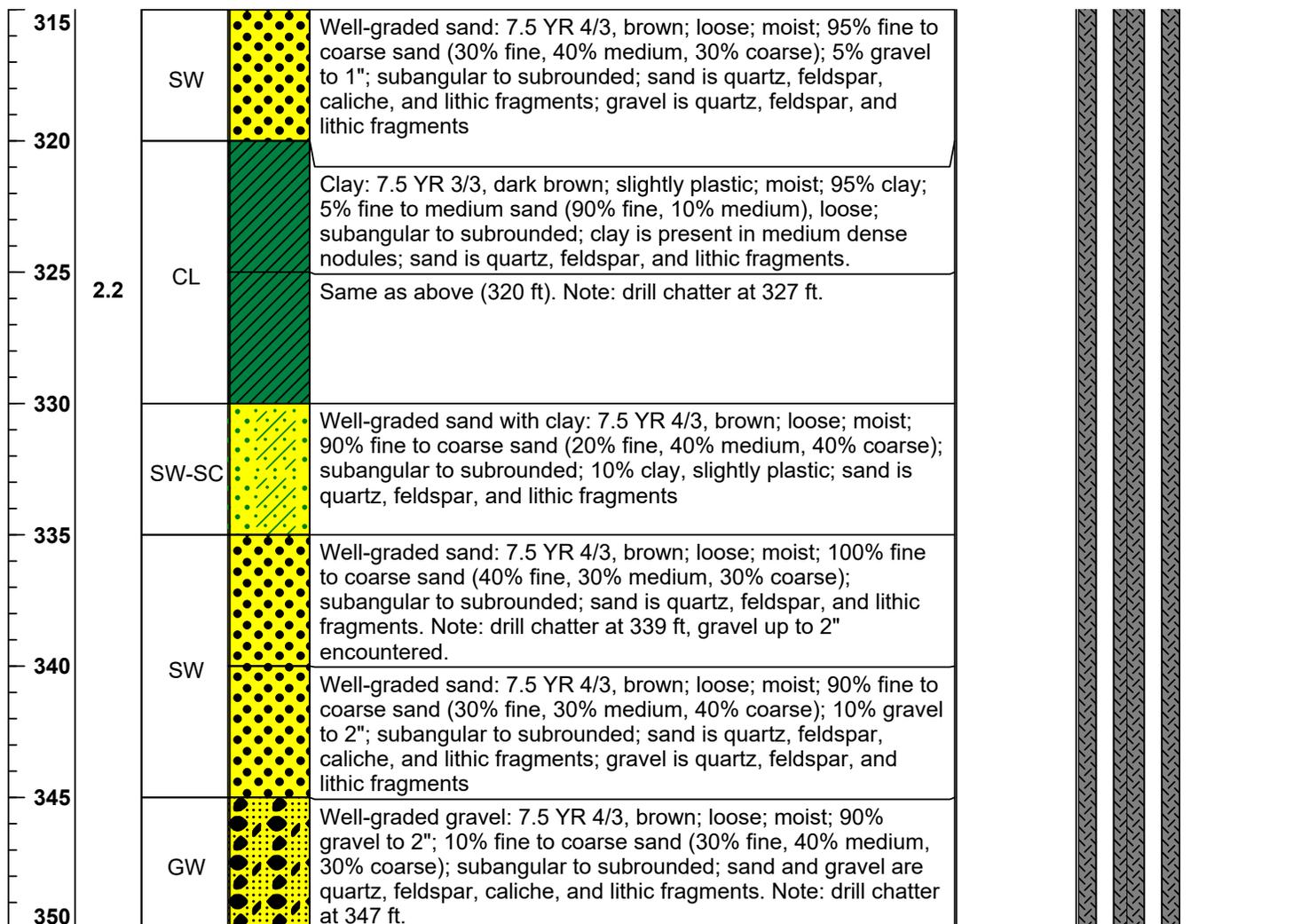
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  -  = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/28/18</b> Completion Date: <b>9/7/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106245</b> Page: <b>10 of 16</b>		
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>		Boring Depth (ft): <b>537</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft bgs): <b>485.62</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

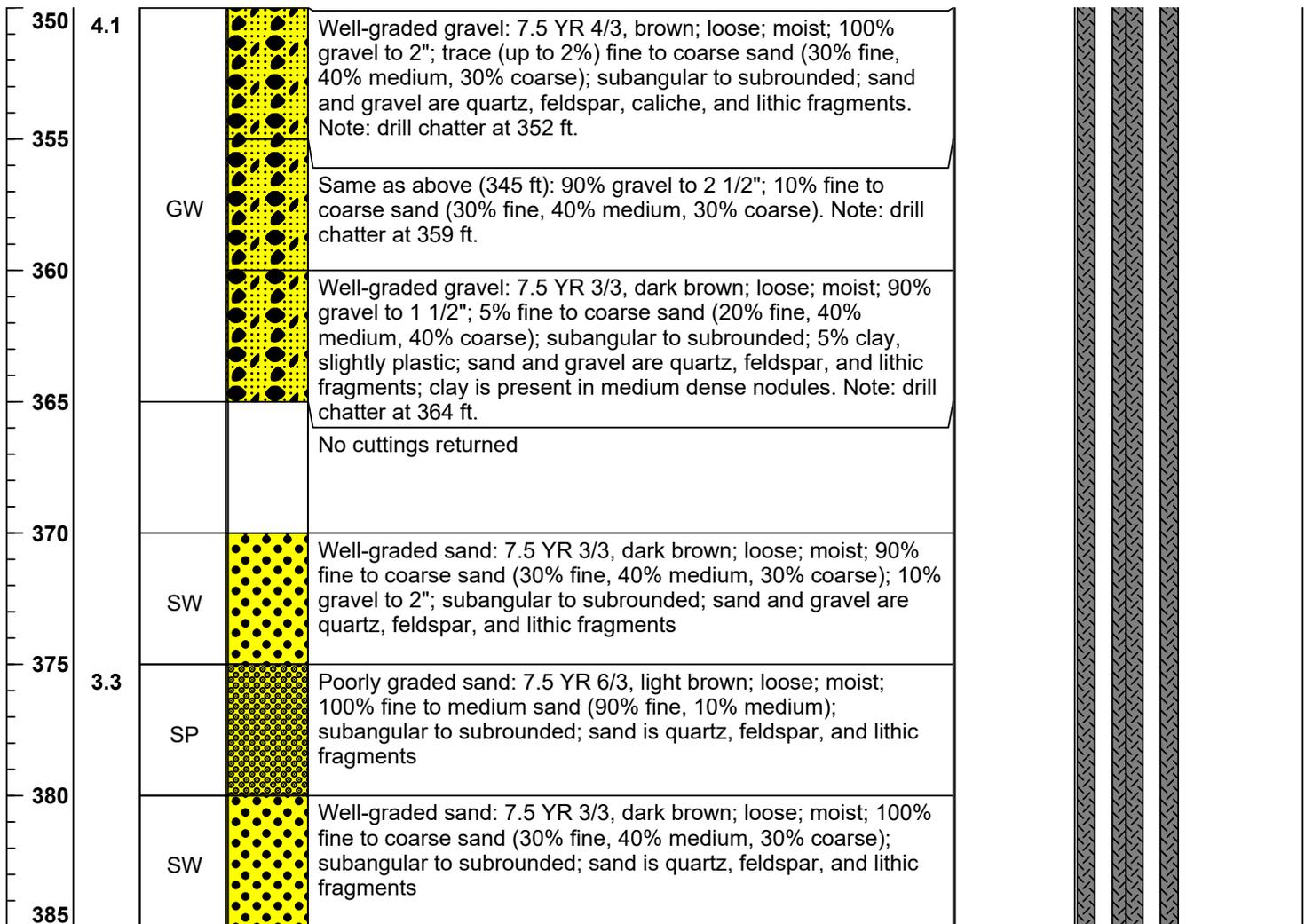
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/28/18</b> Completion Date: <b>9/7/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106245</b> Page: <b>11 of 16</b>		
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>		Boring Depth (ft): <b>537</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft bgs): <b>485.62</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

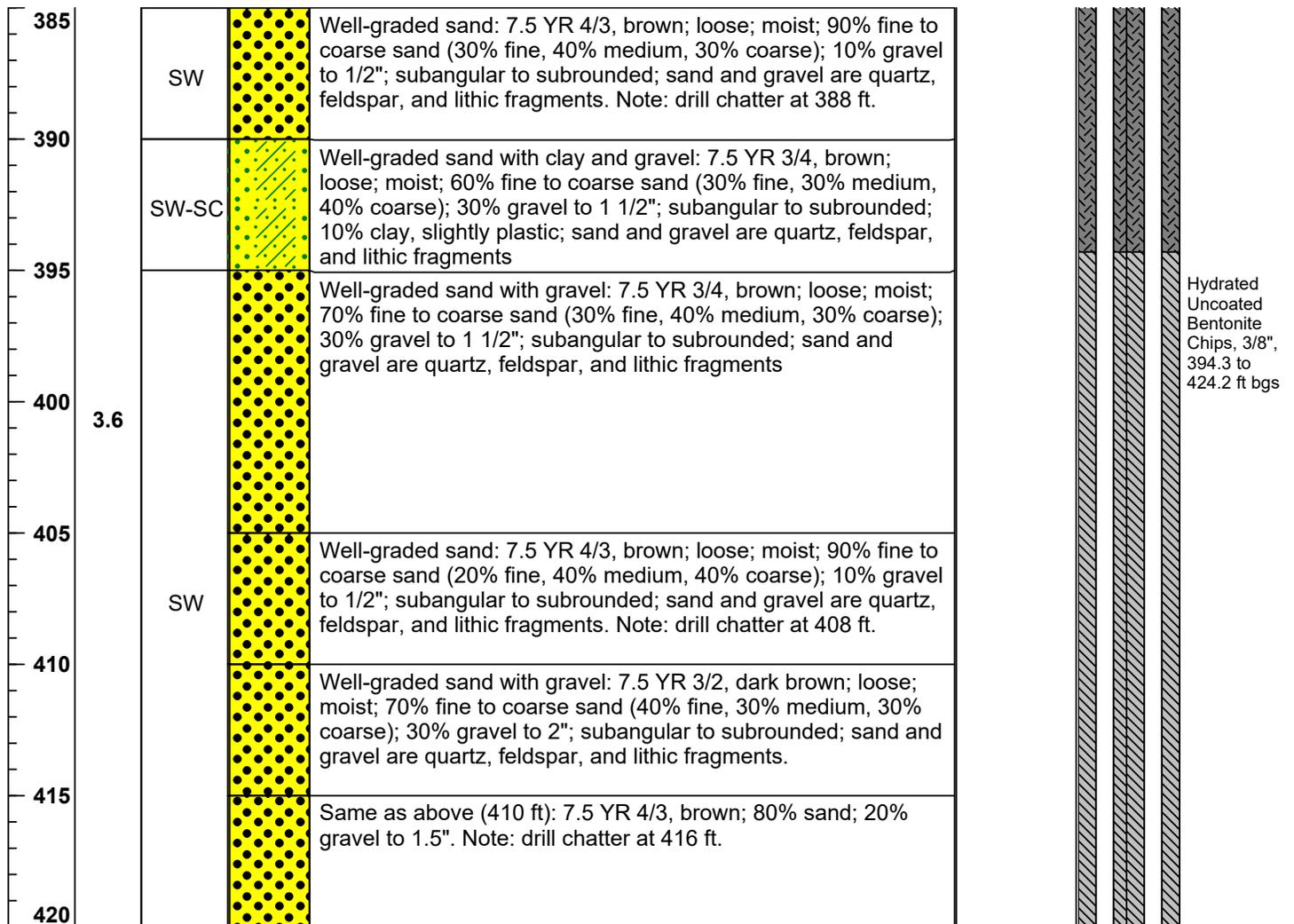
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- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

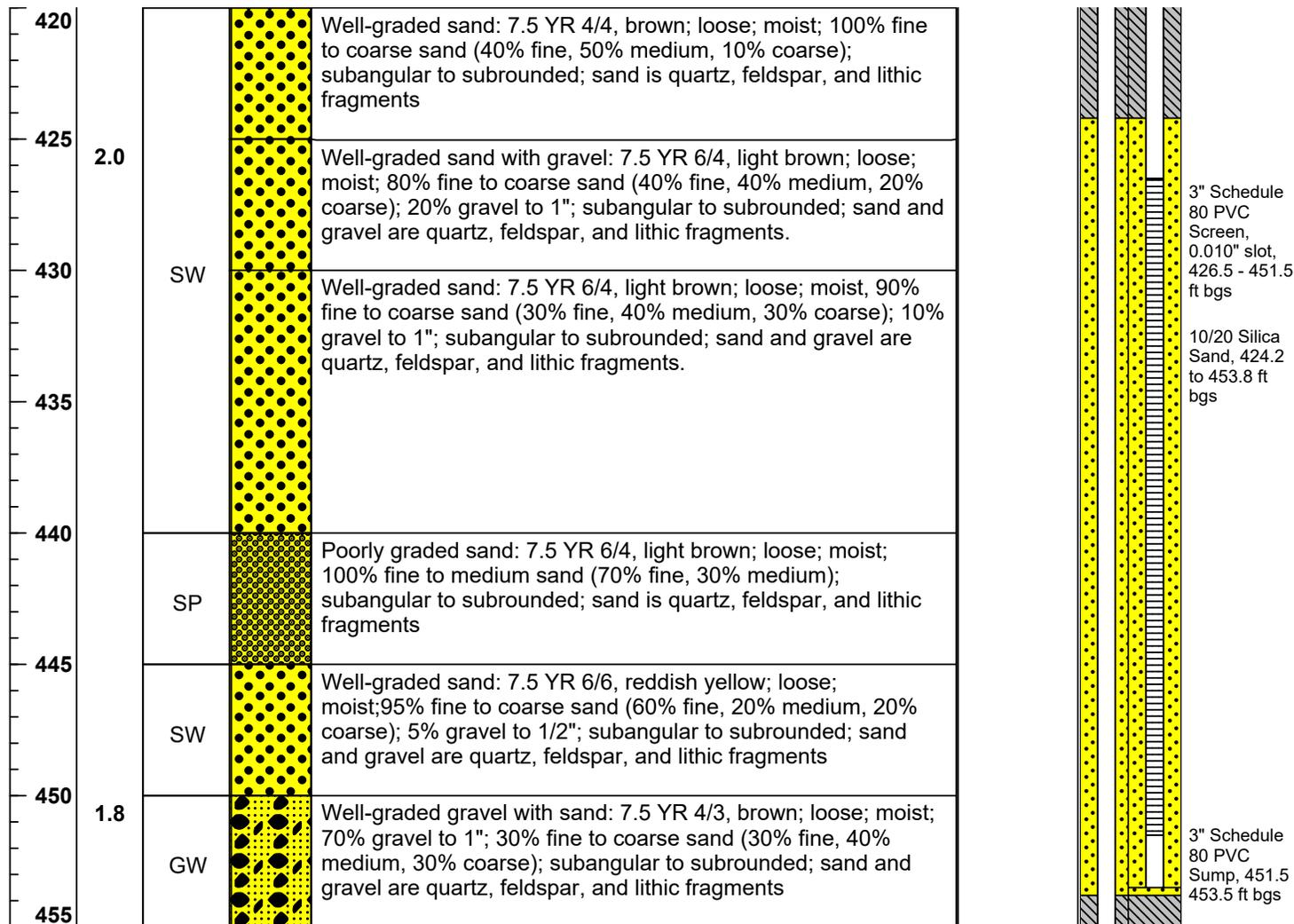
		Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/28/18</b> Completion Date: <b>9/7/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106245</b> Page: <b>12 of 16</b>	
Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>		Boring Depth (ft): <b>537</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft bgs): <b>485.62</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>	
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
-  = Depth to water after completion, taken from the measuring reference point (MRP).

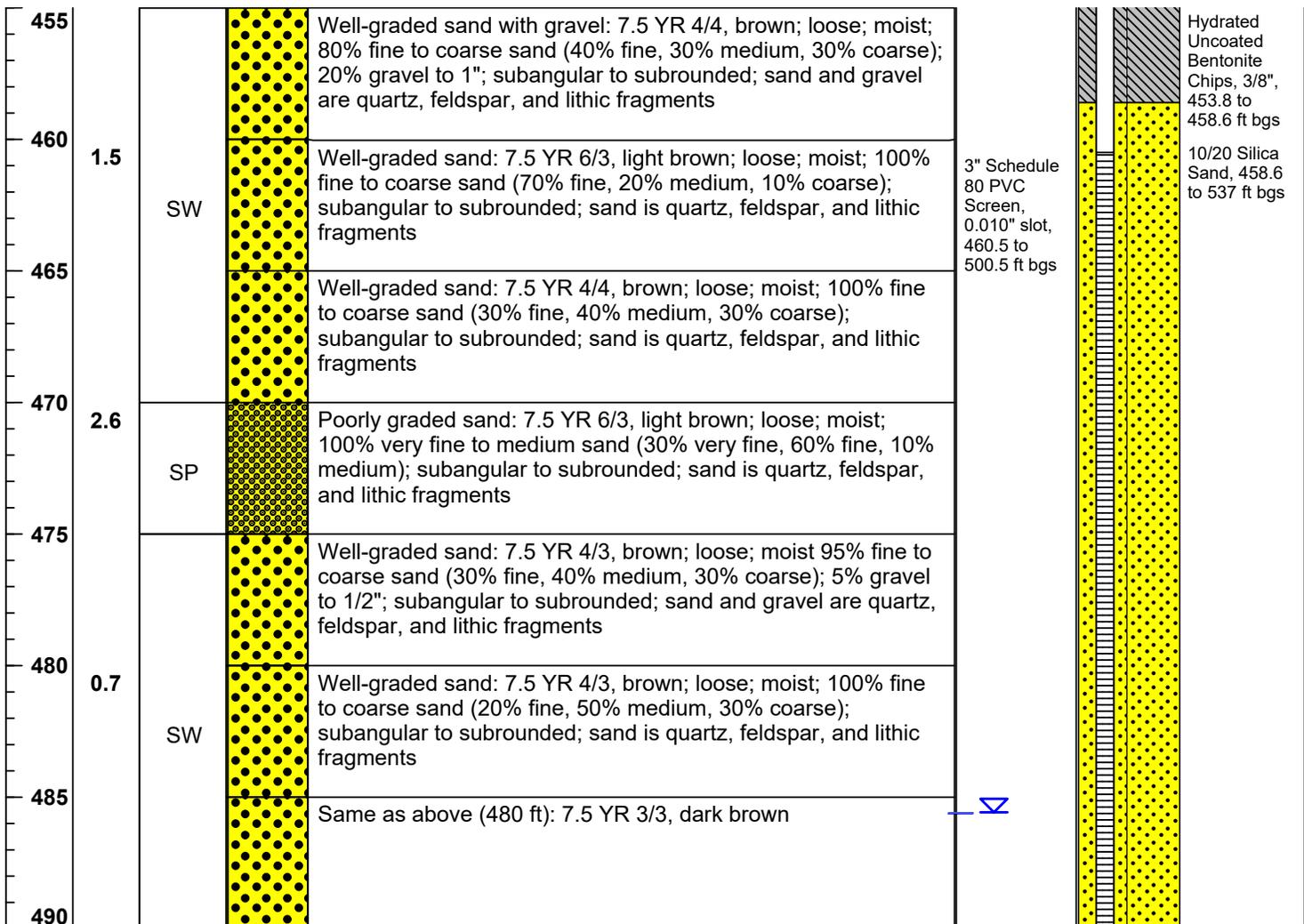
		Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/28/18</b> Completion Date: <b>9/7/18</b>		<h2 style="text-align: center;">WELL LOG</h2> Well ID: <b>KAFB-106245</b> Page: <b>13 of 16</b>			
Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messinger, S. Busby</b>		Boring Depth (ft): <b>537</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft bgs): <b>485.62</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>			
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description		Completion Details	
				(1)	(2)		



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>	<h3 style="text-align: center;">WELL LOG</h3> Well ID: <b>KAFB-106245</b> Page: <b>14 of 16</b>			
	Location: <b>Kirtland AFB, New Mexico</b>				
	Start Date: <b>8/28/18</b>				
	Completion Date: <b>9/7/18</b>				
Drilling Company: <b>Cascade Drilling</b>	Boring Depth (ft): <b>537</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b>			
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>9 5/8 and 11 3/4</b>	Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b>			
Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b>	Well Diameter: <b>3" ID</b>	Filter Pack: <b>10/20 Silica Sand</b>			
Driller: <b>Mark Green</b>	DTW After Completion (ft bgs): <b>485.62</b>				
Geologist: <b>J. Messenger, S. Busby</b>	Riser Material: <b>3" Sch. 80 PVC</b>				
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

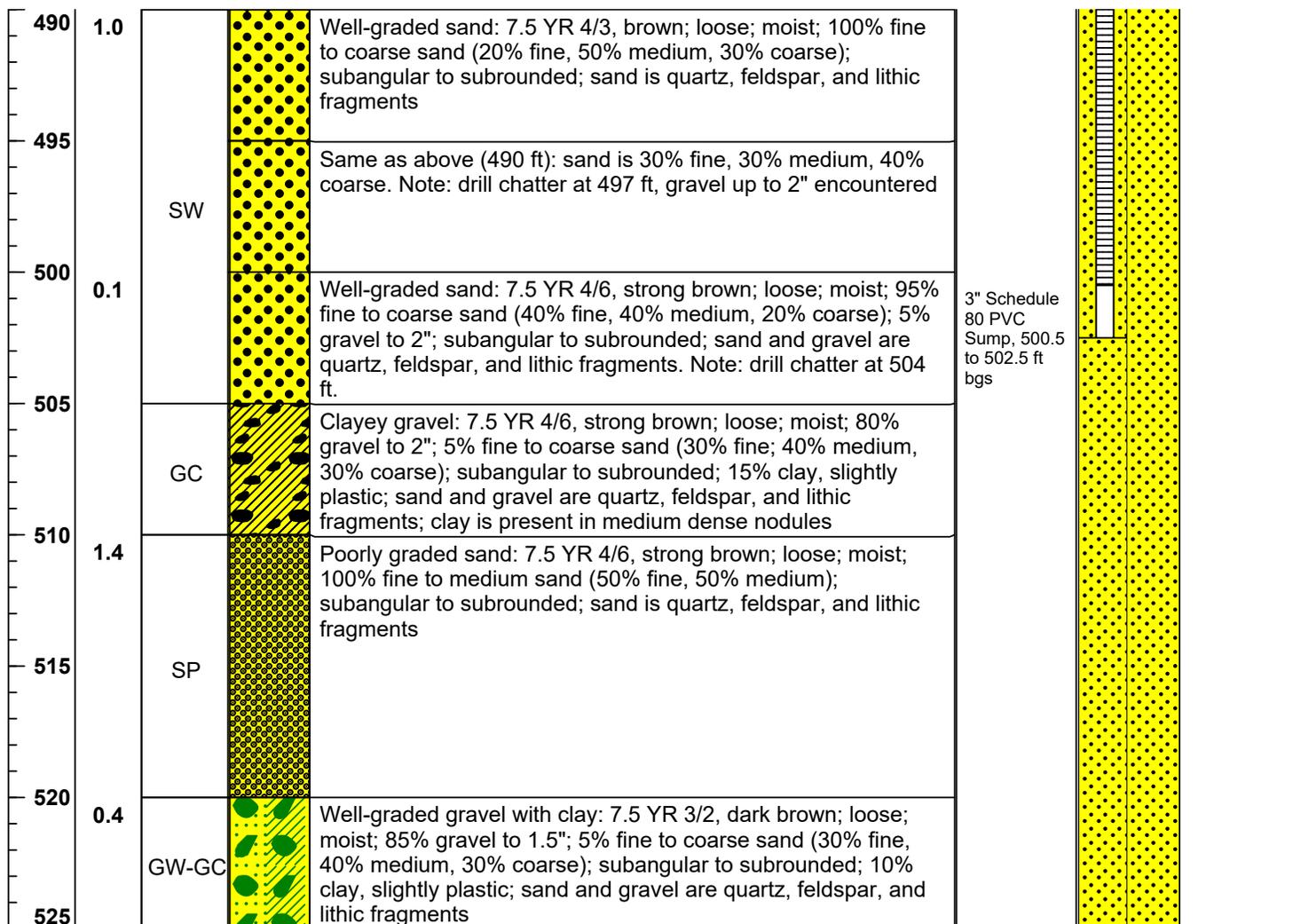
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/28/18</b> Completion Date: <b>9/7/18</b>		<b>WELL LOG</b> Well ID: <b>KAFB-106245</b> Page: <b>15 of 16</b>		
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>		Boring Depth (ft): <b>537</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft bgs): <b>485.62</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

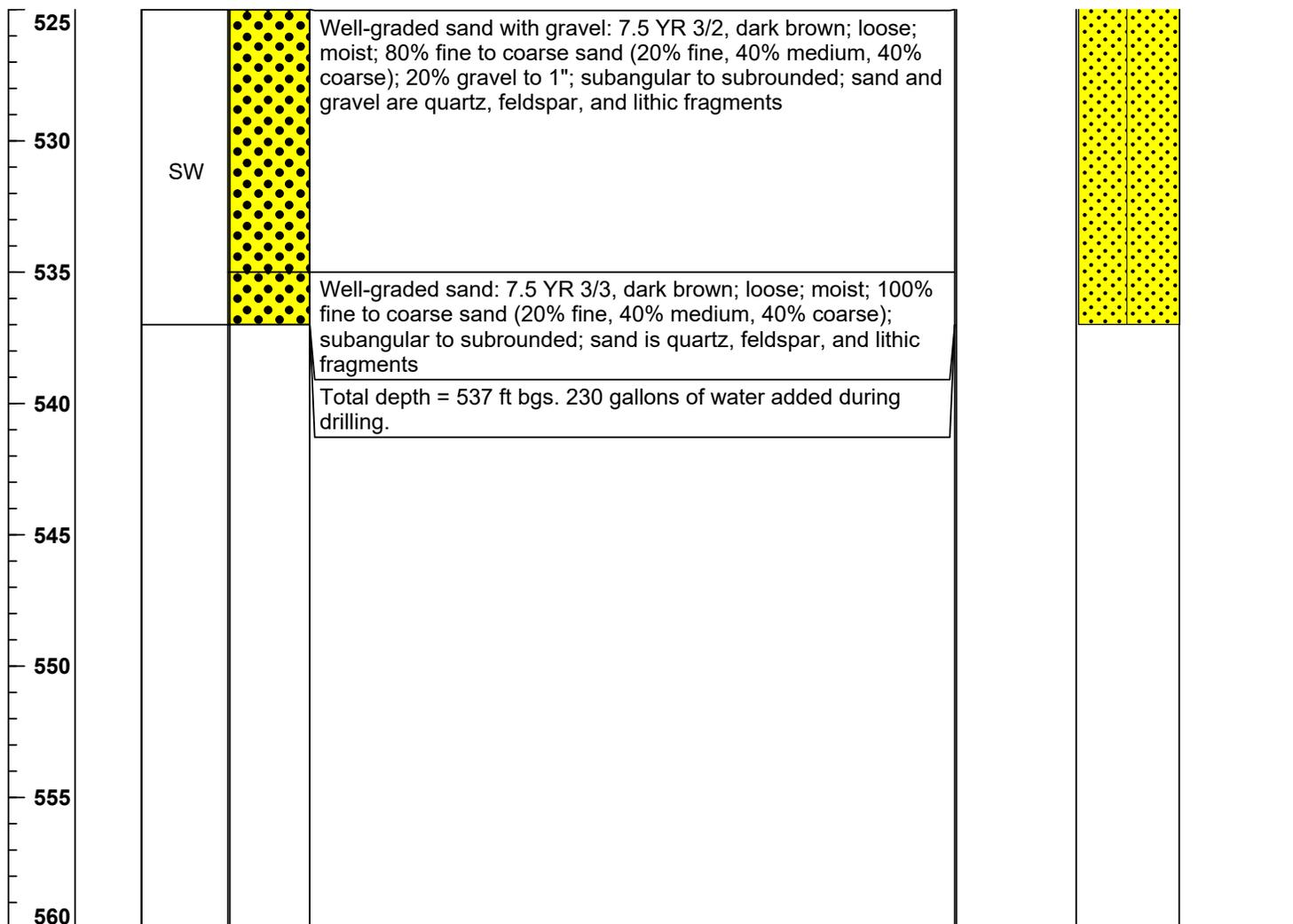
(1) (2)



- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/28/18</b> Completion Date: <b>9/7/18</b>		<h3 style="text-align: center;">WELL LOG</h3> Well ID: <b>KAFB-106245</b> Page: <b>16 of 16</b>		
	Drilling Company: <b>Cascade Drilling</b> Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 8 1/2" and 10 5/8"</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>		Boring Depth (ft): <b>537</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft bgs): <b>485.62</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

(1) (2)

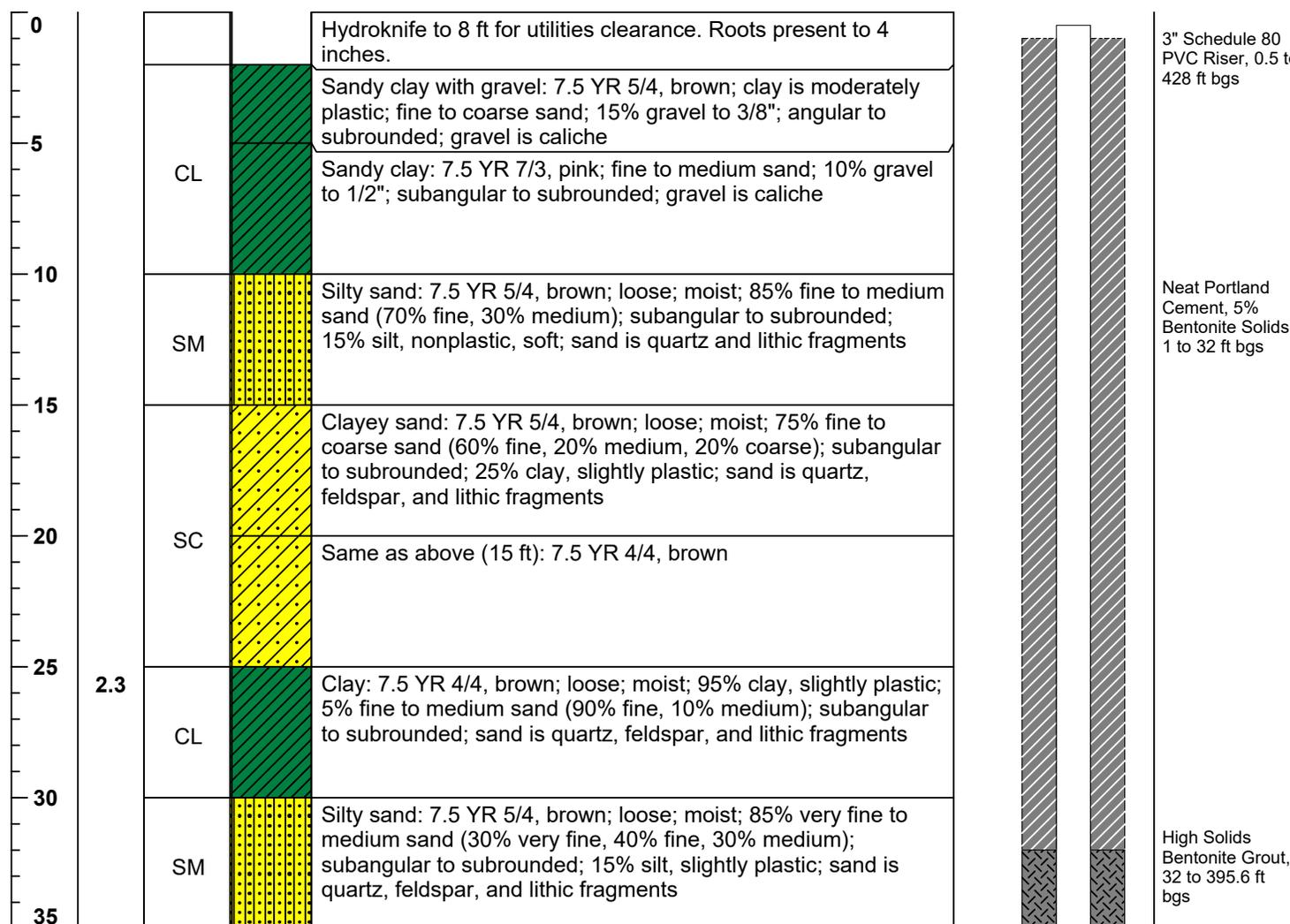


- Notes:
- (1) Current Water Table Data Gap Well
  - (2) Contingency Well
  - (3) Hydro-knifing used for utility clearance
  - (4) See Table 2-3 for well construction elevations
  - ∇ = Depth to water after completion, taken from the measuring reference point (MRP).

	Project: <b>62599DM01.1017.3</b>	<h2 style="margin: 0;">WELL LOG</h2>
	Location: <b>Kirtland AFB, New Mexico</b>	
	Start Date: <b>8/28/18</b>	Page: <b>1 of 14</b>
	Completion Date: <b>9/2/18</b>	

Drilling Company: Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 10 5/8" and Milltooth Tricone 10 1/2</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>	Boring Depth (ft): <b>462.7</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>NA</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
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Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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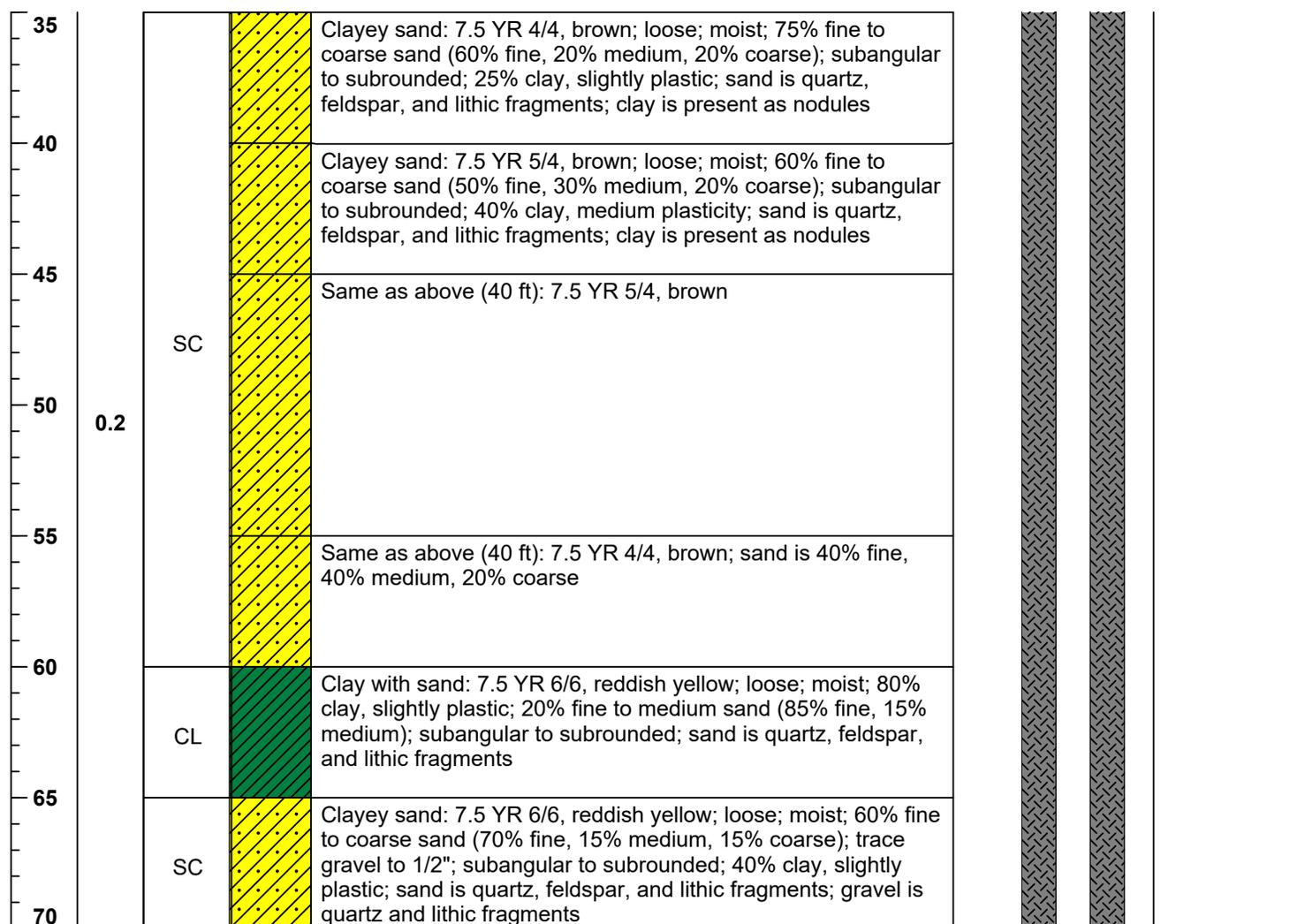


- Notes: (1) Hydro-knifing used for utility clearance  
 (2) Well completed in the vadose zone; depth to water is not applicable

	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b>
	Location: <b>Kirtland AFB, New Mexico</b>	
	Start Date: <b>8/28/18</b>	Page: <b>2 of 14</b>
	Completion Date: <b>9/2/18</b>	

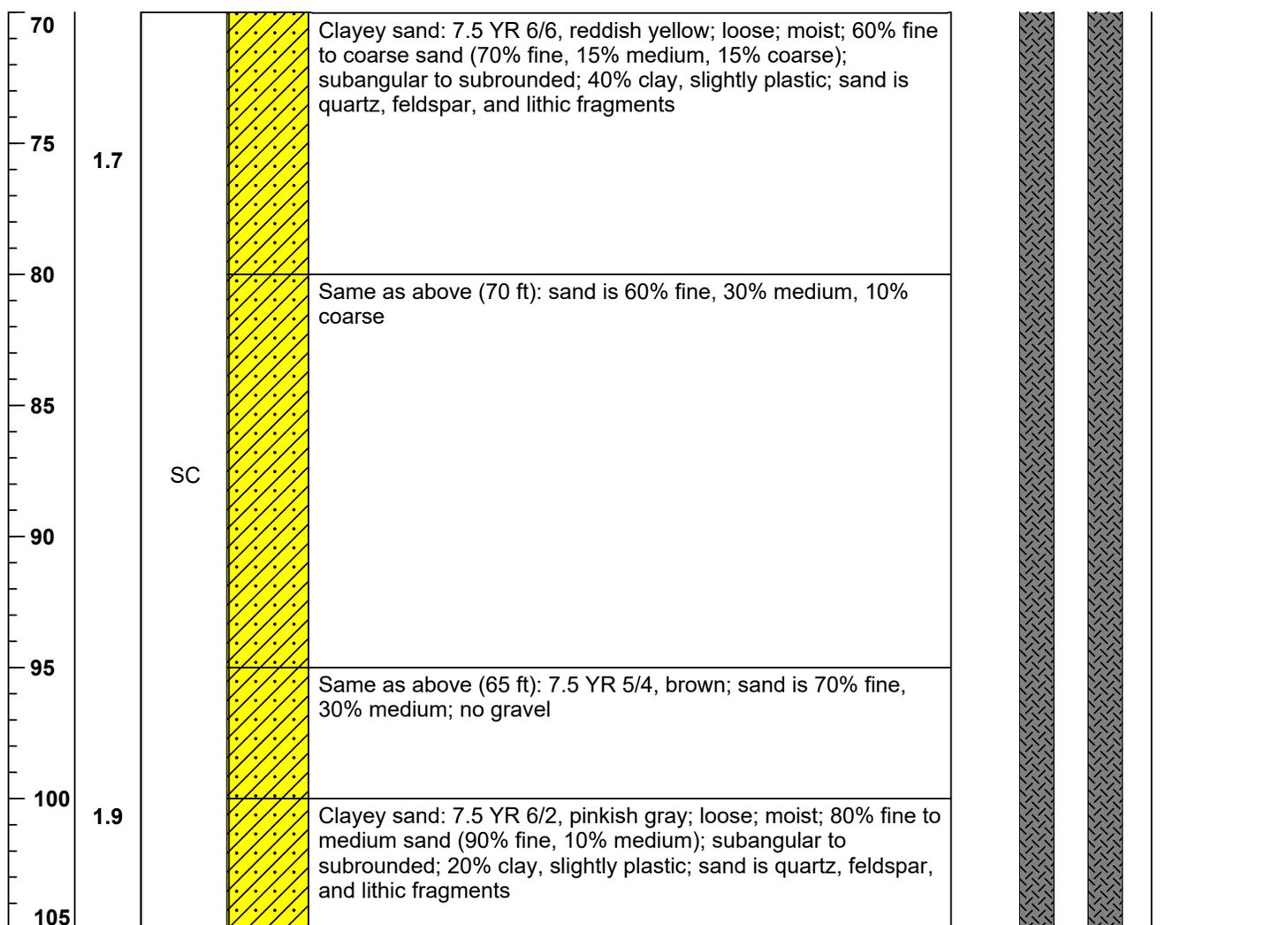
Drilling Company:	Boring Depth (ft): <b>462.7</b>	Screen Material: <b>3" Sch. 80 PVC 0.010"</b>
Drilling Method: <b>Air Rotary Casing Hammer</b>	Boring Diameter (in): <b>9 5/8 and 11 3/4</b>	<b>Slot Screen</b>
Drill Bit: <b>Ken Claw 10 5/8" and Milltooth Tricone 10 1/2</b>	Well Diameter: <b>3" ID</b>	Seal Material(s): <b>Cement; Bentonite;</b>
Driller: <b>Mark Green</b>	DTW After Completion (ft): <b>NA</b>	<b>High Solids Bentonite Grout</b>
Geologist: <b>J. Messenger, S. Busby</b>	Riser Material: <b>3" Sch. 80 PVC</b>	Filter Pack: <b>10/20 Silica Sand</b>

Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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- Notes: (1) Hydro-knifing used for utility clearance  
 (2) Well completed in the vadose zone; depth to water is not applicable

		Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/28/18</b> Completion Date: <b>9/2/18</b>		<h3 style="text-align: center;">WELL LOG</h3> Well ID: <b>KAFB-106246</b> Page: <b>3 of 14</b>	
Drilling Company: Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 10 5/8" and Milltooth Tricone 10 1/2</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>		Boring Depth (ft): <b>462.7</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>NA</b> Riser Material: <b>3" Sch. 80 PVC</b>		Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>	
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details

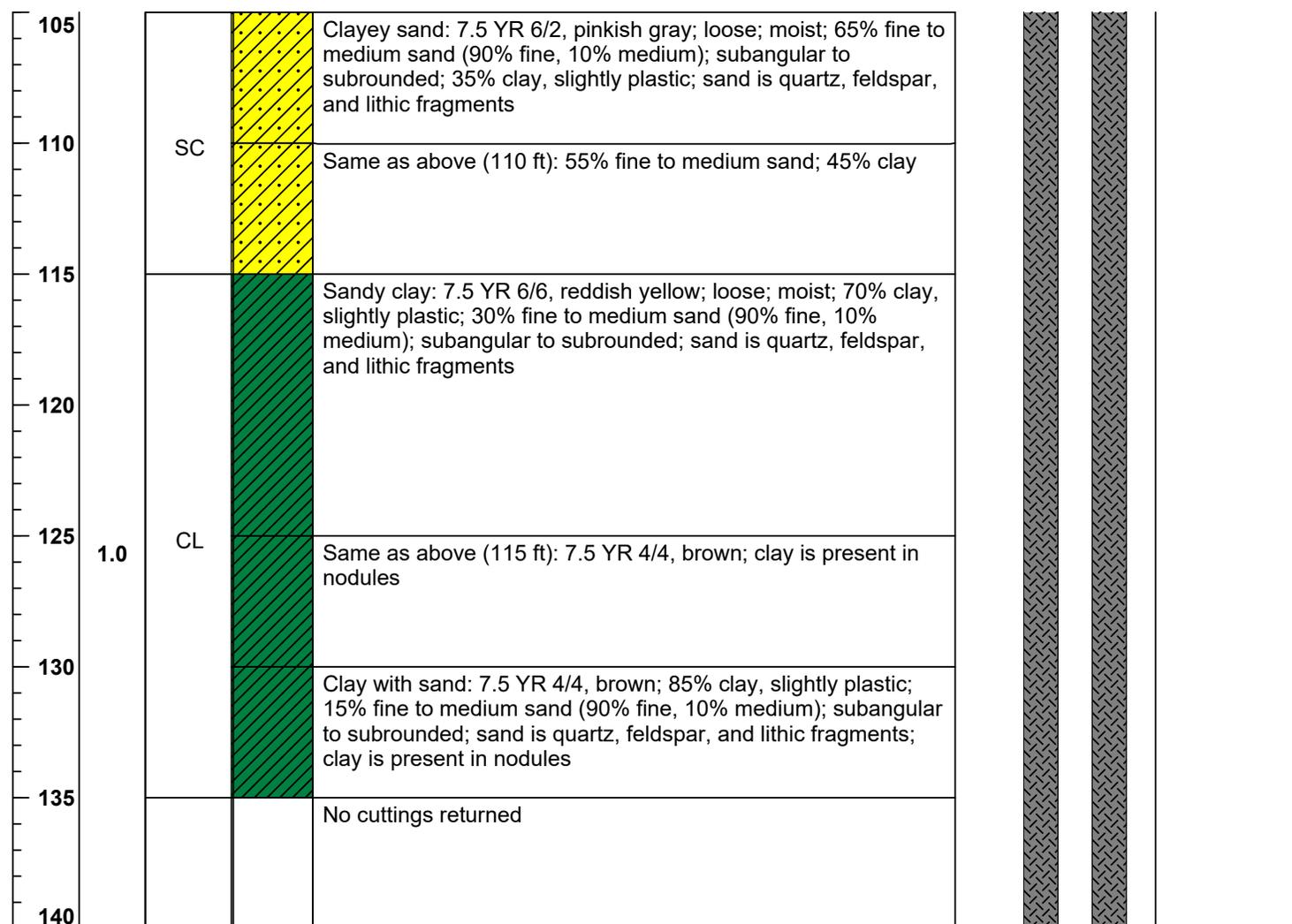


- Notes: (1) Hydro-knifing used for utility clearance  
 (2) Well completed in the vadose zone; depth to water is not applicable

	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b>
	Location: <b>Kirtland AFB, New Mexico</b>	
	Start Date: <b>8/28/18</b>	Page: <b>4 of 14</b>
	Completion Date: <b>9/2/18</b>	

Drilling Company: Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 10 5/8" and Milltooth Tricone 10 1/2</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>	Boring Depth (ft): <b>462.7</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>NA</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
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Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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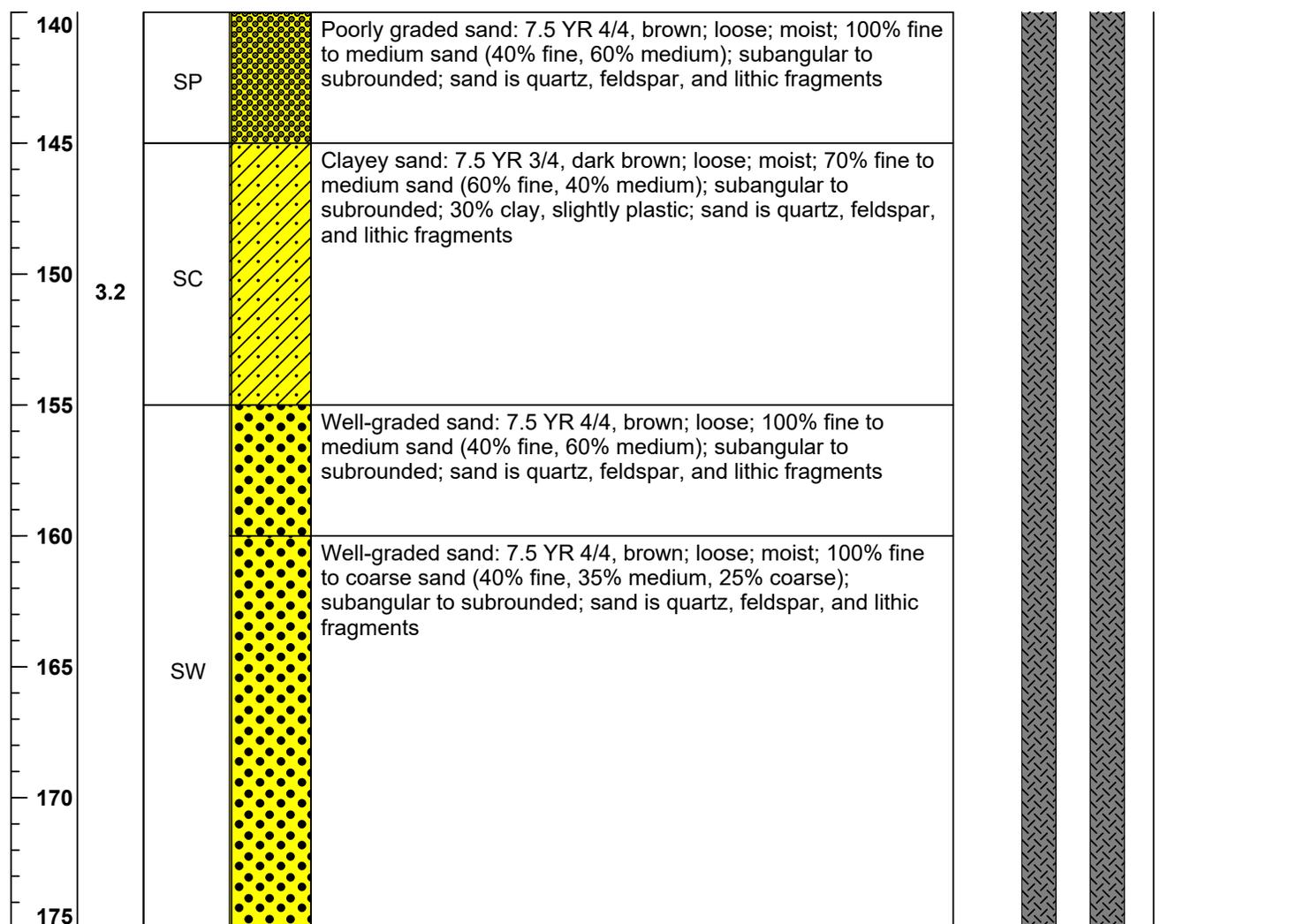


- Notes: (1) Hydro-knifing used for utility clearance  
 (2) Well completed in the vadose zone; depth to water is not applicable

	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106246</b> Page: <b>5 of 14</b>
	Location: <b>Kirtland AFB, New Mexico</b>	
	Start Date: <b>8/28/18</b>	
	Completion Date: <b>9/2/18</b>	

Drilling Company: Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 10 5/8" and Milltooth Tricone 10 1/2</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>	Boring Depth (ft): <b>462.7</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>NA</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
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Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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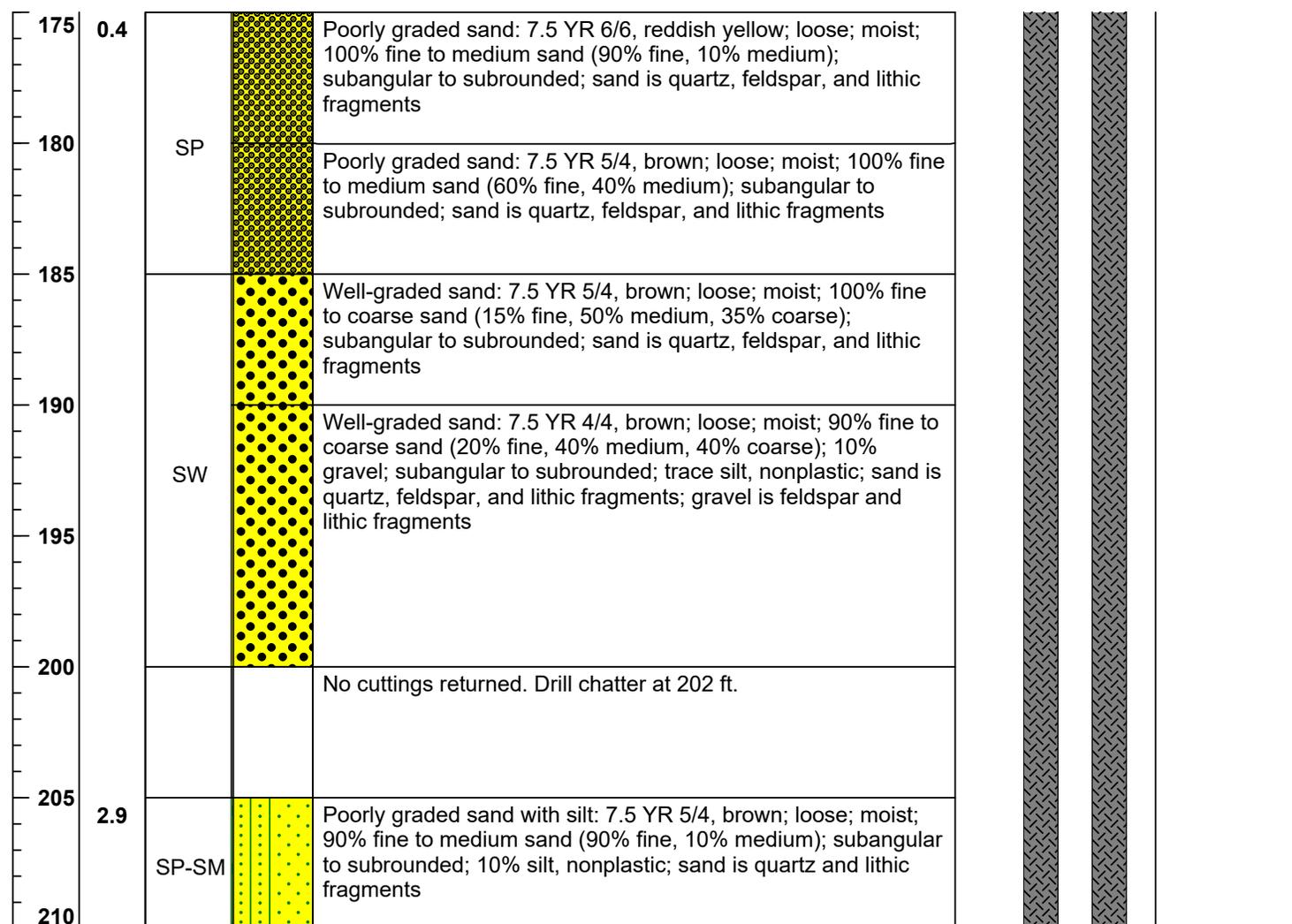


- Notes: (1) Hydro-knifing used for utility clearance  
 (2) Well completed in the vadose zone; depth to water is not applicable

	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106246</b> Page: <b>6 of 14</b>
	Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/28/18</b> Completion Date: <b>9/2/18</b>	

Drilling Company: Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 10 5/8" and Milltooth Tricone 10 1/2</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>	Boring Depth (ft): <b>462.7</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>NA</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
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Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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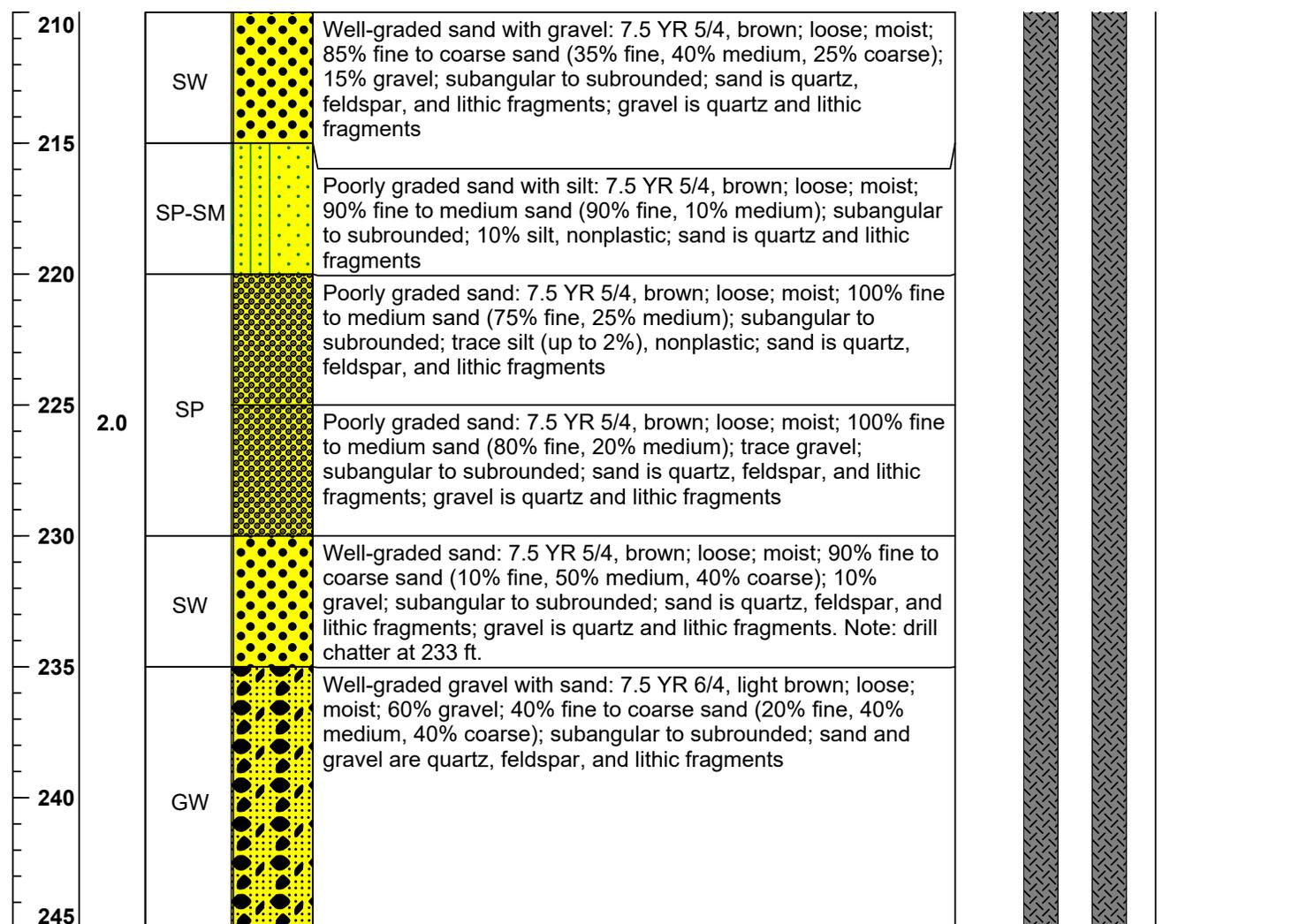


- Notes: (1) Hydro-knifing used for utility clearance  
 (2) Well completed in the vadose zone; depth to water is not applicable

	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106246</b> Page: <b>7 of 14</b>
	Location: <b>Kirtland AFB, New Mexico</b>	
	Start Date: <b>8/28/18</b>	
	Completion Date: <b>9/2/18</b>	

Drilling Company: Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 10 5/8" and Milltooth Tricone 10 1/2</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>	Boring Depth (ft): <b>462.7</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>NA</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
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Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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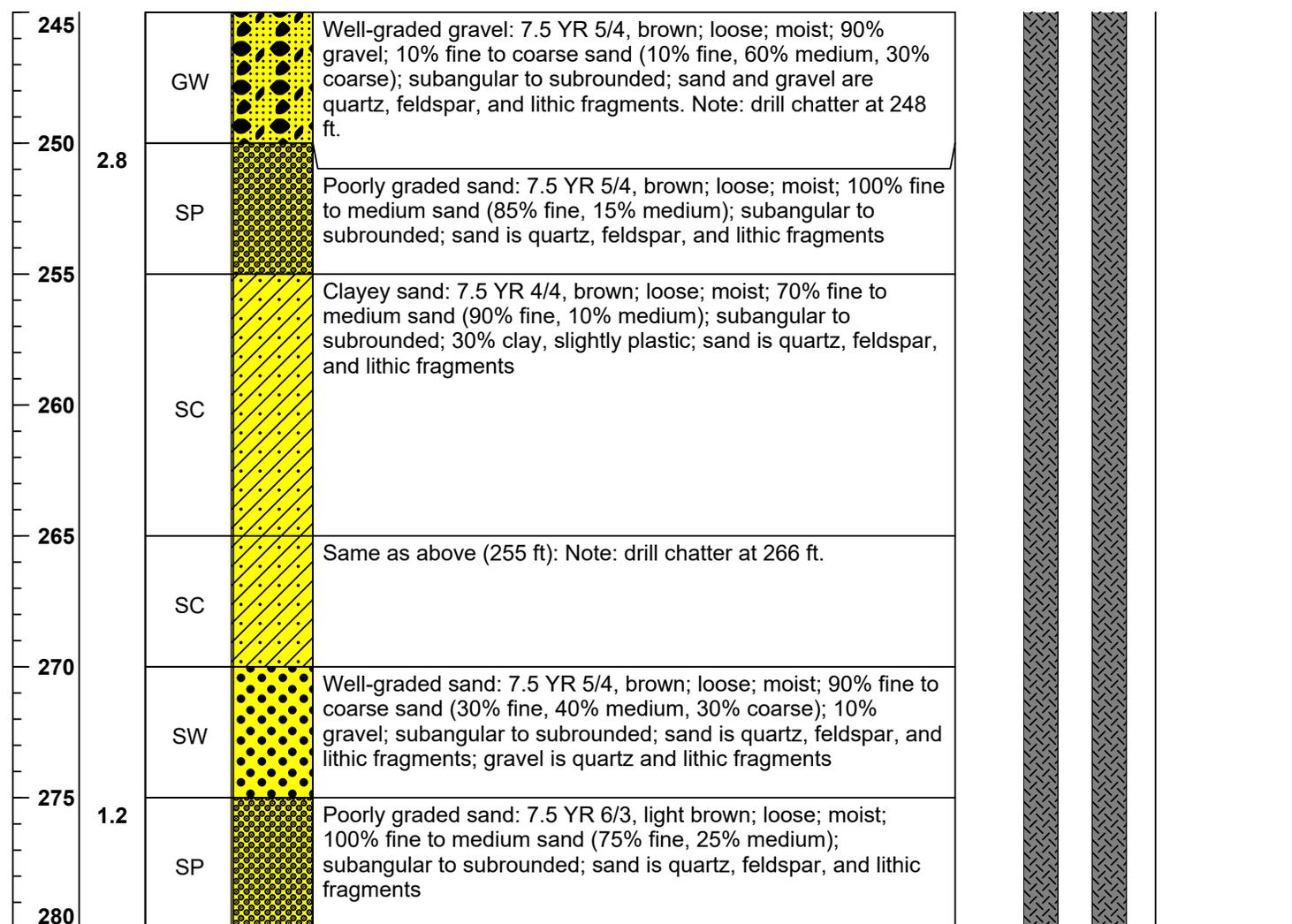


- Notes: (1) Hydro-knifing used for utility clearance  
 (2) Well completed in the vadose zone; depth to water is not applicable

	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106246</b> Page: <b>8 of 14</b>
	Location: <b>Kirtland AFB, New Mexico</b>	
	Start Date: <b>8/28/18</b>	
	Completion Date: <b>9/2/18</b>	

Drilling Company: Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 10 5/8" and Milltooth Tricone 10 1/2</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>	Boring Depth (ft): <b>462.7</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>NA</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
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Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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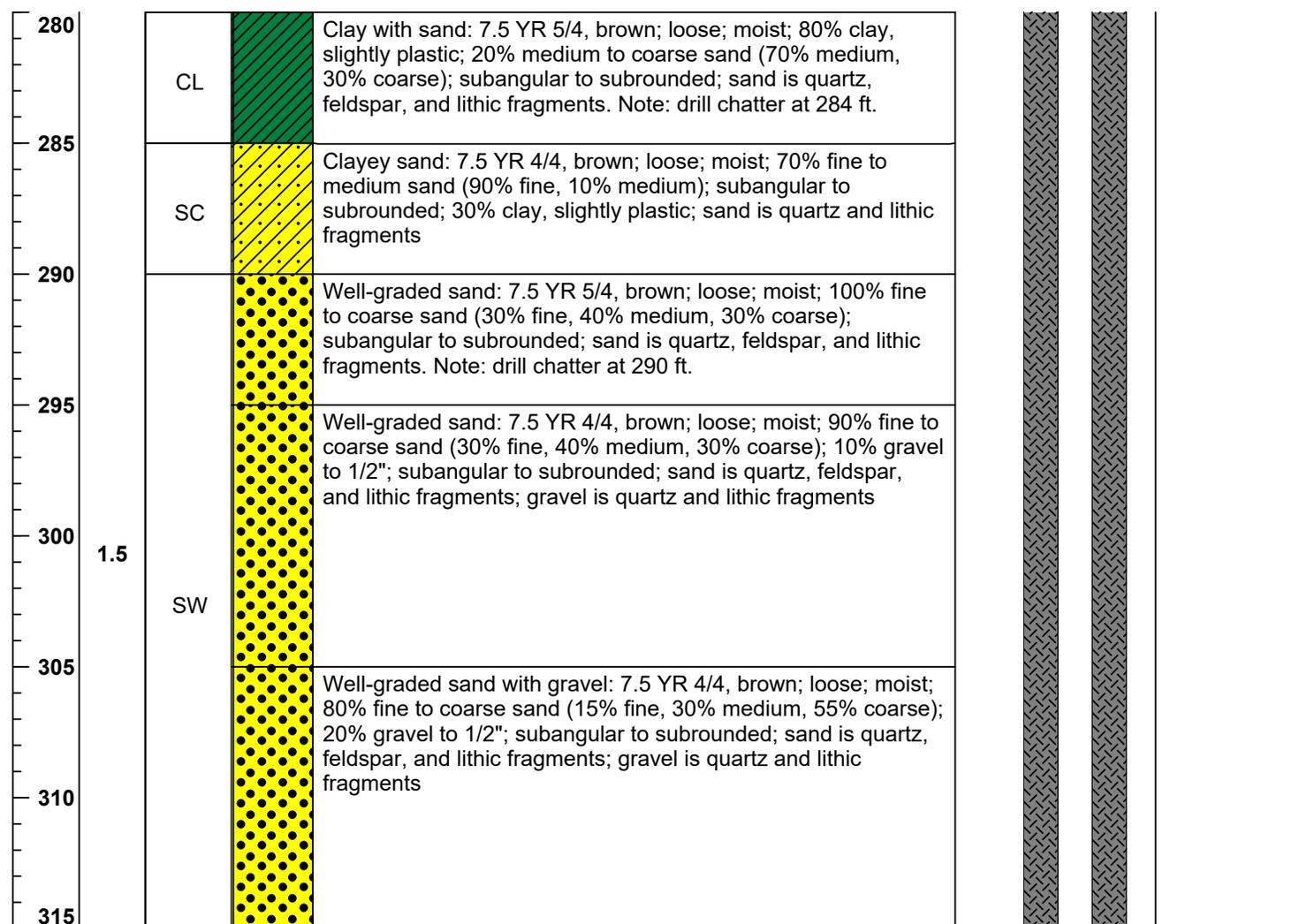


- Notes: (1) Hydro-knifing used for utility clearance  
 (2) Well completed in the vadose zone; depth to water is not applicable

	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106246</b> Page: <b>9 of 14</b>
	Location: <b>Kirtland AFB, New Mexico</b>	
	Start Date: <b>8/28/18</b>	
	Completion Date: <b>9/2/18</b>	

Drilling Company: Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 10 5/8" and Milltooth Tricone 10 1/2</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>	Boring Depth (ft): <b>462.7</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>NA</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
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Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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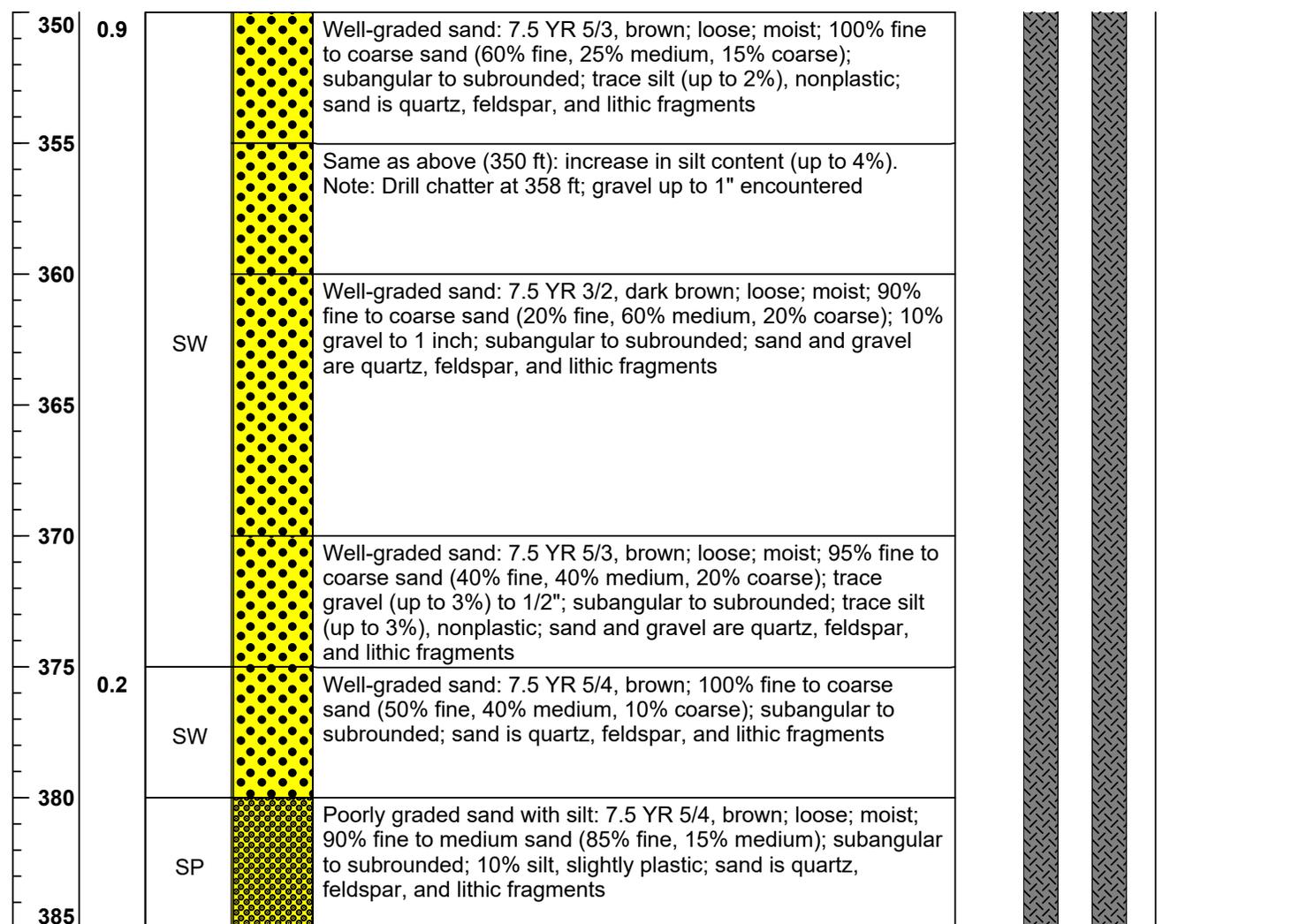
- Notes: (1) Hydro-knifing used for utility clearance  
 (2) Well completed in the vadose zone; depth to water is not applicable



	Project: <b>62599DM01.1017.3</b> Location: <b>Kirtland AFB, New Mexico</b> Start Date: <b>8/28/18</b> Completion Date: <b>9/2/18</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106246</b> Page: <b>11 of 14</b>
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Drilling Company: Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 10 5/8" and Milltooth Tricone 10 1/2</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>	Boring Depth (ft): <b>462.7</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>NA</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
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Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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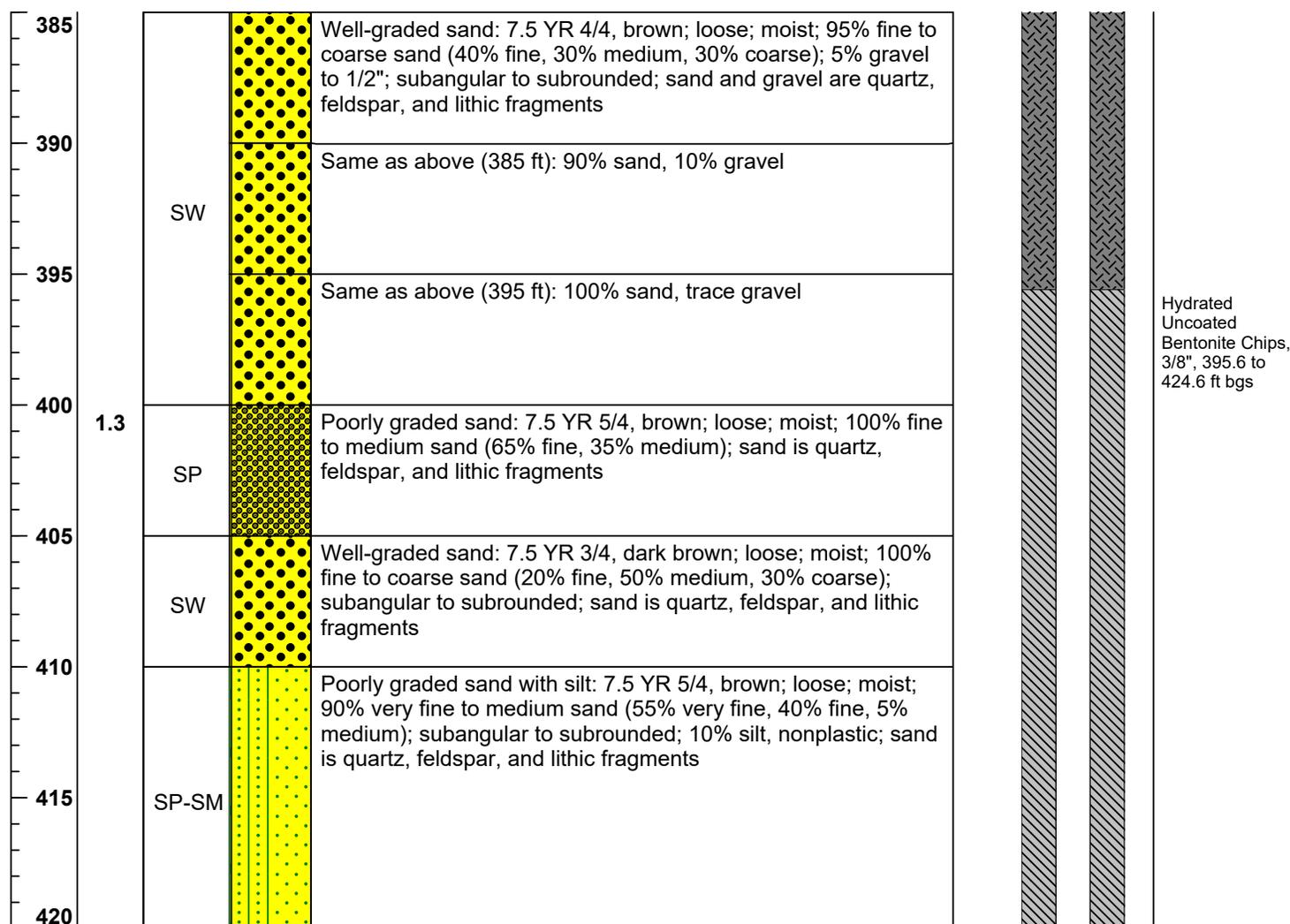


- Notes: (1) Hydro-knifing used for utility clearance  
 (2) Well completed in the vadose zone; depth to water is not applicable

	Project: <b>62599DM01.1017.3</b>	<h2>WELL LOG</h2>	
	Location: <b>Kirtland AFB, New Mexico</b>		Well ID: <b>KAFB-106246</b>
	Start Date: <b>8/28/18</b>		Page: <b>12 of 14</b>
	Completion Date: <b>9/2/18</b>		

Drilling Company: Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 10 5/8" and Milltooth Tricone 10 1/2</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>	Boring Depth (ft): <b>462.7</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>NA</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
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Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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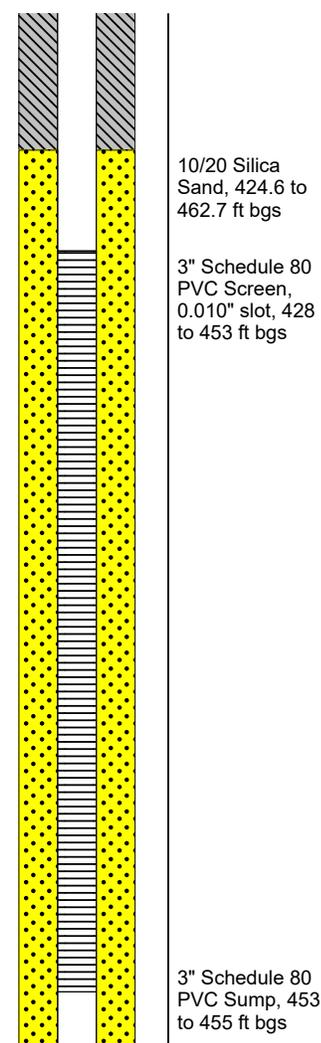
- Notes: (1) Hydro-knifing used for utility clearance  
 (2) Well completed in the vadose zone; depth to water is not applicable

	Project: <b>62599DM01.1017.3</b>	<h2 style="margin: 0;">WELL LOG</h2> Well ID: <b>KAFB-106246</b> Page: <b>13 of 14</b>
	Location: <b>Kirtland AFB, New Mexico</b>	
	Start Date: <b>8/28/18</b>	
	Completion Date: <b>9/2/18</b>	

Drilling Company: Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 10 5/8" and Milltooth Tricone 10 1/2</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>	Boring Depth (ft): <b>462.7</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>NA</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
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Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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420	2.0	SW		Well-graded sand: 7.5 YR 5/4, brown; loose; moist; 100% fine to coarse sand (40% fine, 35% medium, 25% coarse); subangular to subrounded; sand is quartz, feldspar, and lithic fragments
425				Same as above (420 ft): trace silt, nonplastic
430				Same as above (420 ft): trace gravel to 1/2"; trace silt, nonplastic. Note: drill chatter at 433 ft.
435				No cuttings returned
440		SP		Poorly graded sand: 7.5 YR 3/4, dark brown; loose; moist; 100% fine to medium sand (80% fine, 20% medium); subangular to subrounded; sand is quartz, feldspar, and lithic fragments
445	1.4	SW		Well-graded sand: 7.5 YR 3/4, dark brown; loose; moist; 100% fine to coarse sand (30% fine, 40% medium, 30% coarse); trace gravel (up to 2%) to 1/2"; subangular to subrounded; sand is quartz, feldspar, and lithic fragments, gravel is quartz and lithic fragments
450				Well-graded sand: 7.5 YR 3/4, dark brown; loose; moist; 100% fine to coarse sand (25% fine, 40% medium, 35% coarse); subangular to subrounded; sand is quartz, feldspar, and lithic fragments
455				

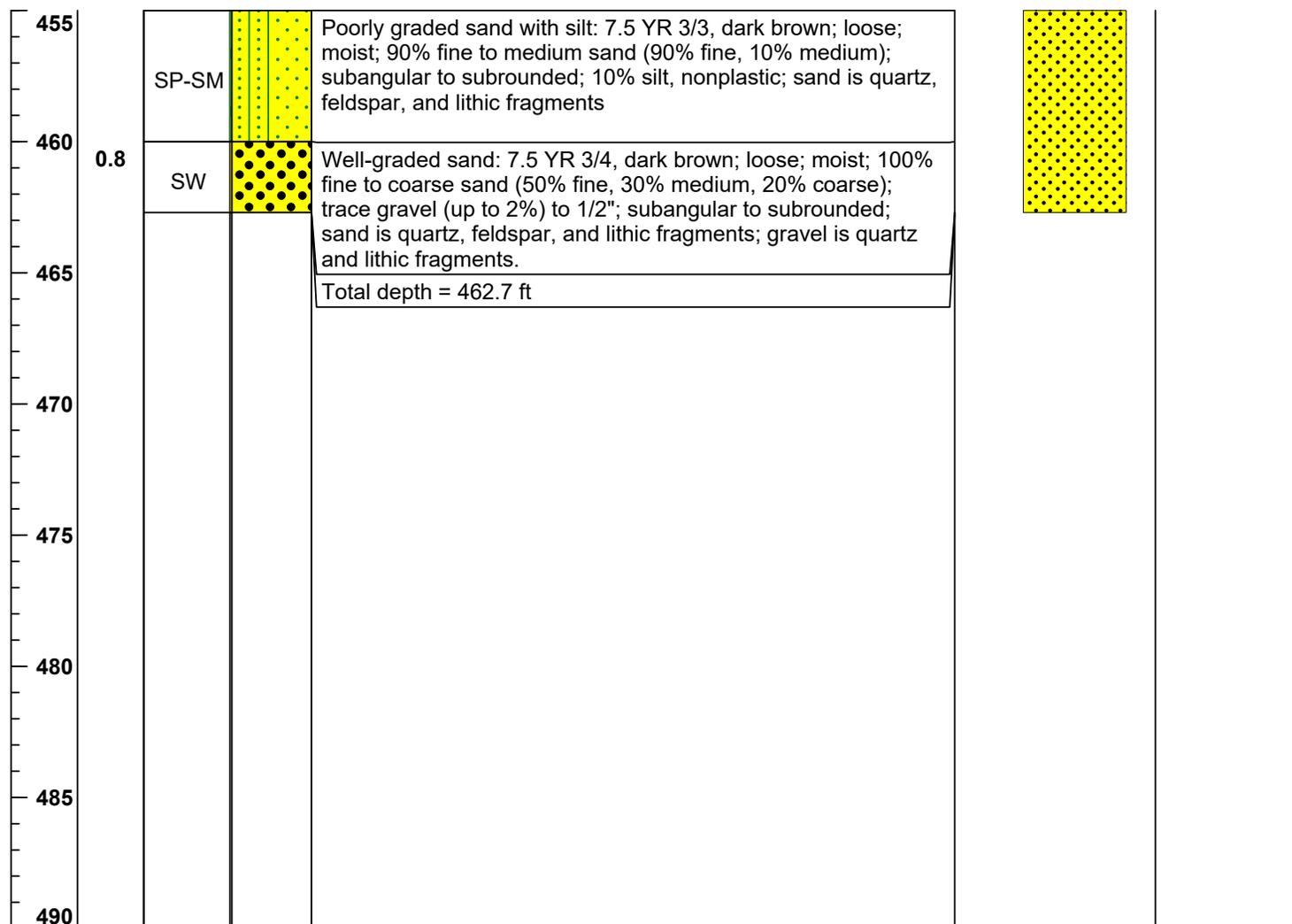


- Notes: (1) Hydro-knifing used for utility clearance  
 (2) Well completed in the vadose zone; depth to water is not applicable

	Project: <b>62599DM01.1017.3</b>	<b>WELL LOG</b> Well ID: <b>KAFB-106246</b> Page: <b>14 of 14</b>
	Location: <b>Kirtland AFB, New Mexico</b>	
	Start Date: <b>8/28/18</b>	
	Completion Date: <b>9/2/18</b>	

Drilling Company: Drilling Method: <b>Air Rotary Casing Hammer</b> Drill Bit: <b>Ken Claw 10 5/8" and Milltooth Tricone 10 1/2</b> Driller: <b>Mark Green</b> Geologist: <b>J. Messenger, S. Busby</b>	Boring Depth (ft): <b>462.7</b> Boring Diameter (in): <b>9 5/8 and 11 3/4</b> Well Diameter: <b>3" ID</b> DTW After Completion (ft): <b>NA</b> Riser Material: <b>3" Sch. 80 PVC</b>	Screen Material: <b>3" Sch. 80 PVC 0.010" Slot Screen</b> Seal Material(s): <b>Cement; Bentonite; High Solids Bentonite Grout</b> Filter Pack: <b>10/20 Silica Sand</b>
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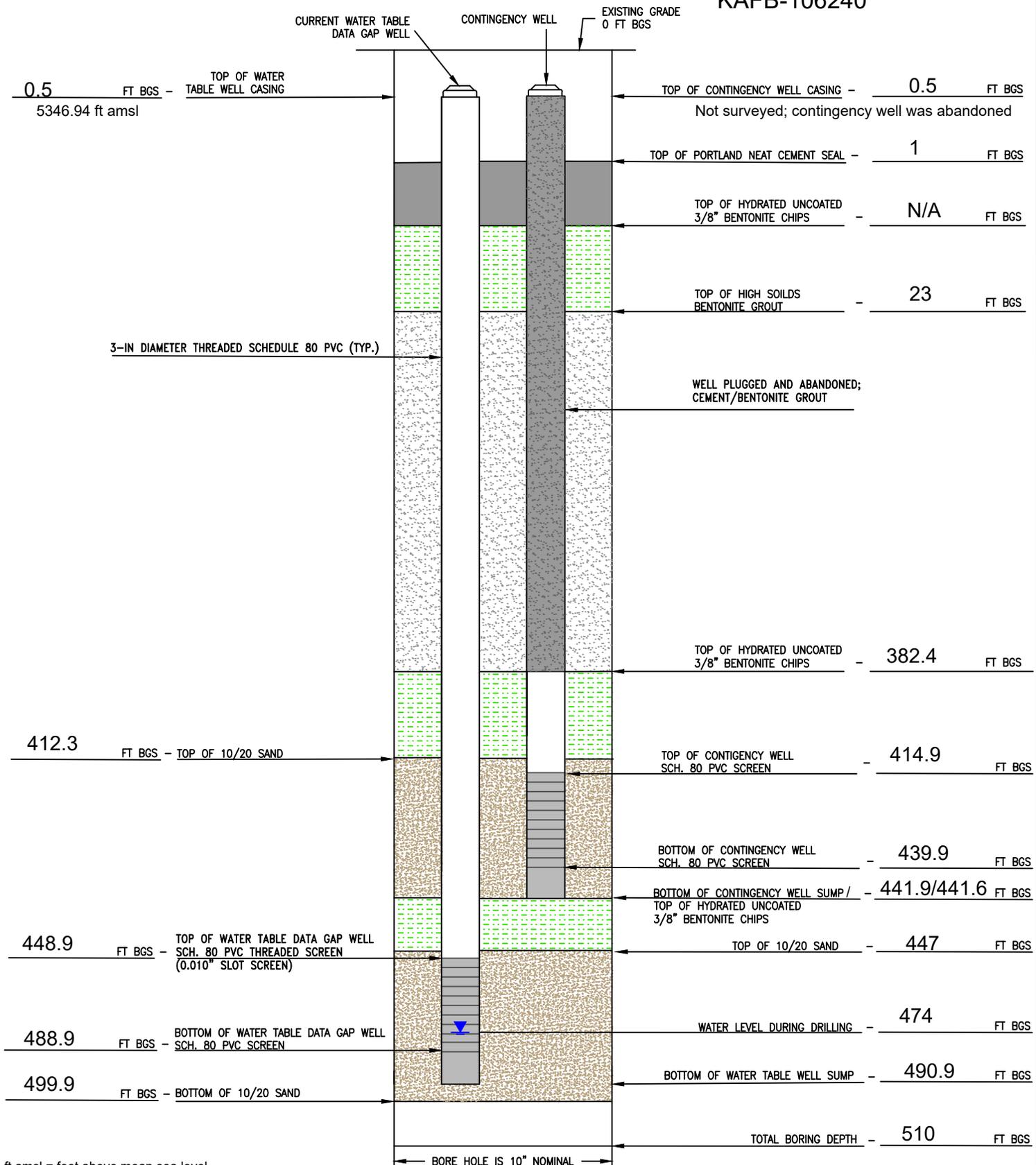
Depth (ft)	PID (ppmv)	USCS	Lithology	Sample Description	Completion Details
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- Notes: (1) Hydro-knifing used for utility clearance  
 (2) Well completed in the vadose zone; depth to water is not applicable

NESTED MONITORING WELL CONSTRUCTION  
SEE TABLE 2-3 FOR WELL CONSTRUCTION ELEVATIONS

KAFB-106240



ft amsl = feet above mean sea level  
PVC = polyvinyl chloride  
SCH - schedule

NOT TO SCALE  
BGS=BELOW GROUND SURFACE  
FT=FEET

**EA**  
320 Gold Avenue, SW Suite 1300  
Albuquerque, NM 87102  
Phone: (505) 224-9013  
Fax: (505) 224-9016  
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC., PBC

**KIRTLAND AIR FORCE BASE**

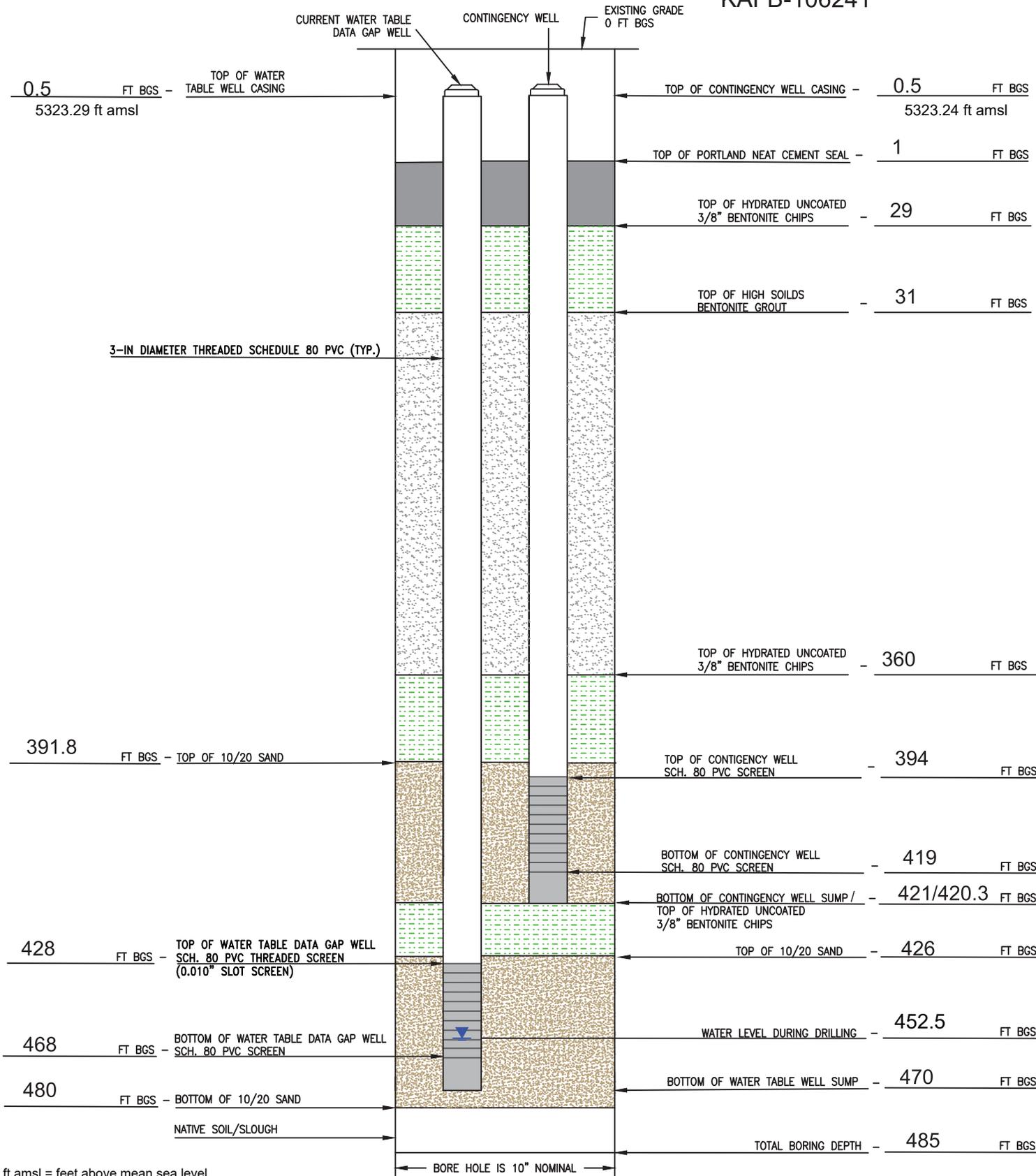
PROJECT NO.:	WELL ID:
62599DM01.1017.3	KAFB-106240

INSTALLATION START DATE/TIME:	INSTALLATION END DATE/TIME:
6/6/18	6/14/18
GEOLOGIST:	DRILLER:
Lane Andress	John Chavez

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NESTED MONITORING WELL CONSTRUCTION  
SEE TABLE 2-3 FOR WELL CONSTRUCTION ELEVATIONS

KAFB-106241



ft amsl = feet above mean sea level  
PVC = polyvinyl chloride  
SCH - schedule

NOT TO SCALE  
BGS=BELOW GROUND SURFACE  
FT=FEET



320 Gold Avenue, SW Suite 1300  
Albuquerque, NM 87102  
Phone: (505) 224-9013  
Fax: (505) 224-9016

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC., PBC

KIRTLAND AIR FORCE BASE

PROJECT NO.: 62599DM01.1017.3

WELL ID: KAFB-106241

INSTALLATION START DATE/TIME: 8/6/18

GEOLOGIST: Lane Andress

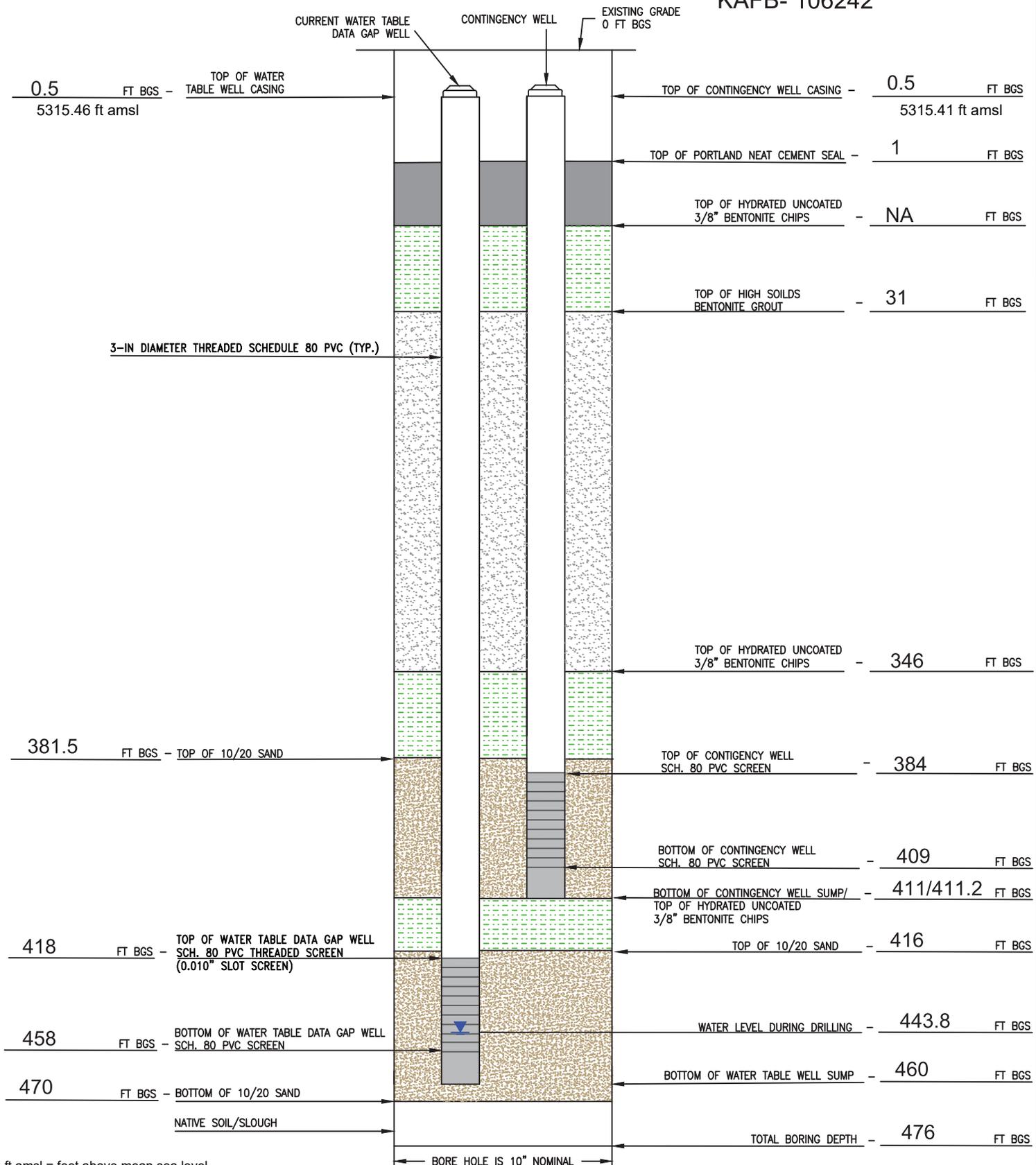
INSTALLATION END DATE/TIME: 8/16/18

DRILLER: Mark Green

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NESTED MONITORING WELL CONSTRUCTION  
SEE TABLE 2-3 FOR WELL CONSTRUCTION ELEVATIONS

KAFB- 106242



ft amsl = feet above mean sea level  
PVC = polyvinyl chloride  
SCH - schedule

NOT TO SCALE  
BGS=BELOW GROUND SURFACE  
FT=FEET

P:\Projects\Kirtland\Figures\Data Gap Monitoring\Wells\WELL\_COMPLETION\_DIAGRAMS\KAFB-106242\_as-built.dwg



320 Gold Avenue, SW Suite 1300  
Albuquerque, NM 87102  
Phone: (505) 224-9013  
Fax: (505) 224-9016

**KIRTLAND AIR FORCE BASE**

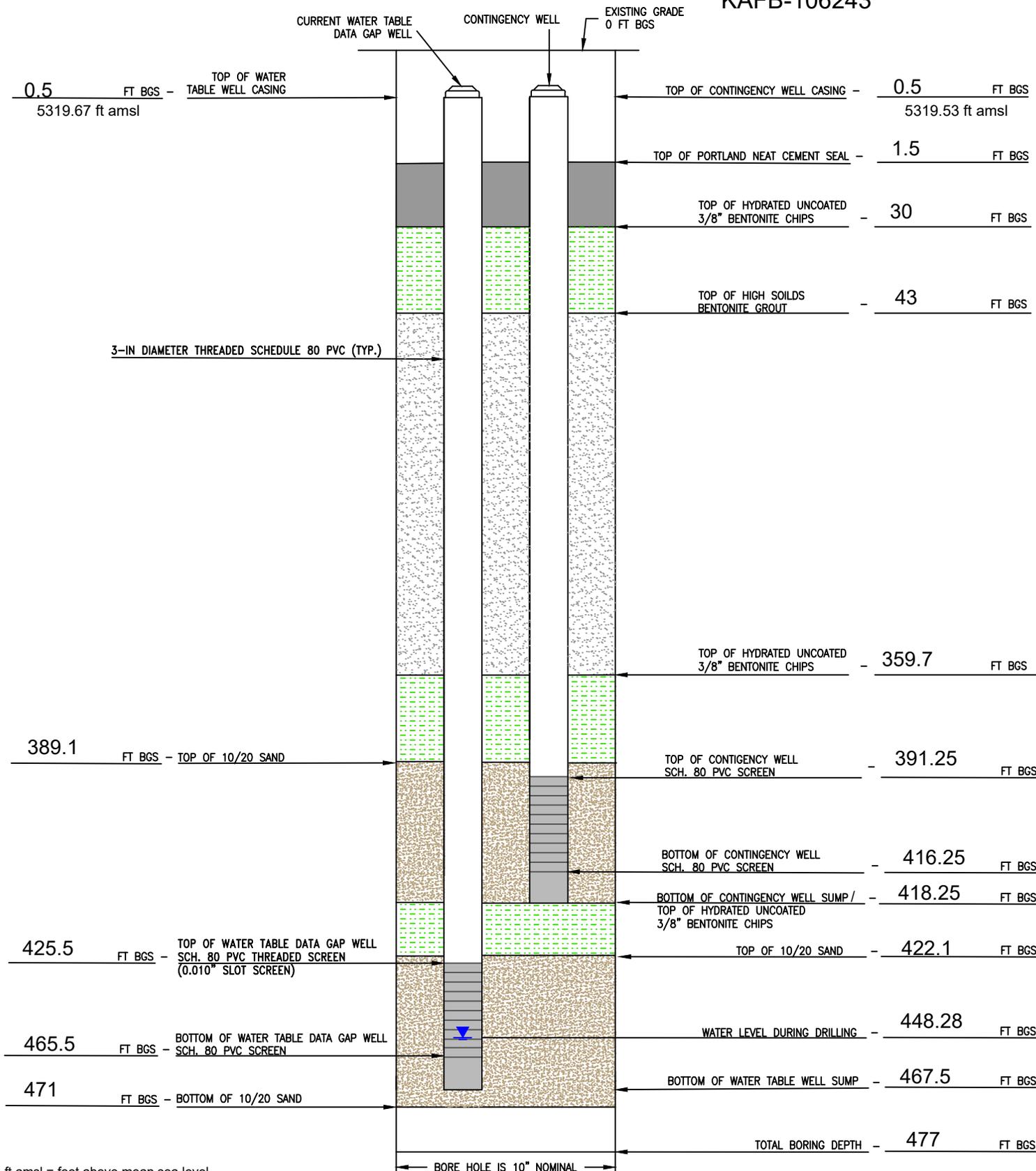
PROJECT NO.: 62599DM01.1017.3  
WELL ID: KAFB-106242

INSTALLATION START DATE/TIME: 8/17/18  
GEOLOGIST: Joshua Messenger

INSTALLATION END DATE/TIME: 8/23/18  
DRILLER: Mark Green

NESTED MONITORING WELL CONSTRUCTION  
SEE TABLE 2-3 FOR WELL CONSTRUCTION ELEVATIONS

KAFB-106243



ft amsl = feet above mean sea level  
PVC = polyvinyl chloride  
SCH - schedule

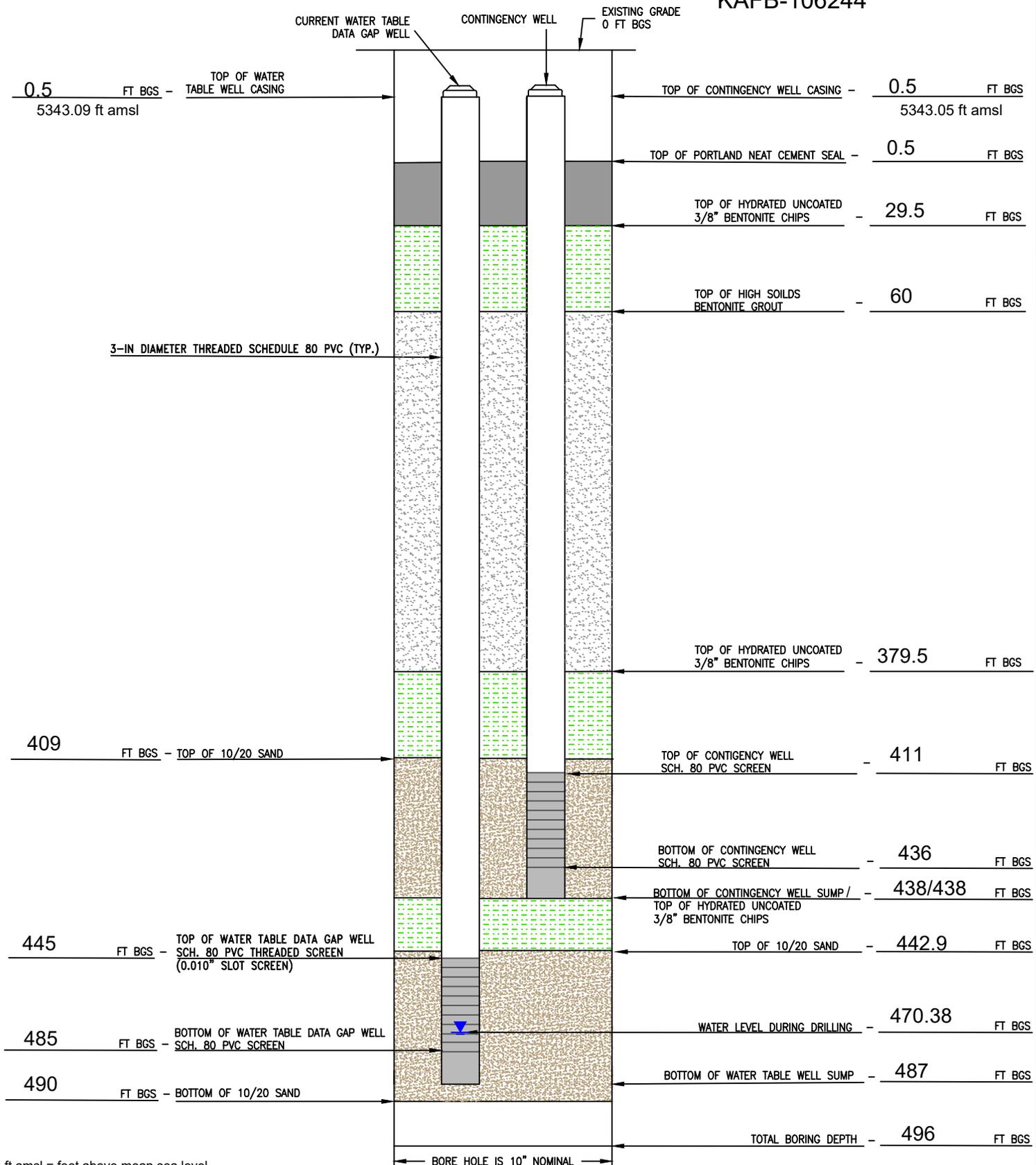
NOT TO SCALE  
BGS=BELOW GROUND SURFACE  
FT=FEET

P:\Projects\Kirtland\Figures\Data Gap Monitoring\Wells\WELL\_COMPLETION\_DIAGRAMS\KAFB-106243\_as-built.dwg

 <p>320 Gold Avenue, SW Suite 1300 Albuquerque, NM 87102 Phone: (505) 224-9013 Fax: (505) 224-9016 EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC., PBC</p>	<p>KIRTLAND AIR FORCE BASE</p>		<p>INSTALLATION START DATE/TIME: 7/18/18</p>	<p>INSTALLATION END DATE/TIME: 7/27/18</p>
	<p>PROJECT NO.: 62599DM01.1017.3</p>	<p>WELL ID: KAFB-106243</p>	<p>GEOLOGIST: Joshua Messenger</p>	<p>DRILLER: Gerry Woods</p>

NESTED MONITORING WELL CONSTRUCTION  
SEE TABLE 2-3 FOR WELL CONSTRUCTION ELEVATIONS

KAFB-106244



ft amsl = feet above mean sea level  
PVC = polyvinyl chloride  
SCH - schedule

NOT TO SCALE  
BGS=BELOW GROUND SURFACE  
FT=FEET



320 Gold Avenue, SW Suite 1300  
Albuquerque, NM 87102  
Phone: (505) 224-9013  
Fax: (505) 224-9016

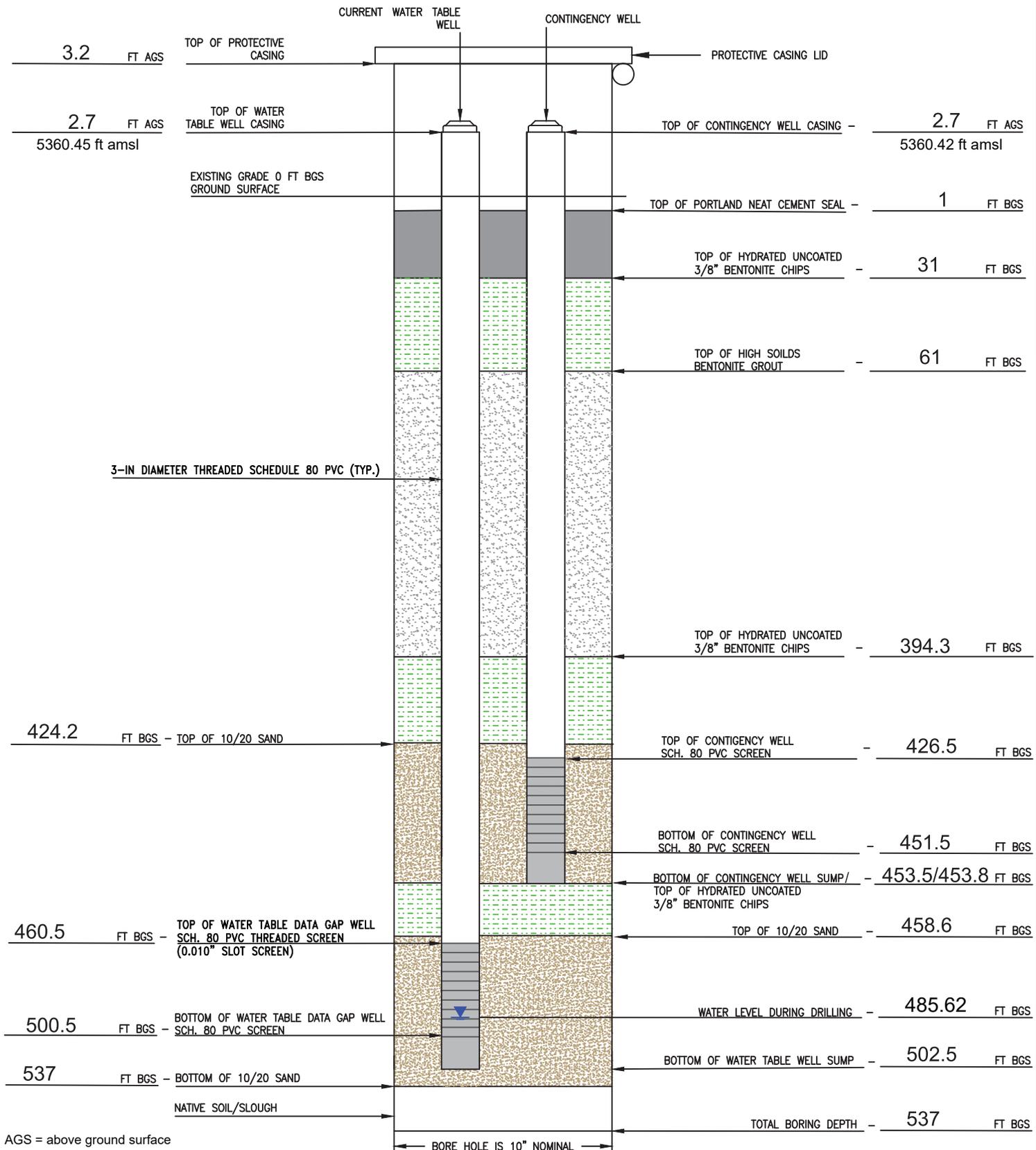
KIRTLAND AIR FORCE BASE	
PROJECT NO.: 62599DM01.1017.3	WELL ID: KAFB-106244

INSTALLATION START DATE/TIME: 6/28/18	INSTALLATION END DATE/TIME: 7/12/18
GEOLOGIST: Lane Andress	DRILLER: Gerry Woods

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NESTED MONITORING WELL CONSTRUCTION  
SEE TABLE 2-3 FOR WELL CONSTRUCTION ELEVATIONS

KAFB-106245



AGS = above ground surface  
ft amsl = feet above mean sea level  
PVC = polyvinyl chloride  
SCH - schedule

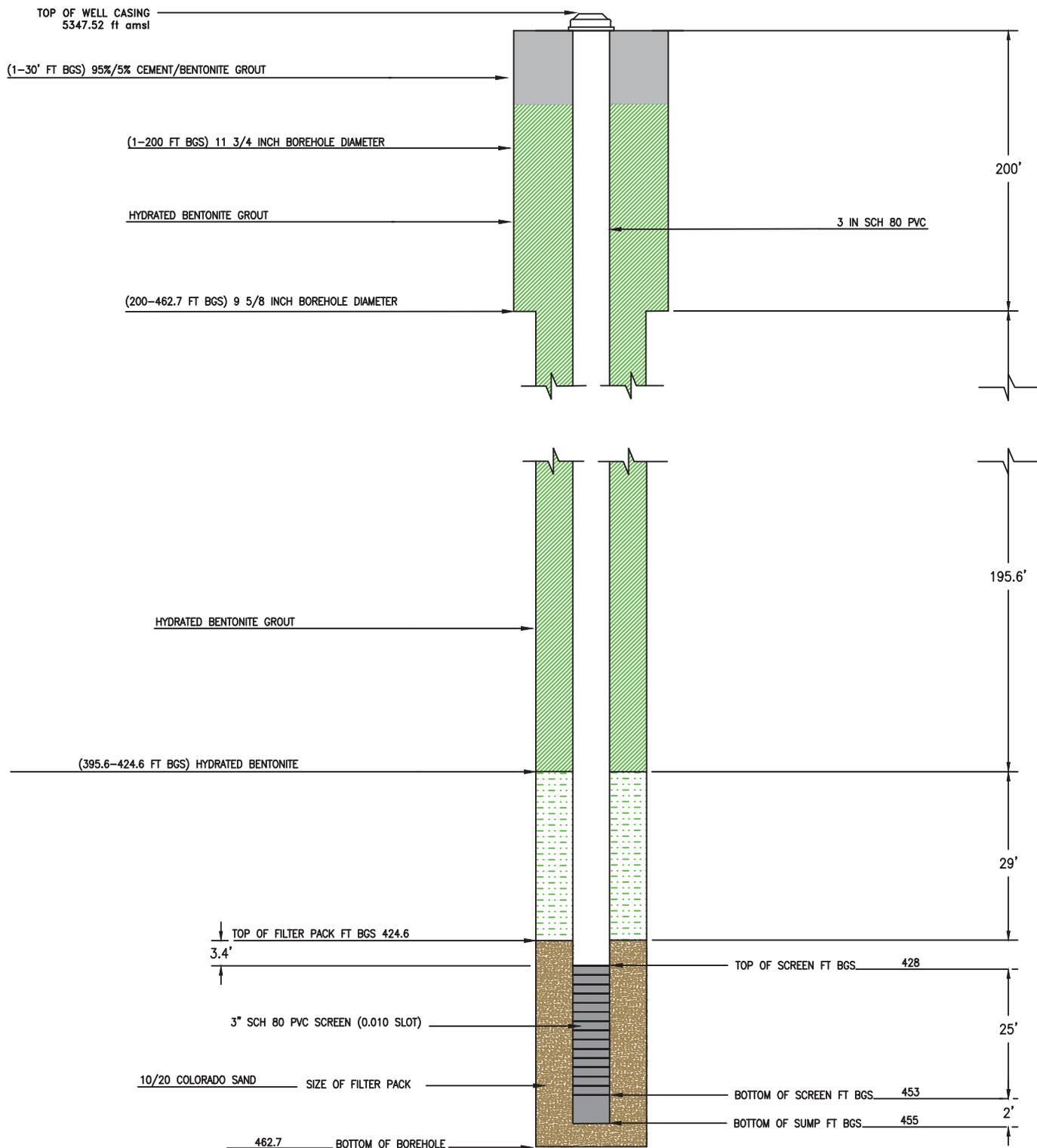
NOT TO SCALE  
BGS=BELOW GROUND SURFACE  
FT=FEET

 <p>320 Gold Avenue, SW Suite 1300 Albuquerque, NM 87102 Phone: (505) 224-9013 Fax: (505) 224-9016 EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC., PBC</p>	<p>KIRTLAND AIR FORCE BASE</p>		<p>INSTALLATION START DATE/TIME: 8/28/18</p>	<p>INSTALLATION END DATE/TIME: 9/7/18</p>
	<p>PROJECT NO.: 62599DM01.1017.3</p>	<p>WELL ID: KAFB-106245</p>	<p>GEOLOGIST: J. Messenger, S. Busby</p>	<p>DRILLER: Mark Green</p>

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NESTED MONITORING WELL CONSTRUCTION  
SEE TABLE 2-3 FOR WELL CONSTRUCTION ELEVATIONS

**KAFB-106246**  
(REPLACEMENT WELL FOR  
KAFB-106140 CONTINGENCY WELL)



NOTE: ALL DEPTHS REFERENCE IN FEET BELOW GROUND SURFACE.  
Water table 474 bgs June 2018; Top of screen KAFB-106240 is 449 bgs.

Not to Scale  
BGS = below ground surface  
ft amsl = feet above mean sea level  
PVC = polyvinyl chloride  
SCH - schedule



320 Gold Avenue, SW Suite 1300  
Albuquerque, NM 87102  
Phone: (505) 224-9013

KIRTLAND AIR FORCE BASE		INSTALLATION START DATE/TIME: 8/28/18	INSTALLATION END DATE/TIME: 9/2/2018
PROJECT NO.: 62599DM01	WELL ID: KAFB-106246	GEOLOGIST: J. Messenger / S. Busby	DRILLER: Mark Green



## FIELD RECORD OF WELL DEVELOPMENT

Project Name: <i>Kirtland BFF</i>	Project No: <i>62574/44</i>	Date/Time: <i>08/07/18</i>
EA Personnel: <i>Kevin McKenna</i>	Development Method: <i>Bar 1.0m</i>	
Equipment Used: <i>YSI Professional Plus, HACH 2100Q, Solinst</i>	Equipment Calibrated: <i>Y N</i>	
Weather/Temperature/Barometric Pressure: <i>Not recorded Water Level Meter</i>	Date/Time: <i>8/7/18</i>	

Well No.: <i>KAFB-103240</i>	Well Condition: <i>New</i>
Well Diameter: <i>3"</i>	Measurement Reference: <i>below ground surface</i>
Well Volume Calculations	
A. Depth To Water (ft): <i>474.70</i>	D. Well Volume/ft: <i>0.37 gal/ft</i>
B. Total Well Depth (ft): <i>490.9</i>	E. Total Well Volume (gal)[C*D]: <i>6.0 gal</i>
C. Water Column Height (ft): <i>16.2</i>	F. Five Well Volumes (gal): <i>30 gal</i>

Parameter	Beginning	1 Volume	2 Volumes	3 Volumes	4 Volumes	5 Volumes
Time (min)	<i>1104</i>		<i>1311</i>	<i>1410</i>	<i>1459</i>	<i>1545</i>
Depth to Water (ft)	<i>474.70</i>		<i>474.68</i>	<i>474.68</i>	<i>474.67</i>	<i>474.64</i>
Purge Rate (gpm)	<i>-</i>		<i>-</i>	<i>-</i>	<i>-</i>	<i>-</i>
Volume Purged (gal)	<i>0.5</i>	<i>+ Km</i>	<i>11</i>	<i>17</i>	<i>25.23</i>	<i>30</i>
pH ( $\Delta < 0.2$ )	<i>6.92</i>		<i>7.85</i>	<i>7.94</i>	<i>7.90</i>	<i>7.85</i>
Temperature ( $^{\circ}F$ ) ( $\Delta < 10\%$ )	<i>22.9</i>		<i>22.5</i>	<i>23.0</i>	<i>21.8</i>	<i>22.3</i>
Conductivity ( $\mu\text{mhos/cm}$ ) ( $\Delta < 10\%$ )	<i>1157</i>		<i>1182</i>	<i>1218</i>	<i>1199</i>	<i>1207</i>
Turbidity (NTU) ( $< 10$ NTU*)	<i>71000</i>		<i>71600</i>	<i>71000</i>	<i>71000</i>	<i>71000</i>
Parameter	6 Volumes	7 Volumes	8 Volumes	9 Volumes	10 Volumes	End
Time (min)	<i>1630</i>	<i>1710</i>				
Depth to Water (ft)	<i>474.62</i>	<i>474.61</i>				
Purge Rate (gpm)	<i>-</i>	<i>-</i>				
Volume Purged (gal)	<i>36</i>	<i>41</i>				
pH ( $\Delta < 0.2$ )	<i>8.00</i>	<i>7.85</i>				
Temperature ( $^{\circ}F$ ) ( $\Delta < 10\%$ )	<i>21.7</i>	<i>22.5</i>				
Conductivity ( $\mu\text{mhos/cm}$ ) ( $\Delta < 10\%$ )	<i>1209</i>	<i>1214</i>				
Turbidity (NTU) ( $< 10$ NTU*)	<i>71000</i>	<i>71000</i>				

NOTE: NTU = Nephelometric turbidity unit.

ORP = Oxidation-reduction potential.

\* = If  $< 10$  NTU is not able to be achieved,  $< 100$  NTU is acceptableParameter stabilization requires four consecutive readings [four consecutive differences ( $\Delta$ )] to meet parameter stabilization requirements listed.COMMENTS AND OBSERVATIONS: *Math error on Volume missed first 6 Vol.*



FIELD RECORD OF WELL DEVELOPMENT

Page 1

Project Name: <i>KAFB BFF Data Gap Wells</i>	Project No: <i>62559 DMW</i>	Date/Time: <i>8-28-18</i>
EA Personnel: <i>Pet + Ferras</i>	Development Method: <i>surge &amp; bail</i>	
Equipment Used: <i>VSI</i>		Equipment Calibrated: <i>Y</i> N
Weather/Temperature/Barometric Pressure: <i>Mostly Sunny 41-90°F</i>		Date/Time: <i>8/28/18</i> <span style="float: right;">0800</span>

Well No.: <i>KAFB-106241</i>	Well Condition: <i>None</i>
Well Diameter: <i>3" 10</i>	Measurement Reference: <i>MAR measurement reference point</i>
Well Volume Calculations	
A. Depth To Water (ft): <i>452.45</i>	D. Well Volume/ft: <i>0.367</i>
B. Total Well Depth (ft): <i>470.10</i>	E. Total Well Volume (gal)[C*D]: <i>0.367 6.48</i>
C. Water Column Height (ft): <i>17.65</i>	F. Five Well Volumes (gal): <i>32.39</i>

Parameter	Beginning	1 Volume	2 Volumes	3 Volumes	4 Volumes	5 Volumes
Time (min)	<i>0855</i>	<i>0915</i>	<i>0928</i>	<i>1014</i>	<i>1028</i>	<i>1045</i>
Depth to Water (ft)	<i>452.45</i>					
Purge Rate (gpm)	<i>Bailing</i>					
Volume Purged (gal)	<i>1.5</i>	<i>5.0</i>	<i>10.0</i>	<i>15.0</i>	<i>19.5</i>	<i>26</i>
pH ( $\Delta < 0.2$ )	<i>7.04</i>	<i>7.91</i>	<i>7.92</i>	<i>8.04</i>	<i>8.04</i>	<i>8.08</i>
Temperature (°F) ( $\Delta < 10\%$ )	<i>21.1</i>	<i>21.0</i>	<i>21.0</i>	<i>20.7</i>	<i>20.0</i>	<i>20.0</i>
Conductivity ( $\mu\text{mhos/cm}$ ) Sp. Cond	<i>474.1</i>	<i>443.3</i>	<i>454.4</i>	<i>450.5</i>	<i>450.1</i>	<i>442.2</i>
( $\Delta < 10\%$ )	<i>438.9</i>	<i>410.3</i>	<i>425.4</i>	<i>408.8</i>	<i>416.2</i>	<i>401.6</i>
Turbidity (NTU) (<10 NTU*)	<i>&gt;1000</i>	<i>&gt;1000</i>	<i>&gt;1000</i>	<i>&gt;1000</i>	<i>&gt;1000</i>	<i>&gt;1000</i>
Parameter	5 Volumes	6 Volumes	7 Volumes	8 Volumes	9 Volumes	10 gal. End
Time (min)	<i>1103</i>	<i>1146</i>	<i>1243</i>	<i>1323</i>	<i>1341</i>	<i>1400</i>
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)	<i>32.5</i>	<i>39</i>	<i>46.5</i>	<i>53</i>	<i>61.5</i>	<i>68</i>
pH ( $\Delta < 0.2$ )	<i>8.00</i>	<i>8.09</i>	<i>7.99</i>	<i>8.09</i>	<i>8.34</i>	<i>8.10</i>
Temperature (°F) ( $\Delta < 10\%$ )	<i>21.0</i>	<i>20.0</i>	<i>21.0</i>	<i>20.0</i>	<i>21.0</i>	<i>21.3</i>
Conductivity ( $\mu\text{mhos/cm}$ ) Sp. Cond	<i>442.1</i>	<i>435.8</i>	<i>473.1</i>	<i>423.0</i>	<i>430.0</i>	<i>423.1</i>
( $\Delta < 10\%$ )	<i>414.6</i>	<i>395.2</i>	<i>425.3</i>	<i>387.3</i>	<i>405.6</i>	<i>393.4</i>
Turbidity (NTU) (<10 NTU*)	<i>&gt;1000</i>	<i>&gt;1000</i>	<i>998</i>	<i>&gt;1000</i>	<i>783</i>	<i>198</i>
NOTE: NTU = Nephelometric turbidity unit. ORP = Oxidation-reduction potential. * = If <10 NTU is not able to be achieved, <100 NTU is acceptable Parameter stabilization requires four consecutive readings [four consecutive differences ( $\Delta$ )] to meet parameter stabilization requirements listed.						
COMMENTS AND OBSERVATIONS: <i>1st Imhoff 350g No HC odor</i> <i>2nd Imhoff 200g</i> <i>3rd Imhoff 3 (22.5g)</i> <i>4th Imhoff 1.6 (39.0g)</i> <i>5th Imhoff 3.3 (46.5g)</i> <i>6th Imhoff (68g)</i> 13:23 check pH in bucket $\rightarrow$ pH 6.97						



FIELD RECORD OF WELL DEVELOPMENT

Page 2

Project Name: <u>KAFB BFF Data Gap Wells</u>	Project No: <u>625790M01</u>	Date/Time: <u>6/28/18</u>
EA Personnel: <u>Pete Ferrari</u>	Development Method:	
Equipment Used: <u>YSI, Turbidity meter</u>	Equipment Calibrated: <input checked="" type="checkbox"/> N	
Weather/Temperature/Barometric Pressure:	Date/Time: <u>8/29/18 0800</u>	

Well No.: <u>KAFB-106241</u>	Well Condition: <u>None</u>
Well Diameter: <u>3"</u>	Measurement Reference: <u>MRF</u>
Well Volume Calculations	
A. Depth To Water (ft): <u>452.42 end</u>	D. Well Volume/ft: <u>see page 1</u>
B. Total Well Depth (ft): <u>470.12 end</u>	E. Total Well Volume (gal)[C*D]: <u>see page 1</u>
C. Water Column Height (ft): <u>17.70</u>	F. Five Well Volumes (gal): <u>see page 1</u>

Parameter	<u>PF</u> Beginning	<u>11</u> 1 Volume	2 Volumes	3 Volumes	4 Volumes	5 Volumes
Time (min)	<u>1416</u>	<u>1441</u>				
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)	<u>73</u>	<u>80</u>				
pH ( $\Delta < 0.2$ )	<u>8.16</u>	<u>8.29</u>				
Temperature ( $^{\circ}F$ ) ( $\Delta < 10\%$ )	<u>21.9</u>	<u>21.6</u>				
Conductivity ( $\mu mhos/cm$ ) ( $\Delta < 10\%$ )	<u>417.5</u>	<u>419.3</u>				
Turbidity (NTU) (<10 NTU*)	<u>173</u>	<u>212</u>				

Parameter	6 Volumes	7 Volumes	8 Volumes	9 Volumes	10 Volumes	End
Time (min)						
Depth to Water (ft)						
Purge Rate (gpm)						
Volume Purged (gal)						
pH ( $\Delta < 0.2$ )						
Temperature ( $^{\circ}F$ ) ( $\Delta < 10\%$ )						
Conductivity ( $\mu mhos/cm$ ) ( $\Delta < 10\%$ )						
Turbidity (NTU) (<10 NTU*)						

NOTE: NTU = Nephelometric turbidity unit.  
 ORP = Oxidation-reduction potential.  
 \* = If <10 NTU is not able to be achieved, <100 NTU is acceptable  
 Parameter stabilization requires four consecutive readings [four consecutive differences ( $\Delta$ )] to meet parameter stabilization requirements listed.

COMMENTS AND OBSERVATIONS:

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FIELD RECORD OF WELL DEVELOPMENT

Project Name: <u>KAFB BFF Data Gap Wells</u>	Project No: <u>62-99901-107.5</u>	Date/Time: <u>8/27/18</u>
EA Personnel: <u>Lane Anderson</u>	Development Method: <u>Surge &amp; bail</u>	
Equipment Used:	Equipment Calibrated: <u>Y (N)</u>	
Weather/Temperature/Barometric Pressure: <u>81°F clear sunny, 38% humidity, slight breeze, barometer 29.86 inches</u>	Date/Time: <u>8/27/18 0745</u>	

Well No.: <u>KAFB-106242</u>	Well Condition: <u>New</u>
Well Diameter: <u>3" ID</u>	Measurement Reference: <u>MRP Bas "Measurement reference point"</u>
Well Volume Calculations	
A. Depth To Water (ft): <u>443.67</u>	D. Well Volume/ft: <u>0.367</u>
B. Total Well Depth (ft): <u>458.00</u>	E. Total Well Volume (gal)[C*D]: <u>5.259</u>
C. Water Column Height (ft): <u>14.33</u>	F. Five Well Volumes (gal): <u>26.30</u>

Parameter	Beginning	1-Volume	2-Volumes	3-Volumes	4-Volumes	5-Volumes
Time (min)	<u>0825</u>	<u>0935</u>	<u>0943</u>	<u>1055</u>	<u>1137</u>	<u>1155</u>
Depth to Water (ft)	<u>443.67</u>	<u>443.67</u>				
Purge Rate (gpm)	<u>NA</u>	<u>Bailing</u>				
Volume Purged (gal)		<u>1.5 gal</u>	<u>2.75</u>	<u>10 gal</u>	<u>13 gal</u>	<u>15 gal</u>
pH (Δ<0.2)			<u>7.31</u>	<u>7.56</u>	<u>7.29</u>	<u>7.64</u>
Temperature (°F) (Δ<10%)			<u>19.6</u>	<u>19.9</u>	<u>19.9</u>	<u>20.2</u>
Conductivity (µmhos/cm) (Δ<10%)			<u>915</u>	<u>916</u>	<u>923</u>	<u>922</u>
Turbidity (NTU) (<10 NTU*)			<u>&gt;1,000</u>	<u>&gt;1,000</u>	<u>&gt;1,000</u>	<u>&gt;1,000</u>

Parameter	6-Volumes	5-Volumes	8-Volumes	9-Volumes	10-Volumes	End
Time (min)	<u>1306</u>	<u>1334</u>	<u>1755</u>	<u>1433</u>	<u>1506</u>	<u>1531</u>
Depth to Water (ft)	<u>443.67</u>					
Purge Rate (gpm)	<u>bailing</u>					
Volume Purged (gal)	<u>20 gal</u>	<u>26.5 gal</u>	<u>30 gal</u>	<u>60 gal</u>	<u>80 gal</u>	<u>90 gal</u>
pH (Δ<0.2)	<u>7.39</u>	<u>7.37</u>	<u>7.59</u>	<u>7.43</u>	<u>7.37</u>	<u>7.45</u>
Temperature (°F) (Δ<10%)	<u>19.8</u>	<u>19.9</u>	<u>20.3</u>	<u>19.9</u>	<u>20.2</u>	<u>19.9</u>
Conductivity (µmhos/cm) (Δ<10%)	<u>923</u>	<u>922</u>	<u>937</u>	<u>933</u>	<u>940</u>	<u>979</u>
Turbidity (NTU) (<10 NTU*)	<u>&lt;1,000</u>	<u>&lt;1,000</u>	<u>&lt;1,000</u>	<u>&lt;1,000</u>	<u>&lt;1,000</u>	<u>&lt;1,000</u>

NOTE: NTU = Nephelometric turbidity unit.  
 ORP = Oxidation-reduction potential.  
 \* = If <10 NTU is not able to be achieved, <100 NTU is acceptable  
 Parameter stabilization requires four consecutive readings [four consecutive differences (Δ)] to meet parameter stabilization requirements listed.

COMMENTS AND OBSERVATIONS: I had underestimated volume previously by based on marks on a 5 gal bucket - volume in poly drums shows a more accurate amount

Depth to bottom post development: 449.90 ft below MRP  
449.90  
459.90

1558  
443.52  
Bailing  
90 gal  
5486  
90 gallons total removed



FIELD RECORD OF WELL DEVELOPMENT

Project Name: <u>Kirtland BFF</u>	Project No: <u>6259A</u>	Date/Time: <u>08/09/18</u>
EA Personnel: <u>Kenn McKeage</u>	Development Method: <u>Bar'ling.</u>	
Equipment Used: <u>YSI Pro Plus; Hach 2100Q; SOLINST WATER LEVEL</u>	Equipment Calibrated: <input checked="" type="checkbox"/> N	
Weather/Temperature/Barometric Pressure: <u>NOT RECORDED</u>	<u>METER</u>	Date/Time: <u>8/9/18</u>

Well No.: <u>KAFB-1062 # 3</u>	Well Condition: <u>NEW</u>
Well Diameter: <u>3" ID</u>	Measurement Reference: <u>BELOW GROUND SURFACE</u>
Well Volume Calculations	
A. Depth To Water (ft): <u>448.34</u>	D. Well Volume/ft: <u>0.37 gal/ft</u>
B. Total Well Depth (ft): <u>467.5</u>	E. Total Well Volume (gal)[C*D]: <u>7.09</u>
C. Water Column Height (ft): <u>19.16</u>	F. Five Well Volumes (gal): <u>35.45</u>

Parameter	Beginning	1 Volume	2 Volumes	3 Volumes	4 Volumes	5 Volumes
Time (min)	<u>0740</u>	<u>0818</u>	<u>0857</u>	<u>0939</u>	<u>1017</u>	<u>1056</u>
Depth to Water (ft)	<u>448.34</u>	<u>448.38</u>	<u>448.39</u>	<u>448.38</u>	<u>448.38</u>	<u>448.36</u>
Purge Rate (gpm)	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Volume Purged (gal)	<u>0.5</u>	<u>5.5</u>	<u>11</u>	<u>17</u>	<u>23</u>	<u>29</u>
pH (Δ<0.2)	<u>7.52</u>	<u>8.06</u>	<u>8.09</u>	<u>8.16</u>	<u>8.11</u>	<u>8.07</u>
Temperature (°F) (Δ<10%)	<u>19.6</u>	<u>19.4</u>	<u>19.5</u>	<u>20.4</u>	<u>20.7</u>	<u>21.3</u>
Conductivity (µmhos/cm) (Δ<10%)	<u>418.3</u>	<u>460.2</u>	<u>453.2</u>	<u>464.0</u>	<u>469.7</u>	<u>475.9</u>
Turbidity (NTU) (<10 NTU*)	<u>353</u>	<u>71000</u>	<u>71000</u>	<u>71000</u>	<u>71000</u>	<u>71000</u>
Parameter	6 Volumes	7 Volumes	8 Volumes	9 Volumes	10 Volumes	End
Time (min)	<u>1210</u>	<u>1247</u>	<u>1327</u>	<u>1407</u>	<u>1446</u>	
Depth to Water (ft)	<u>448.38</u>	<u>448.33</u>	<u>448.30</u>	<u>448.29</u>	<u>448.28</u>	
Purge Rate (gpm)	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	
Volume Purged (gal)	<u>35</u>	<u>41</u>	<u>47</u>	<u>53</u>	<u>59</u>	
pH (Δ<0.2)	<u>8.16</u>	<u>8.18</u>	<u>8.16</u>	<u>8.16</u>	<u>8.21</u>	
Temperature (°F) (Δ<10%)	<u>21.3</u>	<u>22.4</u>	<u>21.5</u>	<u>21.5</u>	<u>22.3</u>	
Conductivity (µmhos/cm) (Δ<10%)	<u>474.8</u>	<u>496.8</u>	<u>492.1</u>	<u>492.9</u>	<u>494.0</u>	
Turbidity (NTU) (<10 NTU*)	<u>71000</u>	<u>71000</u>	<u>71000</u>	<u>7100</u>	<u>71000</u>	

NOTE: NTU = Nephelometric turbidity unit.  
 ORP = Oxidation-reduction potential.  
 \* = If <10 NTU is not able to be achieved, <100 NTU is acceptable  
 Parameter stabilization requires four consecutive readings [four consecutive differences (Δ)] to meet parameter stabilization requirements listed.

COMMENTS AND OBSERVATIONS:



FIELD RECORD OF WELL DEVELOPMENT

Project Name: <u>Kirtland BFF</u>	Project No: <u>6259001</u>	Date/Time: <u>08/08/18</u>
EA Personnel: <u>KEVIN MCKEAGE</u>	Development Method: <u>Bailing</u>	
Equipment Used: <u>YSI Pro Plus; Hach 2100Q; Solinst Water Level</u>	Equipment Calibrated: <input checked="" type="checkbox"/> N	
Weather/Temperature/Barometric Pressure: <u>Not recorded</u>	<u>METER</u>	Date/Time: <u>8/8/18</u>

Well No.: <u>KAFB-106244</u>	Well Condition: <u>NEW</u>
Well Diameter: <u>3 in ID</u>	Measurement Reference: <u>BELOW GROUND SURFACE</u>
Well Volume Calculations	
A. Depth To Water (ft): <u>474.40</u>	D. Well Volume/ft: <u>0.37 gal/ft</u>
B. Total Well Depth (ft): <u>487</u>	E. Total Well Volume (gal)[C*D]: <u>4.7</u>
C. Water Column Height (ft): <u>12.6 ft</u>	F. Five Well Volumes (gal): <u>23.3</u>

Parameter	Beginning	1 Volume	2 Volumes	3 Volumes	4 Volumes	5 Volumes
Time (min)	<u>0809</u>	<u>0844</u>	<u>0930</u>	<u>1017</u>	<u>1103</u>	<u>1153</u>
Depth to Water (ft)	<u>470.40</u>	<u>470.44</u>	<u>470.45</u>	<u>470.42</u>	<u>470.40</u>	<u>470.35</u>
Purge Rate (gpm)	-	-	-	-	-	-
Volume Purged (gal)	<u>0.5</u>	<u>5.5</u>	<u>11</u>	<u>16.5</u>	<u>22</u>	<u>28</u>
pH ( $\Delta < 0.2$ )	<u>7.55</u>	<u>7.74</u>	<u>8.00</u>	<u>7.93</u>	<u>7.83</u>	<u>7.77</u>
Temperature (°F) ( $\Delta < 10\%$ )	<u>20.1</u>	<u>19.9</u>	<u>20.3</u>	<u>20.1</u>	<u>21.5</u>	<u>22.4</u>
Conductivity ( $\mu\text{mhos/cm}$ ) ( $\Delta < 10\%$ )	<u>1256</u>	<u>1156</u>	<u>1178</u>	<u>1139</u>	<u>1135</u>	<u>1127</u>
Turbidity (NTU) ( $< 10$ NTU*)	<u>71000</u>	<u>71000</u>	<u>71000</u>	<u>71000</u>	<u>71000</u>	<u>71000</u>
Parameter	6 Volumes	7 Volumes	8 Volumes	9 Volumes	10 Volumes	End
Time (min)	<u>1350</u>	<u>1438</u>	<u>1532</u>	<u>1619</u>		
Depth to Water (ft)	<u>470.28</u>	<u>470.28</u>	<u>470.27</u>	<u>470.25</u>		
Purge Rate (gpm)	-	-	-	-		
Volume Purged (gal)	<u>34</u>	<u>40</u>	<u>46</u>	<u>52</u>		
pH ( $\Delta < 0.2$ )	<u>7.81</u>	<u>7.90</u>	<u>7.88</u>	<u>7.80</u>		
Temperature (°F) ( $\Delta < 10\%$ )	<u>22.8</u>	<u>22.0</u>	<u>21.8</u>	<u>21.6</u>		
Conductivity ( $\mu\text{mhos/cm}$ ) ( $\Delta < 10\%$ )	<u>1126</u>	<u>1140</u>	<u>1116</u>	<u>1109</u>		
Turbidity (NTU) ( $< 10$ NTU*)	<u>71000</u>	<u>71000</u>	<u>71000</u>	<u>71000</u>		

NOTE: NTU = Nephelometric turbidity unit.  
 ORP = Oxidation-reduction potential.  
 \* = If  $< 10$  NTU is not able to be achieved,  $< 100$  NTU is acceptable  
 Parameter stabilization requires four consecutive readings [four consecutive differences ( $\Delta$ )] to meet parameter stabilization requirements listed.

COMMENTS AND OBSERVATIONS: _____



FIELD RECORD OF WELL DEVELOPMENT

page 1 of 2

Project Name: <i>KATB-Data Gap Wells</i>	Project No: <i>62549 BMD-1-1017.3</i>	Date/Time: <i>9/12/18 0930</i>
EA Personnel: <i>Lane Ambress</i>	Development Method: <i>surged bail</i>	
Equipment Used: <i>YSI professional PWS / Hach 2100Q</i>	Equipment Calibrated: <i>Y N</i>	
Weather/Temperature/Barometric Pressure: <i>70°F, 38% humidity, slight breeze</i>		Date/Time: <i>9/9/18</i>

Well No.: <i>KATB-106245</i>	Well Condition: <i>New</i>
Well Diameter: <i>3"</i>	Measurement Reference: <i>below ground surface</i>

Well Volume Calculations	
A. Depth To Water (ft): <i>485.62</i>	D. Well Volume/ft: <i>0.36 gal/ft</i>
B. Total Well Depth (ft): <i>502.5ft</i>	E. Total Well Volume (gal)[C*D]: <i>60.0 gal</i>
C. Water Column Height (ft): <i>16.88</i>	F. Five Well Volumes (gal): <i>30.4 gal</i>

Parameter	Beginning	<del>1</del> Volume	<del>2</del> Volumes	<del>3</del> Volumes	<del>4</del> Volumes	<del>5</del> Volumes
Time (min)		<i>0955</i>	<i>1000</i>	<i>1015</i>	<i>1023</i>	<i>1047</i>
Depth to Water (ft) <i>bgs</i>		<i>485.62</i>	—	—	—	—
Purge Rate (gpm) <i>5.0 gpm</i>						
Volume Purged (gal)		<i>1.5</i>	<i>3.0</i>	<i>8.0</i>	<i>11.5</i>	<i>18.5</i>
pH ( $\Delta < 0.2$ )		<i>7.77</i>	<i>7.72</i>	<i>7.74</i>	<i>7.72</i>	<i>7.78</i>
Temperature (°F) ( $\Delta < 10\%$ ) <i>°C</i>		<i>19.7°C</i>	<i>19.9</i>	<i>19.5</i>	<i>19.4</i>	<i>19.5</i>
Conductivity ( $\mu\text{mhos/cm}$ ) ( $\Delta < 10\%$ ) <i>uS/cm</i>		<i>1114</i>	<i>1032</i>	<i>1027</i>	<i>1066</i>	<i>1059</i>
Turbidity (NTU) ( $< 10$ NTU*)		<i>&gt;1,000</i>	<i>&gt;1,000</i>	<i>&gt;1,000</i>	<i>&gt;1,000</i>	<i>&gt;1,000</i>

Parameter	<del>6</del> Volumes	<del>7</del> Volumes	<del>8</del> Volumes	<del>9</del> Volumes	<del>10</del> Volumes	<del>End</del>
Time (min)	<i>101303</i>	<i>1322</i>	<i>1343</i>	<i>1353</i>	<i>1417</i>	<i>1429</i>
Depth to Water (ft)	—	—	—	—	—	—
Purge Rate (gpm) <i>surge &amp; bail</i>						
Volume Purged (gal)	<i>23.5</i>	<i>33.5</i>	<i>40</i>	<i>43.5</i>	<i>55 gal</i>	<i>56.5</i>
pH ( $\Delta < 0.2$ )	<i>7.77</i>	<i>7.70</i>	<i>7.84</i>	<i>7.81</i>	<i>7.85</i>	<i>7.97</i>
Temperature (°F) ( $\Delta < 10\%$ ) <i>°C</i>	<i>20.1</i>	<i>19.5</i>	<i>19.5</i>	<i>19.6</i>	<i>19.6</i>	<i>19.5</i>
Conductivity ( $\mu\text{mhos/cm}$ ) ( $\Delta < 10\%$ ) <i>uS/cm</i>	<i>1117</i>	<i>1071</i>	<i>1066</i>	<i>1046</i>	<i>1005</i>	<i>1023</i>
Turbidity (NTU) ( $< 10$ NTU*)	<i>&gt;1,000</i>	<i>&gt;1,000</i>	<i>&gt;1,000</i>	<i>&gt;1,000</i>	<i>&gt;1,000</i>	<i>&gt;1,000</i>

NOTE: NTU = Nephelometric turbidity unit.  
 ORP = Oxidation-reduction potential.  
 \* = If  $< 10$  NTU is not able to be achieved,  $< 100$  NTU is acceptable  
 Parameter stabilization requires four consecutive readings [four consecutive differences ( $\Delta$ )] to meet parameter stabilization requirements listed.

COMMENTS AND OBSERVATIONS: *1st inhoft cone taken at 3 gallons*  
*2nd inhoft cone taken at 23.5 gallons*  
*3rd inhoft cone taken at 56.5 gallons*



FIELD RECORD OF WELL DEVELOPMENT

Page 2 of 2

Project Name: <u>KAFB Data Gaps Wells</u>	Project No: <u>2018010173</u>	Date/Time: <u>9/12/18 0930</u>
EA Personnel: <u>Lore Andress</u>	Development Method:	
Equipment Used: <u>YSI Professional Plus/Hach Z100Q</u>	Equipment Calibrated: <u>(Y)N</u>	
Weather/Temperature/Barometric Pressure: <u>76°F, 38% humidity, slight breeze</u>	Date/Time: <u>9/9/18</u>	

Well No.: <u>KAFB-106245</u>	Well Condition: <u>New</u>
Well Diameter: <u>3"</u>	Measurement Reference: <u>above &amp; below ground surface</u>

Well Volume Calculations	
A. Depth To Water (ft): <u>485.62</u>	D. Well Volume/ft: <u>0.36 gal/ft</u>
B. Total Well Depth (ft): <u>502.5</u>	E. Total Well Volume (gal)[C*D]: <u>6.0768</u>
C. Water Column Height (ft): <u>16.88</u>	F. Five Well Volumes (gal): <u>30.4 gal</u>

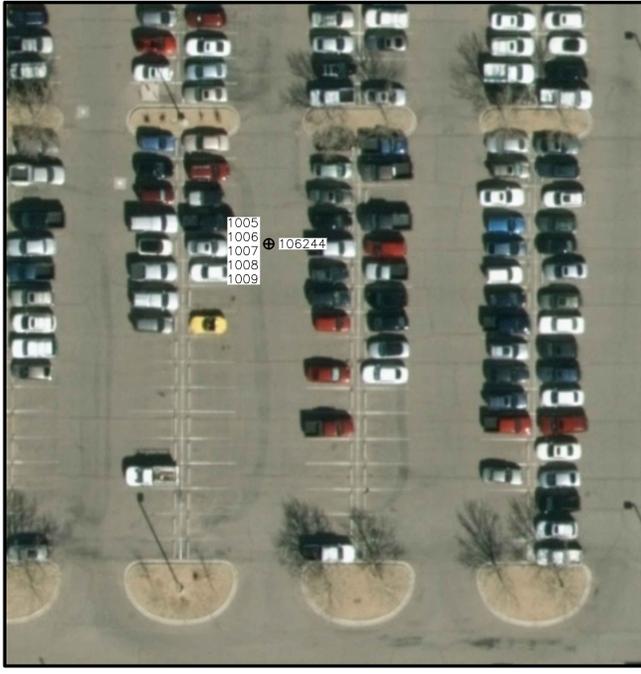
> 10 well volumes

Parameter	Beginning	1 Volume	2 Volumes	3 Volumes	4 Volumes	5 Volumes
Time (min)	<u>1444</u>	<u>1453</u>	<u>1518</u>	<u>1526</u>	<u>1536</u>	<u>1551</u>
Depth to Water (ft) <u>bgs</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
Purge Rate (gpm) <u>surged bail</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
Volume Purged (gal)	<u>63.5</u>	<u>65</u>	<u>70</u>	<u>71.5</u>	<u>76.5</u>	<u>81.5</u>
pH ( $\Delta < 0.2$ )	<u>7.87</u>	<u>7.85</u>	<u>7.87</u>	<u>7.88</u>	<u>7.90</u>	<u>7.9</u>
Temperature ( $^{\circ}F$ ) ( $\Delta < 10\%$ ) <u>C</u>	<u>19.5</u>	<u>19.6</u>	<u>19.7</u>	<u>19.8</u>	<u>19.2</u>	<u>19.2</u>
Conductivity ( $\mu mhos/cm$ ) <u>us/cm</u> ( $\Delta < 10\%$ )	<u>1036</u>	<u>1035</u>	<u>1037</u>	<u>1036</u>	<u>1024</u>	<u>1034</u>
Turbidity (NTU) ( $< 10$ NTU*)	<u>&gt; 1,000</u>	<u>&gt; 1,000</u>	<u>512</u>	<u>595</u>	<u>254</u>	<u>149</u>

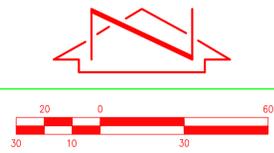
Parameter	6 Volumes	7 Volumes	8 Volumes	9 Volumes	10 Volumes	End
Time (min)	<u>1605</u>					
Depth to Water (ft) <u>bgs</u>	<u>485.68</u>					
Purge Rate (gpm) <u>surged bail</u>	<u>—</u>					
Volume Purged (gal)	<u>81.5</u>					
pH ( $\Delta < 0.2$ )	<u>—</u>					
Temperature ( $^{\circ}F$ ) ( $\Delta < 10\%$ ) <u>C</u>	<u>—</u>					
Conductivity ( $\mu mhos/cm$ ) <u>us/cm</u> ( $\Delta < 10\%$ )	<u>—</u>					
Turbidity (NTU) ( $< 10$ NTU*)	<u>—</u>					

NOTE: NTU = Nephelometric turbidity unit.  
 ORP = Oxidation-reduction potential.  
 \* = If  $< 10$  NTU is not able to be achieved,  $< 100$  NTU is acceptable  
 Parameter stabilization requires four consecutive readings [four consecutive differences ( $\Delta$ )] to meet parameter stabilization requirements listed.

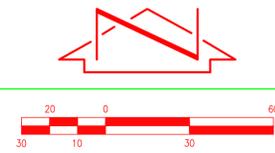
COMMENTS AND OBSERVATIONS: Final & 4th mhoft cone at 76.5 gal



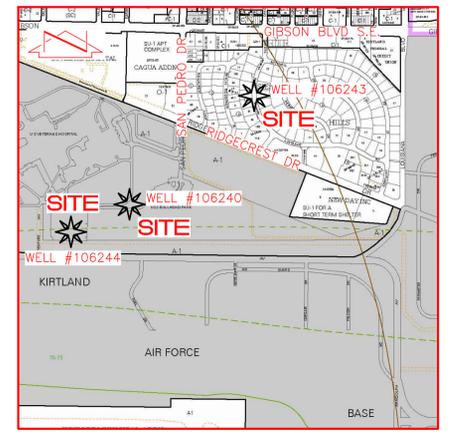
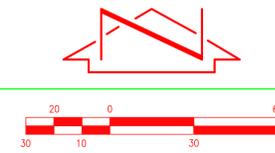
WELL 106244  
SCALE: 1" = 30'



WELL 106240  
SCALE: 1" = 30'



WELL 106243  
SCALE: 1" = 30'



VICINITY MAP M-18  
SCALE: 1" = 1000'

COORDINATE TABLE

POINT NO.	NORTHING-GRID	EASTING-GRID	ELEVATION	DESCRIPTION	LATITUDE-NORTH	LONGITUDE-WEST	X-METER	Y-METER	Z-METER
	1476630.47	1544945.86	5337.43	G-2(Project Benchmark)	35°03'29.55211"	106°34'08.48412"	470900.438	450077.868	1626.849
WELL KAFB-106240									
1001	1474596.984	1541754.335	5346.94	TOC*-DEEP	35°03'09.33531"	106°34'46.79572"	449458.060	469927.661	1629.751
1002	1474597.731	1541754.168	5347.57	TOPC (LID-NORTH SIDE)	35°03'09.34269"	106°34'46.79776"	449458.287	469927.610	1629.943
1003	1474598.894	1541754.035	5347.48	TOP (TOP OF CONCRETE)	35°03'09.35419"	106°34'46.79940"	449458.642	469927.570	1629.915
1004	1474599.424	1541753.894	5347.43	DIRT	35°03'09.35943"	106°34'46.80111"	449458.803	469927.527	1629.900
WELL KAFB-106244									
1005	1474307.629	1541081.207	5343.42	TOP ASPHALT	35°03'06.45110"	106°34'54.88098"	449369.864	469722.491	1628.678
1006	1474307.324	1541081.228	5343.44	TCP (TOP OF CONCRETE)	35°03'06.44808"	106°34'54.88071"	449369.771	469722.498	1628.684
1007	1474304.678	1541081.085	5343.51	TOPC (LID-NORTH SIDE)	35°03'06.42190"	106°34'54.88233"	449368.965	469722.454	1628.705
1008	1474304.167	1541080.864	5343.05	TOC*-SHALLOW	35°03'06.41684"	106°34'54.88496"	449368.809	469722.387	1628.565
1009	1474303.943	1541081.081	5343.09	TOC*-DEEP	35°03'06.41463"	106°34'54.88235"	449368.740	469722.453	1628.577
WELL KAFB-106243									
1100	1475937.626	1543210.161	5319.53	TOC*-SHALLOW	35°03'22.64346"	106°34'29.33654"	449866.688	470371.398	1621.396
1101	1475937.670	1543209.808	5319.67	TOC*-DEEP	35°03'22.64388"	106°34'29.34079"	449866.701	470371.290	1621.439
1102	1475938.293	1543210.000	5320.57	TOPC (LID-NORTH SIDE)	35°03'22.65004"	106°34'29.33857"	449866.891	470371.349	1621.713
1106	1475938.416	1543209.988	5320.62	TOP (TOP OF CONCRETE)	35°03'22.65126"	106°34'29.33865"	449866.929	470371.345	1621.728
1107	1475939.798	1543210.029	5320.53	TOP ASPHALT	35°03'22.66494"	106°34'29.33826"	449867.350	470371.356	1621.701

GENERAL NOTES

1. AN UNCLASSIFIED SURVEY FOR WELL LOCATIONS (106240, 106243 & 106244) WAS PERFORMED ON JULY 29 & 30, 2018. THIS IS NOT A BOUNDARY SURVEY.
2. WELL LOCATIONS ARE NAD 83 GRID COORDINATES (NEW MEXICO CENTRAL 3002).
3. SITE LOCATED WITHIN SECTION 36, TOWNSHIP 10 NORTH, RANGE 3 EAST N.M.P.M.
4. THE PHOTOBASED IMAGE, DEPICTED ON THIS SURVEY, WAS IMPORTED FROM THE USGS WEB SITE. THIS PHOTOBASED IMAGE IS SHOWN TO PROVIDE A GENERAL SITE ORIENTATION AND MAY NOT REFLECT THE CURRENT SITE CONDITIONS.
5. THE PURPOSE OF THIS SURVEY IS TO ESTABLISH NEW MEXICO STATE PLANE GRID COORDINATES FOR THE LOCATIONS OF THE EA ENGINEERING, SCIENCE AND TECHNOLOGY, INC. MONITORING AND EXTRACTION WELLS.

CONTROL SURVEY NOTE

A CONTROL SURVEY WAS CONDUCTED AT THE SITE ON DECEMBER 08, 2016. CONTROL WAS PROJECTED ONTO THE SUBJECT SITE UTILIZING RTK GPS OBSERVATIONS COMBINED WITH GEOID 12B (CONUS) TO ESTABLISH HORIZONTAL AND VERTICAL POSITIONS BASED UPON NAD83/NAVD 88 DATUM. THE POINTS OBSERVED HAVE BEEN QUALITY CONTROLLED FOR RELATIVE ACCURACY. AN NMSHC BENCHMARK (G-2) IN THE VICINITY OF THE PROJECT WAS OBSERVED IN ORDER TO PROVIDE REFERENCE TIES TO THE SITE. THE COORDINATES LISTED BELOW ARE GRID COORDINATES:  
 LATITUDE: N35°03'29.55211", LONGITUDE: W106°34'08.48412", ELLIPSOID HEIGHT 1605.871 METERS.  
 ELEVATIONS SHOWN HAVE BEEN QUALITY CONTROLLED BASED UPON USGS PROVISIONAL CONTROL DATA BY PERFORMANCE OF A CLOSED SPIRIT LEVEL LOOPS BETWEEN EXISTING KAFB WELLS.

PROJECT BENCHMARK: G-2

AN NMSHC CONTROL MONUMENT BRASS CAP SET IN CONCRETE STAMPED "STA. G-2". THE STATION IS LOCATED IN THE CENTER OF THE EASTERN ISLAND OF THE INTERSECTION OF GIBSON BLVD S.E. AND LOUISIANA BLVD S.E.  
 ELEVATION = 5337.43 FEET (NAVD 1988)

SURVEYORS CERTIFICATION

I, JOSEPH M. SOLOMON, JR., NEW MEXICO PROFESSIONAL SURVEYOR NO. 15075, DO HEREBY CERTIFY; THAT THIS UNCLASSIFIED SURVEY AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO, AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

*Joseph M. Solomon, Jr.*  
 JOSEPH M. SOLOMON, JR., NMPS 15075

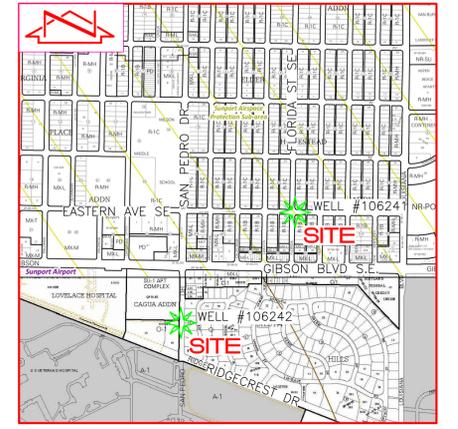
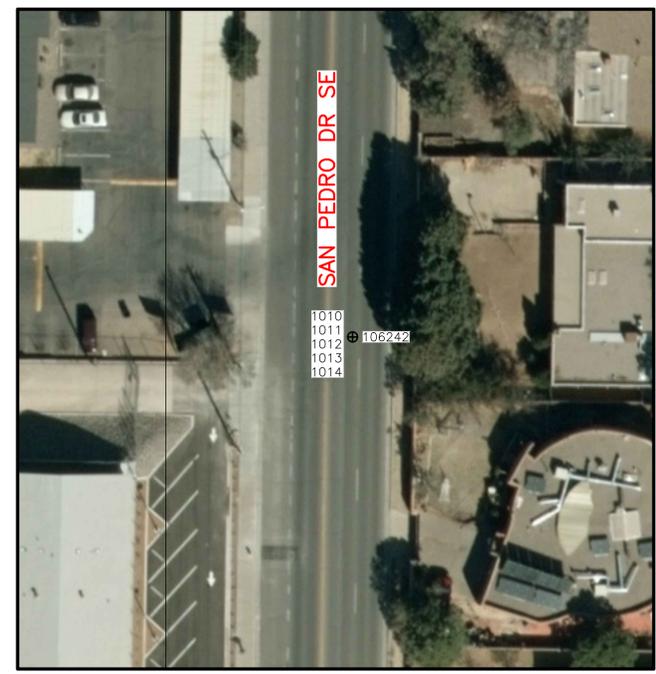
August 2, 2018  
 DATE



UNCLASSIFIED SURVEY - WELL LOCATION SURVEY  
 EA ENGINEERING KAFB WELLS

SURVEYED BY	DRAWN BY	APPROVED BY	NO.	DATE	BY	REVISIONS		JOB NO.
						DESCRIPTION	DATE	
M.V.Z./E.J.S.	E.J.S.	J.M.S.						2018.035.1
								DATE 08-2018
								SHEET 1 OF 1

File Path: P:\MVA\2018\08\05\1\SR\ Plot Date: 08-02-2018  
 File Name: 20180351\_SHT1.DWG Plot Time: 08:49 am



VICINITY MAP  
SCALE: 1" = 1000'  
L-18  
M-18

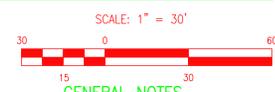
WELL 106242

SCALE: 1" = 30'



WELL 106241

SCALE: 1" = 30'



COORDINATE TABLE

POINT NO.	NORTHING-GRID	EASTING-GRID	ELEVATION	DESCRIPTION	LATITUDE-NORTH	LONGITUDE-WEST	X-METER	Y-METER	Z-METER
155	1476630.47	1544945.86	5337.43	G-2(Project Benchmark)	35°03'29.55211"	106°34'08.48412"	470900.438	450077.868	1626.849
WELL KAFB-106242									
1010	1476022.807	1542374.623	5316.01	TOP ASPHALT	35°03'23.45899"	106°34'39.39079"	449892.651	470116.725	1620.323
1011	1476022.664	1542374.618	5316.04	TCP (TOP OF CONCRETE)	35°03'23.45757"	106°34'39.39085"	449892.608	470116.724	1620.332
1012	1476021.336	1542374.594	5316.15	TOPC (LID-NORTH SIDE)	35°03'23.44444"	106°34'39.39108"	449892.203	470116.716	1620.366
1013	1476020.681	1542374.289	5315.46	TOC*-CONTINGENCY	35°03'23.43796"	106°34'39.39472"	449892.003	470116.624	1620.155
1014	1476020.848	1542374.789	5315.41	TOC*-DEEP	35°03'23.43962"	106°34'39.38871"	449892.054	470116.776	1620.140
WELL KAFB-106241									
1015	1477303.090	1543728.425	5323.96	TOP ASPHALT	35°03'36.16654"	106°34'23.15542"	450282.882	470529.365	1622.746
1016	1477303.026	1543728.444	5323.97	TCP (TOP OF CONCRETE)	35°03'36.16590"	106°34'23.15520"	450282.863	470529.371	1622.749
1017	1477301.204	1543728.502	5324.06	TOPC (LID-NORTH SIDE)	35°03'36.14789"	106°34'23.15443"	450282.308	470529.388	1622.777
1018	1477300.735	1543728.646	5323.24	TOC*-SHALLOW	35°03'36.14329"	106°34'23.15268"	450282.165	470529.432	1622.527
1019	1477300.377	1543728.523	5323.29	TOC*-DEEP	35°03'36.13970"	106°34'23.15414"	450282.055	470529.395	1622.542
				TOC*-TOP OF CASING					

GENERAL NOTES

1. AN UNCLASSIFIED SURVEY FOR WELL LOCATIONS (KAFB #106241 AND #106242) WAS PERFORMED ON AUGUST 24, 2018. THIS IS NOT A BOUNDARY SURVEY.
2. WELL LOCATIONS ARE NAD 83 GRID COORDINATES (NEW MEXICO CENTRAL 3002).
3. SITE LOCATED WITHIN SECTION 36, TOWNSHIP 10 NORTH, RANGE 3 EAST N.M.P.M.
4. THE PHOTOBASED IMAGE, DEPICTED ON THIS SURVEY, WAS IMPORTED FROM THE USGS WEB SITE. THIS PHOTOBASE IMAGE IS SHOWN TO PROVIDE A GENERAL SITE ORIENTATION AND MAY NOT REFLECT THE CURRENT SITE CONDITIONS.
5. THE PURPOSE OF THIS SURVEY IS TO ESTABLISH NEW MEXICO STATE PLANE GRID COORDINATES FOR THE LOCATIONS OF THE EA ENGINEERING, SCIENCE AND TECHNOLOGY, INC. MONITORING AND EXTRACTION WELLS.

CONTROL SURVEY NOTE

A CONTROL SURVEY WAS CONDUCTED AT THE SITE ON DECEMBER 08, 2016 AND VERIFIED ON AUGUST 24, 2018. CONTROL WAS PROJECTED ONTO THE SUBJECT SITE UTILIZING RTK GPS OBSERVATIONS COMBINED WITH GEOID 12B (CONUS) TO ESTABLISH HORIZONTAL AND VERTICAL POSITIONS BASED UPON NAD83/NAVD 88 DATUM. THE POINTS OBSERVED HAVE BEEN QUALITY CONTROLLED FOR RELATIVE ACCURACY. AN NMSHC BENCHMARK (G-2) IN THE VICINITY OF THE PROJECT WAS OBSERVED IN ORDER TO PROVIDE REFERENCE TIES TO THE SITE. THE COORDINATES LISTED BELOW ARE GRID COORDINATES: LATITUDE: N35°03'29.55211", LONGITUDE: W106°34'08.48412", ELLIPSOID HEIGHT 1605.871 METERS.

ELEVATIONS SHOWN HAVE BEEN QUALITY CONTROLLED BASED UPON USGS PROVISIONAL CONTROL DATA BY PERFORMANCE OF A CLOSED SPIRIT LEVEL LOOPS BETWEEN EXISTING KAFB WELLS.

PROJECT BENCHMARK: G-2

AN NMSHC CONTROL MONUMENT BRASS CAP SET IN CONCRETE STAMPED "STA. G-2". THE STATION IS LOCATED IN THE CENTER OF THE EASTERN ISLAND OF THE INTERSECTION OF GIBSON BLVD S.E. AND LOUISIANA BLVD S.E.  
ELEVATION = 5337.43 FEET (NAVD 1988)

SURVEYORS CERTIFICATION

I, JOSEPH M. SOLOMON, JR., NEW MEXICO PROFESSIONAL SURVEYOR NO. 15075, DO HEREBY CERTIFY; THAT THIS UNCLASSIFIED SURVEY AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO, AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

*Joseph M. Solomon, Jr.*  
JOSEPH M. SOLOMON, JR., NMPS 15075



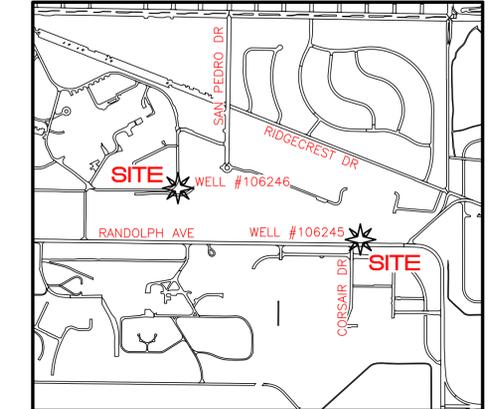
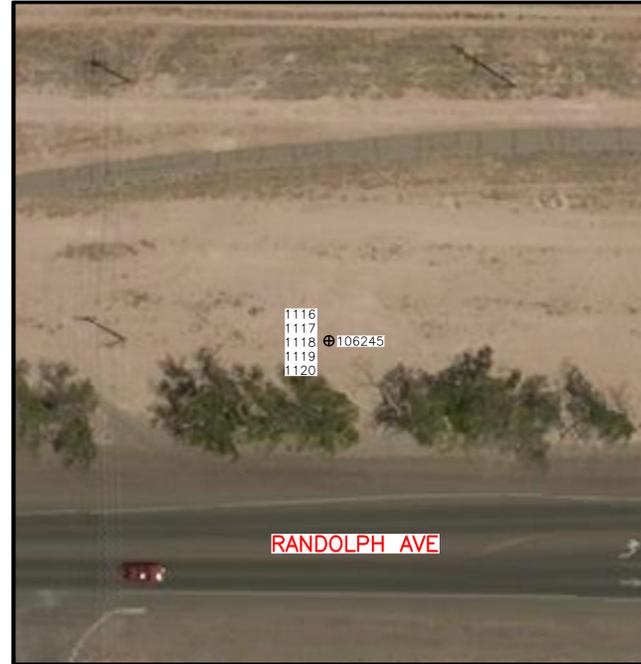
September 11, 2018  
DATE

**HIGH MESA Consulting Group**  
Engineers, Surveyors & Subcontract Utility Contractors  
6010-B Midway Park Blvd. NE • Albuquerque, New Mexico 87109  
Phone: 505.345.4250 • Fax: 505.345.4254 • www.highmesacg.com

UNCLASSIFIED SURVEY - WELL LOCATION SURVEY  
EA ENGINEERING KAFB WELLS

SURVEYED BY			DATE			BY			REVISIONS			JOB NO.	
M.V.Z.			09-2018									2018.035.1	
DRAWN BY			DATE									09-2018	
E.J.S.			SHEET									1 OF 1	
APPROVED BY													
J.M.S.													

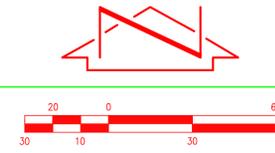
File Name: P:\data\2018\035\_1\SUR\20180351\_SH1\_8-24-18.dwg - HM\_C-G-D Plot Date: 9/11/18 Plot Time: 08:00



VICINITY MAP M-18  
SCALE: 1" = 1000'

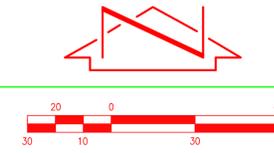
WELL 106245

SCALE: 1" = 30'



WELL 106246

SCALE: 1" = 30'



COORDINATE TABLE

POINT NO.	NORTHING-GRID	EASTING-GRID	ELEVATION	DESCRIPTION	LATITUDE-NORTH	LONGITUDE-WEST	X-METER	Y-METER	Z-METER	
	1476630.47	1544945.86	5337.43	G-2(Project Benchmark)	35°03'29.55211"	106°34'08.48412"	470900.438	450077.868	1626.849	
WELL KAFB-106246	1110	1474612.71	1541752.79	TOC* - CONTINGENCY	35°03'09.49081"	106°34'46.81488"	469927.191	449462.853	1629.954	
	1111	1474612.08	1541752.89	TOPC (LID-NORTH SIDE)	35°03'09.48458"	106°34'46.81372"	469927.220	449462.661	1629.831	
	1113	1474609.98	1541753.16	TCP (TOP OF CONCRETE)	35°03'09.46383"	106°34'46.81042"	469927.302	449462.021	1629.954	
	1114	1474609.21	1541753.27	DIRT	35°03'09.45622"	106°34'46.80907"	469927.335	449461.787	1629.855	
WELL KAFB-106245	1116	1474006.11	1543941.47	DIRT	35°03'03.56141"	106°34'20.46439"	470594.301	449277.961	1633.038	
	1117	1474004.48	1543941.53	5358.01	35°03'03.54528"	106°34'20.46354"	470594.321	449277.464	1633.129	
	1118	1474004.47	1543941.59	5360.90	TOPC (LID-NORTH SIDE)	35°03'03.54518"	106°34'20.46289"	470594.337	449277.461	1634.023
	1119	1474004.30	1543941.50	5360.42	TOC* - DEEP	35°03'03.54353"	106°34'20.46392"	470594.311	449277.410	1633.865
	1120	1474003.97	1543941.76	5360.45	TOC* - SHALLOW	35°03'03.54025"	106°34'20.46075"	470594.391	449277.309	1633.860

GENERAL NOTES

1. AN UNCLASSIFIED SURVEY FOR WELL LOCATIONS (106245 & 106246) WAS PERFORMED ON SEPTEMBER 13, 2018. THIS IS NOT A BOUNDARY SURVEY.
2. WELL LOCATIONS ARE NAD 83 GRID COORDINATES (NEW MEXICO CENTRAL 3002).
3. SITE LOCATED WITHIN SECTION 36, TOWNSHIP 10 NORTH, RANGE 3 EAST N.M.P.M.
4. THE PHOTOBASED IMAGE, DEPICTED ON THIS SURVEY, WAS IMPORTED FROM THE USGS WEB SITE. THIS PHOTOBASE IMAGE IS SHOWN TO PROVIDE A GENERAL SITE ORIENTATION AND MAY NOT REFLECT THE CURRENT SITE CONDITIONS.
5. THE PURPOSE OF THIS SURVEY IS TO ESTABLISH NEW MEXICO STATE PLANE GRID COORDINATES FOR THE LOCATIONS OF THE EA ENGINEERING, SCIENCE AND TECHNOLOGY, INC. MONITORING AND EXTRACTION WELLS.

CONTROL SURVEY NOTE

A CONTROL SURVEY WAS CONDUCTED AT THE SITE ON DECEMBER 08, 2016. CONTROL WAS PROJECTED ONTO THE SUBJECT SITE UTILIZING RTK GPS OBSERVATIONS COMBINED WITH GEOID 12B (CONUS) TO ESTABLISH HORIZONTAL AND VERTICAL POSITIONS BASED UPON NAD83/NAVD 88 DATUM. THE POINTS OBSERVED HAVE BEEN QUALITY CONTROLLED FOR RELATIVE ACCURACY. AN NMSHC BENCHMARK (G-2) IN THE VICINITY OF THE PROJECT WAS OBSERVED IN ORDER TO PROVIDE REFERENCE TIES TO THE SITE. THE COORDINATES LISTED BELOW ARE GRID COORDINATES:  
 LATITUDE: N35°03'29.55211", LONGITUDE: W106°34'08.48412", ELLIPSOID HEIGHT 1605.871 METERS.

ELEVATIONS SHOWN HAVE BEEN QUALITY CONTROLLED BASED UPON USGS PROVISIONAL CONTROL DATA BY PERFORMANCE OF A CLOSED SPIRIT LEVEL LOOPS BETWEEN EXISTING KAFB WELLS.

PROJECT BENCHMARK: G-2

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 ELEVATION = 5337.43 FEET (NAVD 1988)

SURVEYORS CERTIFICATION

I, JOSEPH M. SOLOMON, JR., NEW MEXICO PROFESSIONAL SURVEYOR NO. 15075, DO HEREBY CERTIFY; THAT THIS UNCLASSIFIED SURVEY AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO, AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

*Joseph M. Solomon, Jr.*  
 JOSEPH M. SOLOMON, JR., NMPS 15075

October 10, 2018  
 DATE



UNCLASSIFIED SURVEY - WELL LOCATION SURVEY  
 EA ENGINEERING KAFB WELLS

SURVEYED BY	J.M.S./D.R.	NO.	DATE	BY	REVISIONS	JOB NO.	2018.035.1
							DATE
DRAWN BY	P.J.S.						10-2018
APPROVED BY	J.M.S.						1 OF 1

File Name: P:\data\2018\2018.035.1\SUR\2018035.L\_SH1\_9-13-18.dwg - SEP 13 Plot Date: 10/10/18 Plot Time: 14:48



EA Engineering, Science, & Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, New Mexico 87102  
Phone: (505) 224-9013

July 26, 2018

Ms. Katrina Wheelock  
Solid Waste Program Manager  
Environmental Management  
377 MSG/CEIE  
Kirtland AFB, New Mexico 87117

Subject: Request to dispose non-hazardous soil cuttings at Kirtland C&D Landfill  
Roll-off Identification: KAFB-106240-3 (Bin ID 22023)  
USACE Contract No. W912DR-12-D-0006-DM01

Dear Ms. Wheelock,

EA Engineering, Science, and Technology, Inc., PBC (EA) is requesting permission to dispose of non-hazardous soil drill cuttings and plastic liners from one roll-off container to the Kirtland Air Force Base (AFB) Construction and Demolition (C&D) debris landfill. Roll-off bin with the EA identification of KAFB-106240 #3 (Bin identification #22023) contains approximately 15 cubic yards of soil.

Between June and July 2018 EA installed a groundwater monitoring well, KAFB-106240, associated with the Kirtland Bulk Fuels Facility environmental restoration project. Well KAFB-106240 is located on VA Hospital property just west of Bullhead Park. Drill cuttings were containerized in a plastic-lined, steel, roll-off pending laboratory analysis for waste characterization. Any excess moisture in the bin was stabilized using Hydrosorb®, a superabsorbent polymer. All roll-off bins are currently residing in the EA investigation derived waste yard near 1601 Perimeter Circle SE, on Kirtland AFB.

One five-point composite waste characterization sample was collected from the roll-off bin and delivered to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis. The sample was analyzed for all the required parameters per the Kirtland AFB Landfill Acceptance Memorandum (January 2009). The attached analytical results (Reports 1806745 and 1807137) for the composite sample confirms the drill cuttings meet waste acceptance requirements for disposal at the Kirtland C&D landfill. Please note that analytical report 1807137 is a resample of this bin for BTEX which was missed on the original sample request for analysis. The sample designation is listed as 106240-3B-IDW indicating it is from bin 106240-3 (sample B). This report originally contained sample results not applicable to bin 106240-3. These results have been omitted from the report to simplify the review process.



W912DR-12-D-0006-DM01  
 Kirtland Air Force Base Bulk Fuels Facility Expansion  
 of the Dissolved Plume Groundwater Treatment System Design  
 2 May 2017  
 Page 2 of 2

All of the roll-off containers are owned and/or leased by Advanced Chemical Transport Environmental Services Inc. (ACT) with roll-off identification number, when present, marked clearly on the roll off. ACT will utilize one of the following vehicles for waste transport:

- 2015 Western Star Roll Off Truck, License #: WD121651, registered in New Mexico
- 2015 Western Star Roll Off Truck, License #: WD124756, registered in New Mexico

Mr. Sheen Kottkamp has reviewed this package and authorized EA to forward it for your review. EA respectfully requests your review of the attached summary table and analytical data for determination if disposal can be authorized at the Kirtland AFB C&D landfill. Upon receiving notification of Kirtland AFB's acceptance of the waste, EA will coordinate transport and disposal of the roll-off contents with ACT.

EA's Kirtland AFB Point of Contact is Mr. Scott Clark; 505-846-9017.

If you have any questions, please do not hesitate to contact me at 505-266-2225, or via e-mail at [landress@eaest.com](mailto:landress@eaest.com).

Sincerely,

Lane Andress, PG

Attachments: Summary Analytical Table  
 Hall Environmental Analysis Laboratory Order No: 1806745 and 1807137

cc: Jeanne Dye-Porto, [jeanne.dye-porto@us.af.mil](mailto:jeanne.dye-porto@us.af.mil)  
 Scott Clark, [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)  
 Sheen Kottkamp, [sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)  
 Melissa Clark, [melissa.clark.8@us.af.mil](mailto:melissa.clark.8@us.af.mil)  
 Ben Moayyad, [Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)  
 Devon Jercinovic, [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
 Bernie Bockisch, [bbockisch@eaest.com](mailto:bbockisch@eaest.com)  
 Earl Morse, [emorse@eaest.com](mailto:emorse@eaest.com)

		LOCATION CODE							
		FIELD SAMPLE ID		KAFB-106240-3/3B-IDW					
		SAMPLE DATE		12-Jun-18					
		SAMPLE PURPOSE		Waste Characterization					
		ROLL-OFF NO.		KAFB-106240-3					
Parameter	Method	Analyte	Units	TCLP Regulatory Level <sup>a</sup> or KAFB Limits <sup>b</sup>	Result	QUAL	PQL		
RCRA Characteristics	SW1010A Mod	IGNITABILITY	<sup>a</sup> F	See footnote <sup>c</sup>	> 170	--	--		
	SW9012B	REACTIVE CYANIDE (as total)	mg/kg	NE	ND	--	0.25		
	SW9034	REACTIVE SULFIDE (as total)	mg/kg	NE	ND	--	25		
	SW9045D	CORROSIVITY (pH)	S.U.	≥2 or ≤12.5	9.0	--	--		
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.002		
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.002		
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0		
		BARIUM	mg/L	100	ND	--	100		
		CADMIUM	mg/L	1	ND	--	1.0		
		CHROMIUM	mg/L	5	ND	--	5.0		
		LEAD	mg/L	5	ND	--	5.0		
		SELENIUM	mg/L	1	ND	--	1.0		
		SILVER	mg/L	5	ND	--	5.0		
	SW1311/7470A	MERCURY	mg/L	0.02	ND	--	0.020		
TCLP PESTICIDES	SW1311/8081	CHLORDANE	mg/L	0.03	ND	--	0.030		
		ENDRIN	mg/L	0.02	ND	--	0.020		
		GAMMA-BHC (LINDANE)	mg/L	0.4	ND	--	0.40		
		HEPTACHLOR	mg/L	0.008	ND	--	0.0080		
		HEPTACHLOR EPOXIDE	mg/L	0.008	ND	--	0.0080		
		METHOXYCHLOR	mg/L	10	ND	--	10		
		TOXAPHENE	mg/L	0.5	ND	--	0.50		
		2,4,5-TRICHLOROPHENOL	mg/L	400	ND	--	400		
TCLP SVOCs	SW1311/8270C	2,4,6-TRICHLOROPHENOL	mg/L	2	ND	--	2.0		
		2,4-DINITROTOLUENE	mg/L	0.13	ND	--	0.13		
		2-METHYLPHENOL (o-Cresol)	mg/L	200	ND	--	200		
		3- and 4-METHYLPHENOL (m- and p-Cresol)	mg/L	200	ND	--	200		
		HEXACHLOROBENZENE	mg/L	0.13	ND	--	0.13		
		HEXACHLOROBUTADIENE	mg/L	0.5	ND	--	0.50		
		HEXACHLOROETHANE	mg/L	3	ND	--	3.0		
		NITROBENZENE	mg/L	2	ND	--	2.0		
		PENTACHLOROPHENOL	mg/L	100	ND	--	100		
		PYRIDINE	mg/L	5	ND	--	5.0		
		CRESOLS, TOTAL	mg/L	200	ND	--	200.0		
TCLP VOCs	SW1311/8260B	1,1-DICHLOROETHENE	mg/L	0.7	ND	--	0.70		
		1,2-DICHLOROETHANE	mg/L	0.5	ND	--	0.50		
		1,4-DICHLOROETHANE	mg/L	7.5	ND	--	7.5		
		2-BUTANONE (MEK)	mg/L	200	ND	--	200		
		BENZENE	mg/L	0.5	ND	--	0.50		
		CARBON TETRACHLORIDE	mg/L	0.5	ND	--	0.50		
		CHLOROETHENE	mg/L	100	ND	--	100		
		CHLOROFORM	mg/L	6	ND	--	6.0		
		TETRACHLOROETHENE	mg/L	0.7	ND	--	0.70		
		TRICHLOROETHENE	mg/L	0.5	ND	--	0.50		
		VINYL CHLORIDE	mg/L	0.2	ND	--	0.20		
		TPH	SW8015M/D	DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	9.4
				MOTOR OIL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	47
GASOLINE RANGE ORGANICS	mg/kg			100 <sup>d</sup>	ND	--	5.0		
VOLATILES (BTEX)	SW8260B	BENZENE	mg/kg	10	ND	--	0.024		
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.048		
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.048		
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.096		

Notes:

- <sup>a</sup>TCLP Regulatory Level - Resource Conservation Recovery Act (RCRA) hazardous waste characteristic limits per 40CFR Part 261 Subpart C, Section 261.20 - 261.24.
- <sup>b</sup>KAFB Limits - Kirtland AFB landfill requirements per the Department of Air Force Technical Memorandum for Kirtland AFB/Department of Energy/Sandia National Laboratories Restoration Agencies and Their Commercial Contractors (2009).
- <sup>c</sup>Ignitability characteristic for solids from 40 CFR Part 261.21: "It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of moisture, or spontaneous chemical change, and when ignited burns so vigorously and persistently that it creates a hazard."
- <sup>d</sup>KAFB limit for TPH measured as the sum of gasoline, diesel and motor oil range organics.
- <sup>e</sup>KAFB limit for BTEX measured as the sum of benzene, toluene, ethylbenzene, and total xylenes.
- BTEX - benzene, toluene, ethylbenzene, total xylenes
- <sup>a</sup>F - degrees fahrenheit
- J - Analyte detected below quantitation limit
- mg/L - milligram per liter
- mg/kg - milligram per kilogram
- NE - not established
- ND - not detected above the PQL
- PQL - practical quantitation limit
- QUAL - laboratory data qualifier
- Shade - analyte detected above the detection limit
- Shade and Bold - analyte detected above KAFB Landfill acceptance limit or TCLP Regulatory Level.
- SVOCs - semivolatle organic compounds
- S.U. - Standard units
- TCLP - Toxicity Characteristic Leaching Procedure
- TPH - total petroleum hydrocarbons
- VOCs - volatile organic compounds



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

June 26, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland BFF Project

OrderNo.: 1806745

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 1 sample(s) on 6/12/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1806745

Date Reported: 6/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106240-3-idw

Project: Kirtland BFF Project

Collection Date: 6/12/2018 1:25:00 PM

Lab ID: 1806745-001

Matrix: SOIL

Received Date: 6/12/2018 4:15:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: rde
Mercury	ND	0.020		mg/L	1	6/18/2018 6:09:45 PM	38724
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: MED
Arsenic	ND	5.0		mg/L	1	6/19/2018 11:17:49 AM	38712
Barium	ND	100		mg/L	1	6/20/2018 2:39:04 PM	38712
Cadmium	ND	1.0		mg/L	1	6/19/2018 11:17:49 AM	38712
Chromium	ND	5.0		mg/L	1	6/19/2018 11:17:49 AM	38712
Lead	ND	5.0		mg/L	1	6/20/2018 2:39:04 PM	38712
Selenium	ND	1.0		mg/L	1	6/21/2018 12:43:23 PM	38712
Silver	ND	5.0		mg/L	1	6/19/2018 11:17:49 AM	38712
<b>EPA METHOD 8081: PESTICIDES TCLP</b>							Analyst: JME
Chlordane	ND	0.030		mg/L	1	6/21/2018 12:15:33 PM	38752
Endrin	ND	0.020		mg/L	1	6/21/2018 12:15:33 PM	38752
gamma-BHC (Lindane)	ND	0.40		mg/L	1	6/21/2018 12:15:33 PM	38752
Heptachlor	ND	0.0080		mg/L	1	6/21/2018 12:15:33 PM	38752
Heptachlor epoxide	ND	0.0080		mg/L	1	6/21/2018 12:15:33 PM	38752
Methoxychlor	ND	10		mg/L	1	6/21/2018 12:15:33 PM	38752
Toxaphene	ND	0.50		mg/L	1	6/21/2018 12:15:33 PM	38752
Surr: Decachlorobiphenyl	50.4	43.3-136		%Rec	1	6/21/2018 12:15:33 PM	38752
Surr: Tetrachloro-m-xylene	49.2	30.7-130		%Rec	1	6/21/2018 12:15:33 PM	38752
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: TOM
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	6/15/2018 9:45:57 PM	38686
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	6/15/2018 9:45:57 PM	38686
Surr: DNOP	110	70-130		%Rec	1	6/15/2018 9:45:57 PM	38686
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: NSB
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	6/14/2018 8:55:23 PM	38669
Surr: BFB	88.6	15-316		%Rec	1	6/14/2018 8:55:23 PM	38669
<b>EPA METHOD 8270C TCLP</b>							Analyst: DAM
2-Methylphenol	ND	200		mg/L	1	6/25/2018 8:38:30 PM	38754
3+4-Methylphenol	ND	200		mg/L	1	6/25/2018 8:38:30 PM	38754
Phenol	ND	200		mg/L	1	6/25/2018 8:38:30 PM	38754
2,4-Dinitrotoluene	ND	0.13		mg/L	1	6/25/2018 8:38:30 PM	38754
Hexachlorobenzene	ND	0.13		mg/L	1	6/25/2018 8:38:30 PM	38754
Hexachlorobutadiene	ND	0.50		mg/L	1	6/25/2018 8:38:30 PM	38754
Hexachloroethane	ND	3.0		mg/L	1	6/25/2018 8:38:30 PM	38754
Nitrobenzene	ND	2.0		mg/L	1	6/25/2018 8:38:30 PM	38754
Pentachlorophenol	ND	100		mg/L	1	6/25/2018 8:38:30 PM	38754
Pyridine	ND	5.0		mg/L	1	6/25/2018 8:38:30 PM	38754

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 1 of 11

## Analytical Report

Lab Order 1806745

Date Reported: 6/26/2018

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106240-3-idw

Project: Kirtland BFF Project

Collection Date: 6/12/2018 1:25:00 PM

Lab ID: 1806745-001

Matrix: SOIL

Received Date: 6/12/2018 4:15:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C TCLP</b>							Analyst: DAM
2,4,5-Trichlorophenol	ND	400		mg/L	1	6/25/2018 8:38:30 PM	38754
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	6/25/2018 8:38:30 PM	38754
Cresols, Total	ND	200		mg/L	1	6/25/2018 8:38:30 PM	38754
Surr: 2-Fluorophenol	28.7	22.1-97.5		%Rec	1	6/25/2018 8:38:30 PM	38754
Surr: Phenol-d5	23.0	15-82.7		%Rec	1	6/25/2018 8:38:30 PM	38754
Surr: 2,4,6-Tribromophenol	55.0	39-129		%Rec	1	6/25/2018 8:38:30 PM	38754
Surr: Nitrobenzene-d5	41.3	44.6-120	S	%Rec	1	6/25/2018 8:38:30 PM	38754
Surr: 2-Fluorobiphenyl	40.4	38.3-115		%Rec	1	6/25/2018 8:38:30 PM	38754
Surr: 4-Terphenyl-d14	80.8	29.6-79.7	S	%Rec	1	6/25/2018 8:38:30 PM	38754
<b>EPA METHOD 8260B: TCLP COMPOUNDS</b>							Analyst: DJF
Benzene	ND	0.50		ppm	10	6/15/2018 1:01:53 AM	38669
1,2-Dichloroethane (EDC)	ND	0.50		ppm	10	6/15/2018 1:01:53 AM	38669
2-Butanone	ND	200		ppm	10	6/15/2018 1:01:53 AM	38669
Carbon tetrachloride	ND	0.50		ppm	10	6/15/2018 1:01:53 AM	38669
Chlorobenzene	ND	100		ppm	10	6/15/2018 1:01:53 AM	38669
Chloroform	ND	6.0		ppm	10	6/15/2018 1:01:53 AM	38669
1,4-Dichlorobenzene	ND	7.5		ppm	10	6/15/2018 1:01:53 AM	38669
1,1-Dichloroethene	ND	0.70		ppm	10	6/15/2018 1:01:53 AM	38669
Tetrachloroethene (PCE)	ND	0.70		ppm	10	6/15/2018 1:01:53 AM	38669
Trichloroethene (TCE)	ND	0.50		ppm	10	6/15/2018 1:01:53 AM	38669
Vinyl chloride	ND	0.20		ppm	10	6/15/2018 1:01:53 AM	38669
Surr: 1,2-Dichloroethane-d4	95.4	70-130		%Rec	10	6/15/2018 1:01:53 AM	38669
Surr: 4-Bromofluorobenzene	116	70-130		%Rec	10	6/15/2018 1:01:53 AM	38669
Surr: Dibromofluoromethane	97.4	70-130		%Rec	10	6/15/2018 1:01:53 AM	38669
Surr: Toluene-d8	97.7	70-130		%Rec	10	6/15/2018 1:01:53 AM	38669

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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1806745-001B KAFB-106240-3-IDW  
 Collected date/time: 06/12/18 13:25

SAMPLE RESULTS - 01  
 L1001854

ONE LAB. NATIONWIDE.



Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		6/19/2018 10:03:42 AM	WG1126458
Fluid	1		6/19/2018 10:03:42 AM	WG1126458
Initial pH	9.48		6/19/2018 10:03:42 AM	WG1126458
Final pH	5.01		6/19/2018 10:03:42 AM	WG1126458

2 Tc

3 Ss

4 Cn

Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.250	1	06/19/2018 14:49	WG1126232

5 Sr

6 Qc

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		25.0	1	06/21/2018 01:45	WG1126584

7 Gl

AI

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	9.00	TS	1	06/16/2018 12:28	WG1125395

8 Sc

Sample Narrative:  
 L1001854-01WG1125395: 9 at 25.4C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DNI at 170		1	06/17/2018 14:29	WG1124269

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND		0.00200	1	1	06/21/2018 20:51	WG1127544
2,4-D	ND		0.00200	10	1	06/21/2018 20:51	WG1127544
(S) 2,4-Dichlorophenyl Acetic Acid	72.4		14.0-158			06/21/2018 20:51	WG1127544

ACCOUNT:  
 Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
 L1001854

DATE/TIME:  
 06/22/18 16:18

ONE LAB. NATIONWIDE

QUALITY CONTROL SUMMARY

WG1126232

Wet Chemistry by Method 9012 B

L1001854-01

Method Blank (MB)

(MB) R3319071-1 06/19/18 14:29

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Cyanide	U	0.0390	0.0390	0.250

L1001853-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1001853-01 06/19/18 14:47 • (DUP) R3319071-4 06/19/18 14:48

Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
ND	0.000	1	0.000		20

L1002076-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1002076-01 06/19/18 14:57 • (DUP) R3319071-5 06/19/18 14:58

Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
ND	0.000	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS)

(LCS) R3319071-2 06/19/18 14:30 • (LCS) R3319071-3 06/19/18 14:31

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	LCS Rec. Limits %	LCSD Result mg/kg	LCSD Rec. %	LCSD Rec. Limits %	LCSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	2.50	2.55	102	50.0-150	2.37	94.7	50.0-150	7.46	20	20

Tc  
 Ss  
 Cn  
 Sr  
 Qc  
 Gl  
 Al  
 Sc

ACCOUNT: Hall Environmental Analysis Laboratory  
 PROJECT:  
 SDG: L1001854  
 DATE/TIME: 06/22/18 16:18

ONE LAB. NATIONWIDE.

**WG1126584**

L1007854-01

Wet Chemistry by Method 9034-9030B

Method Blank (MB)

(MB) R3319554-1 06/21/18 01:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Sulfide	U		7.63	25.0

L1002157-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1002157-01 06/21/18 01:45 • (DUP) R3319554-4 06/21/18 01:45

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Sulfide	U	ND	1	0.000		20

L1002674-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1002674-02 06/21/18 01:45 • (DUP) R3319554-5 06/21/18 01:45

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Sulfide	565	559	1	1.08		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3319554-2 06/21/18 01:45 • (LCS-D) R3319554-3 06/21/18 01:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	LCS Rec. Limits %	LCS Qualifier	LCS-D Qualifier	RPD %	RPD Limits %
Reactive Sulfide	100	72.9	72.9	70.0-130		0.000	0.000	20

- 1. Tc
- 2. Ss
- 3. Cu
- 4. Sr
- 5. OC
- 6. GI
- 7. Al
- 8. Sc

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1001854

DATE/TIME:  
06/22/18 16:18

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**QUALITY CONTROL SUMMARY**

**WG1125395**

Wet Chemistry by Method 9045D

L1001854-01

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3318479-1 06/16/18 12:28 • (LCS-D) R3318479-2 06/16/18 12:28

Spike Amount	LCS Result	LCS-D Result	LCS Rec.	LCS-D Rec.	Rec. Limits	LCS Qualifier	LCS-D Qualifier	RPD	RPD Limits
su 10.0	su 10.0	su 10.0	% 100	% 100	% 99.0-101	% 0.200	% 0.200	% 0.200	% 1

Sample Narrative:

LCS: 10 at 22.2C  
LCS-D: 10.02 at 22.4C

1	Tc
2	SS
3	Cn
4	Sr
5	Qc
6	GI
7	AI
8	Sc

DATE/TIME:  
06/22/18 16:18

SDG:  
L1001854

PROJECT:

ACCOUNT:  
Hell Environmental Analysis Laboratory

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QUALITY CONTROL SUMMARY

L1001854-01

WG1124269

Wet Chemistry by Method D93/1010A

L1001958-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1001958-02 06/17/18 14:29 • (DUP) R3318551-3 06/17/18 14:29

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ignitability	Deg. F DNI at 170	Deg. F DNI at 170	1	% 0.000	% 10	% 10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3318551-1 06/17/18 14:29 • (LCS-D) R3318551-2 06/17/18 14:29

Analyte	Spike Amount	LCS Result	LCS-D Result	LCS Rec.	LCS-D Rec.	Rec. Limits	LCS Qualifier	LCS-D Qualifier	RPD	RPD Limits
Ignitability	Deg. F 82.0	Deg. F 82.6	Deg. F 82.5	% 101	% 101	% 96.0-104	% 101	% 101	% 0.000	% 10

Tc  
SS  
Cn  
Sr  
Qc  
Gl  
Al  
Sc

ACCOUNT: Hall Environmental Analysis Laboratory  
PROJECT:  
SDG: L1001854  
DATE/TIME: 06/27/18 16:18

ONE LAB. NATIONWIDE

**QUALITY CONTROL SUMMARY**

L1901854-01

**WG1127544**

Chlorinated Acid Herbicides (GC) by Method 8151A

Method Blank (MB)

(MB) R3320187-1 06/21/18 17:52

Analyte	MB Result mg/l	MB Qualifier mg/l	MB MDL mg/l	MB RDL mg/l
2,4-D	U	0.000667	0.000667	0.00200
2,4,5-TP (Silvex)	U	0.000667	0.000667	0.00200
(S) 2,4-Dichlorophenyl Acetic Acid	71.6			14.0-158

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)

(LCS) R3320187-2 06/21/18 18:05 - (LCSD) R3320187-3 06/21/18 18:19

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
2,4-D	0.00500	0.00389	0.00393	77.8	78.6	56.0-120			1.02	20
2,4,5-TP (Silvex)	0.00500	0.00380	0.00374	76.0	74.8	55.0-120			1.59	20
(S) 2,4-Dichlorophenyl Acetic Acid				73.8	78.8	14.0-158				

Tc  
Ss  
Cn  
Sr  
Qc  
GI  
AI  
Sc

DATE/TIME:  
06/22/18 15:18

SDG:  
L1001854

PROJECT:

ACCOUNT:  
Hall Environmental Analysis Laboratory

GLOSSARY OF TERMS

ONE LAB. NATIONWIDE



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

- 1 Tc
- 2 Ss
- 3 Cn
- 4 Sr
- 5 Qc
- 6 GI
- 7 AI
- 8 Sc

Qualifier	Description
T8	Sample(s) received past/too close to holding time expiration.

ACCOUNT:  
Hell Environmental Analysis Laboratory

PROJECT:

SDG:  
L1001854

DATE/TIME:  
06/22/18 16:18

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806745

26-Jun-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF Project

Sample ID	LCS-38686	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS	Batch ID:	38686	RunNo:	52007					
Prep Date:	6/14/2018	Analysis Date:	6/15/2018	SeqNo:	1701226	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	10	50.00	0	91.2	70	130			
Surr: DNOP	4.8		5.000		97.0	70	130			

Sample ID	MB-38686	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID:	38686	RunNo:	52007					
Prep Date:	6/14/2018	Analysis Date:	6/15/2018	SeqNo:	1701227	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		99.6	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 3 of 11

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806745

26-Jun-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF Project

Sample ID	MB-38669	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	38669	RunNo:	51984					
Prep Date:	6/13/2018	Analysis Date:	6/14/2018	SeqNo:	1700018	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	870		1000		86.8	15	316			

Sample ID	LCS-38669	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	38669	RunNo:	51984					
Prep Date:	6/13/2018	Analysis Date:	6/14/2018	SeqNo:	1700019	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	28	5.0	25.00	0	112	75.9	131			
Surr: BFB	1000		1000		101	15	316			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 4 of 11

**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806745  
 26-Jun-18

Client: EA Engineering Science & Technology  
 Project: Kirtland BFF Project

Sample ID	MB-38752	SampType:	MBLK	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	PBW	Batch ID:	38752	RunNo:	52137					
Prep Date:	6/19/2018	Analysis Date:	6/21/2018	SeqNo:	1707820	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0018		0.002500		73.0	43.3	136			
Surr: Tetrachloro-m-xylene	0.0017		0.002500		67.3	30.7	130			

Sample ID	LCS-38752	SampType:	LCS	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	LCSW	Batch ID:	38752	RunNo:	52137					
Prep Date:	6/19/2018	Analysis Date:	6/21/2018	SeqNo:	1707821	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00043	0.00010	0.0005000	0	87.0	42.6	125			
gamma-BHC (Lindane)	0.00038	0.00010	0.0005000	0	76.9	29.5	142			
Heptachlor	0.00033	0.00010	0.0005000	0	65.5	18.6	138			
Heptachlor epoxide	0.00042	0.00010	0.0005000	0	84.7	40.3	127			
Methoxychlor	0.00044	0.00010	0.0005000	0	87.3	36.5	143			
Surr: Decachlorobiphenyl	0.0019		0.002500		75.0	43.3	136			
Surr: Tetrachloro-m-xylene	0.00067		0.002500		26.7	30.7	130			S

Sample ID	LCS-38752	SampType:	LCS	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	LCSW	Batch ID:	38752	RunNo:	52137					
Prep Date:	6/19/2018	Analysis Date:	6/21/2018	SeqNo:	1707822	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00052	0.00010	0.0005000	0	104	42.6	125	17.4	20	
gamma-BHC (Lindane)	0.00046	0.00010	0.0005000	0	93.0	29.5	142	19.0	20	
Heptachlor	0.00045	0.00010	0.0005000	0	90.0	18.6	138	31.5	20	R
Heptachlor epoxide	0.00051	0.00010	0.0005000	0	101	40.3	127	17.6	20	
Methoxychlor	0.00052	0.00010	0.0005000	0	104	36.5	143	17.3	20	
Surr: Decachlorobiphenyl	0.0022		0.002500		86.6	43.3	136	0	0	
Surr: Tetrachloro-m-xylene	0.0016		0.002500		62.2	30.7	130	0	0	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1806745

26-Jun-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF Project

Sample ID	mb-38669	SampType:	MBLK	TestCode:	EPA Method 8260B: TCLP Compounds						
Client ID:	PBS	Batch ID:	38669	RunNo:	51994						
Prep Date:	6/13/2018	Analysis Date:	6/14/2018	SeqNo:	1700368	Units:	ppm				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	ND	0.050									
1,2-Dichloroethane (EDC)	ND	0.050									
2-Butanone	ND	20									
Carbon tetrachloride	ND	0.050									
Chlorobenzene	ND	10									
Chloroform	ND	0.60									
1,4-Dichlorobenzene	ND	0.75									
1,1-Dichloroethene	ND	0.070									
Tetrachloroethene (PCE)	ND	0.070									
Trichloroethene (TCE)	ND	0.050									
Vinyl chloride	ND	0.020									
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		99.5	70	130				
Surr: 4-Bromofluorobenzene	0.54		0.5000		108	70	130				
Surr: Dibromofluoromethane	0.50		0.5000		100	70	130				
Surr: Toluene-d8	0.49		0.5000		97.9	70	130				

Sample ID	Ics-38669	SampType:	LCS	TestCode:	EPA Method 8260B: TCLP Compounds						
Client ID:	LCSS	Batch ID:	38669	RunNo:	51994						
Prep Date:	6/13/2018	Analysis Date:	6/14/2018	SeqNo:	1700370	Units:	ppm				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	1.0	0.050	1.000	0	101	70	130				
Chlorobenzene	1.0	0.050	1.000	0	101	70	130				
1,1-Dichloroethene	1.3	0.050	1.000	0	126	70	130				
Trichloroethene (TCE)	1.0	0.050	1.000	0	101	70	130				
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		94.2	70	130				
Surr: 4-Bromofluorobenzene	0.57		0.5000		114	70	130				
Surr: Dibromofluoromethane	0.51		0.5000		102	70	130				
Surr: Toluene-d8	0.46		0.5000		92.5	70	130				

## Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1806745

26-Jun-18

Client: EA Engineering Science & Technology  
Project: Kirtland BFF Project

Sample ID	ics-38754	SampType:	LCS	TestCode:	EPA Method 8270C TCLP					
Client ID:	LCSS	Batch ID:	38754	RunNo:	52208					
Prep Date:	6/19/2018	Analysis Date:	6/25/2018	SeqNo:	1710990	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.085	0.0010	0.1000	0	84.6	47.8	99.2			
3+4-Methylphenol	0.17	0.0010	0.2000	0	85.7	41.5	118			
2,4-Dinitrotoluene	0.078	0.0010	0.1000	0	78.0	44.4	81			
Hexachlorobenzene	0.089	0.0010	0.1000	0	88.9	49.5	91.6			
Hexachlorobutadiene	0.080	0.0010	0.1000	0	80.1	38.6	93			
Hexachloroethane	0.077	0.0010	0.1000	0	77.1	39.4	79.9			
Nitrobenzene	0.081	0.0010	0.1000	0	81.0	47.4	96.2			
Pentachlorophenol	0.082	0.0010	0.1000	0	81.9	39.4	79.9			S
Pyridine	0.048	0.0010	0.1000	0	48.1	15	79.9			
2,4,5-Trichlorophenol	0.087	0.0010	0.1000	0	86.5	47.4	118			
2,4,6-Trichlorophenol	0.091	0.0010	0.1000	0	91.1	47.4	101			
Cresols, Total	0.26	0.0010	0.3000	0	85.3	44.1	111			
Surr: 2-Fluorophenol	0.14		0.2000		71.6	22.1	97.5			
Surr: Phenol-d5	0.14		0.2000		69.0	15	82.7			
Surr: 2,4,6-Tribromophenol	0.18		0.2000		88.7	39	129			
Surr: Nitrobenzene-d5	0.081		0.1000		81.1	44.6	120			
Surr: 2-Fluorobiphenyl	0.081		0.1000		80.8	38.3	115			
Surr: 4-Terphenyl-d14	0.081		0.1000		81.1	29.6	79.7			S

Sample ID	mb-38754	SampType:	MBLK	TestCode:	EPA Method 8270C TCLP					
Client ID:	PBS	Batch ID:	38754	RunNo:	52208					
Prep Date:	6/19/2018	Analysis Date:	6/25/2018	SeqNo:	1710992	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
Phenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.12		0.2000		60.0	22.1	97.5			
Surr: Phenol-d5	0.10		0.2000		51.8	15	82.7			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806745  
 26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Sample ID: mb-38754	SampType: MBLK	TestCode: EPA Method 8270C TCLP
Client ID: PBS	Batch ID: 38754	RunNo: 52208
Prep Date: 6/19/2018	Analysis Date: 6/25/2018	SeqNo: 1710992 Units: mg/L

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2,4,6-Tribromophenol	0.16		0.2000		78.5	39	129			
Surr: Nitrobenzene-d5	0.073		0.1000		72.6	44.6	120			
Surr: 2-Fluorobiphenyl	0.066		0.1000		66.4	38.3	115			
Surr: 4-Terphenyl-d14	0.073		0.1000		73.3	29.6	79.7			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4-Dichlorophenol	ND	300								
2,4-Dinitrophenol	ND	300								
Phenol	ND	500								
2,4-Dichlorophenol	ND	0.15								
2,4-Dinitrophenol	ND	0.15								
Phenol	ND	0.50								
2,4-Dichlorophenol	ND	5.0								
Phenol	ND	100								
Phenol	ND	1.0								
2,4-Dichlorophenol	ND	450								
2,4-Dinitrophenol	ND	450								
Phenol	ND	500								
2,4-Dichlorophenol	ND	0.15								
2,4-Dinitrophenol	ND	0.15								
Phenol	ND	0.50								
2,4-Dichlorophenol	ND	5.0								
Phenol	ND	100								
Phenol	ND	1.0								
2,4-Dichlorophenol	ND	450								
2,4-Dinitrophenol	ND	450								
Phenol	ND	500								

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806745

26-Jun-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF Project

Sample ID	MB-38724	SampType:	MBLK	TestCode:	MERCURY, TCLP						
Client ID:	PBW	Batch ID:	38724	RunNo:	52057						
Prep Date:	6/18/2018	Analysis Date:	6/18/2018	SeqNo:	1702856	Units:	mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND	0.020								

Sample ID	LCS-38724	SampType:	LCS	TestCode:	MERCURY, TCLP						
Client ID:	LCSW	Batch ID:	38724	RunNo:	52057						
Prep Date:	6/18/2018	Analysis Date:	6/18/2018	SeqNo:	1702857	Units:	mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND	0.020	0.005000	0	96.0	80	120			

Sample ID	TCLP#1-3721	SampType:	MBLK	TestCode:	MERCURY, TCLP						
Client ID:	PBW	Batch ID:	38724	RunNo:	52057						
Prep Date:	6/18/2018	Analysis Date:	6/18/2018	SeqNo:	1702858	Units:	mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND	0.020								

Sample ID	TCLP#2-3747	SampType:	MBLK	TestCode:	MERCURY, TCLP						
Client ID:	PBW	Batch ID:	38724	RunNo:	52057						
Prep Date:	6/18/2018	Analysis Date:	6/18/2018	SeqNo:	1702859	Units:	mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND	0.020								

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT**

**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806745

26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Sample ID	MB-38712	SampType	MBLK	TestCode	EPA Method 6010B: TCLP Metals						
Client ID	PBW	Batch ID	38712	RunNo	52086						
Prep Date	6/15/2018	Analysis Date	6/19/2018	SeqNo	1704418	Units	mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Lead	ND	5.0									

Sample ID	LCS-38712	SampType	LCS	TestCode	EPA Method 6010B: TCLP Metals						
Client ID	LCSW	Batch ID	38712	RunNo	52086						
Prep Date	6/15/2018	Analysis Date	6/19/2018	SeqNo	1704419	Units	mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Lead	ND	5.0	0.5000	0	101	80	120				

Sample ID	TCLPFI#2-3747	SampType	MBLK	TestCode	EPA Method 6010B: TCLP Metals						
Client ID	PBW	Batch ID	38712	RunNo	52086						
Prep Date		Analysis Date	6/19/2018	SeqNo	1704438	Units	mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic	ND	5.0									
Barium	ND	100									
Lead	ND	5.0									

Sample ID	MB-38712	SampType	MBLK	TestCode	EPA Method 6010B: TCLP Metals						
Client ID	PBW	Batch ID	38712	RunNo	52086						
Prep Date	6/15/2018	Analysis Date	6/19/2018	SeqNo	1704467	Units	mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic	ND	5.0									
Barium	ND	100									
Cadmium	ND	1.0									
Chromium	ND	5.0									
Silver	ND	5.0									

Sample ID	LCS-38712	SampType	LCS	TestCode	EPA Method 6010B: TCLP Metals						
Client ID	LCSW	Batch ID	38712	RunNo	52086						
Prep Date	6/15/2018	Analysis Date	6/19/2018	SeqNo	1704468	Units	mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic	ND	5.0	0.5000	0	107	80	120				
Barium	ND	100	0.5000	0	100	80	120				
Cadmium	ND	1.0	0.5000	0	107	80	120				
Chromium	ND	5.0	0.5000	0	99.6	80	120				
Silver	ND	5.0	0.1000	0	119	80	120				

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806745

26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Sample ID	MB-38712	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	38712	RunNo:	52127					
Prep Date:	6/15/2018	Analysis Date:	6/21/2018	SeqNo:	1707485	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	LCS-38712	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	LCSW	Batch ID:	38712	RunNo:	52127					
Prep Date:	6/15/2018	Analysis Date:	6/21/2018	SeqNo:	1707486	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	108	80	120			

Sample ID	TCLP FL#2 - 3747	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	38712	RunNo:	52182					
Prep Date:	6/15/2018	Analysis Date:	6/24/2018	SeqNo:	1709611	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EA Engineering Alb      Work Order Number: 1806745      RcptNo: 1

Received By: Michelle Garcia      6/12/2018 4:15:00 PM      *Michelle Garcia*  
 Completed By: Erin Melendrez      6/13/2018 9:05:27 AM      *EM*  
 Reviewed By: *ENM*      *6/13/18*  
*LB: JB 06/13/18*

**Chain of Custody**

1. Is Chain of Custody complete?      Yes       No       Not Present   
 2. How was the sample delivered?      Client

**Log In**

3. Was an attempt made to cool the samples?      Yes       No       NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C      Yes       No       NA   
 5. Sample(s) in proper container(s)?      Yes       No   
 6. Sufficient sample volume for indicated test(s)?      Yes       No   
 7. Are samples (except VOA and ONG) properly preserved?      Yes       No   
 8. Was preservative added to bottles?      Yes       No       NA   
 9. VOA vials have zero headspace?      Yes       No       No VOA Vials   
 10. Were any sample containers received broken?      Yes       No   
 11. Does paperwork match bottle labels?      Yes       No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody?      Yes       No   
 13. Is it clear what analyses were requested?      Yes       No   
 14. Were all holding times able to be met?      Yes       No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: *06/13/18*  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: *JB*

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order?      Yes       No       NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

16. Additional remarks:

**17. Cooler Information**

Cooler No.	Temp. °C	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	1.9	Good	Not Present			





Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

July 19, 2018

Amanda Smith

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland AFB BFF

OrderNo.: 1807137

Dear Amanda Smith:

Hall Environmental Analysis Laboratory received 4 sample(s) on 7/3/2018 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued July 18, 2018.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1807137

Date Reported: 7/19/2018

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106240-3B-1DW

Project: Kirtland AFB BFF

Collection Date: 7/3/2018 9:50:00 AM

Lab ID: 1807137-003

Matrix: SOIL

Received Date: 7/3/2018 1:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: AG
Benzene	ND	0.024		mg/Kg	1	7/10/2018 2:51:58 PM
Toluene	ND	0.048		mg/Kg	1	7/10/2018 2:51:58 PM
Ethylbenzene	ND	0.048		mg/Kg	1	7/10/2018 2:51:58 PM
Xylenes, Total	ND	0.096		mg/Kg	1	7/10/2018 2:51:58 PM
Surr: 4-Bromofluorobenzene	120	70-130		%Rec	1	7/10/2018 2:51:58 PM
Surr: Toluene-d8	91.6	70-130		%Rec	1	7/10/2018 2:51:58 PM
<b>VOLATILES BY 8260B/1311</b>						Analyst: RAA
Benzene	ND	0.50		mg/L	1	7/9/2018 4:18:00 PM
2-Butanone	ND	200		mg/L	1	7/9/2018 4:18:00 PM
Carbon Tetrachloride	ND	0.50		mg/L	1	7/9/2018 4:18:00 PM
Chlorobenzene	ND	100		mg/L	1	7/9/2018 4:18:00 PM
Chloroform	ND	6.0		mg/L	1	7/9/2018 4:18:00 PM
1,4-Dichlorobenzene	ND	7.5		mg/L	1	7/9/2018 4:18:00 PM
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	7/9/2018 4:18:00 PM
1,1-Dichloroethene	ND	0.70		mg/L	1	7/9/2018 4:18:00 PM
Hexachlorobutadiene	ND	0.50		mg/L	1	7/9/2018 4:18:00 PM
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	7/9/2018 4:18:00 PM
Trichloroethene (TCE)	ND	0.50		mg/L	1	7/9/2018 4:18:00 PM
Vinyl chloride	ND	0.20		mg/L	1	7/9/2018 4:18:00 PM
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	7/9/2018 4:18:00 PM
Surr: 4-Bromofluorobenzene	96.3	57.3-148		%Rec	1	7/9/2018 4:18:00 PM
Surr: Dibromofluoromethane	98.1	70-130		%Rec	1	7/9/2018 4:18:00 PM
Surr: Toluene-d8	96.3	70-130		%Rec	1	7/9/2018 4:18:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

 WO#: 1807137  
 19-Jul-18

 Client: EA Engineering Science & Technology  
 Project: Kirtland AFB BFF

Sample ID	ics-39050	SampType:	LCS4	TestCode:	EPA Method 8260B: Volatiles Short List						
Client ID:	BatchQC	Batch ID:	39050	RunNo:	52594						
Prep Date:	7/5/2018	Analysis Date:	7/10/2018	SeqNo:	1725924	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	0.98	0.025	1.000	0	97.6	80	120				
Toluene	1.0	0.050	1.000	0	101	80	120				
Ethylbenzene	1.0	0.050	1.000	0	103	80	120				
Xylenes, Total	3.1	0.10	3.000	0	102	80	120				
Surr: 4-Bromofluorobenzene	0.55		0.5000		110	70	130				
Surr: Toluene-d8	0.46		0.5000		92.4	70	130				

Sample ID	mb-39050	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles Short List						
Client ID:	PBS	Batch ID:	39050	RunNo:	52594						
Prep Date:	7/5/2018	Analysis Date:	7/10/2018	SeqNo:	1725925	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	ND	0.025									
Toluene	ND	0.050									
Ethylbenzene	ND	0.050									
Xylenes, Total	ND	0.10									
Surr: 4-Bromofluorobenzene	0.61		0.5000		122	70	130				
Surr: Toluene-d8	0.47		0.5000		94.3	70	130				

Sample ID	1807137-001ams	SampType:	MS	TestCode:	EPA Method 8260B: Volatiles Short List						
Client ID:	KAFB-106420-1B-1D	Batch ID:	39050	RunNo:	52594						
Prep Date:	7/5/2018	Analysis Date:	7/10/2018	SeqNo:	1726396	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	0.80	0.024	0.9452	0.006692	84.3	51.9	158				
Toluene	0.80	0.047	0.9452	0	85.0	64.6	132				
Surr: 4-Bromofluorobenzene	0.55		0.4726		117	70	130				
Surr: Toluene-d8	0.42		0.4726		89.5	70	130				

Sample ID	1807137-001amsd	SampType:	MSD	TestCode:	EPA Method 8260B: Volatiles Short List						
Client ID:	KAFB-106420-1B-1D	Batch ID:	39050	RunNo:	52594						
Prep Date:	7/5/2018	Analysis Date:	7/10/2018	SeqNo:	1726397	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	0.90	0.025	1.000	0.006692	89.1	51.9	158	11.1	20		
Toluene	0.89	0.050	1.000	0	89.0	64.6	132	10.2	20		
Surr: 4-Bromofluorobenzene	0.59		0.5000		118	70	130	0	0		
Surr: Toluene-d8	0.45		0.5000		89.8	70	130	0	0		

## Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 5 of 8

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807137

19-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	Ics-39054		SampType: LCS		TestCode: Volatiles by 8260B/1311					
Client ID:	LCSS		Batch ID: 39054		RunNo: 52559					
Prep Date:	7/5/2018		Analysis Date: 7/9/2018		SeqNo: 1724846		Units: mg/L			
Benzene	0.35	0.10	0.4000	0	88.2	70	130			
Chlorobenzene	0.39	0.10	0.4000	0	98.0	70	130			
1,1-Dichloroethene	0.37	0.10	0.4000	0	91.9	70	130			
Trichloroethene (TCE)	0.35	0.10	0.4000	0	88.6	70	130			
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		99.9	70	130			
Surr: 4-Bromofluorobenzene	0.20		0.2000		97.7	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		95.7	70	130			
Surr: Toluene-d8	0.19		0.2000		97.1	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	mb-39054		SampType: MBLK		TestCode: Volatiles by 8260B/1311					
Client ID:	PBS		Batch ID: 39054		RunNo: 52559					
Prep Date:	7/5/2018		Analysis Date: 7/9/2018		SeqNo: 1724847		Units: mg/L			
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Hexachlorobutadiene	ND	0.50								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		101	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		95.7	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		97.2	70	130			
Surr: Toluene-d8	0.19		0.2000		95.7	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	1807137-001ams		SampType: MS		TestCode: Volatiles by 8260B/1311					
Client ID:	KAFB-106420-1B-1D		Batch ID: 39054		RunNo: 52559					
Prep Date:	7/5/2018		Analysis Date: 7/9/2018		SeqNo: 1724850		Units: mg/L			
Benzene	0.38	0.10	0.4000	0	94.1	44.5	152			
Chlorobenzene	0.39	0.10	0.4000	0	98.7	70	130			
1,1-Dichloroethene	0.40	0.10	0.4000	0	101	79.1	132			
Trichloroethene (TCE)	0.38	0.10	0.4000	0	94.2	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 6 of 8

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1807137

19-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Sample ID	1807137-001ams	SampType: MS	TestCode: Volatiles by 8260B/1311							
Client ID:	KAFB-106420-1B-1D	Batch ID: 39054	RunNo: 52559							
Prep Date:	7/5/2018	Analysis Date: 7/9/2018	SeqNo: 1724850 Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		103	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		96.5	57.3	148			
Surr: Dibromofluoromethane	0.20		0.2000		99.5	70	130			
Surr: Toluene-d8	0.19		0.2000		93.7	70	130			

Sample ID	1807137-001amsd	SampType: MSD	TestCode: Volatiles by 8260B/1311							
Client ID:	KAFB-106420-1B-1D	Batch ID: 39054	RunNo: 52559							
Prep Date:	7/5/2018	Analysis Date: 7/9/2018	SeqNo: 1724851 Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.36	0.10	0.4000	0	90.6	44.5	152	3.74	20	
Chlorobenzene	0.39	0.10	0.4000	0	96.9	70	130	1.87	20	
1,1-Dichloroethene	0.38	0.10	0.4000	0	95.1	79.1	132	6.14	20	
Trichloroethene (TCE)	0.36	0.10	0.4000	0	90.9	70	130	3.53	20	
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		105	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.19		0.2000		95.8	57.3	148	0	0	
Surr: Dibromofluoromethane	0.20		0.2000		102	70	130	0	0	
Surr: Toluene-d8	0.19		0.2000		95.0	70	130	0	0	

Sample ID	mb-39098	SampType: MBLK	TestCode: Volatiles by 8260B/1311							
Client ID:	PBS	Batch ID: 39098	RunNo: 52596							
Prep Date:	7/9/2018	Analysis Date: 7/10/2018	SeqNo: 1726139 Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Hexachlorobutadiene	ND	0.50								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		101	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		97.2	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		94.3	70	130			
Surr: Toluene-d8	0.19		0.2000		94.1	70	130			

## Qualifiers:

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1807137  
19-Jul-18

Client: EA Engineering Science & Technology  
Project: Kirtland AFB BFF

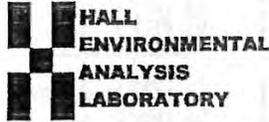
Sample ID	1807137-004ams	SampType: MS	TestCode: Volatiles by 8260B/1311							
Client ID:	KAFB-106240-4B-1D	Batch ID: 39098	RunNo: 52596							
Prep Date:	7/9/2018	Analysis Date: 7/10/2018	SeqNo: 1726141	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.37	0.10	0.4000	0	92.0	44.5	152			
Chlorobenzene	0.40	0.10	0.4000	0	99.6	70	130			
1,1-Dichloroethene	0.37	0.10	0.4000	0	93.5	79.1	132			
Trichloroethene (TCE)	0.36	0.10	0.4000	0	90.5	70	130			
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		101	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		96.1	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		95.0	70	130			
Surr: Toluene-d8	0.19		0.2000		92.8	70	130			

Sample ID	1807137-004amsd	SampType: MSD	TestCode: Volatiles by 8260B/1311							
Client ID:	KAFB-106240-4B-1D	Batch ID: 39098	RunNo: 52596							
Prep Date:	7/9/2018	Analysis Date: 7/10/2018	SeqNo: 1726142	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.34	0.10	0.4000	0	84.2	44.5	152	8.88	20	
Chlorobenzene	0.37	0.10	0.4000	0	93.4	70	130	6.38	20	
1,1-Dichloroethene	0.34	0.10	0.4000	0	85.9	79.1	132	8.46	20	
Trichloroethene (TCE)	0.33	0.10	0.4000	0	82.8	70	130	8.86	20	
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		101	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.20		0.2000		98.0	57.3	148	0	0	
Surr: Dibromofluoromethane	0.18		0.2000		91.8	70	130	0	0	
Surr: Toluene-d8	0.19		0.2000		94.2	70	130	0	0	

Sample ID	Ics-39098	SampType: LCS	TestCode: Volatiles by 8260B/1311							
Client ID:	LCSS	Batch ID: 39098	RunNo: 52632							
Prep Date:	7/9/2018	Analysis Date: 7/11/2018	SeqNo: 1727297	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.35	0.10	0.4000	0	88.4	70	130			
Chlorobenzene	0.38	0.10	0.4000	0	95.3	70	130			
1,1-Dichloroethene	0.37	0.10	0.4000	0	92.9	70	130			
Trichloroethene (TCE)	0.35	0.10	0.4000	0	87.7	70	130			
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		103	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		95.3	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		97.1	70	130			
Surr: Toluene-d8	0.19		0.2000		94.5	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1807137

RcptNo: 1

Received By: Anne Thome 7/3/2018 1:50:00 PM

*Anne Thome*

Completed By: Anne Thome 7/5/2018 7:06:34 AM

*Anne Thome*

Reviewed By: *su 7.5.18*

Labeled by: *A 07105118*

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present
2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA
4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA
5. Sample(s) in proper container(s)? Yes  No
6. Sufficient sample volume for indicated test(s)? Yes  No
7. Are samples (except VOA and ONG) properly preserved? Yes  No
8. Was preservative added to bottles? Yes  No  NA
9. VOA vials have zero headspace? Yes  No  No VOA Vials
10. Were any sample containers received broken? Yes  No
11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)
12. Are matrices correctly identified on Chain of Custody? Yes  No
13. Is it clear what analyses were requested? Yes  No
14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: _____
(<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified: _____	Date: _____
By Whom: _____	Via: <input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding: _____	
Client Instructions: _____	

16. Additional remarks:

**17. Cooler Information**

Cooler No.	Temp °C	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	4.7	Good	Not Present			



225 Sealing Circle Suite 400, Hunt Valley MD 21087  
Tel No: (410) 984-1000  
Fax No: (410) 771-1625

## CHAIN-OF-CUSTODY RECORD

<sup>1</sup> COC NUMBER:  
**COC-KAFB-106240-B-1D1**

---

<sup>2</sup> PROJECT NAME:  
Kirtland AFB BFF

<sup>3</sup> PROJECT PHASE/TASK:  
Data Gap Wells

<sup>4</sup> PROJECT CONTACT:  
E. Morse

<sup>5</sup> PROJECT NUMBER:  
62599DM01.1017.3.13D

<sup>6</sup> DO NUMBER:  
15182

<sup>7</sup> PROJECT TEL NO AND FAX NO:  
505-238-4410

<sup>8</sup> LAB NAME AND CONTACT:  
Hall Environmental

<sup>9</sup> FAX AND MAIL REPORTS/SEND TO:  
Amanda Smith/amsmith@east.com

<sup>10</sup> FAX AND MAIL REPORTS/SEND TO:  
Paul Morse/pmorso@east.com

<sup>11</sup> FAX AND MAIL REPORTS/SEND TO:  
Earl Morse/emorse@east.com

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ITEM	SAMPLE IDENTIFIER	SAMPLE DESCRIPTION/LOCATION	MATRIX	DATE COLLECTED	TIME COLLECTED	DATA PRG LEVEL (see codes on SOP)	LAB TAT (business days)	Bottle Type	ANALYSES REQUIRED (Include Method Number)					SAMPLE TYPE (see codes on SOP)	COMMENTS/SCREENING READINGS	LAB II (for list)
									TPH GRO, DRO, FRO (8015D)	Reactive Cyanide/Sulfide (9012B/9034)	Consistency - PH (9045D)	Integrity (1010A)	TPH VOC (1311/8260B)			
1	KAFB-106240-1B-1DW	Rolloff Bin 1	Soil	7-3-18	0840	IV	7	1	X	X	X	X	composite	1807137-001		
2	KAFB-106240-2B-1SW	Rolloff Bin 2	Soil	7-3-18	0915	IV	7	1	X	X	X	X	composite	202		
3	KAFB-106240-3B-1SW	Rolloff Bin 3	Soil	7-3-18	0950	IV	7	1	X	X	X	X	composite	203		
4	KAFB-106240-4B-1SW	Rolloff Bin 4	Soil	7-3-18	1005	IV	7	1	X	X	X	X	composite	204		
5																
6																
7																
8																
9																
10																

---

<sup>12</sup> COURIER AND SHIPPING NUMBER:  
FedEx Number: N/A - Hand delivered to lab

Printed Name and Signature:  
P. Feffer / J. Messinger

<sup>13</sup> RECEIVED BY:  
Anne Thorns

DATE: 7-3-18

TIME: 1330

<sup>14</sup> RELINQUISHED BY:  
5.8

DATE: 07/03/18

TIME: 1330

---

Distribution: | Original - Laboratory (To be returned with analytical reports) | Copy 1 - Project File



EA Engineering, Science, & Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, New Mexico 87102  
Phone: (505) 224-9013

July 26, 2018

Ms. Katrina Wheelock  
Solid Waste Program Manager  
Environmental Management  
377 MSG/CEIE  
Kirtland AFB, New Mexico 87117

Subject: Request to dispose non-hazardous soil cuttings at Kirtland C&D Landfill  
Roll-off Identification: KAFB-106240-4 (No bin ID #)  
USACE Contract No. W912DR-12-D-0006-DM01

Dear Ms. Wheelock,

EA Engineering, Science, and Technology, Inc., PBC (EA) is requesting permission to dispose of non-hazardous soil drill cuttings and plastic liners from one roll-off container to the Kirtland Air Force Base (AFB) Construction and Demolition (C&D) debris landfill. Roll-off bin with the EA identification of KAFB-106240 #4 (no bin identification #) contains approximately 7 cubic yards of soil.

Between June and July 2018 EA installed a groundwater monitoring well, KAFB-106240, associated with the Kirtland Bulk Fuels Facility environmental restoration project. Well KAFB-106240 is located on VA Hospital property just west of Bullhead Park. Drill cuttings were containerized in a plastic-lined, steel, roll-off pending laboratory analysis for waste characterization. Any excess moisture in the bin was stabilized using Hydrosorb®, a superabsorbent polymer. All roll-off bins are currently residing in the EA investigation derived waste yard near 1601 Perimeter Circle SE, on Kirtland AFB.

One five-point composite waste characterization sample was collected from the roll-off bin and delivered to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis. The sample was analyzed for all the required parameters per the Kirtland AFB Landfill Acceptance Memorandum (January 2009). The attached analytical results (Reports 1806749 and 1807137) for the composite sample confirms the drill cuttings meet waste acceptance requirements for disposal at the Kirtland C&D landfill. Please note that analytical report 1807137 is a resample of this bin for BTEX which was missed on the original sample request for analysis. The sample designation is listed as 106240-4B-IDW indicating it is from bin 106240-4 (sample B). This report originally contained sample results not applicable to bin 106240-4. These results have been omitted from the report to simplify the review process.



W912DR-12-D-0006-DM01  
 Kirtland Air Force Base Bulk Fuels Facility Expansion  
 of the Dissolved Plume Groundwater Treatment System Design  
 2 May 2017  
 Page 2 of 2

All of the roll-off containers are owned and/or leased by Advanced Chemical Transport Environmental Services Inc. (ACT) with roll-off identification number, when present, marked clearly on the roll off. ACT will utilize one of the following vehicles for waste transport:

- 2015 Western Star Roll Off Truck, License #: WD121651, registered in New Mexico
- 2015 Western Star Roll Off Truck, License #: WD124756, registered in New Mexico

Mr. Sheen Kottkamp has reviewed this package and authorized EA to forward it for your review. EA respectfully requests your review of the attached summary table and analytical data for determination if disposal can be authorized at the Kirtland AFB C&D landfill. Upon receiving notification of Kirtland AFB's acceptance of the waste, EA will coordinate transport and disposal of the roll-off contents with ACT.

EA's Kirtland AFB Point of Contact is Mr. Scott Clark; 505-846-9017.

If you have any questions, please do not hesitate to contact me at 505-266-2225, or via e-mail at [landress@eaest.com](mailto:landress@eaest.com).

Sincerely,

Lane Andress, PG

Attachments: Summary Analytical Table  
 Hall Environmental Analysis Laboratory Order No: 1086749 and 1807137

cc: Jeanne Dye-Porto, [jeanne.dye-porto@us.af.mil](mailto:jeanne.dye-porto@us.af.mil)  
 Scott Clark, [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)  
 Sheen Kottkamp, [sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)  
 Melissa Clark, [melissa.clark.8@us.af.mil](mailto:melissa.clark.8@us.af.mil)  
 Ben Moayyad, [Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)  
 Devon Jercinovic, [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
 Bernie Bockisch, [bbockisch@eaest.com](mailto:bbockisch@eaest.com)  
 Earl Morse, [emorse@eaest.com](mailto:emorse@eaest.com)

		LOCATION CODE					
		FIELD SAMPLE ID		KAFB-106240-4/4B-IDW			
		SAMPLE DATE		12-Jun-18			
		SAMPLE PURPOSE		Waste Characterization			
		ROLL-OFF NO.		KAFB-106240-4			
Parameter	Method	Analyte	Units	TCLP Regulatory Level <sup>a</sup> or KAFB Limits <sup>b</sup>	Result	QUAL	PQL
RCRA Characteristics	SW1010A Mod	IGNITABILITY	*F	See footnote <sup>c</sup>	> 170	--	--
	SW9012B	REACTIVE CYANIDE (as total)	mg/kg	NE	ND	--	0.25
	SW9034	REACTIVE SULFIDE (as total)	mg/kg	NE	ND	--	25
	SW9045D	CORROSIVITY (pH)	S.U.	≥2 or ≤12.5	9.08	--	--
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.002
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.002
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0
		BARIUM	mg/L	100	ND	--	100
		CADMIUM	mg/L	1	ND	--	1.0
		CHROMIUM	mg/L	5	ND	--	5.0
		LEAD	mg/L	5	ND	--	5.0
		SELENIUM	mg/L	1	ND	--	1.0
	SW1311/7470A	SILVER	mg/L	5	ND	--	5.0
		MERCURY	mg/L	0.02	ND	--	0.020
TCLP PESTICIDES	SW1311/8081	CHLORDANE	mg/L	0.03	ND	--	0.030
		ENDRIN	mg/L	0.02	ND	--	0.020
		GAMMA-BHC (LINDANE)	mg/L	0.4	ND	--	0.40
		HEPTACHLOR	mg/L	0.008	ND	--	0.0080
		HEPTACHLOR EPOXIDE	mg/L	0.008	ND	--	0.0080
		METHOXYCHLOR	mg/L	10	ND	--	10
		TOXAPHENE	mg/L	0.5	ND	--	0.50
TCLP SVOCs	SW1311/8270C	2,4,5-TRICHLOROPHENOL	mg/L	400	ND	--	400
		2,4,6-TRICHLOROPHENOL	mg/L	2	ND	--	2.0
		2,4-DINITROTOLUENE	mg/L	0.13	ND	--	0.13
		2-METHYLPHENOL (o-Cresol)	mg/L	200	ND	--	200
		3- and 4-METHYLPHENOL (m- and o-Cresol)	mg/L	200	ND	--	200
		HEXACHLOROBENZENE	mg/L	0.13	ND	--	0.13
		HEXACHLOROBUTADIENE	mg/L	0.5	ND	--	0.50
		HEXACHLOROETHANE	mg/L	3	ND	--	3.0
		NITROBENZENE	mg/L	2	ND	--	2.0
		PENTACHLOROPHENOL	mg/L	100	ND	--	100
		PYRIDINE	mg/L	5	ND	--	5.0
		CRESOLS, TOTAL	mg/L	200	ND	--	200.0
		TCLP VOCS	SW1311/8260B	1,1-DICHLOROETHENE	mg/L	0.7	ND
1,2-DICHLOROETHANE	mg/L			0.5	ND	--	0.50
1,4-DICHLOROBENZENE	mg/L			7.5	ND	--	7.5
2-BUTANONE (MEK)	mg/L			200	ND	--	200
BENZENE	mg/L			0.5	ND	--	0.50
CARBON TETRACHLORIDE	mg/L			0.5	ND	--	0.50
CHLOROBENZENE	mg/L			100	ND	--	100
CHLOROFORM	mg/L			6	ND	--	6.0
TETRACHLOROETHENE	mg/L			0.7	ND	--	0.70
TRICHLOROETHENE	mg/L			0.5	ND	--	0.50
VINYL CHLORIDE	mg/L			0.2	ND	--	0.20
TPH	SW8015M/D	DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	10
		MOTOR OIL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	50
		GASOLINE RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	5.0
VOLATILES (BTEX)	SW8260B	BENZENE	mg/kg	10	ND	--	0.025
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.049
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.049
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.099

Notes:

- <sup>a</sup>TCLP Regulatory Level - Resource Conservation Recovery Act (RCRA) hazardous waste characteristic limits per 40CFR Part 261 Subpart C, Section 261.20 - 261.24.
- <sup>b</sup>KAFB Limits - Kirtland AFB landfill requirements per the Department of Air Force Technical Memorandum for Kirtland AFB/Department of Energy/Sandia National Laboratories Restoration Agencies and Their Commercial Contractors (2009).
- <sup>c</sup>Ignitability characteristic for solids from 40 CFR Part 261.21: "It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of moisture, or spontaneous chemical change, and when ignited burns so vigorously and persistently that it creates a hazard."
- <sup>d</sup>KAFB limit for TPH measured as the sum of gasoline, diesel and motor oil range organics.
- <sup>e</sup>KAFB limit for BTEX measured as the sum of benzene, toluene, ethylbenzene, and total xylenes.
- BTEX - benzene, toluene, ethylbenzene, total xylenes
- \*F - degrees fahrenheit
- J - Analyte detected below quantitation limit
- mg/L - milligram per liter
- mg/kg - milligram per kilogram
- NE - not established
- ND - not detected above the PQL
- PQL - practical quantitation limit
- QUAL - laboratory data qualifier
- Shade - analyte detected above the detection limit
- Shade and Bold - analyte detected above KAFB Landfill acceptance limit or TCLP Regulatory Level.
- SVOCs - semivolatile organic compounds
- S.U. - Standard units
- TCLP - Toxicity Characteristic Leaching Procedure
- TPH - total petroleum hydrocarbons
- VOCs - volatile organic compounds



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

June 26, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland BFF Project

OrderNo.: 1806749

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 1 sample(s) on 6/12/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1806749

Date Reported: 6/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106240-4-idw

Project: Kirtland BFF Project

Collection Date: 6/12/2018 2:55:00 PM

Lab ID: 1806749-001

Matrix: SOIL

Received Date: 6/12/2018 4:15:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: rde
Mercury	ND	0.020		mg/L	1	6/18/2018 6:13:09 PM	38724
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: MED
Arsenic	ND	5.0		mg/L	1	6/24/2018 6:31:52 PM	38712
Barium	ND	100		mg/L	1	6/20/2018 2:42:06 PM	38712
Cadmium	ND	1.0		mg/L	1	6/19/2018 11:21:37 AM	38712
Chromium	ND	5.0		mg/L	1	6/19/2018 11:21:37 AM	38712
Lead	ND	5.0		mg/L	1	6/20/2018 2:42:06 PM	38712
Selenium	ND	1.0		mg/L	1	6/24/2018 6:31:52 PM	38712
Silver	ND	5.0		mg/L	1	6/19/2018 11:21:37 AM	38712
<b>EPA METHOD 8081: PESTICIDES TCLP</b>							Analyst: JME
Chlordane	ND	0.030		mg/L	1	6/21/2018 12:41:50 PM	38752
Endrin	ND	0.020		mg/L	1	6/21/2018 12:41:50 PM	38752
gamma-BHC (Lindane)	ND	0.40		mg/L	1	6/21/2018 12:41:50 PM	38752
Heptachlor	ND	0.0080		mg/L	1	6/21/2018 12:41:50 PM	38752
Heptachlor epoxide	ND	0.0080		mg/L	1	6/21/2018 12:41:50 PM	38752
Methoxychlor	ND	10		mg/L	1	6/21/2018 12:41:50 PM	38752
Toxaphene	ND	0.50		mg/L	1	6/21/2018 12:41:50 PM	38752
Surr: Decachlorobiphenyl	71.3	43.3-136		%Rec	1	6/21/2018 12:41:50 PM	38752
Surr: Tetrachloro-m-xylene	69.2	30.7-130		%Rec	1	6/21/2018 12:41:50 PM	38752
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: TOM
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	6/19/2018 3:50:29 AM	38702
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/19/2018 3:50:29 AM	38702
Surr: DNOP	106	70-130		%Rec	1	6/19/2018 3:50:29 AM	38702
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: NSB
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	6/14/2018 9:41:55 PM	38669
Surr: BFB	84.8	15-316		%Rec	1	6/14/2018 9:41:55 PM	38669
<b>EPA METHOD 8270C TCLP</b>							Analyst: DAM
2-Methylphenol	ND	200		mg/L	1	6/25/2018 9:39:12 PM	38754
3+4-Methylphenol	ND	200		mg/L	1	6/25/2018 9:39:12 PM	38754
Phenol	ND	200		mg/L	1	6/25/2018 9:39:12 PM	38754
2,4-Dinitrotoluene	ND	0.13		mg/L	1	6/25/2018 9:39:12 PM	38754
Hexachlorobenzene	ND	0.13		mg/L	1	6/25/2018 9:39:12 PM	38754
Hexachlorobutadiene	ND	0.50		mg/L	1	6/25/2018 9:39:12 PM	38754
Hexachloroethane	ND	3.0		mg/L	1	6/25/2018 9:39:12 PM	38754
Nitrobenzene	ND	2.0		mg/L	1	6/25/2018 9:39:12 PM	38754
Pentachlorophenol	ND	100		mg/L	1	6/25/2018 9:39:12 PM	38754
Pyridine	ND	5.0		mg/L	1	6/25/2018 9:39:12 PM	38754

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1806749

Date Reported: 6/26/2018

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106240-4-idw

Project: Kirtland BFF Project

Collection Date: 6/12/2018 2:55:00 PM

Lab ID: 1806749-001

Matrix: SOIL

Received Date: 6/12/2018 4:15:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C TCLP</b>							Analyst: DAM
2,4,5-Trichlorophenol	ND	400		mg/L	1	6/25/2018 9:39:12 PM	38754
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	6/25/2018 9:39:12 PM	38754
Cresols, Total	ND	200		mg/L	1	6/25/2018 9:39:12 PM	38754
Surr: 2-Fluorophenol	56.0	22.1-97.5		%Rec	1	6/25/2018 9:39:12 PM	38754
Surr: Phenol-d5	43.6	15-82.7		%Rec	1	6/25/2018 9:39:12 PM	38754
Surr: 2,4,6-Tribromophenol	83.1	39-129		%Rec	1	6/25/2018 9:39:12 PM	38754
Surr: Nitrobenzene-d5	73.0	44.6-120		%Rec	1	6/25/2018 9:39:12 PM	38754
Surr: 2-Fluorobiphenyl	70.7	38.3-115		%Rec	1	6/25/2018 9:39:12 PM	38754
Surr: 4-Terphenyl-d14	91.6	29.6-79.7	S	%Rec	1	6/25/2018 9:39:12 PM	38754
<b>EPA METHOD 8260B: TCLP COMPOUNDS</b>							Analyst: DJF
Benzene	ND	0.50		ppm	10	6/15/2018 1:59:51 AM	38669
1,2-Dichloroethane (EDC)	ND	0.50		ppm	10	6/15/2018 1:59:51 AM	38669
2-Butanone	ND	200		ppm	10	6/15/2018 1:59:51 AM	38669
Carbon tetrachloride	ND	0.50		ppm	10	6/15/2018 1:59:51 AM	38669
Chlorobenzene	ND	100		ppm	10	6/15/2018 1:59:51 AM	38669
Chloroform	ND	6.0		ppm	10	6/15/2018 1:59:51 AM	38669
1,4-Dichlorobenzene	ND	7.5		ppm	10	6/15/2018 1:59:51 AM	38669
1,1-Dichloroethene	ND	0.70		ppm	10	6/15/2018 1:59:51 AM	38669
Tetrachloroethene (PCE)	ND	0.70		ppm	10	6/15/2018 1:59:51 AM	38669
Trichloroethene (TCE)	ND	0.50		ppm	10	6/15/2018 1:59:51 AM	38669
Vinyl chloride	ND	0.20		ppm	10	6/15/2018 1:59:51 AM	38669
Surr: 1,2-Dichloroethane-d4	93.9	70-130		%Rec	10	6/15/2018 1:59:51 AM	38669
Surr: 4-Bromofluorobenzene	113	70-130		%Rec	10	6/15/2018 1:59:51 AM	38669
Surr: Dibromofluoromethane	97.5	70-130		%Rec	10	6/15/2018 1:59:51 AM	38669
Surr: Toluene-d8	101	70-130		%Rec	10	6/15/2018 1:59:51 AM	38669

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 2 of 12

1806749-001B KAFB-106240-4-IDW  
 Collected date/time: 06/12/18 14:55

**SAMPLE RESULTS - 01**  
 L1001853

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Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		6/19/2018 10:03:42 AM	WG1126458
Fluid	1		6/19/2018 10:03:42 AM	WG1126458
Initial pH	9.16		6/19/2018 10:03:42 AM	WG1126458
Final pH	5.04		6/19/2018 10:03:42 AM	WG1126458

2 Tc

3 Ss

4 Cn

Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.250	1	06/19/2018 14:47	WG1126232

5 Sr

6 Qc

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		25.0	1	06/21/2018 01:45	WG1126584

7 Gl

8 Al

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	9.08	T6	1	06/16/2018 12:28	WG1125395

9 Sc

Sample Narrative:  
 L1001853-01 WG1125395: 9.08 at 25C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DNI at 170		1	06/19/2018 14:10	WG1126235

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND		0.00200	1	1	06/21/2018 20:38	WG1127544
2,4-D	ND		0.00200	10	1	06/21/2018 20:38	WG1127544
(S) 2,4-Dichlorophenyl Acetic Acid	74.4		14.0-158			06/21/2018 20:38	WG1127544

ACCOUNT:  
 Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
 L1001853

DATE/TIME:  
 06/22/18 16:17



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QUALITY CONTROL SUMMARY

L1001853-01

WG1126584

Wet Chemistry by Method 9034-9030B

Method Blank (MB)

(MB) R3319554-1 06/21/18 01:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Sulfide	U		7.63	25.0

L1002157-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1002157-01 06/21/18 01:45 • (DUP) R3319554-4 06/21/18 01:45

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Sulfide	U	ND	1	0.000		20

L1002674-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1002674-02 06/21/18 01:45 • (DUP) R3319554-5 06/21/18 01:45

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Sulfide	565	559	1	1.08		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3319554-2 06/21/18 01:45 • (LCS-D) R3319554-3 06/21/18 01:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS-D Result mg/kg	LCS Rec. %	LCS-D Rec. %	Rec. Limits %	RPD %	RPD Limits %
Reactive Sulfide	100	72.9	72.9	72.9	72.9	70.0-130	0.000	20

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1001853

DATE/TIME:  
06/22/18 16:17

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**QUALITY CONTROL SUMMARY**

**WG1125395**

Wet Chemistry by Method 9045D

L1001853-01

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3318479-1 06/16/18 12:28 • (LCSD) R3318479-2 06/16/18 12:28

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Corrosivity by pH	10.0	10.0	10.0	100	100	99.0-101			0.200	1

Sample Narrative:

LCS: 10 at 22.2C

LCSD: 10.02 at 22.4C

Tc
Ss
Ch
Sr
Qc
Gl
Al
Sc

DATE/TIME:  
06/22/18 16:17

SDG:  
L1001853

PROJECT:

ACCOUNT:  
Hall Environmental Analysis Laboratory

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**WG1126235**  
 Wet Chemistry by Method D93/1010A  
**QUALITY CONTROL SUMMARY**  
 L1001853-01

L1002451-03 Original Sample (OS) • Duplicate (DUP)  
 (OS) L1002451-03 06/19/18 14:10 • (DUP) R3319055-3 06/19/18 14:10

Analyte	Original Result		DUP Result		DUP RPD		DUP Qualifier		DUP RPD Limits	
	Deg. F	DNI at 170	Deg. F	DNI at 170	%		%		%	
Ignitability					0.000		10			

**Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)**

(LCS) R3319055-1 06/19/18 14:10 • (LCSD) R3319055-2 06/19/18 14:10

Analyte	Spike Amount		LCS Result		LCSD Result		LCS Rec.		LCSD Rec.		Rec. Limits		LCS Qualifier		LCSD Qualifier		RPD		RPD Limits	
	Deg. F		Deg. F		Deg. F		%		%		%	%		%		%	%		%	
Ignitability	82.0		82.7		82.7		101		101		96.0-104		0.000		0.000		10			

Tc  
 Ss  
 Cn  
 Sr  
 Qc  
 GI  
 AI  
 Sc

ACCOUNT: Hall Environmental Analysis Laboratory  
 PROJECT: ...  
 SDG: L1001853  
 DATE/TIME: 06/22/18 16:17

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QUALITY CONTROL SUMMARY

WG1127544  
Chlorinated Acid Herbicides (GC) by Method 8151A

L1001853-01

Method Blank (MB)

(MB) R3320187-1 06/21/18 17:52

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4-D	U	0.000667	0.000667	0.00200
2,4,5-TP (Silvex)	U	0.000667	0.000667	0.00200
(S) 2,4-Dichlorophenyl Acetic Acid	71.6			14.0-158

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3320187-2 06/21/18 18:05 • (LCSD) R3320187-3 06/21/18 18:19

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
2,4-D	0.00500	0.00389	0.00393	77.8	78.6	56.0-120			102	20
2,4,5-TP (Silvex)	0.00500	0.00380	0.00374	76.0	74.8	55.0-120			159	20
(S) 2,4-Dichlorophenyl Acetic Acid				73.8	78.8	14.0-158				



DATE/TIME:  
06/22/18 15:17

SDG:  
L1001853

PROJECT:

ACCOUNT:  
Hall Environmental Analysis Laboratory

GLOSSARY OF TERMS

ONE LAB. NATIONWIDE



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Qualifier	Description
T8	Sample(s) received past/too close to holding time expiration.

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1001853

DATE/TIME:  
06/22/18 16:17

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806749

26-Jun-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF Project

Sample ID	LCS-38702		SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics						
Client ID:	LCSS		Batch ID: 38702	RunNo: 52041						
Prep Date:	6/15/2018	Analysis Date:	6/18/2018	SeqNo: 1702706	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	50.00	0	90.9	70	130			
Surr: DNOP	4.8		5.000		95.4	70	130			

Sample ID	MB-38702		SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics						
Client ID:	PBS		Batch ID: 38702	RunNo: 52041						
Prep Date:	6/15/2018	Analysis Date:	6/18/2018	SeqNo: 1702707	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		102	70	130			

Sample ID	1806749-001AMS		SampType: MS	TestCode: EPA Method 8015M/D: Diesel Range Organics						
Client ID:	KAFB-106240-4-idw		Batch ID: 38702	RunNo: 52041						
Prep Date:	6/15/2018	Analysis Date:	6/19/2018	SeqNo: 1703082	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	9.7	48.73	0	92.0	62	120			
Surr: DNOP	5.1		4.873		104	70	130			

Sample ID	1806749-001AMSD		SampType: MSD	TestCode: EPA Method 8015M/D: Diesel Range Organics						
Client ID:	KAFB-106240-4-idw		Batch ID: 38702	RunNo: 52041						
Prep Date:	6/15/2018	Analysis Date:	6/19/2018	SeqNo: 1703083	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.35	0	93.0	62	120	4.33	20	
Surr: DNOP	5.4		5.035		107	70	130	0	0	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 3 of 12

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1806749  
26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Sample ID <b>MB-38669</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>38669</b>	RunNo: <b>51984</b>								
Prep Date: <b>6/13/2018</b>	Analysis Date: <b>6/14/2018</b>	SeqNo: <b>1700018</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	870		1000		86.8	15	316			

Sample ID <b>LCS-38669</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>38669</b>	RunNo: <b>51984</b>								
Prep Date: <b>6/13/2018</b>	Analysis Date: <b>6/14/2018</b>	SeqNo: <b>1700019</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	28	5.0	25.00	0	112	75.9	131			
Surr: BFB	1000		1000		101	15	316			

Sample ID <b>MB-38669</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>38669</b>	RunNo: <b>51984</b>								
Prep Date: <b>6/13/2018</b>	Analysis Date: <b>6/14/2018</b>	SeqNo: <b>1700018</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	870		1000		86.8	15	316			

Sample ID <b>LCS-38669</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>38669</b>	RunNo: <b>51984</b>								
Prep Date: <b>6/13/2018</b>	Analysis Date: <b>6/14/2018</b>	SeqNo: <b>1700019</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	28	5.0	25.00	0	112	75.9	131			
Surr: BFB	1000		1000		101	15	316			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806749

26-Jun-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF Project

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0018		0.002500		73.0	43.3	136			
Surr: Tetrachloro-m-xylene	0.0017		0.002500		67.3	30.7	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00043	0.00010	0.0005000	0	87.0	42.6	125			
gamma-BHC (Lindane)	0.00038	0.00010	0.0005000	0	76.9	29.5	142			
Heptachlor	0.00033	0.00010	0.0005000	0	65.5	18.6	138			
Heptachlor epoxide	0.00042	0.00010	0.0005000	0	84.7	40.3	127			
Methoxychlor	0.00044	0.00010	0.0005000	0	87.3	36.5	143			
Surr: Decachlorobiphenyl	0.0019		0.002500		75.0	43.3	136			
Surr: Tetrachloro-m-xylene	0.00067		0.002500		26.7	30.7	130			S

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00052	0.00010	0.0005000	0	104	42.6	125	17.4	20	
gamma-BHC (Lindane)	0.00046	0.00010	0.0005000	0	93.0	29.5	142	19.0	20	
Heptachlor	0.00045	0.00010	0.0005000	0	90.0	18.6	138	31.5	20	R
Heptachlor epoxide	0.00051	0.00010	0.0005000	0	101	40.3	127	17.6	20	
Methoxychlor	0.00052	0.00010	0.0005000	0	104	36.5	143	17.3	20	
Surr: Decachlorobiphenyl	0.0022		0.002500		86.6	43.3	136	0	0	
Surr: Tetrachloro-m-xylene	0.0016		0.002500		62.2	30.7	130	0	0	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1806749

26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Sample ID	mb-38669	SampType:	MBLK	TestCode:	EPA Method 8260B: TCLP Compounds					
Client ID:	PBS	Batch ID:	38669	RunNo:	51994					
Prep Date:	6/13/2018	Analysis Date:	6/14/2018	SeqNo:	1700368	Units:	ppm			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
2-Butanone	ND	20								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	10								
Chloroform	ND	0.60								
1,4-Dichlorobenzene	ND	0.75								
1,1-Dichloroethene	ND	0.070								
Tetrachloroethene (PCE)	ND	0.070								
Trichloroethene (TCE)	ND	0.050								
Vinyl chloride	ND	0.020								
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		99.5	70	130			
Surr: 4-Bromofluorobenzene	0.54		0.5000		108	70	130			
Surr: Dibromofluoromethane	0.50		0.5000		100	70	130			
Surr: Toluene-d8	0.49		0.5000		97.9	70	130			

Sample ID	Ics-38669	SampType:	LCS	TestCode:	EPA Method 8260B: TCLP Compounds					
Client ID:	LCSS	Batch ID:	38669	RunNo:	51994					
Prep Date:	6/13/2018	Analysis Date:	6/14/2018	SeqNo:	1700370	Units:	ppm			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.050	1.000	0	101	70	130			
Chlorobenzene	1.0	0.050	1.000	0	101	70	130			
1,1-Dichloroethene	1.3	0.050	1.000	0	126	70	130			
Trichloroethene (TCE)	1.0	0.050	1.000	0	101	70	130			
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		94.2	70	130			
Surr: 4-Bromofluorobenzene	0.57		0.5000		114	70	130			
Surr: Dibromofluoromethane	0.51		0.5000		102	70	130			
Surr: Toluene-d8	0.46		0.5000		92.5	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806749  
 26-Jun-18

Client: EA Engineering Science & Technology  
 Project: Kirtland BFF Project

Sample ID	Ics-38754		SampType: LCS	TestCode: EPA Method 8270C TCLP						
Client ID:	LCSS		Batch ID: 38754	RunNo: 52208						
Prep Date:	6/19/2018		Analysis Date: 6/25/2018	SeqNo: 1710990	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.085	0.0010	0.1000	0	84.6	47.8	99.2			
3+4-Methylphenol	0.17	0.0010	0.2000	0	85.7	41.5	118			
2,4-Dinitrotoluene	0.078	0.0010	0.1000	0	78.0	44.4	81			
Hexachlorobenzene	0.089	0.0010	0.1000	0	88.9	49.5	91.6			
Hexachlorobutadiene	0.080	0.0010	0.1000	0	80.1	38.6	93			
Hexachloroethane	0.077	0.0010	0.1000	0	77.1	39.4	79.9			
Nitrobenzene	0.081	0.0010	0.1000	0	81.0	47.4	96.2			
Pentachlorophenol	0.082	0.0010	0.1000	0	81.9	39.4	79.9			S
Pyridine	0.048	0.0010	0.1000	0	48.1	15	79.9			
2,4,5-Trichlorophenol	0.087	0.0010	0.1000	0	86.5	47.4	118			
2,4,6-Trichlorophenol	0.091	0.0010	0.1000	0	91.1	47.4	101			
Cresols, Total	0.26	0.0010	0.3000	0	85.3	44.1	111			
Surr: 2-Fluorophenol	0.14		0.2000		71.6	22.1	97.5			
Surr: Phenol-d5	0.14		0.2000		69.0	15	82.7			
Surr: 2,4,6-Tribromophenol	0.18		0.2000		88.7	39	129			
Surr: Nitrobenzene-d5	0.081		0.1000		81.1	44.6	120			
Surr: 2-Fluorobiphenyl	0.081		0.1000		80.8	38.3	115			
Surr: 4-Terphenyl-d14	0.081		0.1000		81.1	29.6	79.7			S

Sample ID	mb-38754		SampType: MBLK	TestCode: EPA Method 8270C TCLP						
Client ID:	PBS		Batch ID: 38754	RunNo: 52208						
Prep Date:	6/19/2018		Analysis Date: 6/25/2018	SeqNo: 1710992	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
Phenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.12		0.2000		60.0	22.1	97.5			
Surr: Phenol-d5	0.10		0.2000		51.8	15	82.7			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified



**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806749

26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Sample ID	<b>MB-38724</b>	SampType:	<b>MBLK</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>38724</b>	RunNo:	<b>52057</b>					
Prep Date:	<b>6/18/2018</b>	Analysis Date:	<b>6/18/2018</b>	SeqNo:	<b>1702856</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	<b>LCS-38724</b>	SampType:	<b>LCS</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>38724</b>	RunNo:	<b>52057</b>					
Prep Date:	<b>6/18/2018</b>	Analysis Date:	<b>6/18/2018</b>	SeqNo:	<b>1702857</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	96.0	80	120			

Sample ID	<b>TCLP#1-3721</b>	SampType:	<b>MBLK</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>38724</b>	RunNo:	<b>52057</b>					
Prep Date:	<b>6/18/2018</b>	Analysis Date:	<b>6/18/2018</b>	SeqNo:	<b>1702858</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	<b>TCLP#2-3747</b>	SampType:	<b>MBLK</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>38724</b>	RunNo:	<b>52057</b>					
Prep Date:	<b>6/18/2018</b>	Analysis Date:	<b>6/18/2018</b>	SeqNo:	<b>1702859</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806749  
 26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Sample ID	MB-38712	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	38712	RunNo:	52086					
Prep Date:	6/15/2018	Analysis Date:	6/19/2018	SeqNo:	1704418	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0								

Sample ID	LCS-38712	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	LCSW	Batch ID:	38712	RunNo:	52086					
Prep Date:	6/15/2018	Analysis Date:	6/19/2018	SeqNo:	1704419	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0	0.5000	0	101	80	120			

Sample ID	TCLPFI#2-3747	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	38712	RunNo:	52086					
Prep Date:		Analysis Date:	6/19/2018	SeqNo:	1704438	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Lead	ND	5.0								

Sample ID	MB-38712	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	38712	RunNo:	52086					
Prep Date:	6/15/2018	Analysis Date:	6/19/2018	SeqNo:	1704467	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Silver	ND	5.0								

Sample ID	LCS-38712	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	LCSW	Batch ID:	38712	RunNo:	52086					
Prep Date:	6/15/2018	Analysis Date:	6/19/2018	SeqNo:	1704468	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	107	80	120			
Barium	ND	100	0.5000	0	100	80	120			
Cadmium	ND	1.0	0.5000	0	107	80	120			
Chromium	ND	5.0	0.5000	0	99.6	80	120			
Silver	ND	5.0	0.1000	0	119	80	120			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806749

26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Sample ID	1806749-001AMS	SampType:	MS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	KAFB-106240-4-idw	Batch ID:	38712	RunNo:	52086					
Prep Date:	6/15/2018	Analysis Date:	6/19/2018	SeqNo:	1704487	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	ND	1.0	0.5000	0	112	75	125			
Chromium	ND	5.0	0.5000	0.0009200	105	75	125			
Silver	ND	5.0	0.1000	0.004390	117	75	125			

Sample ID	1806749-001AMSD	SampType:	MSD	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	KAFB-106240-4-idw	Batch ID:	38712	RunNo:	52086					
Prep Date:	6/15/2018	Analysis Date:	6/19/2018	SeqNo:	1704488	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	ND	1.0	0.5000	0	109	75	125	0	20	
Chromium	ND	5.0	0.5000	0.0009200	103	75	125	0	20	
Silver	ND	5.0	0.1000	0.004390	114	75	125	0	20	

Sample ID	1806749-001AMS	SampType:	MS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	KAFB-106240-4-idw	Batch ID:	38712	RunNo:	52109					
Prep Date:	6/15/2018	Analysis Date:	6/20/2018	SeqNo:	1705687	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	100	0.5000	0.6036	77.2	75	125			
Lead	ND	5.0	0.5000	0	83.8	75	125			

Sample ID	1806749-001AMSD	SampType:	MSD	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	KAFB-106240-4-idw	Batch ID:	38712	RunNo:	52109					
Prep Date:	6/15/2018	Analysis Date:	6/20/2018	SeqNo:	1705688	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	100	0.5000	0.6036	75.7	75	125	0	20	
Lead	ND	5.0	0.5000	0	83.7	75	125	0	20	

Sample ID	MB-38712	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	38712	RunNo:	52127					
Prep Date:	6/15/2018	Analysis Date:	6/21/2018	SeqNo:	1707485	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806749  
 26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Sample ID	LCS-38712	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	LCSW	Batch ID:	38712	RunNo:	52127					
Prep Date:	6/15/2018	Analysis Date:	6/21/2018	SeqNo:	1707486	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	108	80	120			

Sample ID	1806749-001AMS	SampType:	MS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	KAFB-106240-4-idw	Batch ID:	38712	RunNo:	52182					
Prep Date:	6/15/2018	Analysis Date:	6/24/2018	SeqNo:	1709607	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	99.4	75	125			
Selenium	ND	1.0	0.5000	0	95.7	75	125			

Sample ID	1806749-001AMSD	SampType:	MSD	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	KAFB-106240-4-idw	Batch ID:	38712	RunNo:	52182					
Prep Date:	6/15/2018	Analysis Date:	6/24/2018	SeqNo:	1709610	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	93.8	75	125	0	20	
Selenium	ND	1.0	0.5000	0	89.9	75	125	0	20	

Sample ID	TCLP FL#2 - 3747	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	38712	RunNo:	52182					
Prep Date:	6/15/2018	Analysis Date:	6/24/2018	SeqNo:	1709611	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1806749

RcptNo: 1

Received By: Michelle Garcia 6/12/2018 4:15:00 PM

*Michelle Garcia*

Completed By: Erin Melendrez 6/13/2018 9:15:29 AM

*EM*

Reviewed By: ENM  
 LB: JS 06/13/18

6/13/18

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: 6/13/18  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: JS

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

16. Additional remarks:

**17. Cooler Information**

Cooler No.	Temp. °C	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	0.1	Good	Not Present			

**Chain-of-Custody Record**

Client: EA Engineering

Mailing Address: 320 Gold SW, #1200

Albuquerque, NM 87102

Phone #: 505-238-4410

email or Fax#: emorse@east.com

QA/QC Package:  Standard  Level 4 (Full Validation)

Accreditation:  NELAP  Other

EDD (Type)

*\* For soils only*

Turn-Around Time:

Standard  Rush

Project Name: Kirtland BFF Project

Project #: PO #15182

Project Manager: Devon Serchomian

Sampler: Perman/None

Container: 3

Preservative Type: None

Sample Temperature: 100°F

Container Type and #: 3

Preservative Type: None

Sample Temperature: 100°F

Container Type and #: 8 oz jars Ice

Preservative Type: None

Sample Temperature: 100°F

Container Type and #: None

Preservative Type: None

Sample Temperature: None

Container Type and #: None

Preservative Type: None

Sample Temperature: None

Container Type and #: None

Preservative Type: None

Sample Temperature: None

**HALL ENVIRONMENTAL ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

**Analysis Request**

BTEX + MTBE + TMB's (8021)	
BTEX + MTBE + TPH (Gas only)	
TPH 8015B (GRO / DRO / MRO)	
TPH (Method 418.1)	
EDB (Method 504.1)	
PAH's (8310 or 8270 SIMS)	
RCA 8 Metals TCLP	
Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	
8081 Pesticides / 8082 PCB's	
8260B (VOA) TCLP	
8270 (Semi-VOA) TCLP	
Pesticides and Herbicides TCLP	
RCA	
Air Bubbles (Y or N)	

Remarks: - email results to Earl Morse  
- Note PO Number on Invoice

Date: 6-12-18 Time: 1256 Relinquished by: [Signature]  
Date: 6-12-18 Time: 1256 Relinquished by: [Signature]

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

July 19, 2018

Amanda Smith

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland AFB BFF

OrderNo.: 1807137

Dear Amanda Smith:

Hall Environmental Analysis Laboratory received 4 sample(s) on 7/3/2018 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued July 18, 2018.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1807137

Date Reported: 7/19/2018

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106240-4B-1DW

Project: Kirtland AFB BFF

Collection Date: 7/3/2018 10:05:00 AM

Lab ID: 1807137-004

Matrix: SOIL

Received Date: 7/3/2018 1:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: AG
Benzene	ND	0.025		mg/Kg	1	7/10/2018 3:15:13 PM
Toluene	ND	0.049		mg/Kg	1	7/10/2018 3:15:13 PM
Ethylbenzene	ND	0.049		mg/Kg	1	7/10/2018 3:15:13 PM
Xylenes, Total	ND	0.099		mg/Kg	1	7/10/2018 3:15:13 PM
Surr: 4-Bromofluorobenzene	121	70-130		%Rec	1	7/10/2018 3:15:13 PM
Surr: Toluene-d8	92.9	70-130		%Rec	1	7/10/2018 3:15:13 PM
<b>VOLATILES BY 8260B/1311</b>						Analyst: RAA
Benzene	ND	0.50		mg/L	1	7/10/2018 9:19:00 PM
2-Butanone	ND	200		mg/L	1	7/10/2018 9:19:00 PM
Carbon Tetrachloride	ND	0.50		mg/L	1	7/10/2018 9:19:00 PM
Chlorobenzene	ND	100		mg/L	1	7/10/2018 9:19:00 PM
Chloroform	ND	6.0		mg/L	1	7/10/2018 9:19:00 PM
1,4-Dichlorobenzene	ND	7.5		mg/L	1	7/10/2018 9:19:00 PM
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	7/10/2018 9:19:00 PM
1,1-Dichloroethene	ND	0.70		mg/L	1	7/10/2018 9:19:00 PM
Hexachlorobutadiene	ND	0.50		mg/L	1	7/10/2018 9:19:00 PM
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	7/10/2018 9:19:00 PM
Trichloroethene (TCE)	ND	0.50		mg/L	1	7/10/2018 9:19:00 PM
Vinyl chloride	ND	0.20		mg/L	1	7/10/2018 9:19:00 PM
Surr: 1,2-Dichloroethane-d4	99.4	70-130		%Rec	1	7/10/2018 9:19:00 PM
Surr: 4-Bromofluorobenzene	97.4	57.3-148		%Rec	1	7/10/2018 9:19:00 PM
Surr: Dibromofluoromethane	93.6	70-130		%Rec	1	7/10/2018 9:19:00 PM
Surr: Toluene-d8	93.0	70-130		%Rec	1	7/10/2018 9:19:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807137  
 19-Jul-18

Client: EA Engineering Science & Technology  
 Project: Kirtland AFB BFF

Sample ID	ics-39050	SampType:	LCS4	TestCode:	EPA Method 8260B: Volatiles Short List					
Client ID:	BatchQC	Batch ID:	39050	RunNo:	52594					
Prep Date:	7/5/2018	Analysis Date:	7/10/2018	SeqNo:	1725924	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.025	1.000	0	97.6	80	120			
Toluene	1.0	0.050	1.000	0	101	80	120			
Ethylbenzene	1.0	0.050	1.000	0	103	80	120			
Xylenes, Total	3.1	0.10	3.000	0	102	80	120			
Surr: 4-Bromofluorobenzene	0.55		0.5000		110	70	130			
Surr: Toluene-d8	0.46		0.5000		92.4	70	130			

Sample ID	mb-39050	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles Short List					
Client ID:	PBS	Batch ID:	39050	RunNo:	52594					
Prep Date:	7/5/2018	Analysis Date:	7/10/2018	SeqNo:	1725925	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.61		0.5000		122	70	130			
Surr: Toluene-d8	0.47		0.5000		94.3	70	130			

Sample ID	1807137-001ams	SampType:	MS	TestCode:	EPA Method 8260B: Volatiles Short List					
Client ID:	KAFB-106420-1B-1D	Batch ID:	39050	RunNo:	52594					
Prep Date:	7/5/2018	Analysis Date:	7/10/2018	SeqNo:	1726396	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.80	0.024	0.9452	0.006692	84.3	51.9	158			
Toluene	0.80	0.047	0.9452	0	85.0	64.6	132			
Surr: 4-Bromofluorobenzene	0.55		0.4726		117	70	130			
Surr: Toluene-d8	0.42		0.4726		89.5	70	130			

Sample ID	1807137-001amsd	SampType:	MSD	TestCode:	EPA Method 8260B: Volatiles Short List					
Client ID:	KAFB-106420-1B-1D	Batch ID:	39050	RunNo:	52594					
Prep Date:	7/5/2018	Analysis Date:	7/10/2018	SeqNo:	1726397	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.90	0.025	1.000	0.006692	89.1	51.9	158	11.1	20	
Toluene	0.89	0.050	1.000	0	89.0	64.6	132	10.2	20	
Surr: 4-Bromofluorobenzene	0.59		0.5000		118	70	130	0	0	
Surr: Toluene-d8	0.45		0.5000		89.8	70	130	0	0	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1807137  
19-Jul-18

Client: EA Engineering Science & Technology  
Project: Kirtland AFB BFF

Sample ID	lcs-39054		SampType: LCS	TestCode: Volatiles by 8260B/1311						
Client ID:	LCSS		Batch ID: 39054	RunNo: 52559						
Prep Date:	7/5/2018		Analysis Date: 7/9/2018	SeqNo: 1724846		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.35	0.10	0.4000	0	88.2	70	130			
Chlorobenzene	0.39	0.10	0.4000	0	98.0	70	130			
1,1-Dichloroethene	0.37	0.10	0.4000	0	91.9	70	130			
Trichloroethene (TCE)	0.35	0.10	0.4000	0	88.6	70	130			
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		99.9	70	130			
Surr: 4-Bromofluorobenzene	0.20		0.2000		97.7	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		95.7	70	130			
Surr: Toluene-d8	0.19		0.2000		97.1	70	130			

Sample ID	mb-39054		SampType: MBLK	TestCode: Volatiles by 8260B/1311						
Client ID:	PBS		Batch ID: 39054	RunNo: 52559						
Prep Date:	7/5/2018		Analysis Date: 7/9/2018	SeqNo: 1724847		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Hexachlorobutadiene	ND	0.50								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		101	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		95.7	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		97.2	70	130			
Surr: Toluene-d8	0.19		0.2000		95.7	70	130			

Sample ID	1807137-001ams		SampType: MS	TestCode: Volatiles by 8260B/1311						
Client ID:	KAFB-106420-1B-1D		Batch ID: 39054	RunNo: 52559						
Prep Date:	7/5/2018		Analysis Date: 7/9/2018	SeqNo: 1724850		Units: mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.38	0.10	0.4000	0	94.1	44.5	152			
Chlorobenzene	0.39	0.10	0.4000	0	98.7	70	130			
1,1-Dichloroethene	0.40	0.10	0.4000	0	101	79.1	132			
Trichloroethene (TCE)	0.38	0.10	0.4000	0	94.2	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807137  
 19-Jul-18

Client: EA Engineering Science & Technology  
 Project: Kirtland AFB BFF

Sample ID 1807137-001ams	SampType: MS	TestCode: Volatiles by 8260B/1311								
Client ID: KAFB-106420-1B-1D	Batch ID: 39054	RunNo: 52559								
Prep Date: 7/5/2018	Analysis Date: 7/9/2018	SeqNo: 1724850							Units: mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		103	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		96.5	57.3	148			
Surr: Dibromofluoromethane	0.20		0.2000		99.5	70	130			
Surr: Toluene-d8	0.19		0.2000		93.7	70	130			

Sample ID 1807137-001amsd	SampType: MSD	TestCode: Volatiles by 8260B/1311								
Client ID: KAFB-106420-1B-1D	Batch ID: 39054	RunNo: 52559								
Prep Date: 7/5/2018	Analysis Date: 7/9/2018	SeqNo: 1724851							Units: mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.36	0.10	0.4000	0	90.6	44.5	152	3.74	20	
Chlorobenzene	0.39	0.10	0.4000	0	96.9	70	130	1.87	20	
1,1-Dichloroethene	0.38	0.10	0.4000	0	95.1	79.1	132	6.14	20	
Trichloroethene (TCE)	0.36	0.10	0.4000	0	90.9	70	130	3.53	20	
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		105	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.19		0.2000		95.8	57.3	148	0	0	
Surr: Dibromofluoromethane	0.20		0.2000		102	70	130	0	0	
Surr: Toluene-d8	0.19		0.2000		95.0	70	130	0	0	

Sample ID mb-39098	SampType: MBLK	TestCode: Volatiles by 8260B/1311								
Client ID: PBS	Batch ID: 39098	RunNo: 52596								
Prep Date: 7/9/2018	Analysis Date: 7/10/2018	SeqNo: 1726139							Units: mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Hexachlorobutadiene	ND	0.50								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		101	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		97.2	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		94.3	70	130			
Surr: Toluene-d8	0.19		0.2000		94.1	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1807137  
19-Jul-18

Client: EA Engineering Science & Technology  
Project: Kirtland AFB BFF

Sample ID	1807137-004ams	SampType: MS	TestCode: Volatiles by 8260B/1311							
Client ID:	KAFB-106240-4B-1D	Batch ID: 39098	RunNo: 52596							
Prep Date:	7/9/2018	Analysis Date: 7/10/2018	SeqNo: 1726141 Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.37	0.10	0.4000	0	92.0	44.5	152			
Chlorobenzene	0.40	0.10	0.4000	0	99.6	70	130			
1,1-Dichloroethene	0.37	0.10	0.4000	0	93.5	79.1	132			
Trichloroethene (TCE)	0.36	0.10	0.4000	0	90.5	70	130			
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		101	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		96.1	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		95.0	70	130			
Surr: Toluene-d8	0.19		0.2000		92.8	70	130			

Sample ID	1807137-004amsd	SampType: MSD	TestCode: Volatiles by 8260B/1311							
Client ID:	KAFB-106240-4B-1D	Batch ID: 39098	RunNo: 52596							
Prep Date:	7/9/2018	Analysis Date: 7/10/2018	SeqNo: 1726142 Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.34	0.10	0.4000	0	84.2	44.5	152	8.88	20	
Chlorobenzene	0.37	0.10	0.4000	0	93.4	70	130	6.38	20	
1,1-Dichloroethene	0.34	0.10	0.4000	0	85.9	79.1	132	8.46	20	
Trichloroethene (TCE)	0.33	0.10	0.4000	0	82.8	70	130	8.86	20	
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		101	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.20		0.2000		98.0	57.3	148	0	0	
Surr: Dibromofluoromethane	0.18		0.2000		91.8	70	130	0	0	
Surr: Toluene-d8	0.19		0.2000		94.2	70	130	0	0	

Sample ID	Ics-39098	SampType: LCS	TestCode: Volatiles by 8260B/1311							
Client ID:	LCSS	Batch ID: 39098	RunNo: 52632							
Prep Date:	7/9/2018	Analysis Date: 7/11/2018	SeqNo: 1727297 Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.35	0.10	0.4000	0	88.4	70	130			
Chlorobenzene	0.38	0.10	0.4000	0	95.3	70	130			
1,1-Dichloroethene	0.37	0.10	0.4000	0	92.9	70	130			
Trichloroethene (TCE)	0.35	0.10	0.4000	0	87.7	70	130			
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		103	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		95.3	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		97.1	70	130			
Surr: Toluene-d8	0.19		0.2000		94.5	70	130			

Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EA Engineering Alb      Work Order Number: 1807137      RcptNo: 1

Received By: Anna Thorne      7/3/2018 1:50:00 PM      *Anna Thorne*  
 Completed By: Anne Thorne      7/5/2018 7:08:34 AM      *Anna Thorne*

Reviewed By: *50 7.5.18*  
 Labeled by: *for 07105118*

Chain of Custody

1. Is Chain of Custody complete?      Yes       No       Not Present   
 2. How was the sample delivered?      Client

Log In

3. Was an attempt made to cool the samples?      Yes       No       NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C      Yes       No       NA   
 5. Sample(s) in proper container(s)?      Yes       No   
 6. Sufficient sample volume for indicated test(s)?      Yes       No   
 7. Are samples (except VOA and ONG) properly preserved?      Yes       No   
 8. Was preservative added to bottles?      Yes       No       NA   
 9. VOA vials have zero headspace?      Yes       No       No VOA Vials   
 10. Were any sample containers received broken?      Yes       No   
 11. Does paperwork match bottle labels?      Yes       No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody?      Yes       No   
 13. Is it clear what analyses were requested?      Yes       No   
 14. Were all holding times able to be met?      Yes       No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: _____
(<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order?      Yes       No       NA

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

16. Additional remarks:

17. Cooler Information

Cooler No.	Temp °C	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	4.7	Good	Not Present			

## CHAIN-OF-CUSTODY RECORD

**1** COC NUMBER: COC-KAFB-106240-B-17P

**2** PROJECT NAME: Kirtland AFB BFF

**3** PROJECT NUMBER: 02599DM011017.3.13D

**4** LAB NAME AND CONTACT: Hall Environmental

**5** PROJECT PHASE/STATUS: Data Gap Wells

**6** PROJECT CONTACT: E. Morse

**7** DO NUMBER: 15182

**8** LAB NO NUMBER: 15182

**9** PROJECT TEL NO AND FAX NO: 505-238-4410

**10** LAB TEL NO AND FAX NO: Tel - 505-345-3975  
Fax - 505-345-4107

**11** FAX AND MAIL REPORTS TO: Amanda Smith/asmith@east.com

**12** FAX AND MAIL REPORTS TO: Pat Moss/pmoos@east.com

**13** FAX AND MAIL REPORTS TO: Earl Morse/emorse@east.com

**14** ANALYSES REQUIRED (Indicate Method Number)

ITEM	SAMPLE IDENTIFIER	DESCRIPTION/LOCATION	MATRIX	DATE COLLECTED	TIME COLLECTED	DATA PKG LEVEL (see codes on SOP)	Lab TAT (business days)	Number of Batches	TCF VOC (1311/826B)	BTEX (826B)	TPH,GRO, DRO, RFO (8015D)	Reactive Cyanide/Sulfide (9012B/9034)	Corrosivity - PH (9045D)	Grainability (1010A)	SAMPLE TYPE (see codes on SOP)	COMMENTS/SCREENING READINGS	LAB #
1	KAFB-106240-1B-1DM	Roll-off Bin 1	Soil	7-3-18	0840	IV	7	1	X	X					composite	1807137-001	
2	KAFB-106240-2B-150	Roll-off Bin 2	Soil	7-3-18	0915	IV	7	1	X	X					composite	202	
3	KAFB-106240-3B-144	Roll-off Bin 3	Soil	7-3-18	0950	IV	7	1	X	X					composite	203	
4	KAFB-106240-4B-144	Roll-off Bin 4	Soil	7-3-18	1005	IV	7	1	X	X					composite	204	
5																	
6																	
7																	
8																	
9																	
10																	

**15** COURIER AND SHIPPING NUMBERS: N/A - Hand delivered to lab

**16** SAMPLE(S) AND COMPANY: (please print) Field Sampler/EA Engineering

**17** RECEIVED BY: Anne Thorne

**18** DATE: 7-3-18

**19** TIME: 1350

**20** DATE: 07/03/18

**21** TIME: 1350

**22** RECEIVED BY: Earl Morse

**23** DATE: 07/03/18

**24** TIME: 1350

**25** RECEIVED BY: Earl Morse

**26** DATE: 07/03/18

**27** TIME: 1350

**28** RECEIVED BY: Earl Morse

**29** DATE: 07/03/18

**30** TIME: 1350

**31** RECEIVED BY: Earl Morse

**32** DATE: 07/03/18

**33** TIME: 1350

**34** RECEIVED BY: Earl Morse

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**37** RECEIVED BY: Earl Morse

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**397** RECEIVED BY: Earl Morse

**398** DATE: 07/03/18

**399** TIME: 1350

**400** RECEIVED BY: Earl Morse

**401** DATE: 07/03/18

**402** TIME: 1350

**403** RECEIVED BY: Earl Morse

**404** DATE: 07/03/18

**405** TIME: 1350

**406** RECEIVED BY: Earl Morse



EA Engineering, Science, & Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, New Mexico 87102  
Phone: (505) 224-9013

July 26, 2018

Ms. Katrina Wheelock  
Solid Waste Program Manager  
Environmental Management  
377 MSG/CEIE  
Kirtland AFB, New Mexico 87117

Subject: Request to dispose non-hazardous soil cuttings at Kirtland C&D Landfill  
Roll-off Identification: KAFB-106240-1 (20B004)  
USACE Contract No. W912DR-12-D-0006-DM01

Dear Ms. Wheelock,

EA Engineering, Science, and Technology, Inc., PBC (EA) is requesting permission to dispose of non-hazardous soil drill cuttings and plastic liners from one roll-off container to the Kirtland Air Force Base (AFB) Construction and Demolition (C&D) debris landfill. Roll-off bin with the EA identification of KAFB-106240 #1 (bin identification #20B004) contains approximately 10 cubic yards of soil.

Between June and July 2018 EA installed a groundwater monitoring well, KAFB-106240, associated with the Kirtland Bulk Fuels Facility environmental restoration project. Well KAFB-106240 is located on VA Hospital property just west of Bullhead Park. Drill cuttings were containerized in a plastic-lined, steel, roll-off pending laboratory analysis for waste characterization. Any excess moisture in the bin was stabilized using Hydrosorb®, a superabsorbent polymer. All roll-off bins are currently residing in the EA investigation derived waste yard near 1601 Perimeter Circle SE, on Kirtland AFB.

One five-point composite waste characterization sample was collected from the roll-off bin and delivered to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis. The sample was analyzed for all the required parameters per the Kirtland AFB Landfill Acceptance Memorandum (January 2009). The attached analytical results (Reports 1806746 and 1807137) for the composite sample confirms the drill cuttings meet waste acceptance requirements for disposal at the Kirtland C&D landfill. Please note that analytical report 1807137 is a resample of this bin for BTEX which was missed on the original sample request for analysis. The sample designation is listed as 106240-1B-IDW indicating it is from bin 106240-1 (sample B). This report originally contained sample results not applicable to bin 106240-1. These results have been omitted from the report to simplify the review process.



W912DR-12-D-0006-DM01  
 Kirtland Air Force Base Bulk Fuels Facility Expansion  
 of the Dissolved Plume Groundwater Treatment System Design  
 2 May 2017  
 Page 2 of 2

All of the roll-off containers are owned and/or leased by Advanced Chemical Transport Environmental Services Inc. (ACT) with roll-off identification number, when present, marked clearly on the roll off. ACT will utilize one of the following vehicles for waste transport:

- 2015 Western Star Truck, License #: WD121651, registered in New Mexico
- 2015 Western Star Truck, License #: WD124756, registered in New Mexico

Mr. Sheen Kottkamp has reviewed this package and authorized EA to forward it for your review. EA respectfully requests your review of the attached summary table and analytical data for determination if disposal can be authorized at the Kirtland AFB C&D landfill. Upon receiving notification of Kirtland AFB's acceptance of the waste, EA will coordinate transport and disposal of the roll-off contents with ACT.

EA's Kirtland AFB Point of Contact is Mr. Scott Clark; 505-846-9017.

If you have any questions, please do not hesitate to contact me at 505-266-2225, or via e-mail at [landress@eaest.com](mailto:landress@eaest.com).

Sincerely,

Lane Andress, PG

Attachments: Summary Analytical Table  
 Hall Environmental Analysis Laboratory Order No: 1806746 and 1807137

cc: Jeanne Dye-Porto, [jeanne.dye-porto@us.af.mil](mailto:jeanne.dye-porto@us.af.mil)  
 Scott Clark, [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)  
 Sheen Kottkamp, [sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)  
 Melissa Clark, [melissa.clark.8@us.af.mil](mailto:melissa.clark.8@us.af.mil)  
 Ben Moayyad, [Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)  
 Devon Jercinovic, [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
 Bernie Bockisch, [bbockisch@eaest.com](mailto:bbockisch@eaest.com)  
 Earl Morse, [emorse@eaest.com](mailto:emorse@eaest.com)

		LOCATION CODE					
		FIELD SAMPLE ID		KAFB-106240-1/1B-IDW			
		SAMPLE DATE		11-Jun-18			
		SAMPLE PURPOSE		Waste Characterization			
		ROLL-OFF NO.		KAFB-106240-1			
Parameter	Method	Analyte	Units	TCLP Regulatory Level <sup>a</sup> or KAFB Limits <sup>b</sup>	Result	QUAL	PQL
RCRA Characteristics	SW1010A Mod	IGNITABILITY	*F	See footnote <sup>c</sup>	> 170	--	--
	SW9012B	REACTIVE CYANIDE (as total)	mg/kg	NE	ND	--	0.25
	SW9034	REACTIVE SULFIDE (as total)	mg/kg	NE	ND	--	25
	SW9045D	CORROSIVITY (pH)	S.U.	≥2 or ≤12.5	8.81	--	--
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.002
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.002
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0
		BARIIUM	mg/L	100	ND	--	100
		CADMIUM	mg/L	1	ND	--	1.0
		CHROMIUM	mg/L	5	ND	--	5.0
		LEAD	mg/L	5	ND	--	5.0
		SELENIUM	mg/L	1	ND	--	1.0
	SILVER	mg/L	5	ND	--	5.0	
SW1311/7470A	MERCURY	mg/L	0.02	ND	--	0.020	
TCLP PESTICIDES	SW1311/8081	CHLORDANE	mg/L	0.03	ND	--	0.030
		ENDRIN	mg/L	0.02	ND	--	0.020
		GAMMA-BHC (LINDANE)	mg/L	0.4	ND	--	0.40
		HEPTACHLOR	mg/L	0.008	ND	--	0.0080
		HEPTACHLOR EPOXIDE	mg/L	0.008	ND	--	0.0080
		METHOXYCHLOR	mg/L	10	ND	--	10
		TOXAPHENE	mg/L	0.5	ND	--	0.50
TCLP SVOCs	SW1311/8270C	2,4,5-TRICHLOROPHENOL	mg/L	400	ND	--	400
		2,4,6-TRICHLOROPHENOL	mg/L	2	ND	--	2.0
		2,4-DINITROTOLUENE	mg/L	0.13	ND	--	0.13
		2-METHYLPHENOL (o-Cresol)	mg/L	200	ND	--	200
		3- and 4-METHYLPHENOL (m- and o-Cresol)	mg/L	200	ND	--	200
		HEXACHLOROBENZENE	mg/L	0.13	ND	--	0.13
		HEXACHLOROBUTADIENE	mg/L	0.5	ND	--	0.50
		HEXACHLOROETHANE	mg/L	3	ND	--	3.0
		NITROBENZENE	mg/L	2	ND	--	2.0
		PENTACHLOROPHENOL	mg/L	100	ND	--	100
		PYRIDINE	mg/L	5	ND	--	5.0
		CRESOLS, TOTAL	mg/L	200	ND	--	200.0
TCLP VOCs	SW1311/8260B	1,1-DICHLOROETHENE	mg/L	0.7	ND	--	0.70
		1,2-DICHLOROETHANE	mg/L	0.5	ND	--	0.50
		1,4-DICHLOROBENZENE	mg/L	7.5	ND	--	7.5
		2-BUTANONE (MEK)	mg/L	200	ND	--	200
		BENZENE	mg/L	0.5	ND	--	0.50
		CARBON TETRACHLORIDE	mg/L	0.5	ND	--	0.50
		CHLOROBENZENE	mg/L	100	ND	--	100
		CHLOROFORM	mg/L	6.0	ND	--	6.0
		TETRACHLOROETHENE	mg/L	0.7	ND	--	0.70
		TRICHLOROETHENE	mg/L	0.5	ND	--	0.50
		VINYL CHLORIDE	mg/L	0.2	ND	--	0.20
		TPH	SW8015M/D	DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND
MOTOR OIL RANGE ORGANICS	mg/kg			100 <sup>d</sup>	ND	--	42
GASOLINE RANGE ORGANICS	mg/kg			100 <sup>d</sup>	ND	--	5.0
VOLATILES (BTEX)	SW8260B	BENZENE	mg/kg	10	ND	--	0.024
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.047
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.047
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.094

Notes:

- <sup>a</sup>TCLP Regulatory Level - Resource Conservation Recovery Act (RCRA) hazardous waste characteristic limits per 40CFR Part 261 Subpart C, Section 261.20 - 261.24.
- <sup>b</sup>KAFB Limits - Kirtland AFB landfill requirements per the Department of Air Force Technical Memorandum for Kirtland AFB/Department of Energy/Sandia National Laboratories Restoration Agencies and Their Commercial Contractors (2009).
- <sup>c</sup>Ignitability characteristic for solids from 40 CFR Part 261.21: "It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of moisture, or spontaneous chemical change, and when ignited burns so vigorously and persistently that it creates a hazard."
- <sup>d</sup>KAFB limit for TPH measured as the sum of gasoline, diesel and motor oil range organics.
- <sup>e</sup>KAFB limit for BTEX measured as the sum of benzene, toluene, ethylbenzene, and total xylenes.
- > - greater than
- BTEX - benzene, toluene, ethylbenzene, total xylenes
- \*F - degrees fahrenheit
- J - Analyte detected below quantitation limit
- mg/L - milligram per liter
- mg/kg - milligram per kilogram
- NE - not established
- ND - not detected above the PQL
- PQL - practical quantitation limit
- QUAL - laboratory data qualifier
- Shade - analyte detected above the detection limit
- Shade and Bold - analyte detected above KAFB Landfill acceptance limit or TCLP Regulatory Level.
- SVOCs - semivolatile organic compounds
- S.U. - Standard units
- TCLP - Toxicity Characteristic Leaching Procedure
- TPH - total petroleum hydrocarbons
- VOCs - volatile organic compounds



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

June 26, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland BFF Project

OrderNo.: 1806746

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 1 sample(s) on 6/12/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1806746

Date Reported: 6/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106240-1-idw

Project: Kirtland BFF Project

Collection Date: 6/11/2018 9:42:00 AM

Lab ID: 1806746-001

Matrix: SOIL

Received Date: 6/12/2018 4:15:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: <b>rde</b>
Mercury	ND	0.020		mg/L	1	6/18/2018 6:11:27 PM	38724
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: <b>MED</b>
Arsenic	ND	5.0		mg/L	1	6/19/2018 11:19:43 AM	38712
Barium	ND	100		mg/L	1	6/20/2018 2:40:35 PM	38712
Cadmium	ND	1.0		mg/L	1	6/19/2018 11:19:43 AM	38712
Chromium	ND	5.0		mg/L	1	6/19/2018 11:19:43 AM	38712
Lead	ND	5.0		mg/L	1	6/19/2018 12:46:23 PM	38712
Selenium	ND	1.0		mg/L	1	6/21/2018 12:44:55 PM	38712
Silver	ND	5.0		mg/L	1	6/19/2018 11:19:43 AM	38712
<b>EPA METHOD 8081: PESTICIDES TCLP</b>							Analyst: <b>JME</b>
Chlordane	ND	0.030		mg/L	1	6/21/2018 12:28:40 PM	38752
Endrin	ND	0.020		mg/L	1	6/21/2018 12:28:40 PM	38752
gamma-BHC (Lindane)	ND	0.40		mg/L	1	6/21/2018 12:28:40 PM	38752
Heptachlor	ND	0.0080		mg/L	1	6/21/2018 12:28:40 PM	38752
Heptachlor epoxide	ND	0.0080		mg/L	1	6/21/2018 12:28:40 PM	38752
Methoxychlor	ND	10		mg/L	1	6/21/2018 12:28:40 PM	38752
Toxaphene	ND	0.50		mg/L	1	6/21/2018 12:28:40 PM	38752
Surr: Decachlorobiphenyl	83.8	43.3-136		%Rec	1	6/21/2018 12:28:40 PM	38752
Surr: Tetrachloro-m-xylene	79.2	30.7-130		%Rec	1	6/21/2018 12:28:40 PM	38752
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	8.4		mg/Kg	1	6/15/2018 10:10:13 PM	38686
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	6/15/2018 10:10:13 PM	38686
Surr: DNOP	97.0	70-130		%Rec	1	6/15/2018 10:10:13 PM	38686
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	6/14/2018 9:18:40 PM	38669
Surr: BFB	84.0	15-316		%Rec	1	6/14/2018 9:18:40 PM	38669
<b>EPA METHOD 8270C TCLP</b>							Analyst: <b>DAM</b>
2-Methylphenol	ND	200		mg/L	1	6/25/2018 9:08:45 PM	38754
3+4-Methylphenol	ND	200		mg/L	1	6/25/2018 9:08:45 PM	38754
Phenol	ND	200		mg/L	1	6/25/2018 9:08:45 PM	38754
2,4-Dinitrotoluene	ND	0.13		mg/L	1	6/25/2018 9:08:45 PM	38754
Hexachlorobenzene	ND	0.13		mg/L	1	6/25/2018 9:08:45 PM	38754
Hexachlorobutadiene	ND	0.50		mg/L	1	6/25/2018 9:08:45 PM	38754
Hexachloroethane	ND	3.0		mg/L	1	6/25/2018 9:08:45 PM	38754
Nitrobenzene	ND	2.0		mg/L	1	6/25/2018 9:08:45 PM	38754
Pentachlorophenol	ND	100		mg/L	1	6/25/2018 9:08:45 PM	38754
Pyridine	ND	5.0		mg/L	1	6/25/2018 9:08:45 PM	38754

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 1 of 11

**Hall Environmental Analysis Laboratory, Inc.**

**Analytical Report**

Lab Order 1806746

Date Reported: 6/26/2018

**CLIENT:** EA Engineering Science & Technology

**Client Sample ID:** KAFB-106240-1-idw

**Project:** Kirtland BFF Project

**Collection Date:** 6/11/2018 9:42:00 AM

**Lab ID:** 1806746-001

**Matrix:** SOIL

**Received Date:** 6/12/2018 4:15:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C TCLP</b>							Analyst: <b>DAM</b>
2,4,5-Trichlorophenol	ND	400		mg/L	1	6/25/2018 9:08:45 PM	38754
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	6/25/2018 9:08:45 PM	38754
Cresols, Total	ND	200		mg/L	1	6/25/2018 9:08:45 PM	38754
Surr: 2-Fluorophenol	47.1	22.1-97.5		%Rec	1	6/25/2018 9:08:45 PM	38754
Surr: Phenol-d5	35.8	15-82.7		%Rec	1	6/25/2018 9:08:45 PM	38754
Surr: 2,4,6-Tribromophenol	76.8	39-129		%Rec	1	6/25/2018 9:08:45 PM	38754
Surr: Nitrobenzene-d5	69.9	44.6-120		%Rec	1	6/25/2018 9:08:45 PM	38754
Surr: 2-Fluorobiphenyl	70.0	38.3-115		%Rec	1	6/25/2018 9:08:45 PM	38754
Surr: 4-Terphenyl-d14	90.7	29.6-79.7	S	%Rec	1	6/25/2018 9:08:45 PM	38754
<b>EPA METHOD 8260B: TCLP COMPOUNDS</b>							Analyst: <b>DJF</b>
Benzene	ND	0.50		ppm	10	6/15/2018 1:30:53 AM	38669
1,2-Dichloroethane (EDC)	ND	0.50		ppm	10	6/15/2018 1:30:53 AM	38669
2-Butanone	ND	200		ppm	10	6/15/2018 1:30:53 AM	38669
Carbon tetrachloride	ND	0.50		ppm	10	6/15/2018 1:30:53 AM	38669
Chlorobenzene	ND	100		ppm	10	6/15/2018 1:30:53 AM	38669
Chloroform	ND	6.0		ppm	10	6/15/2018 1:30:53 AM	38669
1,4-Dichlorobenzene	ND	7.5		ppm	10	6/15/2018 1:30:53 AM	38669
1,1-Dichloroethene	ND	0.70		ppm	10	6/15/2018 1:30:53 AM	38669
Tetrachloroethene (PCE)	ND	0.70		ppm	10	6/15/2018 1:30:53 AM	38669
Trichloroethene (TCE)	ND	0.50		ppm	10	6/15/2018 1:30:53 AM	38669
Vinyl chloride	ND	0.20		ppm	10	6/15/2018 1:30:53 AM	38669
Surr: 1,2-Dichloroethane-d4	97.4	70-130		%Rec	10	6/15/2018 1:30:53 AM	38669
Surr: 4-Bromofluorobenzene	114	70-130		%Rec	10	6/15/2018 1:30:53 AM	38669
Surr: Dibromofluoromethane	95.6	70-130		%Rec	10	6/15/2018 1:30:53 AM	38669
Surr: Toluene-d8	99.7	70-130		%Rec	10	6/15/2018 1:30:53 AM	38669

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

1806746-001B KAFB-106240-1-IDW  
 Collected date/time: 06/11/18 09:42

**SAMPLE RESULTS - 01**  
 L1001855

ONE LAB. NATIONWIDE



Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		6/19/2018 10:03:42 AM	WG1126458
Fluid	1		6/19/2018 10:03:42 AM	WG1126458
Initial pH	9.53		6/19/2018 10:03:42 AM	WG1126458
Final pH	6.22		6/19/2018 10:03:42 AM	WG1126458

2 Tc

3 Ss

4 Cn

Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.250	1	06/19/2018 14:50	WG1126232

5 Sr

6 Qc

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		25.0	1	06/21/2018 01:45	WG1126584

7 Gl

8 Al

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	8.81	T8	1	06/16/2018 12:28	WG1125395

9 Sc

Sample Narrative:

L1001855-01 WG1125395: 8.81 at 25C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DNI at 170		1	06/17/2018 14:29	WG1124269

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND		0.00200	1	1	06/21/2018 21:04	WG1127544
2,4-D	ND		0.00200	10	1	06/21/2018 21:04	WG1127544
(S) 2,4-Dichlorophenyl Acetic Acid	73.4		14.0-158			06/21/2018 21:04	WG1127544

ACCOUNT:  
 Hill Environmental Analysis Laboratory

PROJECT:

SDG:  
 L1001855

DATE/TIME:  
 06/22/18 16:18

ONE LAB. NATIONWIDE.

QUALITY CONTROL SUMMARY

WG1126232

Wet Chemistry by Method 9012 B

L1001855-01

Method Blank (MB)

(MB) R331907-1 06/19/18 14:29

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Cyanide	U		0.0390	0.250

L1001853-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1001853-01 06/19/18 14:47 • (DUP) R331907-4 06/19/18 14:48

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	0.000	1	0.000		20

L1002076-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1002076-01 06/19/18 14:57 • (DUP) R331907-5 06/19/18 14:58

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)

(LCS) R331907-2 06/19/18 14:30 • (LCS-D) R331907-3 06/19/18 14:31

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	2.50	2.55	2.37	102	94.7	50.0-150		7.46		20

- 1 Tc
- 2 Ss
- 3 Cn
- 4 Sr
- 5 Qc
- 6 Gl
- 7 Al
- 8 Sc

DATE/TIME:  
06/22/18 16:18

SDG:  
L1001855

PROJECT:

ACCOUNT:  
Hall Environmental Analysis Laboratory

ONE LAB. NATIONWIDE.

QUALITY CONTROL SUMMARY

L1001955-01

WG1126584

Wet Chemistry by Method 9034-90308

Method Blank (MB)

(MB) R3319554-1	06/21/18	01:45	MB Result mg/kg	MB Qualifier mg/kg	MB MDL mg/kg	MB RDL mg/kg
Analyte			U	7.63	7.63	25.0
Reactive Sulfide						

L1002157-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1002157-01 06/21/18 01:45 • (DUP) R3319554-4 06/21/18 01:45

Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
mg/kg	mg/kg	%	%	%	%
U	ND	1	0.000		20

7 Cc

5 Ss

4 Cn

5 Sr

6 Qc

7 GI

8 AI

9 Sc

L1002674-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1002674-02 06/21/18 01:45 • (DUP) R3319554-5 06/21/18 01:45

Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
mg/kg	mg/kg	%	%	%	%
565	569	1	1.08		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3319554-2 06/21/18 01:45 • (LCSD) R3319554-3 06/21/18 01:45

Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
mg/kg	mg/kg	mg/kg	%	%	%	%	%	%	%
100	72.9	72.9	72.9	72.9	70.0-130			0.000	20

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT:

SDG: L1001955

DATE/TIME: 06/22/18 16:19

ONE LAB. NATIONWIDE.

**WG1125395**  
 Wet Chemistry by Method 9045D

**QUALITY CONTROL SUMMARY**  
 L1001855-01

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)

(LCS) R3318479-1 06/16/18 12:28 • (LCSD) R3318479-2 06/16/18 12:28

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Conductivity by pH	10.0	10.0	10.0	100	100	99.0-101			0.200	1

Sample Narrative:  
 LCS: 10 at 22.2C  
 LCSD: 10.02 at 22.4C



DATE/TIME:  
06/22/18 16:18

SDG:  
L1001855

PROJECT:

ACCOUNT:  
Hall Environmental Analysis Laboratory

ONE LAB. NATIONWIDE.

QUALITY CONTROL SUMMARY

L1001855-01

WG1124269

Wet Chemistry by Method D93/1010A

L1001958-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1001958-02 06/17/18 14:29 • (DUP) R3318551-3 06/17/18 14:29

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ignitability	Deg. F DNI at 170	Deg. F DNI at 170	1	% 0.000	% 10	% 10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3318551-1 06/17/18 14:29 • (LCSD) R3318551-2 06/17/18 14:29

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Ignitability	Deg. F 82.0	Deg. F 82.6	Deg. F 82.6	% 101	% 101	% 96.0-104	% 101	% 101	% 0.000	% 10

1 Tc
2 Ss
3 Cn
4 Sr
5 Qc
6 GI
7 Al
8 Sc

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1001855

DATE/TIME:  
06/22/18 16:18

ONE LAB. NATIONWIDE.

QUALITY CONTROL SUMMARY

WG1127544

Chlorinated Acid Herbicides (GC) by Method 8151A

L1001855-01

Method Blank (MB)

(MB) R3320187-1 06/21/18 17:52

Analyte	MB Result mg/l	MB Qualifier mg/l	MB MDL mg/l	MB RDL mg/l
2,4-D	U	0.000667	0.000667	0.00200
2,4,5-TP (Silvex)	U	0.000667	0.000667	0.00200
(S) 2,4-Dichlorophenyl Acetic Acid	71.6		14.0-158	

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3320187-2 06/21/18 18:05 • (LCSD) R3320187-3 06/21/18 18:19

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
2,4-D	0.00500	0.00389	0.00393	77.8	78.6	56.0-120			1.02	20
2,4,5-TP (Silvex)	0.00500	0.00380	0.00374	76.0	74.8	55.0-120			1.59	20
(S) 2,4-Dichlorophenyl Acetic Acid				73.8	78.8	14.0-158				



DATE/TIME:  
06/22/18 16:18

SDG:  
L1001855

PROJECT:

ACCOUNT:  
Hall Environmental Analysis Laboratory

## GLOSSARY OF TERMS

ONE LAB. NATIONWIDE



### Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

#### Abbreviations and Definitions

<p>MDL ND RDL Rec. RPD SDG (S) U Analyte Dilution Limits Original Sample Qualifier Result Case Narrative (Cn) Quality Control Summary (Qc) Sample Chain of Custody (Sc) Sample Results (Sr) Sample Summary (Ss)</p>	<p>Method Detection Limit. Not detected at the Reporting Limit (or MDL where applicable). Reported Detection Limit. Recovery. Relative Percent Difference. Sample Delivery Group. Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media. Not detected at the Reporting Limit (or MDL where applicable). The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported. If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor. These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges. The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG. This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable. The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte. A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report. This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material. This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis. This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported. This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.</p>	<div style="border: 1px solid black; padding: 2px; width: 20px; height: 20px; margin-bottom: 5px;">Tc</div> <div style="border: 1px solid black; padding: 2px; width: 20px; height: 20px; margin-bottom: 5px;">Ss</div> <div style="border: 1px solid black; padding: 2px; width: 20px; height: 20px; margin-bottom: 5px;">Cn</div> <div style="border: 1px solid black; padding: 2px; width: 20px; height: 20px; margin-bottom: 5px;">Sr</div> <div style="border: 1px solid black; padding: 2px; width: 20px; height: 20px; margin-bottom: 5px;">Qc</div> <div style="background-color: black; color: white; padding: 2px; width: 20px; height: 20px; margin-bottom: 5px;">Gl</div> <div style="border: 1px solid black; padding: 2px; width: 20px; height: 20px; margin-bottom: 5px;">Al</div> <div style="border: 1px solid black; padding: 2px; width: 20px; height: 20px; margin-bottom: 5px;">Sc</div>
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Qualifier	Description
T8	Sample(s) received past/too close to holding time expiration.

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1001855

DATE/TIME:  
06/22/18 16:18

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806746

26-Jun-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF Project

Sample ID	LCS-38686	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS	Batch ID:	38686	RunNo:	52007					
Prep Date:	6/14/2018	Analysis Date:	6/15/2018	SeqNo:	1701226	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	10	50.00	0	91.2	70	130			
Surr: DNOP	4.8		5.000		97.0	70	130			

Sample ID	MB-38686	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID:	38686	RunNo:	52007					
Prep Date:	6/14/2018	Analysis Date:	6/15/2018	SeqNo:	1701227	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		99.6	70	130			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806746  
 26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Sample ID <b>MB-38669</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>38669</b>		RunNo: <b>51984</b>							
Prep Date: <b>6/13/2018</b>	Analysis Date: <b>6/14/2018</b>		SeqNo: <b>1700018</b>				Units: <b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	870		1000		86.8	15	316			

Sample ID <b>LCS-38669</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>38669</b>		RunNo: <b>51984</b>							
Prep Date: <b>6/13/2018</b>	Analysis Date: <b>6/14/2018</b>		SeqNo: <b>1700019</b>				Units: <b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	28	5.0	25.00	0	112	75.9	131			
Surr: BFB	1000		1000		101	15	316			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

## QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1806746

26-Jun-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF Project

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0018		0.002500		73.0	43.3	136			
Surr: Tetrachloro-m-xylene	0.0017		0.002500		67.3	30.7	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00043	0.00010	0.0005000	0	87.0	42.6	125			
gamma-BHC (Lindane)	0.00038	0.00010	0.0005000	0	76.9	29.5	142			
Heptachlor	0.00033	0.00010	0.0005000	0	65.5	18.6	138			
Heptachlor epoxide	0.00042	0.00010	0.0005000	0	84.7	40.3	127			
Methoxychlor	0.00044	0.00010	0.0005000	0	87.3	36.5	143			
Surr: Decachlorobiphenyl	0.0019		0.002500		75.0	43.3	136			
Surr: Tetrachloro-m-xylene	0.00067		0.002500		26.7	30.7	130			S

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00052	0.00010	0.0005000	0	104	42.6	125	17.4	20	
gamma-BHC (Lindane)	0.00046	0.00010	0.0005000	0	93.0	29.5	142	19.0	20	
Heptachlor	0.00045	0.00010	0.0005000	0	90.0	18.6	138	31.5	20	R
Heptachlor epoxide	0.00051	0.00010	0.0005000	0	101	40.3	127	17.6	20	
Methoxychlor	0.00052	0.00010	0.0005000	0	104	36.5	143	17.3	20	
Surr: Decachlorobiphenyl	0.0022		0.002500		86.6	43.3	136	0	0	
Surr: Tetrachloro-m-xylene	0.0016		0.002500		62.2	30.7	130	0	0	

## Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1806746

26-Jun-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF Project

Sample ID	mb-38669	SampType:	MBLK	TestCode:	EPA Method 8260B: TCLP Compounds						
Client ID:	PBS	Batch ID:	38669	RunNo:	51994						
Prep Date:	6/13/2018	Analysis Date:	6/14/2018	SeqNo:	1700368	Units:	ppm				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	ND	0.050									
1,2-Dichloroethane (EDC)	ND	0.050									
2-Butanone	ND	20									
Carbon tetrachloride	ND	0.050									
Chlorobenzene	ND	10									
Chloroform	ND	0.60									
1,4-Dichlorobenzene	ND	0.75									
1,1-Dichloroethene	ND	0.070									
Tetrachloroethene (PCE)	ND	0.070									
Trichloroethene (TCE)	ND	0.050									
Vinyl chloride	ND	0.020									
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		99.5	70	130				
Surr: 4-Bromofluorobenzene	0.54		0.5000		108	70	130				
Surr: Dibromofluoromethane	0.50		0.5000		100	70	130				
Surr: Toluene-d8	0.49		0.5000		97.9	70	130				

Sample ID	ics-38669	SampType:	LCS	TestCode:	EPA Method 8260B: TCLP Compounds						
Client ID:	LCSS	Batch ID:	38669	RunNo:	51994						
Prep Date:	6/13/2018	Analysis Date:	6/14/2018	SeqNo:	1700370	Units:	ppm				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	1.0	0.050	1.000	0	101	70	130				
Chlorobenzene	1.0	0.050	1.000	0	101	70	130				
1,1-Dichloroethene	1.3	0.050	1.000	0	126	70	130				
Trichloroethene (TCE)	1.0	0.050	1.000	0	101	70	130				
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		94.2	70	130				
Surr: 4-Bromofluorobenzene	0.57		0.5000		114	70	130				
Surr: Dibromofluoromethane	0.51		0.5000		102	70	130				
Surr: Toluene-d8	0.46		0.5000		92.5	70	130				

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 6 of 11

**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806746  
 26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Sample ID	Ics-38754		SampType: LCS	TestCode: EPA Method 8270C TCLP						
Client ID:	LCSS		Batch ID: 38754	RunNo: 52208						
Prep Date:	6/19/2018		Analysis Date: 6/25/2018	SeqNo: 1710990	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.085	0.0010	0.1000	0	84.6	47.8	99.2			
3+4-Methylphenol	0.17	0.0010	0.2000	0	85.7	41.5	118			
2,4-Dinitrotoluene	0.078	0.0010	0.1000	0	78.0	44.4	81			
Hexachlorobenzene	0.089	0.0010	0.1000	0	88.9	49.5	91.6			
Hexachlorobutadiene	0.080	0.0010	0.1000	0	80.1	38.6	93			
Hexachloroethane	0.077	0.0010	0.1000	0	77.1	39.4	79.9			
Nitrobenzene	0.081	0.0010	0.1000	0	81.0	47.4	96.2			
Pentachlorophenol	0.082	0.0010	0.1000	0	81.9	39.4	79.9			S
Pyridine	0.048	0.0010	0.1000	0	48.1	15	79.9			
2,4,5-Trichlorophenol	0.087	0.0010	0.1000	0	86.5	47.4	118			
2,4,6-Trichlorophenol	0.091	0.0010	0.1000	0	91.1	47.4	101			
Cresols, Total	0.26	0.0010	0.3000	0	85.3	44.1	111			
Surr: 2-Fluorophenol	0.14		0.2000		71.6	22.1	97.5			
Surr: Phenol-d5	0.14		0.2000		69.0	15	82.7			
Surr: 2,4,6-Tribromophenol	0.18		0.2000		88.7	39	129			
Surr: Nitrobenzene-d5	0.081		0.1000		81.1	44.6	120			
Surr: 2-Fluorobiphenyl	0.081		0.1000		80.8	38.3	115			
Surr: 4-Terphenyl-d14	0.081		0.1000		81.1	29.6	79.7			S

Sample ID	mb-38754		SampType: MBLK	TestCode: EPA Method 8270C TCLP						
Client ID:	PBS		Batch ID: 38754	RunNo: 52208						
Prep Date:	6/19/2018		Analysis Date: 6/25/2018	SeqNo: 1710992	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
Phenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.12		0.2000		60.0	22.1	97.5			
Surr: Phenol-d5	0.10		0.2000		51.8	15	82.7			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806746  
 26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Sample ID: <b>mb-38754</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8270C TCLP</b>
Client ID: <b>PBS</b>	Batch ID: <b>38754</b>	RunNo: <b>52208</b>
Prep Date: <b>6/19/2018</b>	Analysis Date: <b>6/25/2018</b>	SeqNo: <b>1710992</b> Units: <b>mg/L</b>

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 2,4,6-Tribromophenol	0.16		0.2000		78.5	39	129			
Surr: Nitrobenzene-d5	0.073		0.1000		72.6	44.6	120			
Surr: 2-Fluorobiphenyl	0.066		0.1000		66.4	38.3	115			
Surr: 4-Terphenyl-d14	0.073		0.1000		73.3	29.6	79.7			

Analyte	Result	PQL	SPK value	SPK RefVal	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2,4,6-Tribromophenol	0.16		0.2000		78.5	39	129			
Nitrobenzene-d5	0.073		0.1000		72.6	44.6	120			
2-Fluorobiphenyl	0.066		0.1000		66.4	38.3	115			
4-Terphenyl-d14	0.073		0.1000		73.3	29.6	79.7			
2,4-Dichlorophenol										
2,4-Dinitrophenol										
2,6-Dinitrophenol										
2-Nitrophenol										
3,4-Dichlorophenol										
3,4-Dinitrophenol										
3-Nitrophenol										
4-Chlorophenol										
4-Nitrophenol										
5-Nitrophenol										
6-Nitrophenol										
2,4,6-Trinitrophenol										
2,4-Dinitrophenol										
2,6-Dinitrophenol										
2-Nitrophenol										
3,4-Dichlorophenol										
3,4-Dinitrophenol										
3-Nitrophenol										
4-Chlorophenol										
4-Nitrophenol										
5-Nitrophenol										
6-Nitrophenol										
2,4,6-Trinitrophenol										

- Qualifiers:**
- \* Value exceeds Maximum Contaminant Level.
  - D Sample Diluted Due to Matrix
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - PQL Practical Quantitative Limit
  - S % Recovery outside of range due to dilution or matrix
  - B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - J Analyte detected below quantitation limits
  - P Sample pH Not In Range
  - RL Reporting Detection Limit
  - W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806746

26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Sample ID	MB-38724	SampType:	MBLK	TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	38724	RunNo:	52057					
Prep Date:	6/18/2018	Analysis Date:	6/18/2018	SeqNo:	1702856	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	LCS-38724	SampType:	LCS	TestCode:	MERCURY, TCLP					
Client ID:	LCSW	Batch ID:	38724	RunNo:	52057					
Prep Date:	6/18/2018	Analysis Date:	6/18/2018	SeqNo:	1702857	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	96.0	80	120			

Sample ID	TCLP#1-3721	SampType:	MBLK	TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	38724	RunNo:	52057					
Prep Date:	6/18/2018	Analysis Date:	6/18/2018	SeqNo:	1702858	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	TCLP#2-3747	SampType:	MBLK	TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	38724	RunNo:	52057					
Prep Date:	6/18/2018	Analysis Date:	6/18/2018	SeqNo:	1702859	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 9 of 11

**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806746  
 26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Sample ID	MB-38712	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	38712	RunNo:	52086					
Prep Date:	6/15/2018	Analysis Date:	6/19/2018	SeqNo:	1704418	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0								

Sample ID	LCS-38712	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	LCSW	Batch ID:	38712	RunNo:	52086					
Prep Date:	6/15/2018	Analysis Date:	6/19/2018	SeqNo:	1704419	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0	0.5000	0	101	80	120			

Sample ID	TCLPFI#2-3747	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	38712	RunNo:	52086					
Prep Date:		Analysis Date:	6/19/2018	SeqNo:	1704438	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Lead	ND	5.0								

Sample ID	MB-38712	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	38712	RunNo:	52086					
Prep Date:	6/15/2018	Analysis Date:	6/19/2018	SeqNo:	1704467	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Silver	ND	5.0								

Sample ID	LCS-38712	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	LCSW	Batch ID:	38712	RunNo:	52086					
Prep Date:	6/15/2018	Analysis Date:	6/19/2018	SeqNo:	1704468	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	107	80	120			
Barium	ND	100	0.5000	0	100	80	120			
Cadmium	ND	1.0	0.5000	0	107	80	120			
Chromium	ND	5.0	0.5000	0	99.6	80	120			
Silver	ND	5.0	0.1000	0	119	80	120			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806746

26-Jun-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF Project

Sample ID	MB-38712	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	38712	RunNo:	52127					
Prep Date:	6/15/2018	Analysis Date:	6/21/2018	SeqNo:	1707485	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	LCS-38712	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	LCSW	Batch ID:	38712	RunNo:	52127					
Prep Date:	6/15/2018	Analysis Date:	6/21/2018	SeqNo:	1707486	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	108	80	120			

Sample ID	TCLP FL#2 - 3747	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	38712	RunNo:	52182					
Prep Date:	6/15/2018	Analysis Date:	6/24/2018	SeqNo:	1709611	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

Page 11 of 11



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1806746

RcptNo: 1

Received By: Michelle Garcia 6/12/2018 4:15:00 PM

*Michelle Garcia*

Completed By: Erin Melendrez 6/13/2018 9:11:57 AM

*EM*

Reviewed By: *ENM*  
 LB: *SB 06/13/18* *6/13/18*

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: 06/13/18  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: SB

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

16. Additional remarks:

**17. Cooler Information**

Cooler No.	Temp °C	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	0.1	Good	Not Present			

**Chain-of-Custody Record**

Client: EA Engineering  
 Mailing Address: 320 Cold SW #1300  
Albuquerque NM 87102  
 Phone #: 505 288-4410  
 email or Fax#: emorse@earth.com  
 QA/QC Package:  Level 4 (Full Validation)  
 Standard  Other  
 Accreditation  NELAP  Other  
 EDD (Type)

Turn-Around Time: For soils only

Standard  Rush  
 Project Name: Kirtland BFF Project  
 Project #: PO #15182  
 Project Manager: Devon Jerebovin

Sampler: Rate Fermaid  
 Container Type and #: (3)  
 Preservative Type: 802 jars Ice  
 Date: 6-11-18 Time: 0942  
 Matrix: Soil  
 Sample Request ID: KARB-106240-1-idw



**HALL ENVIRONMENTAL ANALYSIS LABORATORY**  
 www.hallenvironmental.com

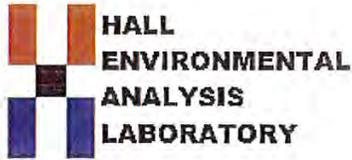
4901 Hawkins NE - Albuquerque, NM 87109  
 Tel. 505-345-3975 Fax 505-345-4107

Analysis Request		Date	Time	Relinquished by:	Date	Time	Relinquished by:
<input checked="" type="checkbox"/>	BTEX + MTBE + TMB's (8021)						
<input checked="" type="checkbox"/>	BTEX + MTBE + TPH (Gas only)						
<input checked="" type="checkbox"/>	TPH 8015B (GRO / DRO / MRO)						
<input type="checkbox"/>	TPH (Method 418.1)						
<input type="checkbox"/>	EDB (Method 504.1)						
<input type="checkbox"/>	PAH's (8310 or 8270 SIMS)						
<input checked="" type="checkbox"/>	RCRA 8 Metals TCLP						
<input type="checkbox"/>	Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )						
<input type="checkbox"/>	8081 Pesticides / 8082 PCB's						
<input checked="" type="checkbox"/>	8260B (VOA) TCLP						
<input checked="" type="checkbox"/>	8270 (Semi-VOA) TCLP						
<input checked="" type="checkbox"/>	Pesticides and Herbicides						
<input checked="" type="checkbox"/>	RCI						
<input type="checkbox"/>	Air Bubbles (Y or N)						

Remarks: - email results to Earl Morse  
- Note PO Number on Invoice

Received by: Paula Ferment Date: 6-12-18 Time: 1355  
 Received by: Earl Morse Date: 6-12-18 Time: 1615

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

July 19, 2018

Amanda Smith

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland AFB BFF

OrderNo.: 1807137

Dear Amanda Smith:

Hall Environmental Analysis Laboratory received 4 sample(s) on 7/3/2018 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued July 18, 2018.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1807137

Date Reported: 7/19/2018

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106420-1B-1DW

Project: Kirtland AFB BFF

Collection Date: 7/3/2018 8:40:00 AM

Lab ID: 1807137-001

Matrix: SOIL

Received Date: 7/3/2018 1:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: AG
Benzene	ND	0.024		mg/Kg	1	7/10/2018 1:18:58 PM
Toluene	ND	0.047		mg/Kg	1	7/10/2018 1:18:58 PM
Ethylbenzene	ND	0.047		mg/Kg	1	7/10/2018 1:18:58 PM
Xylenes, Total	ND	0.094		mg/Kg	1	7/10/2018 1:18:58 PM
Surr: 4-Bromofluorobenzene	120	70-130		%Rec	1	7/10/2018 1:18:58 PM
Surr: Toluene-d8	93.7	70-130		%Rec	1	7/10/2018 1:18:58 PM
<b>VOLATILES BY 8260B/1311</b>						Analyst: RAA
Benzene	ND	0.50		mg/L	1	7/9/2018 2:40:00 PM
2-Butanone	ND	200		mg/L	1	7/9/2018 2:40:00 PM
Carbon Tetrachloride	ND	0.50		mg/L	1	7/9/2018 2:40:00 PM
Chlorobenzene	ND	100		mg/L	1	7/9/2018 2:40:00 PM
Chloroform	ND	6.0		mg/L	1	7/9/2018 2:40:00 PM
1,4-Dichlorobenzene	ND	7.5		mg/L	1	7/9/2018 2:40:00 PM
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	7/9/2018 2:40:00 PM
1,1-Dichloroethene	ND	0.70		mg/L	1	7/9/2018 2:40:00 PM
Hexachlorobutadiene	ND	0.50		mg/L	1	7/9/2018 2:40:00 PM
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	7/9/2018 2:40:00 PM
Trichloroethene (TCE)	ND	0.50		mg/L	1	7/9/2018 2:40:00 PM
Vinyl chloride	ND	0.20		mg/L	1	7/9/2018 2:40:00 PM
Surr: 1,2-Dichloroethane-d4	98.0	70-130		%Rec	1	7/9/2018 2:40:00 PM
Surr: 4-Bromofluorobenzene	95.3	57.3-148		%Rec	1	7/9/2018 2:40:00 PM
Surr: Dibromofluoromethane	98.3	70-130		%Rec	1	7/9/2018 2:40:00 PM
Surr: Toluene-d8	95.8	70-130		%Rec	1	7/9/2018 2:40:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank	
	D Sample Diluted Due to Matrix	E Value above quantitation range	
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits	Page 1 of 8
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range	
	PQL Practical Quantitative Limit	RL Reporting Detection Limit	
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified	

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807137

19-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	ics-39050	SampType:	LCS4	TestCode:	EPA Method 8260B: Volatiles Short List						
Client ID:	BatchQC	Batch ID:	39050	RunNo:	52594						
Prep Date:	7/5/2018	Analysis Date:	7/10/2018	SeqNo:	1725924	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	0.98	0.025	1.000	0	97.6	80	120				
Toluene	1.0	0.050	1.000	0	101	80	120				
Ethylbenzene	1.0	0.050	1.000	0	103	80	120				
Xylenes, Total	3.1	0.10	3.000	0	102	80	120				
Surr: 4-Bromofluorobenzene	0.55		0.5000		110	70	130				
Surr: Toluene-d8	0.46		0.5000		92.4	70	130				

Sample ID	mb-39050	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles Short List						
Client ID:	PBS	Batch ID:	39050	RunNo:	52594						
Prep Date:	7/5/2018	Analysis Date:	7/10/2018	SeqNo:	1725925	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	ND	0.025									
Toluene	ND	0.050									
Ethylbenzene	ND	0.050									
Xylenes, Total	ND	0.10									
Surr: 4-Bromofluorobenzene	0.61		0.5000		122	70	130				
Surr: Toluene-d8	0.47		0.5000		94.3	70	130				

Sample ID	1807137-001ams	SampType:	MS	TestCode:	EPA Method 8260B: Volatiles Short List						
Client ID:	KAFB-106420-1B-1D	Batch ID:	39050	RunNo:	52594						
Prep Date:	7/5/2018	Analysis Date:	7/10/2018	SeqNo:	1726396	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	0.80	0.024	0.9452	0.006692	84.3	51.9	158				
Toluene	0.80	0.047	0.9452	0	85.0	64.6	132				
Surr: 4-Bromofluorobenzene	0.55		0.4726		117	70	130				
Surr: Toluene-d8	0.42		0.4726		89.5	70	130				

Sample ID	1807137-001amsd	SampType:	MSD	TestCode:	EPA Method 8260B: Volatiles Short List						
Client ID:	KAFB-106420-1B-1D	Batch ID:	39050	RunNo:	52594						
Prep Date:	7/5/2018	Analysis Date:	7/10/2018	SeqNo:	1726397	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	0.90	0.025	1.000	0.006692	89.1	51.9	158	11.1	20		
Toluene	0.89	0.050	1.000	0	89.0	64.6	132	10.2	20		
Surr: 4-Bromofluorobenzene	0.59		0.5000		118	70	130	0	0		
Surr: Toluene-d8	0.45		0.5000		89.8	70	130	0	0		

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1807137  
19-Jul-18

Client: EA Engineering Science & Technology  
Project: Kirtland AFB BFF

Sample ID	ics-39054	SampType: LCS	TestCode: Volatiles by 8260B/1311							
Client ID:	LCSS	Batch ID: 39054	RunNo: 52559							
Prep Date:	7/5/2018	Analysis Date: 7/9/2018	SeqNo: 1724846	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.35	0.10	0.4000	0	88.2	70	130			
Chlorobenzene	0.39	0.10	0.4000	0	98.0	70	130			
1,1-Dichloroethene	0.37	0.10	0.4000	0	91.9	70	130			
Trichloroethene (TCE)	0.35	0.10	0.4000	0	88.6	70	130			
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		99.9	70	130			
Surr: 4-Bromofluorobenzene	0.20		0.2000		97.7	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		95.7	70	130			
Surr: Toluene-d8	0.19		0.2000		97.1	70	130			

Sample ID	mb-39054	SampType: MBLK	TestCode: Volatiles by 8260B/1311							
Client ID:	PBS	Batch ID: 39054	RunNo: 52559							
Prep Date:	7/5/2018	Analysis Date: 7/9/2018	SeqNo: 1724847	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Hexachlorobutadiene	ND	0.50								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		101	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		95.7	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		97.2	70	130			
Surr: Toluene-d8	0.19		0.2000		95.7	70	130			

Sample ID	1807137-001ams	SampType: MS	TestCode: Volatiles by 8260B/1311							
Client ID:	KAFB-106420-1B-1D	Batch ID: 39054	RunNo: 52559							
Prep Date:	7/5/2018	Analysis Date: 7/9/2018	SeqNo: 1724850	Units: mg/L						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.38	0.10	0.4000	0	94.1	44.5	152			
Chlorobenzene	0.39	0.10	0.4000	0	98.7	70	130			
1,1-Dichloroethene	0.40	0.10	0.4000	0	101	79.1	132			
Trichloroethene (TCE)	0.38	0.10	0.4000	0	94.2	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807137  
 19-Jul-18

Client: EA Engineering Science & Technology  
 Project: Kirtland AFB BFF

Sample ID	1807137-001ams	SampType: MS	TestCode: Volatiles by 8260B/1311							
Client ID:	KAFB-106420-1B-1D	Batch ID: 39054	RunNo: 52559							
Prep Date:	7/5/2018	Analysis Date: 7/9/2018	SeqNo: 1724850 Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		103	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		96.5	57.3	148			
Surr: Dibromofluoromethane	0.20		0.2000		99.5	70	130			
Surr: Toluene-d8	0.19		0.2000		93.7	70	130			

Sample ID	1807137-001amsd	SampType: MSD	TestCode: Volatiles by 8260B/1311							
Client ID:	KAFB-106420-1B-1D	Batch ID: 39054	RunNo: 52559							
Prep Date:	7/5/2018	Analysis Date: 7/9/2018	SeqNo: 1724851 Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.36	0.10	0.4000	0	90.6	44.5	152	3.74	20	
Chlorobenzene	0.39	0.10	0.4000	0	96.9	70	130	1.87	20	
1,1-Dichloroethene	0.38	0.10	0.4000	0	95.1	79.1	132	6.14	20	
Trichloroethene (TCE)	0.36	0.10	0.4000	0	90.9	70	130	3.53	20	
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		105	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.19		0.2000		95.8	57.3	148	0	0	
Surr: Dibromofluoromethane	0.20		0.2000		102	70	130	0	0	
Surr: Toluene-d8	0.19		0.2000		95.0	70	130	0	0	

Sample ID	mb-39098	SampType: MBLK	TestCode: Volatiles by 8260B/1311							
Client ID:	PBS	Batch ID: 39098	RunNo: 52596							
Prep Date:	7/9/2018	Analysis Date: 7/10/2018	SeqNo: 1726139 Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Hexachlorobutadiene	ND	0.50								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		101	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		97.2	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		94.3	70	130			
Surr: Toluene-d8	0.19		0.2000		94.1	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

## QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807137

19-Jul-18

Client: EA Engineering Science & Technology  
Project: Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID 1807137-004ams SampType: MS TestCode: Volatiles by 8260B/1311										
Client ID: KAFB-106240-4B-1D Batch ID: 39098 RunNo: 52596										
Prep Date: 7/9/2018 Analysis Date: 7/10/2018 SeqNo: 1726141 Units: mg/L										
Benzene	0.37	0.10	0.4000	0	92.0	44.5	152			
Chlorobenzene	0.40	0.10	0.4000	0	99.6	70	130			
1,1-Dichloroethene	0.37	0.10	0.4000	0	93.5	79.1	132			
Trichloroethene (TCE)	0.36	0.10	0.4000	0	90.5	70	130			
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		101	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		96.1	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		95.0	70	130			
Surr: Toluene-d8	0.19		0.2000		92.8	70	130			

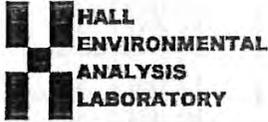
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID 1807137-004amsd SampType: MSD TestCode: Volatiles by 8260B/1311										
Client ID: KAFB-106240-4B-1D Batch ID: 39098 RunNo: 52596										
Prep Date: 7/9/2018 Analysis Date: 7/10/2018 SeqNo: 1726142 Units: mg/L										
Benzene	0.34	0.10	0.4000	0	84.2	44.5	152	8.88	20	
Chlorobenzene	0.37	0.10	0.4000	0	93.4	70	130	6.38	20	
1,1-Dichloroethene	0.34	0.10	0.4000	0	85.9	79.1	132	8.46	20	
Trichloroethene (TCE)	0.33	0.10	0.4000	0	82.8	70	130	8.86	20	
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		101	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.20		0.2000		98.0	57.3	148	0	0	
Surr: Dibromofluoromethane	0.18		0.2000		91.8	70	130	0	0	
Surr: Toluene-d8	0.19		0.2000		94.2	70	130	0	0	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID Ics-39098 SampType: LCS TestCode: Volatiles by 8260B/1311										
Client ID: LCSS Batch ID: 39098 RunNo: 52632										
Prep Date: 7/9/2018 Analysis Date: 7/11/2018 SeqNo: 1727297 Units: mg/L										
Benzene	0.35	0.10	0.4000	0	88.4	70	130			
Chlorobenzene	0.38	0.10	0.4000	0	95.3	70	130			
1,1-Dichloroethene	0.37	0.10	0.4000	0	92.9	70	130			
Trichloroethene (TCE)	0.35	0.10	0.4000	0	87.7	70	130			
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		103	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		95.3	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		97.1	70	130			
Surr: Toluene-d8	0.19		0.2000		94.5	70	130			

## Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 8 of 8



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EA Engineering Alb      Work Order Number: 1807137      RcptNo: 1

Received By: Anne Thorne      7/3/2018 1:50:00 PM      *Anne Thorne*  
 Completed By: Anne Thorne      7/5/2018 7:08:34 AM      *Anne Thorne*  
 Reviewed By: *JB 7.5.18*  
 Labeled by: *AK 07/05/18*

**Chain of Custody**

1. Is Chain of Custody complete?      Yes       No       Not Present   
 2. How was the sample delivered?      Client

**Log In**

3. Was an attempt made to cool the samples?      Yes       No       NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C      Yes       No       NA   
 5. Sample(s) in proper container(s)?      Yes       No   
 6. Sufficient sample volume for indicated test(s)?      Yes       No   
 7. Are samples (except VOA and ONG) properly preserved?      Yes       No   
 8. Was preservative added to bottles?      Yes       No       NA   
 9. VOA vials have zero headspace?      Yes       No       No VOA Vials   
 10. Were any sample containers received broken?      Yes       No   
 11. Does paperwork match bottle labels?      Yes       No   
     (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody?      Yes       No   
 13. Is it clear what analyses were requested?      Yes       No   
 14. Were all holding times able to be met?      Yes       No   
     (If no, notify customer for authorization.)

# of preserved bottles checked for pH:	_____
(<2 or >12 unless noted)	
Adjusted?	_____
Checked by:	_____

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order?      Yes       No       NA

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

16. Additional remarks:

**17. Cooler Information**

Cooler No.	Temp °C	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	4.7	Good	Not Present			

## CHAIN-OF-CUSTODY RECORD

**EA**  
225 Soaring Circle Suite 400, Hunt Valley MD 20887  
Tel: (410) 988-1000 Fax: (410) 977-1000

**PROJECT NAME:**  
Kirtland AFB BFF

**PROJECT NUMBER:**  
62599DM01.1017.3.13D

**LAB NAME AND CONTACT:**  
Hall Environmental

**DO NUMBER:**  
15182

**PROJECT TEL NO AND FAX NO:**  
Tel. - 505-345-3975  
Fax - 505-345-4107

**COC NUMBER:**  
COC-KAFB-106240-B-1D1

**FAX AND MAIL REPORTS/SEND TO:**  
RECIPIENT 1 (Name and Company)  
Amanda Smith/asmith@east.com

**FAX AND MAIL REPORTS/SEND TO:**  
RECIPIENT 2 (Name and Company)  
Earl Morse/emorse@east.com

ITEM	SAMPLE IDENTIFIER	SAMPLE DESCRIPTION/LOCATION	MATRIX	DATE COLLECTED	TIME COLLECTED	DATA PKG LEVEL (see codes on SOP)	Lab TAT (business days)	Bottle Type	TPH GRO, DRO, RRO (6015D)	Reactive Cyanide/Sulfide (9012B/5034)	Corrosivity - PH (9045D)	Inhibitor (1010A)	TPCP VOC (1311/8260B)	ATEX (8260B)	SAMPLE TYPE (see codes on SOP)	COMMENTS/SCREENING READINGS	LAB II (see codes on SOP)
1	KAFB-106240-1B-1DM	Roll-off Bin 1	Soil	7-3-18	0840	IV	7	1	X				X	X	composite	1807137-001	
2	KAFB-106240-2B-1DM	Roll-off Bin 2	Soil	7-3-18	0915	IV	7	1	X				X	X	composite	202	
3	KAFB-106240-3B-1DM	Roll-off Bin 3	Soil	7-3-18	0950	IV	7	1	X				X	X	composite	203	
4	KAFB-106240-4B-1DM	Roll-off Bin 4	Soil	7-3-18	1005	IV	7	1	X				X	X	composite	204	
5																	
6																	
7																	
8																	
9																	
10																	

**RELINQUISHED BY:** P. Fester / J. Messinger

**RECEIVED BY:** Anne Thorne

**DATE:** 7-3-18

**TIME:** 1358

**FedEx Number:** N/A - Hand delivered to lab

**COURIER AND SHIPPING NUMBER:**



EA Engineering, Science, & Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, New Mexico 87102  
Phone: (505) 224-9013

July 26, 2018

Ms. Katrina Wheelock  
Solid Waste Program Manager  
Environmental Management  
377 MSG/CEIE  
Kirtland AFB, New Mexico 87117

Subject: Request to dispose non-hazardous soil cuttings at Kirtland C&D Landfill  
Roll-off Identification: KAFB-106240-2 (no bin ID)  
USACE Contract No. W912DR-12-D-0006-DM01

Dear Ms. Wheelock,

EA Engineering, Science, and Technology, Inc., PBC (EA) is requesting permission to dispose of non-hazardous soil drill cuttings and plastic liners from one roll-off container to the Kirtland Air Force Base (AFB) Construction and Demolition (C&D) debris landfill. Roll-off bin with the EA identification of KAFB-106240 #2 (no bin identification #) contains approximately 10 cubic yards of soil.

Between June and July 2018 EA installed a groundwater monitoring well, KAFB-106240, associated with the Kirtland Bulk Fuels Facility environmental restoration project. Well KAFB-106240 is located on VA Hospital property just west of Bullhead Park. Drill cuttings were containerized in a plastic-lined, steel, roll-off pending laboratory analysis for waste characterization. Any excess moisture in the bin was stabilized using Hydrosorb®, a superabsorbent polymer. All roll-off bins are currently residing in the EA investigation derived waste yard near 1601 Perimeter Circle SE, on Kirtland AFB.

One five-point composite waste characterization sample was collected from the roll-off bin and delivered to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis. The sample was analyzed for all the required parameters per the Kirtland AFB Landfill Acceptance Memorandum (January 2009). The attached analytical results (Reports 1086743 and 1807137) for the composite sample confirms the drill cuttings meet waste acceptance requirements for disposal at the Kirtland C&D landfill. Please note that analytical report 1807137 is a resample of this bin for BTEX which was missed on the original sample request for analysis. The sample designation is listed as 106240-2B-IDW indicating it is from bin 106240-2 (sample B). This report originally contained sample results not applicable to bin 106240-2. These results have been omitted from the report to simplify the review process.



W912DR-12-D-0006-DM01  
 Kirtland Air Force Base Bulk Fuels Facility Expansion  
 of the Dissolved Plume Groundwater Treatment System Design  
 2 May 2017  
 Page 2 of 2

All of the roll-off containers are owned and/or leased by Advanced Chemical Transport Environmental Services Inc. (ACT) with roll-off identification number, when present, marked clearly on the roll off. ACT will utilize one of the following vehicles for waste transport:

- 2015 Western Star Roll Off Truck, License #: WD121651, registered in New Mexico
- 2015 Western Star Roll Off Truck, License #: WD124756, registered in New Mexico

Mr. Sheen Kottkamp has reviewed this package and authorized EA to forward it for your review. EA respectfully requests your review of the attached summary table and analytical data for determination if disposal can be authorized at the Kirtland AFB C&D landfill. Upon receiving notification of Kirtland AFB's acceptance of the waste, EA will coordinate transport and disposal of the roll-off contents with ACT.

EA's Kirtland AFB Point of Contact is Mr. Scott Clark; 505-846-9017.

If you have any questions, please do not hesitate to contact me at 505-266-2225, or via e-mail at [landress@eaest.com](mailto:landress@eaest.com).

Sincerely,

Lane Andress, PG

Attachments: Summary Analytical Table  
 Hall Environmental Analysis Laboratory Order No: 1086743 and 1807137

cc: Jeanne Dye-Porto, [jeanne.dye-porto@us.af.mil](mailto:jeanne.dye-porto@us.af.mil)  
 Scott Clark, [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)  
 Sheen Kottkamp, [sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)  
 Melissa Clark, [melissa.clark.8@us.af.mil](mailto:melissa.clark.8@us.af.mil)  
 Ben Moayyad, [Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)  
 Devon Jercinovic, [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
 Bernie Bockisch, [bbockisch@eaest.com](mailto:bbockisch@eaest.com)  
 Earl Morse, [emorse@eaest.com](mailto:emorse@eaest.com)

		LOCATION CODE							
		FIELD SAMPLE ID		KAFB-106240-2/2B-IDW					
		SAMPLE DATE		12-Jun-18					
		SAMPLE PURPOSE		Waste Characterization					
		ROLL-OFF NO.		KAFB-106240-2					
Parameter	Method	Analyte	Units	TCLP Regulatory Level <sup>a</sup> or KAFB Limits <sup>b</sup>	Result	QUAL	PQL		
RCRA Characteristics	SW1010A Mod	IGNITABILITY	*F	See footnote <sup>c</sup>	> 170	--	--		
	SW9012B	REACTIVE CYANIDE (as total)	mg/kg	NE	ND	--	0.25		
	SW9034	REACTIVE SULFIDE (as total)	mg/kg	NE	ND	--	25		
	SW9045D	CORROSIVITY (pH)	S.U.	≥2 or ≤12.5	8.66	--	--		
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.002		
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.002		
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0		
		BARIUM	mg/L	100	ND	--	100		
		CADMIUM	mg/L	1	ND	--	1.0		
		CHROMIUM	mg/L	5	ND	--	5.0		
		LEAD	mg/L	5	ND	--	5.0		
		SELENIUM	mg/L	1	ND	--	1.0		
		SILVER	mg/L	5	ND	--	5.0		
		MERCURY	mg/L	0.02	ND	--	0.020		
		TCLP PESTICIDES	SW1311/8081	CHLORDANE	mg/L	0.03	ND	--	0.030
	ENDRIN			mg/L	0.02	ND	--	0.020	
GAMMA-BHC (LINDANE)	mg/L			0.4	ND	--	0.40		
HEPTACHLOR	mg/L			0.008	ND	--	0.0080		
HEPTACHLOR EPOXIDE	mg/L			0.008	ND	--	0.0080		
METHOXYCHLOR	mg/L			10	ND	--	10		
TOXAPHENE	mg/L			0.5	ND	--	0.50		
TCLP SVOCs	SW1311/8270C	2,4,5-TRICHLOROPHENOL	mg/L	400	ND	--	400		
		2,4,6-TRICHLOROPHENOL	mg/L	2	ND	--	2.0		
		2,4-DINITROTOLUENE	mg/L	0.13	ND	--	0.13		
		2-METHYLPHENOL (o-Cresol)	mg/L	200	ND	--	200		
		3- and 4-METHYLPHENOL (m- and p-Cresol)	mg/L	200	ND	--	200		
		HEXACHLOROBENZENE	mg/L	0.13	ND	--	0.13		
		HEXACHLOROBUTADIENE	mg/L	0.5	ND	--	0.50		
		HEXACHLOROETHANE	mg/L	3	ND	--	3.0		
		NITROBENZENE	mg/L	2	ND	--	2.0		
		PENTACHLOROPHENOL	mg/L	100	ND	--	100		
		PYRIDINE	mg/L	5	ND	--	5.0		
		CRESOLS, TOTAL	mg/L	200	ND	--	200.0		
		TCLP VOCs	SW1311/8260B	1,1-DICHLOROETHENE	mg/L	0.7	ND	--	0.70
1,2-DICHLOROETHANE	mg/L			0.5	ND	--	0.50		
1,4-DICHLOROETHANE	mg/L			7.5	ND	--	7.5		
2-BUTANONE (MEK)	mg/L			200	ND	--	200		
BENZENE	mg/L			0.5	ND	--	0.50		
CARBON TETRACHLORIDE	mg/L			0.5	ND	--	0.50		
CHLOROETHANE	mg/L			100	ND	--	100		
CHLOROFORM	mg/L			6	ND	--	6.0		
TETRACHLOROETHENE	mg/L			0.7	ND	--	0.70		
TRICHLOROETHENE	mg/L			0.5	ND	--	0.50		
VINYL CHLORIDE	mg/L			0.2	ND	--	0.20		
TPH	SW8015M/D			DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	10
				MOTOR OIL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	51
		GASOLINE RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	5.0		
VOLATILES (BTEX)	SW8260B	BENZENE	mg/kg	10	ND	--	0.025		
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.050		
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.050		
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.099		

Notes:

<sup>a</sup>TCLP Regulatory Level - Resource Conservation Recovery Act (RCRA) hazardous waste characteristic limits per 40CFR Part 261 Subpart C, Section 261.20 - 261.24.

<sup>b</sup>KAFB Limits - Kirtland AFB landfill requirements per the Department of Air Force Technical Memorandum for Kirtland AFB/Department of Energy/Sandia National Laboratories Restoration Agencies and Their Commercial Contractors (2009).

<sup>c</sup>Ignitability characteristic for solids from 40 CFR Part 261.21: "It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of moisture, or spontaneous chemical change, and when ignited burns so vigorously and persistently that it creates a hazard."

<sup>d</sup>KAFB limit for TPH measured as the sum of gasoline, diesel and motor oil range organics.

<sup>e</sup>KAFB limit for BTEX measured as the sum of benzene, toluene, ethylbenzene, and total xylenes.

> - greater than

BTEX - benzene, toluene, ethylbenzene, total xylenes

\*F - degrees fahrenheit

J - Analyte detected below quantitation limit

mg/L - milligram per liter

mg/kg - milligram per kilogram

NE - not established

ND - not detected above the PQL

PQL - practical quantitation limit

QUAL - laboratory data qualifier

Shade - analyte detected above the detection limit

Shade and Bold - analyte detected above KAFB Landfill acceptance limit or TCLP Regulatory Level.

SVOCs - semivolatiles organic compounds

S.U. - Standard units

TCLP - Toxicity Characteristic Leaching Procedure

TPH - total petroleum hydrocarbons

VOCs - volatile organic compounds



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

June 26, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland BFF Project

OrderNo.: 1806743

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 1 sample(s) on 6/12/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1806743

Date Reported: 6/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106240-2-idw

Project: Kirtland BFF Project

Collection Date: 6/12/2018 12:45:00 PM

Lab ID: 1806743-001

Matrix: SOIL

Received Date: 6/12/2018 4:15:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: rde
Mercury	ND	0.020		mg/L	1	6/18/2018 6:03:52 PM	38724
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: MED
Arsenic	ND	5.0		mg/L	1	6/19/2018 11:15:55 AM	38712
Barium	ND	100		mg/L	1	6/20/2018 2:37:33 PM	38712
Cadmium	ND	1.0		mg/L	1	6/19/2018 11:15:55 AM	38712
Chromium	ND	5.0		mg/L	1	6/19/2018 11:15:55 AM	38712
Lead	ND	5.0		mg/L	1	6/19/2018 12:43:02 PM	38712
Selenium	ND	1.0		mg/L	1	6/21/2018 12:41:52 PM	38712
Silver	ND	5.0		mg/L	1	6/19/2018 11:15:55 AM	38712
<b>EPA METHOD 8081: PESTICIDES TCLP</b>							Analyst: JME
Chlordane	ND	0.030		mg/L	1	6/21/2018 12:02:24 PM	38752
Endrin	ND	0.020		mg/L	1	6/21/2018 12:02:24 PM	38752
gamma-BHC (Lindane)	ND	0.40		mg/L	1	6/21/2018 12:02:24 PM	38752
Heptachlor	ND	0.0080		mg/L	1	6/21/2018 12:02:24 PM	38752
Heptachlor epoxide	ND	0.0080		mg/L	1	6/21/2018 12:02:24 PM	38752
Methoxychlor	ND	10		mg/L	1	6/21/2018 12:02:24 PM	38752
Toxaphene	ND	0.50		mg/L	1	6/21/2018 12:02:24 PM	38752
Surr: Decachlorobiphenyl	86.3	43.3-136		%Rec	1	6/21/2018 12:02:24 PM	38752
Surr: Tetrachloro-m-xylene	73.6	30.7-130		%Rec	1	6/21/2018 12:02:24 PM	38752
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: TOM
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	6/15/2018 9:21:35 PM	38686
Motor Oil Range Organics (MRO)	ND	51		mg/Kg	1	6/15/2018 9:21:35 PM	38686
Surr: DNOP	96.7	70-130		%Rec	1	6/15/2018 9:21:35 PM	38686
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: NSB
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	6/14/2018 6:11:27 PM	38669
Surr: BFB	81.0	15-316		%Rec	1	6/14/2018 6:11:27 PM	38669
<b>EPA METHOD 8270C TCLP</b>							Analyst: DAM
2-Methylphenol	ND	200		mg/L	1	6/25/2018 8:08:22 PM	38754
3+4-Methylphenol	ND	200		mg/L	1	6/25/2018 8:08:22 PM	38754
Phenol	ND	200		mg/L	1	6/25/2018 8:08:22 PM	38754
2,4-Dinitrotoluene	ND	0.13		mg/L	1	6/25/2018 8:08:22 PM	38754
Hexachlorobenzene	ND	0.13		mg/L	1	6/25/2018 8:08:22 PM	38754
Hexachlorobutadiene	ND	0.50		mg/L	1	6/25/2018 8:08:22 PM	38754
Hexachloroethane	ND	3.0		mg/L	1	6/25/2018 8:08:22 PM	38754
Nitrobenzene	ND	2.0		mg/L	1	6/25/2018 8:08:22 PM	38754
Pentachlorophenol	ND	100		mg/L	1	6/25/2018 8:08:22 PM	38754
Pyridine	ND	5.0		mg/L	1	6/25/2018 8:08:22 PM	38754

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1806743

Date Reported: 6/26/2018

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106240-2-idw

Project: Kirtland BFF Project

Collection Date: 6/12/2018 12:45:00 PM

Lab ID: 1806743-001

Matrix: SOIL

Received Date: 6/12/2018 4:15:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C TCLP</b>							Analyst: DAM
2,4,5-Trichlorophenol	ND	400		mg/L	1	6/25/2018 8:08:22 PM	38754
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	6/25/2018 8:08:22 PM	38754
Cresols, Total	ND	200		mg/L	1	6/25/2018 8:08:22 PM	38754
Surr: 2-Fluorophenol	41.1	22.1-97.5		%Rec	1	6/25/2018 8:08:22 PM	38754
Surr: Phenol-d5	32.5	15-82.7		%Rec	1	6/25/2018 8:08:22 PM	38754
Surr: 2,4,6-Tribromophenol	76.0	39-129		%Rec	1	6/25/2018 8:08:22 PM	38754
Surr: Nitrobenzene-d5	58.3	44.6-120		%Rec	1	6/25/2018 8:08:22 PM	38754
Surr: 2-Fluorobiphenyl	64.4	38.3-115		%Rec	1	6/25/2018 8:08:22 PM	38754
Surr: 4-Terphenyl-d14	91.6	29.6-79.7	S	%Rec	1	6/25/2018 8:08:22 PM	38754
<b>EPA METHOD 8260B: TCLP COMPOUNDS</b>							Analyst: DJF
Benzene	ND	0.50		ppm	10	6/15/2018 12:32:55 AM	38669
1,2-Dichloroethane (EDC)	ND	0.50		ppm	10	6/15/2018 12:32:55 AM	38669
2-Butanone	ND	200		ppm	10	6/15/2018 12:32:55 AM	38669
Carbon tetrachloride	ND	0.50		ppm	10	6/15/2018 12:32:55 AM	38669
Chlorobenzene	ND	100		ppm	10	6/15/2018 12:32:55 AM	38669
Chloroform	ND	6.0		ppm	10	6/15/2018 12:32:55 AM	38669
1,4-Dichlorobenzene	ND	7.5		ppm	10	6/15/2018 12:32:55 AM	38669
1,1-Dichloroethene	ND	0.70		ppm	10	6/15/2018 12:32:55 AM	38669
Tetrachloroethene (PCE)	ND	0.70		ppm	10	6/15/2018 12:32:55 AM	38669
Trichloroethene (TCE)	ND	0.50		ppm	10	6/15/2018 12:32:55 AM	38669
Vinyl chloride	ND	0.20		ppm	10	6/15/2018 12:32:55 AM	38669
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	10	6/15/2018 12:32:55 AM	38669
Surr: 4-Bromofluorobenzene	113	70-130		%Rec	10	6/15/2018 12:32:55 AM	38669
Surr: Dibromofluoromethane	99.0	70-130		%Rec	10	6/15/2018 12:32:55 AM	38669
Surr: Toluene-d8	101	70-130		%Rec	10	6/15/2018 12:32:55 AM	38669

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

1806743-001B KAFB-106240-2-IDW  
 Collected date/time: 06/12/18 12:45

SAMPLE RESULTS - 01  
 L1001856

ONE LAB. NATIONWIDE. 

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		6/19/2018 10:03:42 AM	WG1126458
Fluid	1		6/19/2018 10:03:42 AM	WG1126458
Initial pH	9.67		6/19/2018 10:03:42 AM	WG1126458
Final pH	5.66		6/19/2018 10:03:42 AM	WG1126458

2 Tc

3 Ss

4 Cn

Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.250	1	06/19/2018 14:51	WG1126232

5 Sr

6 Qc

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		25.0	1	06/21/2018 01:45	WG1126584

7 GI

AI

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	8.66	T&S	1	06/16/2018 12:28	WG1125395

8 Sc

Sample Narrative:

L1001856-01 WG1125395: 8.66 at 25.1C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DNI at 170		1	06/17/2018 14:29	WG1124269

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND		0.00200	1	1	06/21/2018 21:17	WG1127544
2,4-D	ND		0.00200	10	1	06/21/2018 21:17	WG1127544
(S) 2,4-Dichlorophenyl Acetic Acid	67.6		14.0-158			06/21/2018 21:17	WG1127544

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1001856

DATE/TIME:  
06/22/18 16:17

**WG1126232**

Wet Chemistry by Method 9012 B

Method Blank (MB)

**QUALITY CONTROL SUMMARY**

L1001856-01

ONE LAB. NATIONWIDE.

(MB) R3319071-1 06/19/18 14:29

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Cyanide	U	0.0390	0.250	

L1001853-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1001853-01 06/19/18 14:47 • (DUP) R3319071-4 06/19/18 14:48

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	0.000	1	0.000		20

L1002076-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1002076-01 06/19/18 14:57 • (DUP) R3319071-5 06/19/18 14:58

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3319071-2 06/19/18 14:30 • (LCSD) R3319071-3 06/19/18 14:31

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	2.50	2.55	2.37	102	94.7	50.0-150			7.46	20

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1001856

DATE/TIME:  
06/22/18 16:17

ONE LAB. NATIONWIDE.

**QUALITY CONTROL SUMMARY**  
L1001856-01

**W5112584**  
Wet Chemistry by Method 9034-9030B

Method Blank (MB)

(MB) R3319554-1 06/21/18 01:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Sulfide	U		7.63	25.0

L1002157-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1002157-01 06/21/18 01:45 • (DUP) R3319554-4 06/21/18 01:45

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Sulfide	U	ND	1	0.000		20

L1002674-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1002674-02 06/21/18 01:45 • (DUP) R3319554-5 06/21/18 01:45

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Sulfide	565	559	1	1.08		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3319554-2 06/21/18 01:45 • (LCSD) R3319554-3 06/21/18 01:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Reactive Sulfide	100	72.9	72.9	72.9	72.9	70.0-130		0.000	0.000	20

7	Tc
8	SS
4	Cn
5	Sr
9	Qc
7	GI
11	Al
9	Sc

ACCOUNT: Hall Environmental Analysis Laboratory  
PROJECT:  
SDG: L1001856  
DATE/TIME: 06/22/18 16:17



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# QUALITY CONTROL SUMMARY

L1001856-01

**WG1125395**  
Wet Chemistry by Method 9045D

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3318479-1 06/16/18 12:28 • (LCSD) R3318479-2 06/16/18 12:28

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Corrosivity by pH	10.0	10.0	10.0	100	100	99.0-101			0.200	% 1

**Sample Narrative:**

LCS: 10 at 22.2C

LCSD: 10.02 at 22.4C

1	Tc
2	
3	SS
4	Cn
5	Sr
6	QC
7	GI
8	AI
9	Sc

DATE/TIME:  
06/22/18 16:17

SDG:  
L1001856

PROJECT:

ACCOUNT:  
Hill Environmental Analysis Laboratory



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QUALITY CONTROL SUMMARY

L1001856-01

WG1124269

Wet Chemistry by Method D93/1010A

L1001958-02 Original Sample (OS) - Duplicate (DUP)

(OS) L1001958-02 06/17/18 14:29 - (DUP) R3318551-3 06/17/18 14:29

Analyte	Original Result		DUP Result		DUP RPD		DUP Qualifier		DUP RPD Limits	
	Deg. F	DNI at 170	Deg. F	DNI at 170	%		%		%	
Ignitability	82.0	82.6	82.6	82.6	0.000		10		10	

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)

(LCS) R3318551-1 06/17/18 14:29 - (LCSD) R3318551-2 06/17/18 14:29

Analyte	Spike Amount		LCS Result		LCSD Result		LCS Rec.		LCSD Rec.		Rec. Limits		LCS Qualifier		LCSD Qualifier		RPD Limits	
	Deg. F	DNI at 170	Deg. F	DNI at 170	Deg. F	DNI at 170	%		%		%		%		%		%	
Ignitability	82.0	82.6	82.6	82.6	101	101	96.0-104		101	101	96.0-104		0.000		0.000		10	

7	Tc
8	Ss
4	Cn
5	St
9	Qc
7	Gl
8	Al
9	Sc

ACCOUNT: Hell Environmental Analysis Laboratory

PROJECT:

SDG: L1001856

DATE/TIME: 06/22/18 16:17

WG1127544

Chlorinated Acid Herbicides (GC) by Method 8151A

QUALITY CONTROL SUMMARY

L1001856-01

ONE LAB. NATIONWIDE.

Method Blank (MB)

(MB) R3320187-1 06/21/18 17:52

Analyte	MB Result mg/l	MB Qualifier mg/l	MB MDL mg/l	MB RDL mg/l
2,4-D	U	0.000667	0.000667	0.00200
2,4,5-TP (Silvex)	U	0.000667	0.000667	0.00200
(S) 2,4-Dichlorophenyl Acetic Acid	71.6			14.0-158

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3320187-2 06/21/18 18:05 • (LCSD) R3320187-3 06/21/18 18:19

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
2,4-D	0.00500	0.00389	0.00393	77.8	78.6	56.0-120			1.02	20
2,4,5-TP (Silvex)	0.00500	0.00380	0.00374	76.0	74.8	55.0-120			1.59	20
(S) 2,4-Dichlorophenyl Acetic Acid				73.8	78.8	14.0-158				

Tc  
3 Ss  
4 Cn  
5 Sr  
6 QC  
7 GI  
8 AI  
9 Sc

DATE/TIME:  
06/22/18 16:17

SDG:  
L1001856

PROJECT:

ACCOUNT:  
Hall Environmental Analysis Laboratory

GLOSSARY OF TERMS

ONE LAB. NATIONWIDE.



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.	<sup>2</sup> Tc
ND	Not detected at the Reporting Limit (or MDL where applicable).	<sup>3</sup> Ss
RDL	Reported Detection Limit.	<sup>4</sup> Cn
Rec.	Recovery.	<sup>5</sup> Sr
RPD	Relative Percent Difference.	<sup>6</sup> Qc
SDG	Sample Delivery Group.	<sup>7</sup> Gl
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.	<sup>8</sup> Al
U	Not detected at the Reporting Limit (or MDL where applicable).	<sup>9</sup> Sc
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.	
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.	
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.	
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.	
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.	
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.	
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.	
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.	
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.	
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.	
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.	

Qualifier	Description
T8	Sample(s) received past/too close to holding time expiration.

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1001856

DATE/TIME:  
06/22/18 16:17

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806743

26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Sample ID	LCS-38686	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS	Batch ID:	38686	RunNo:	52007					
Prep Date:	6/14/2018	Analysis Date:	6/15/2018	SeqNo:	1701226	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	10	50.00	0	91.2	70	130			
Surr: DNOP	4.8		5.000		97.0	70	130			

Sample ID	MB-38686	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID:	38686	RunNo:	52007					
Prep Date:	6/14/2018	Analysis Date:	6/15/2018	SeqNo:	1701227	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		99.6	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 3 of 11

**QC SUMMARY REPORT**

WO#: 1806743

**Hall Environmental Analysis Laboratory, Inc.**

26-Jun-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF Project

Sample ID	MB-38669	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	38669	RunNo:	51984					
Prep Date:	6/13/2018	Analysis Date:	6/14/2018	SeqNo:	1700018	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	870		1000		86.8	15	316			

Sample ID	LCS-38669	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	38669	RunNo:	51984					
Prep Date:	6/13/2018	Analysis Date:	6/14/2018	SeqNo:	1700019	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	28	5.0	25.00	0	112	75.9	131			
Surr: BFB	1000		1000		101	15	316			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 4 of 11

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806743

26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	MB-38752	SampType: MBLK		TestCode: EPA Method 8081: Pesticides TCLP						
Client ID:	PBW	Batch ID: 38752		RunNo: 52137						
Prep Date:	6/19/2018	Analysis Date: 6/21/2018		SeqNo: 1707820		Units: mg/L				
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0018		0.002500		73.0	43.3	136			
Surr: Tetrachloro-m-xylene	0.0017		0.002500		67.3	30.7	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	LCS-38752	SampType: LCS		TestCode: EPA Method 8081: Pesticides TCLP						
Client ID:	LCSW	Batch ID: 38752		RunNo: 52137						
Prep Date:	6/19/2018	Analysis Date: 6/21/2018		SeqNo: 1707821		Units: mg/L				
Endrin	0.00043	0.00010	0.0005000	0	87.0	42.6	125			
gamma-BHC (Lindane)	0.00038	0.00010	0.0005000	0	76.9	29.5	142			
Heptachlor	0.00033	0.00010	0.0005000	0	65.5	18.6	138			
Heptachlor epoxide	0.00042	0.00010	0.0005000	0	84.7	40.3	127			
Methoxychlor	0.00044	0.00010	0.0005000	0	87.3	36.5	143			
Surr: Decachlorobiphenyl	0.0019		0.002500		75.0	43.3	136			
Surr: Tetrachloro-m-xylene	0.00067		0.002500		26.7	30.7	130			S

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	LCSD-38752	SampType: LCSD		TestCode: EPA Method 8081: Pesticides TCLP						
Client ID:	LCSS02	Batch ID: 38752		RunNo: 52137						
Prep Date:	6/19/2018	Analysis Date: 6/21/2018		SeqNo: 1707822		Units: mg/L				
Endrin	0.00052	0.00010	0.0005000	0	104	42.6	125	17.4	20	
gamma-BHC (Lindane)	0.00046	0.00010	0.0005000	0	93.0	29.5	142	19.0	20	
Heptachlor	0.00045	0.00010	0.0005000	0	90.0	18.6	138	31.5	20	R
Heptachlor epoxide	0.00051	0.00010	0.0005000	0	101	40.3	127	17.6	20	
Methoxychlor	0.00052	0.00010	0.0005000	0	104	36.5	143	17.3	20	
Surr: Decachlorobiphenyl	0.0022		0.002500		86.6	43.3	136	0	0	
Surr: Tetrachloro-m-xylene	0.0016		0.002500		62.2	30.7	130	0	0	

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1806743

26-Jun-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland BFF Project

Sample ID	mb-38669	SampType:	MBLK	TestCode:	EPA Method 8260B: TCLP Compounds						
Client ID:	PBS	Batch ID:	38669	RunNo:	51994						
Prep Date:	6/13/2018	Analysis Date:	6/14/2018	SeqNo:	1700368	Units:	ppm				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	ND	0.050									
1,2-Dichloroethane (EDC)	ND	0.050									
2-Butanone	ND	20									
Carbon tetrachloride	ND	0.050									
Chlorobenzene	ND	10									
Chloroform	ND	0.60									
1,4-Dichlorobenzene	ND	0.75									
1,1-Dichloroethene	ND	0.070									
Tetrachloroethene (PCE)	ND	0.070									
Trichloroethene (TCE)	ND	0.050									
Vinyl chloride	ND	0.020									
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		99.5	70	130				
Surr: 4-Bromofluorobenzene	0.54		0.5000		108	70	130				
Surr: Dibromofluoromethane	0.50		0.5000		100	70	130				
Surr: Toluene-d8	0.49		0.5000		97.9	70	130				

Sample ID	Ics-38669	SampType:	LCS	TestCode:	EPA Method 8260B: TCLP Compounds						
Client ID:	LCSS	Batch ID:	38669	RunNo:	51994						
Prep Date:	6/13/2018	Analysis Date:	6/14/2018	SeqNo:	1700370	Units:	ppm				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	1.0	0.050	1.000	0	101	70	130				
Chlorobenzene	1.0	0.050	1.000	0	101	70	130				
1,1-Dichloroethene	1.3	0.050	1.000	0	126	70	130				
Trichloroethene (TCE)	1.0	0.050	1.000	0	101	70	130				
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		94.2	70	130				
Surr: 4-Bromofluorobenzene	0.57		0.5000		114	70	130				
Surr: Dibromofluoromethane	0.51		0.5000		102	70	130				
Surr: Toluene-d8	0.46		0.5000		92.5	70	130				

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806743  
 26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Sample ID	Ics-38754		SampType: LCS	TestCode: EPA Method 8270C TCLP						
Client ID:	LCSS		Batch ID: 38754	RunNo: 52208						
Prep Date:	6/19/2018		Analysis Date: 6/25/2018	SeqNo: 1710990	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.085	0.0010	0.1000	0	84.6	47.8	99.2			
3+4-Methylphenol	0.17	0.0010	0.2000	0	85.7	41.5	118			
2,4-Dinitrotoluene	0.078	0.0010	0.1000	0	78.0	44.4	81			
Hexachlorobenzene	0.089	0.0010	0.1000	0	88.9	49.5	91.6			
Hexachlorobutadiene	0.080	0.0010	0.1000	0	80.1	38.6	93			
Hexachloroethane	0.077	0.0010	0.1000	0	77.1	39.4	79.9			
Nitrobenzene	0.081	0.0010	0.1000	0	81.0	47.4	96.2			
Pentachlorophenol	0.082	0.0010	0.1000	0	81.9	39.4	79.9			S
Pyridine	0.048	0.0010	0.1000	0	48.1	15	79.9			
2,4,5-Trichlorophenol	0.087	0.0010	0.1000	0	86.5	47.4	118			
2,4,6-Trichlorophenol	0.091	0.0010	0.1000	0	91.1	47.4	101			
Cresols, Total	0.26	0.0010	0.3000	0	85.3	44.1	111			
Surr: 2-Fluorophenol	0.14		0.2000		71.6	22.1	97.5			
Surr: Phenol-d5	0.14		0.2000		69.0	15	82.7			
Surr: 2,4,6-Tribromophenol	0.18		0.2000		88.7	39	129			
Surr: Nitrobenzene-d5	0.081		0.1000		81.1	44.6	120			
Surr: 2-Fluorobiphenyl	0.081		0.1000		80.8	38.3	115			
Surr: 4-Terphenyl-d14	0.081		0.1000		81.1	29.6	79.7			S

Sample ID	mb-38754		SampType: MBLK	TestCode: EPA Method 8270C TCLP						
Client ID:	PBS		Batch ID: 38754	RunNo: 52208						
Prep Date:	6/19/2018		Analysis Date: 6/25/2018	SeqNo: 1710992	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
Phenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.12		0.2000		60.0	22.1	97.5			
Surr: Phenol-d5	0.10		0.2000		51.8	15	82.7			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified



**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806743

26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Sample ID	MB-38724	SampType:	MBLK	TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	38724	RunNo:	52057					
Prep Date:	6/18/2018	Analysis Date:	6/18/2018	SeqNo:	1702856	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	LCS-38724	SampType:	LCS	TestCode:	MERCURY, TCLP					
Client ID:	LCSW	Batch ID:	38724	RunNo:	52057					
Prep Date:	6/18/2018	Analysis Date:	6/18/2018	SeqNo:	1702857	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	96.0	80	120			

Sample ID	TCLP#1-3721	SampType:	MBLK	TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	38724	RunNo:	52057					
Prep Date:	6/18/2018	Analysis Date:	6/18/2018	SeqNo:	1702858	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	TCLP#2-3747	SampType:	MBLK	TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	38724	RunNo:	52057					
Prep Date:	6/18/2018	Analysis Date:	6/18/2018	SeqNo:	1702859	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806743  
 26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Sample ID	MB-38712	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	38712	RunNo:	52086					
Prep Date:	6/15/2018	Analysis Date:	6/19/2018	SeqNo:	1704418	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0								

Sample ID	LCS-38712	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	LCSW	Batch ID:	38712	RunNo:	52086					
Prep Date:	6/15/2018	Analysis Date:	6/19/2018	SeqNo:	1704419	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0	0.5000	0	101	80	120			

Sample ID	TCLPFI#2-3747	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	38712	RunNo:	52086					
Prep Date:		Analysis Date:	6/19/2018	SeqNo:	1704438	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Lead	ND	5.0								

Sample ID	MB-38712	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	38712	RunNo:	52086					
Prep Date:	6/15/2018	Analysis Date:	6/19/2018	SeqNo:	1704467	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Silver	ND	5.0								

Sample ID	LCS-38712	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	LCSW	Batch ID:	38712	RunNo:	52086					
Prep Date:	6/15/2018	Analysis Date:	6/19/2018	SeqNo:	1704468	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	107	80	120			
Barium	ND	100	0.5000	0	100	80	120			
Cadmium	ND	1.0	0.5000	0	107	80	120			
Chromium	ND	5.0	0.5000	0	99.6	80	120			
Silver	ND	5.0	0.1000	0	119	80	120			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1806743

26-Jun-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland BFF Project

Sample ID	MB-38712	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	38712	RunNo:	52127					
Prep Date:	6/15/2018	Analysis Date:	6/21/2018	SeqNo:	1707485	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	LCS-38712	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	LCSW	Batch ID:	38712	RunNo:	52127					
Prep Date:	6/15/2018	Analysis Date:	6/21/2018	SeqNo:	1707486	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	108	80	120			

Sample ID	TCLP FL#2 - 3747	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	38712	RunNo:	52182					
Prep Date:	6/15/2018	Analysis Date:	6/24/2018	SeqNo:	1709611	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1806743

RcptNo: 1

Received By: Michelle Garcia 6/12/2018 4:15:00 PM

*Michelle Garcia*

Completed By: Erin Melendrez 6/13/2018 8:49:36 AM

*EM*

Reviewed By: ENM  
 LB: JB 06/13/18

*6/13/18*

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

*JB 06/13/18*

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: JB

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

16. Additional remarks:

**17. Cooler Information**

Cooler No.	Temp. °C	Condition	Seal intact	Seal No.	Seal Date	Signed By
1	3.1	Good	Not Present			

**Chain-of-Custody Record**

Client: EA Engineering  
 Mailing Address: 320 Cold SW #1300  
 Albuquerque, NM 87102  
 Phone #: (505) 238-4470  
 email or Fax#: emorse@east.com  
 QA/QC Package:  
 Standard  Level 4 (Full Validation)  
 NELAP  Other  
 EDD (Type)

\* For soils only  
 Turn-Around Time:

Standard  Rush

Project Name:

Kirtland BFF Project

Project #:

PO # 15182

Project Manager:

Dorin Jorhonic

Sampler: Peter Emorse / Home Address

Office: 505-238-4470  
 Sample Temperature: 41.1°C

Container Type and #  
 (3) 8 oz jar Ice -DDI

Preservative Type

Ice

-DDI

Date Time Matrix Sample Request ID

6-12-18 1245 Soil WAFB-106240-2-idw 8 oz jar Ice -DDI

Date: 6-12-18 1355  
 Relinquished by: Peter Emorse  
 Date: 6-12-18 1615  
 Relinquished by: [Signature]

Date Time  
 Received by: [Signature] 6/12/18 1355  
 Date Time  
 Received by: [Signature] 6/12/18 1615

**HALL ENVIRONMENTAL ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

**Analysis Request**

<input checked="" type="checkbox"/>	BTEX + MTBE + TMBs (8021)	
<input checked="" type="checkbox"/>	BTEX + MTBE + TPH (Gas only)	
<input checked="" type="checkbox"/>	TPH 8015B (GRO / DRO / MRO)	
	TPH (Method 418.1)	
	EDB (Method 504.1)	
	PAHs (8310 or 8270 SIMS)	
<input checked="" type="checkbox"/>	RCRA 8 Metals TCLP	
	Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	
	8081 Pesticides / 8082 PCBs	
<input checked="" type="checkbox"/>	8260B (VOA) TCLP	
<input checked="" type="checkbox"/>	8270 (Semi-VOA) TCLP	
<input checked="" type="checkbox"/>	Pesticides and Herbicides TCLP	
<input checked="" type="checkbox"/>	RCI	
	Air Bubbles (Y or N)	

Remarks:  
 - email results to Earl Morse.  
 - Note PO Number on Invoice

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

July 19, 2018

Amanda Smith

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland AFB BFF

OrderNo.: 1807137

Dear Amanda Smith:

Hall Environmental Analysis Laboratory received 4 sample(s) on 7/3/2018 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued July 18, 2018.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1807137

Date Reported: 7/19/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106240-2B-1DW

Project: Kirtland AFB BFF

Collection Date: 7/3/2018 9:15:00 AM

Lab ID: 1807137-002

Matrix: SOIL

Received Date: 7/3/2018 1:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: AG
Benzene	ND	0.025		mg/Kg	1	7/10/2018 2:28:38 PM
Toluene	ND	0.050		mg/Kg	1	7/10/2018 2:28:38 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/10/2018 2:28:38 PM
Xylenes, Total	ND	0.099		mg/Kg	1	7/10/2018 2:28:38 PM
Surr: 4-Bromofluorobenzene	119	70-130		%Rec	1	7/10/2018 2:28:38 PM
Surr: Toluene-d8	92.4	70-130		%Rec	1	7/10/2018 2:28:38 PM
<b>VOLATILES BY 8260B/1311</b>						Analyst: RAA
Benzene	ND	0.50		mg/L	1	7/9/2018 3:54:00 PM
2-Butanone	ND	200		mg/L	1	7/9/2018 3:54:00 PM
Carbon Tetrachloride	ND	0.50		mg/L	1	7/9/2018 3:54:00 PM
Chlorobenzene	ND	100		mg/L	1	7/9/2018 3:54:00 PM
Chloroform	ND	6.0		mg/L	1	7/9/2018 3:54:00 PM
1,4-Dichlorobenzene	ND	7.5		mg/L	1	7/9/2018 3:54:00 PM
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	7/9/2018 3:54:00 PM
1,1-Dichloroethene	ND	0.70		mg/L	1	7/9/2018 3:54:00 PM
Hexachlorobutadiene	ND	0.50		mg/L	1	7/9/2018 3:54:00 PM
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	7/9/2018 3:54:00 PM
Trichloroethene (TCE)	ND	0.50		mg/L	1	7/9/2018 3:54:00 PM
Vinyl chloride	ND	0.20		mg/L	1	7/9/2018 3:54:00 PM
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	1	7/9/2018 3:54:00 PM
Surr: 4-Bromofluorobenzene	95.6	57.3-148		%Rec	1	7/9/2018 3:54:00 PM
Surr: Dibromofluoromethane	99.3	70-130		%Rec	1	7/9/2018 3:54:00 PM
Surr: Toluene-d8	97.8	70-130		%Rec	1	7/9/2018 3:54:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 2 of 8

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807137

19-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Sample ID	Ics-39050	SampType:	LCS4	TestCode:	EPA Method 8260B: Volatiles Short List						
Client ID:	BatchQC	Batch ID:	39050	RunNo:	52594						
Prep Date:	7/5/2018	Analysis Date:	7/10/2018	SeqNo:	1725924	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	0.98	0.025	1.000	0	97.6	80	120				
Toluene	1.0	0.050	1.000	0	101	80	120				
Ethylbenzene	1.0	0.050	1.000	0	103	80	120				
Xylenes, Total	3.1	0.10	3.000	0	102	80	120				
Surr: 4-Bromofluorobenzene	0.55		0.5000		110	70	130				
Surr: Toluene-d8	0.46		0.5000		92.4	70	130				

Sample ID	mb-39050	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles Short List						
Client ID:	PBS	Batch ID:	39050	RunNo:	52594						
Prep Date:	7/5/2018	Analysis Date:	7/10/2018	SeqNo:	1725925	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	ND	0.025									
Toluene	ND	0.050									
Ethylbenzene	ND	0.050									
Xylenes, Total	ND	0.10									
Surr: 4-Bromofluorobenzene	0.61		0.5000		122	70	130				
Surr: Toluene-d8	0.47		0.5000		94.3	70	130				

Sample ID	1807137-001ams	SampType:	MS	TestCode:	EPA Method 8260B: Volatiles Short List						
Client ID:	KAFB-106420-1B-1D	Batch ID:	39050	RunNo:	52594						
Prep Date:	7/5/2018	Analysis Date:	7/10/2018	SeqNo:	1726396	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	0.80	0.024	0.9452	0.006692	84.3	51.9	158				
Toluene	0.80	0.047	0.9452	0	85.0	64.6	132				
Surr: 4-Bromofluorobenzene	0.55		0.4726		117	70	130				
Surr: Toluene-d8	0.42		0.4726		89.5	70	130				

Sample ID	1807137-001amsd	SampType:	MSD	TestCode:	EPA Method 8260B: Volatiles Short List						
Client ID:	KAFB-106420-1B-1D	Batch ID:	39050	RunNo:	52594						
Prep Date:	7/5/2018	Analysis Date:	7/10/2018	SeqNo:	1726397	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	0.90	0.025	1.000	0.006692	89.1	51.9	158	11.1	20		
Toluene	0.89	0.050	1.000	0	89.0	64.6	132	10.2	20		
Surr: 4-Bromofluorobenzene	0.59		0.5000		118	70	130	0	0		
Surr: Toluene-d8	0.45		0.5000		89.8	70	130	0	0		

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

Page 5 of 8

## QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807137

19-Jul-18

Client: EA Engineering Science & Technology  
Project: Kirtland AFB BFF

Sample ID	ics-39054	SampType: LCS	TestCode: Volatiles by 8260B/1311							
Client ID:	LCSS	Batch ID:	39054	RunNo:	52559					
Prep Date:	7/5/2018	Analysis Date:	7/9/2018	SeqNo:	1724846	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.35	0.10	0.4000	0	88.2	70	130			
Chlorobenzene	0.39	0.10	0.4000	0	98.0	70	130			
1,1-Dichloroethene	0.37	0.10	0.4000	0	91.9	70	130			
Trichloroethene (TCE)	0.35	0.10	0.4000	0	88.6	70	130			
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		99.9	70	130			
Surr: 4-Bromofluorobenzene	0.20		0.2000		97.7	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		95.7	70	130			
Surr: Toluene-d8	0.19		0.2000		97.1	70	130			

Sample ID	mb-39054	SampType: MBLK	TestCode: Volatiles by 8260B/1311							
Client ID:	PBS	Batch ID:	39054	RunNo:	52559					
Prep Date:	7/5/2018	Analysis Date:	7/9/2018	SeqNo:	1724847	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Hexachlorobutadiene	ND	0.50								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		101	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		95.7	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		97.2	70	130			
Surr: Toluene-d8	0.19		0.2000		95.7	70	130			

Sample ID	1807137-001ams	SampType: MS	TestCode: Volatiles by 8260B/1311							
Client ID:	KAFB-106420-1B-1D	Batch ID:	39054	RunNo:	52559					
Prep Date:	7/5/2018	Analysis Date:	7/9/2018	SeqNo:	1724850	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.38	0.10	0.4000	0	94.1	44.5	152			
Chlorobenzene	0.39	0.10	0.4000	0	98.7	70	130			
1,1-Dichloroethene	0.40	0.10	0.4000	0	101	79.1	132			
Trichloroethene (TCE)	0.38	0.10	0.4000	0	94.2	70	130			

## Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 6 of 8

**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807137  
 19-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	1807137-001ams	SampType: MS	TestCode: Volatiles by 8260B/1311							
Client ID:	KAFB-106420-1B-1D	Batch ID: 39054	RunNo: 52559							
Prep Date:	7/5/2018	Analysis Date: 7/9/2018	SeqNo: 1724850 Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		103	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		96.5	57.3	148			
Surr: Dibromofluoromethane	0.20		0.2000		99.5	70	130			
Surr: Toluene-d8	0.19		0.2000		93.7	70	130			

Sample ID	1807137-001amsd	SampType: MSD	TestCode: Volatiles by 8260B/1311							
Client ID:	KAFB-106420-1B-1D	Batch ID: 39054	RunNo: 52559							
Prep Date:	7/5/2018	Analysis Date: 7/9/2018	SeqNo: 1724851 Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.36	0.10	0.4000	0	90.6	44.5	152	3.74	20	
Chlorobenzene	0.39	0.10	0.4000	0	96.9	70	130	1.87	20	
1,1-Dichloroethene	0.38	0.10	0.4000	0	95.1	79.1	132	6.14	20	
Trichloroethene (TCE)	0.36	0.10	0.4000	0	90.9	70	130	3.53	20	
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		105	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.19		0.2000		95.8	57.3	148	0	0	
Surr: Dibromofluoromethane	0.20		0.2000		102	70	130	0	0	
Surr: Toluene-d8	0.19		0.2000		95.0	70	130	0	0	

Sample ID	mb-39098	SampType: MBLK	TestCode: Volatiles by 8260B/1311							
Client ID:	PBS	Batch ID: 39098	RunNo: 52596							
Prep Date:	7/9/2018	Analysis Date: 7/10/2018	SeqNo: 1726139 Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Hexachlorobutadiene	ND	0.50								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		101	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		97.2	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		94.3	70	130			
Surr: Toluene-d8	0.19		0.2000		94.1	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807137  
 19-Jul-18

Client: EA Engineering Science & Technology  
 Project: Kirtland AFB BFF

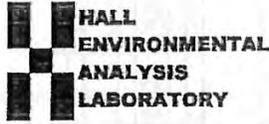
Sample ID	1807137-004ams	SampType: MS	TestCode: Volatiles by 8260B/1311							
Client ID:	KAFB-106240-4B-1D	Batch ID: 39098	RunNo: 52596							
Prep Date:	7/9/2018	Analysis Date: 7/10/2018	SeqNo: 1726141 Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.37	0.10	0.4000	0	92.0	44.5	152			
Chlorobenzene	0.40	0.10	0.4000	0	99.6	70	130			
1,1-Dichloroethene	0.37	0.10	0.4000	0	93.5	79.1	132			
Trichloroethene (TCE)	0.36	0.10	0.4000	0	90.5	70	130			
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		101	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		96.1	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		95.0	70	130			
Surr: Toluene-d8	0.19		0.2000		92.8	70	130			

Sample ID	1807137-004amsd	SampType: MSD	TestCode: Volatiles by 8260B/1311							
Client ID:	KAFB-106240-4B-1D	Batch ID: 39098	RunNo: 52596							
Prep Date:	7/9/2018	Analysis Date: 7/10/2018	SeqNo: 1726142 Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.34	0.10	0.4000	0	84.2	44.5	152	8.88	20	
Chlorobenzene	0.37	0.10	0.4000	0	93.4	70	130	6.38	20	
1,1-Dichloroethene	0.34	0.10	0.4000	0	85.9	79.1	132	8.46	20	
Trichloroethene (TCE)	0.33	0.10	0.4000	0	82.8	70	130	8.86	20	
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		101	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.20		0.2000		98.0	57.3	148	0	0	
Surr: Dibromofluoromethane	0.18		0.2000		91.8	70	130	0	0	
Surr: Toluene-d8	0.19		0.2000		94.2	70	130	0	0	

Sample ID	Ics-39098	SampType: LCS	TestCode: Volatiles by 8260B/1311							
Client ID:	LCSS	Batch ID: 39098	RunNo: 52632							
Prep Date:	7/9/2018	Analysis Date: 7/11/2018	SeqNo: 1727297 Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.35	0.10	0.4000	0	88.4	70	130			
Chlorobenzene	0.38	0.10	0.4000	0	95.3	70	130			
1,1-Dichloroethene	0.37	0.10	0.4000	0	92.9	70	130			
Trichloroethene (TCE)	0.35	0.10	0.4000	0	87.7	70	130			
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		103	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		95.3	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		97.1	70	130			
Surr: Toluene-d8	0.19		0.2000		94.5	70	130			

Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EA Engineering Alb      Work Order Number: 1807137      RcptNo: 1

Received By: Anne Thome      7/3/2018 1:50:00 PM      *Anne Thome*  
 Completed By: Anne Thome      7/5/2018 7:08:34 AM      *Anne Thome*  
 Reviewed By: *SO 7.5.18*  
 Labeled by: *AO 07105118*

**Chain of Custody**

1. Is Chain of Custody complete?      Yes       No       Not Present   
 2. How was the sample delivered?      Client

**Log In**

3. Was an attempt made to cool the samples?      Yes       No       NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C      Yes       No       NA   
 5. Sample(s) in proper container(s)?      Yes       No   
 6. Sufficient sample volume for indicated test(s)?      Yes       No   
 7. Are samples (except VOA and ONG) properly preserved?      Yes       No   
 8. Was preservative added to bottles?      Yes       No       NA   
 9. VOA vials have zero headspace?      Yes       No       No VOA Vials   
 10. Were any sample containers received broken?      Yes       No   
 11. Does paperwork match bottle labels?      Yes       No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody?      Yes       No   
 13. Is it clear what analyses were requested?      Yes       No   
 14. Were all holding times able to be met?      Yes       No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH:	_____
(<2 or >12 unless noted)	
Adjusted?	_____
Checked by:	_____

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order?      Yes       No       NA

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

16. Additional remarks:

**17. Cooler Information**

Cooler No.	Temp °C	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	4.7	Good	Not Present			



255 Soaring Circle Suite 400, West Valley MD 21097  
Tel: 410 771-1425 Fax: 410 771-1425

## CHAIN-OF-CUSTODY RECORD

<sup>1</sup> COC NUMBER:  
COC-KAFB-106240-B-1D1

---

<sup>2</sup> PROJECT NAME:  
Kirtland AFB BFF

<sup>3</sup> PROJECT PHASIS/TASKS:  
Data Gap Wells

<sup>4</sup> PROJECT CONTACT:  
E. Morse

<sup>5</sup> LAB NAME AND CONTACT:  
Hall Environmental

<sup>6</sup> LAB NO NUMBER:  
15182

<sup>7</sup> LAB TEL NO AND FAX NO:  
Tel. - 505-345-3975  
Fax - 505-345-4107

<sup>8</sup> FAX AND MAIL REPORTS/EDD TO:  
RECIPIENT 1 (Name and Company)  
Amanda Smith/asmith@east.com

<sup>9</sup> FAX AND MAIL REPORTS/EDD TO:  
RECIPIENT 2 (Name and Company)  
Pam Moss/pmoss@east.com

<sup>10</sup> FAX AND MAIL REPORTS/EDD TO:  
RECIPIENT 3 (Name and Company)  
Earl Morse/emorse@east.com

---

# ITEM	#1 SAMPLE IDENTIFIER	#2 SAMPLE DESCRIPTION/LOCATION	#3 MATRIX	#4 DATE COLLECTED	#5 TIME COLLECTED	#6 DATA PROGRAM LEVEL	#7 LAB TAT (business days)	#8 Scale Type	#9 ANALYSES REQUIRED (Include Method Numbers)							#10 LAB #
									TPH GRO, DRO, RRO (6015D)	Reactive Cyanide/Sulfide (9012B/9034)	Corrosivity - PH (9045D)	Enrichability (1010A)	# SAMPLE TYPE (as noted on SOP)	# COMMENTS/SCREENING READINGS (for lab #)		
1	KAFB-106240-1B-1DW	Rollout Bin 1	Soil	7-3-18	0840	IV	7	I	X	X	X	X	X	composite	1807137-01	
2	KAFB-106240-2B-1BW	Rollout Bin 2	Soil	7-3-18	0915	IV	7	I	X	X	X	X	X	composite	202	
3	KAFB-106240-3B-1BW	Rollout Bin 3	Soil	7-3-18	0950	IV	7	I	X	X	X	X	X	composite	203	
4	KAFB-106240-4B-1BW	Rollout Bin 4	Soil	7-3-18	1005	IV	7	I	X	X	X	X	X	composite	204	
5																
6																
7																
8																
9																
10																

---

<sup>11</sup> FIELD SAMPLER(S) AND COMPANY (please print):  
P. Peterson / J. Messinger

Printed Name and Signature:  
*P. Peterson / J. Messinger*

<sup>12</sup> RELINQUISHED BY:  
Joshua Messinger

Printed Name and Signature:  
*Joshua Messinger*

<sup>13</sup> COURIER AND SHIPPING NUMBER:  
FedEx Number: N/A - Hand delivered to lab

<sup>14</sup> RECEIVED BY:  
Anne Thorne

Printed Name and Signature:  
*Anne Thorne*

---

DATE: 7-3-18

TIME: 1530

DATE: 07/03/18

TIME: 135

---

Distribution: 1 | Original - Laboratory (To be returned with Analytical Report) | 1 Copy 1 - Project File

NON-HAZARDOUS WASTE MANIFEST

179535

Please print or type (Form designed for use on elite (12 pitch) typewriter)

<b>NON-HAZARDOUS WASTE MANIFEST</b>		1. Generator's US EPA ID No. NM9570024423		Manifest Document No. D215121	2. Page 1 of
8. Generator's Name and Mailing Address KIRTLAND AIR FORCE BASE 2050 WYOMING BLVD SE BLDG 20685, ENVIRONMENTAL KIRTLAND AIR FORCE BASE, NM 87117 505-846-9017					
4. Generator's Phone ( )		5. Transporter 1 Company Name Advanced Chemical Transport Inc./DBA ACTENVIRO		6. US EPA ID Number CAR000070540	
7. Transporter 2 Company Name		8. US EPA ID Number		A. State Transporter's ID	
				B. Transporter 1 Phone	
				C. State Transporter's ID	
				D. Transporter 2 Phone	
9. Facility Name and Site Address TANDEM LANDFILL 2500 FREMONT COUNTY ROAD 67 PENROSE, CO 81240 719-372-6671		10. US EPA ID Number COR000208454		E. State Facility's ID	
				F. Facility's Phone	
11. WASTE DESCRIPTION Non-RCRA/Non-DOT Regulated Material Solid Sludges (DRILL CUTTINGS)			Containers No. Type		13. Total Quantity
			02 CM		5 TON
b.					
c.					
d.					
G. Additional Descriptions for Materials Listed Above Project Number 179535 Document #: D215121 P-20170421-D KIT- (2) 15 CM Bin # HTB-3 / PT4380			H. Handling Codes for Wastes Listed Above		
15. Special Handling Instructions and Additional Information 24 HOUR EMERGENCY CONTACT: SCOTT CLARK 505 385 3679					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
Printed/Typed Name Holly O'Grady				Signature Holly O'Grady	
				Date Month Day Year 10 11 18	
17. Transporter 1 Acknowledgement of Receipt of Materials				Date	
Printed/Typed Name Martin Aranda		Signature		Date Month Day Year 10 11 18	
18. Transporter 2 Acknowledgement of Receipt of Materials				Date	
Printed/Typed Name		Signature		Date Month Day Year	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.					
Printed/Typed Name KD Sullivan				Signature KD Sullivan	
				Date Month Day Year 10 11 18	

NON-HAZARDOUS WASTE





Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 26, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: KAFB BFF Data Gap

OrderNo.: 1809A64

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/18/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

## Case Narrative

WO#: 1809A64  
Date: 9/26/2018

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**CLIENT:** EA Engineering Science & Technology  
**Project:** KAFB BFF Data Gap

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Analytical Notes Regarding EPA Method 8270:  
Surrogates not recoverable due to sample dilution.

## Analytical Report

Lab Order 1809A64

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106240-5-IDW-S

Project: KAFB BFF Data Gap

Collection Date: 9/18/2018 1:10:00 PM

Lab ID: 1809A64-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: <b>rde</b>
Mercury	ND	0.020		mg/L	1	9/24/2018 3:42:27 PM	40525
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: <b>pmf</b>
Arsenic	ND	5.0		mg/L	1	9/24/2018 12:29:17 PM	40518
Barium	ND	100		mg/L	1	9/24/2018 12:29:17 PM	40518
Cadmium	ND	1.0		mg/L	1	9/24/2018 12:29:17 PM	40518
Chromium	ND	5.0		mg/L	1	9/24/2018 12:29:17 PM	40518
Lead	ND	5.0		mg/L	1	9/24/2018 12:29:17 PM	40518
Selenium	ND	1.0		mg/L	1	9/24/2018 12:29:17 PM	40518
Silver	ND	5.0		mg/L	1	9/24/2018 12:29:17 PM	40518
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>AG</b>
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	9/20/2018 6:59:54 PM	40456
Surr: BFB	99.3	70-130		%Rec	1	9/20/2018 6:59:54 PM	40456
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>lrm</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	9/25/2018 11:17:49 AM	40549
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/25/2018 11:17:49 AM	40549
Surr: DNOP	74.7	50.6-138		%Rec	1	9/25/2018 11:17:49 AM	40549
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
Acenaphthene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Acenaphthylene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Aniline	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Anthracene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Azobenzene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Benz(a)anthracene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Benzo(a)pyrene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Benzo(b)fluoranthene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Benzo(g,h,i)perylene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Benzo(k)fluoranthene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Benzoic acid	ND	4.8	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Benzyl alcohol	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Bis(2-chloroethoxy)methane	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Bis(2-chloroethyl)ether	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Bis(2-chloroisopropyl)ether	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Bis(2-ethylhexyl)phthalate	ND	4.8	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
4-Bromophenyl phenyl ether	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Butyl benzyl phthalate	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Carbazole	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
4-Chloro-3-methylphenol	ND	4.8	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A64

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106240-5-IDW-S

Project: KAFB BFF Data Gap

Collection Date: 9/18/2018 1:10:00 PM

Lab ID: 1809A64-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
4-Chloroaniline	ND	4.8	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
2-Chloronaphthalene	ND	2.4	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
2-Chlorophenol	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
4-Chlorophenyl phenyl ether	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Chrysene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Di-n-butyl phthalate	ND	3.8	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Di-n-octyl phthalate	ND	3.8	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Dibenz(a,h)anthracene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Dibenzofuran	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
1,2-Dichlorobenzene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
1,3-Dichlorobenzene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
1,4-Dichlorobenzene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
3,3'-Dichlorobenzidine	ND	2.4	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Diethyl phthalate	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Dimethyl phthalate	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
2,4-Dichlorophenol	ND	3.8	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
2,4-Dimethylphenol	ND	2.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
4,6-Dinitro-2-methylphenol	ND	3.8	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
2,4-Dinitrophenol	ND	4.8	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
2,4-Dinitrotoluene	ND	4.8	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
2,6-Dinitrotoluene	ND	4.8	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Fluoranthene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Fluorene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Hexachlorobenzene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Hexachlorobutadiene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Hexachlorocyclopentadiene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Hexachloroethane	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Indeno(1,2,3-cd)pyrene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Isophorone	ND	3.8	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
1-Methylnaphthalene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
2-Methylnaphthalene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
2-Methylphenol	ND	3.8	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
3+4-Methylphenol	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
N-Nitrosodi-n-propylamine	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
N-Nitrosodiphenylamine	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Naphthalene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
2-Nitroaniline	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
3-Nitroaniline	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
4-Nitroaniline	ND	3.8	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A64

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106240-5-IDW-S

Project: KAFB BFF Data Gap

Collection Date: 9/18/2018 1:10:00 PM

Lab ID: 1809A64-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
Nitrobenzene	ND	3.8	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
2-Nitrophenol	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
4-Nitrophenol	ND	2.4	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Pentachlorophenol	ND	3.8	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Phenanthrene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Phenol	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Pyrene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Pyridine	ND	3.8	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
1,2,4-Trichlorobenzene	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
2,4,5-Trichlorophenol	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
2,4,6-Trichlorophenol	ND	1.9	D	mg/Kg	1	9/21/2018 10:23:30 PM	40469
Surr: 2-Fluorophenol	0	21.7-87.9	SD	%Rec	1	9/21/2018 10:23:30 PM	40469
Surr: Phenol-d5	0	30.2-92.2	SD	%Rec	1	9/21/2018 10:23:30 PM	40469
Surr: 2,4,6-Tribromophenol	0	47.1-103	SD	%Rec	1	9/21/2018 10:23:30 PM	40469
Surr: Nitrobenzene-d5	0	23.9-102	SD	%Rec	1	9/21/2018 10:23:30 PM	40469
Surr: 2-Fluorobiphenyl	0	32.6-101	SD	%Rec	1	9/21/2018 10:23:30 PM	40469
Surr: 4-Terphenyl-d14	0	37.2-117	SD	%Rec	1	9/21/2018 10:23:30 PM	40469
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: <b>DJF</b>
Benzene	ND	0.023		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Toluene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Ethylbenzene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Methyl tert-butyl ether (MTBE)	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,2,4-Trimethylbenzene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,3,5-Trimethylbenzene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,2-Dichloroethane (EDC)	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,2-Dibromoethane (EDB)	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Naphthalene	ND	0.093		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1-Methylnaphthalene	ND	0.19		mg/Kg	1	9/21/2018 11:48:13 AM	40456
2-Methylnaphthalene	ND	0.19		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Acetone	ND	0.70		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Bromobenzene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Bromodichloromethane	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Bromoform	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Bromomethane	ND	0.14		mg/Kg	1	9/21/2018 11:48:13 AM	40456
2-Butanone	ND	0.46		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Carbon disulfide	ND	0.46		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Carbon tetrachloride	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Chlorobenzene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Chloroethane	ND	0.093		mg/Kg	1	9/21/2018 11:48:13 AM	40456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Kirtland AFB BFF

Completion Report for Data Gap Monitoring Wells

SWMUs ST-106/SS-111

June 2020

## Analytical Report

Lab Order 1809A64

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106240-5-IDW-S

Project: KAFB BFF Data Gap

Collection Date: 9/18/2018 1:10:00 PM

Lab ID: 1809A64-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
Chloroform	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Chloromethane	ND	0.14		mg/Kg	1	9/21/2018 11:48:13 AM	40456
2-Chlorotoluene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
4-Chlorotoluene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
cis-1,2-DCE	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
cis-1,3-Dichloropropene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,2-Dibromo-3-chloropropane	ND	0.093		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Dibromochloromethane	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Dibromomethane	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,2-Dichlorobenzene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,3-Dichlorobenzene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,4-Dichlorobenzene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Dichlorodifluoromethane	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,1-Dichloroethane	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,1-Dichloroethene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,2-Dichloropropane	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,3-Dichloropropane	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
2,2-Dichloropropane	ND	0.093		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,1-Dichloropropene	ND	0.093		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Hexachlorobutadiene	ND	0.093		mg/Kg	1	9/21/2018 11:48:13 AM	40456
2-Hexanone	ND	0.46		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Isopropylbenzene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
4-Isopropyltoluene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
4-Methyl-2-pentanone	ND	0.46		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Methylene chloride	ND	0.14		mg/Kg	1	9/21/2018 11:48:13 AM	40456
n-Butylbenzene	ND	0.14		mg/Kg	1	9/21/2018 11:48:13 AM	40456
n-Propylbenzene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
sec-Butylbenzene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Styrene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
tert-Butylbenzene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,1,1,2-Tetrachloroethane	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,1,1,2-Tetrachloroethane	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Tetrachloroethene (PCE)	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
trans-1,2-DCE	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
trans-1,3-Dichloropropene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,2,3-Trichlorobenzene	ND	0.093		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,2,4-Trichlorobenzene	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,1,1-Trichloroethane	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,1,2-Trichloroethane	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A64

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106240-5-IDW-S

Project: KAFB BFF Data Gap

Collection Date: 9/18/2018 1:10:00 PM

Lab ID: 1809A64-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
Trichloroethene (TCE)	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Trichlorofluoromethane	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
1,2,3-Trichloropropane	ND	0.093		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Vinyl chloride	ND	0.046		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Xylenes, Total	ND	0.093		mg/Kg	1	9/21/2018 11:48:13 AM	40456
Surr: Dibromofluoromethane	96.0	70-130		%Rec	1	9/21/2018 11:48:13 AM	40456
Surr: 1,2-Dichloroethane-d4	92.8	70-130		%Rec	1	9/21/2018 11:48:13 AM	40456
Surr: Toluene-d8	92.3	70-130		%Rec	1	9/21/2018 11:48:13 AM	40456
Surr: 4-Bromofluorobenzene	94.1	70-130		%Rec	1	9/21/2018 11:48:13 AM	40456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

1809A64-001B KAFB-106240-5-IDW-S

SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.



Collected date/time: 09/18/18 13:10

L1027439

Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.250	1	09/24/2018 09:19	WG1169232

<sup>2</sup>Tc

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Sulfide	36.6		25.0	1	09/21/2018 19:15	WG1169524

<sup>3</sup>Ss

<sup>4</sup>Cn

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	7.91	T&	1	09/21/2018 09:40	WG1168872

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

Sample Narrative:

L1027439-01 WG1168872: 7.91 at 20.4C

AJ

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DNI at 170		1	09/20/2018 20:01	WG1169226

<sup>8</sup>Sc

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1027439

DATE/TIME:  
09/24/18 12:51

**WG1169232**

Wet Chemistry by Method 9012 B

**QUALITY CONTROL SUMMARY**

L1027439-01

ONE LAB. NATIONWIDE.

Method Blank (MB)

(MB) R3344432-1	09/24/18 09:14								
<b>Analyte</b>	<b>MB Result</b>	<b>MB Qualifier</b>	<b>MB MDL</b>	<b>MB RDL</b>					
Reactive Cyanide	mg/kg U	mg/kg 0.0390	mg/kg 0.0000	mg/kg 0.250					

L1027473-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1027473-01	09/24/18 09:29	(DUP) R3344432-4	09/24/18 09:30						
<b>Analyte</b>	<b>Original Result</b>	<b>DUP Result</b>	<b>Dilution</b>	<b>DUP RPD</b>	<b>DUP Qualifier</b>	<b>DUP RPD Limits</b>			
Reactive Cyanide	mg/kg ND	mg/kg 0.000	% 1	% 0.000	% 20	% 20			

L1027473-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1027473-07	09/24/18 10:08	(DUP) R3344432-9	09/24/18 10:09						
<b>Analyte</b>	<b>Original Result</b>	<b>DUP Result</b>	<b>Dilution</b>	<b>DUP RPD</b>	<b>DUP Qualifier</b>	<b>DUP RPD Limits</b>			
Reactive Cyanide	mg/kg 3.63	mg/kg 4.60	% 5	% 23.5	PI 20	% 20			

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3344432-2	09/24/18 09:15	(LCSD) R3344432-3	09/24/18 09:16						
<b>Analyte</b>	<b>Spike Amount</b>	<b>LCS Result</b>	<b>LCSD Result</b>	<b>LCS Rec.</b>	<b>LCSD Rec.</b>	<b>Rec. Limits</b>	<b>LCS Qualifier</b>	<b>LCSD Qualifier</b>	<b>RPD Limits</b>
Reactive Cyanide	mg/kg 2.50	mg/kg 2.74	mg/kg 2.77	% 110	% 111	% 50.0-150	% 0.937	% 20	% 20

L1027473-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1027473-02	09/24/18 09:31	(MS) R3344432-5	09/24/18 09:32	(MSD) R3344432-6	09/24/18 09:33				
<b>Analyte</b>	<b>Spike Amount</b>	<b>Original Result</b>	<b>MS Result</b>	<b>MSD Result</b>	<b>MSD Rec.</b>	<b>Dilution</b>	<b>Rec. Limits</b>	<b>MS Qualifier</b>	<b>MSD Qualifier</b>
Reactive Cyanide	mg/kg 1.67	mg/kg ND	mg/kg 1.26	mg/kg 1.30	% 77.9	1	% 75.0-125	% 2.66	% 20

L1027473-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1027473-10	09/24/18 09:44	(MS) R3344432-7	09/24/18 09:45	(MSD) R3344432-8	09/24/18 09:46				
<b>Analyte</b>	<b>Spike Amount</b>	<b>Original Result</b>	<b>MS Result</b>	<b>MSD Result</b>	<b>MSD Rec.</b>	<b>Dilution</b>	<b>Rec. Limits</b>	<b>MS Qualifier</b>	<b>MSD Qualifier</b>
Reactive Cyanide	mg/kg 1.67	mg/kg ND	mg/kg 1.56	mg/kg 1.62	% 90.1	1	% 75.0-125	% 3.89	% 20

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT: L1027439

SDG:

DATE/TIME: 09/24/18 12:51



ONE LAB. NATIONWIDE.

- GP
- Tc
- Ss
- Cn
- Sr
- Qc
- GI
- Al
- Sc

## QUALITY CONTROL SUMMARY

L1027439-01

**WG1169524**

Wet Chemistry by Method 9034-9030B

**Method Blank (MB)**

MB Result	MB Qualifier	MB MDL	MB RDL
mg/kg	mg/kg	mg/kg	mg/kg
U	7.63	25.0	25.0

**L1027439-01 Original Sample (OS) • Duplicate (DUP)**

(OS) L1027439-01 09/21/18 19:15 • (DUP) R3344060-4 09/21/18 19:15

Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
mg/kg	mg/kg		%		%
36.6	36.6	1	0.000		20

**L1027473-10 Original Sample (OS) • Duplicate (DUP)**

(OS) L1027473-10 09/21/18 19:15 • (DUP) R3344060-5 09/21/18 19:15

Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
mg/kg	mg/kg		%		%
ND	ND	1	0.000		20

**Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)**

(LCS) R3344060-2 09/21/18 19:15 • (LCSD) R3344060-3 09/21/18 19:15

Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
mg/kg	mg/kg	mg/kg	%	%	%			%	%
100	73.1	73.1	73.1	73.1	70.0-130			0.000	20

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT:

SDG: L1027439

DATE/TIME: 09/24/18 12:51

**WG1168872** **Wet Chemistry by Method 9045D** **QUALITY CONTROL SUMMARY** **L1027439-01** **ONE LAB. NATIONWIDE.**

L1027459-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1027459-01 09/21/18 09:40 • (DUP) R3343835-4 09/21/18 09:40

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Corrosivity by pH	su 9.06	su 9.03	1	% 0.332		% 1

**Sample Narrative:**

OS: 9.06 at 20.6C  
 DUP: 9.03 at 20.2C

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3343835-1 09/21/18 09:40 • (LCSD) R3343835-2 09/21/18 09:40

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Corrosivity by pH	su 10.0	su 9.98	su 9.99	% 99.8	% 99.9	% 99.0-101			% 0.100	% 1

**Sample Narrative:**

LCS: 9.98 at 19.3C  
 LCSD: 9.99 at 19.4C

1 C1  
 2 Tc  
 3 Ss  
 4 Cn  
 5 Sr  
 6 **QC**  
 7 GI  
 8 AI  
 9 SC

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT: L1027439

SDG: L1027439

DATE/TIME: 09/24/18 12:51

**WG1169226**

Wet Chemistry by Method D93/1010A

**QUALITY CONTROL SUMMARY**

L1027439-01

ONE LAB. NATIONWIDE.

L1027405-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1027405-01 09/20/18 20:01 • (DUP) R3343731-3 09/20/18 20:01

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ignitability	Deg. F DNI at 170	Deg. F DNI at 170	1	% 0.000	% 10	% 10

L1027473-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1027473-10 09/20/18 20:01 • (DUP) R3343731-4 09/20/18 20:01

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ignitability	Deg. F DNI at 170	Deg. F DNI at 170	1	% 0.000	% 10	% 10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3343731-1 09/20/18 20:01 • (LCSD) R3343731-2 09/20/18 20:01

Analyte	Spike Amount	LCS Result	LCS Rec.	LCSD Result	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Ignitability	Deg. F 82.0	Deg. F 82.7	% 101	Deg. F 82.7	% 101	% 96.0-104	% 101	% 101	% 0.000	% 10

- 1. RP
- 2. Tc
- 3. Ss
- 4. Cn
- 5. Sr
- 6. Qc
- 7. Gl
- 8. Al
- 9. Sc

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1027439

DATE/TIME:  
09/24/18 12:51

# GLOSSARY OF TERMS

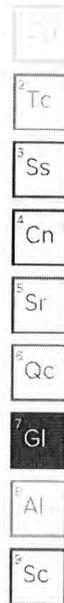


## Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

### Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.



Qualifier	Description
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1027439

DATE/TIME:  
09/24/18 12:51

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A64

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Sample ID	<b>MB-40549</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40549</b>	RunNo:	<b>54386</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/25/2018</b>	SeqNo:	<b>1801281</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	13		10.00		126	50.6	138			

Sample ID	<b>LCS-40549</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40549</b>	RunNo:	<b>54386</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/25/2018</b>	SeqNo:	<b>1801282</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.00	0	104	70	130			
Surr: DNOP	5.1		5.000		102	50.6	138			

Sample ID	<b>MB-40571</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40571</b>	RunNo:	<b>54386</b>					
Prep Date:	<b>9/25/2018</b>	Analysis Date:	<b>9/25/2018</b>	SeqNo:	<b>1801284</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		109	50.6	138			

Sample ID	<b>LCS-40571</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40571</b>	RunNo:	<b>54386</b>					
Prep Date:	<b>9/25/2018</b>	Analysis Date:	<b>9/25/2018</b>	SeqNo:	<b>1801285</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.2		5.000		104	50.6	138			

Sample ID	<b>1809A64-001AMS</b>	SampType:	<b>MS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>KAFB-106240-5-IDW</b>	Batch ID:	<b>40549</b>	RunNo:	<b>54386</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/25/2018</b>	SeqNo:	<b>1802102</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	9.9	49.41	0	105	53.5	126			
Surr: DNOP	3.9		4.941		79.6	50.6	138			

Sample ID	<b>1809A64-001AMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>KAFB-106240-5-IDW</b>	Batch ID:	<b>40549</b>	RunNo:	<b>54386</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/25/2018</b>	SeqNo:	<b>1802103</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	9.8	48.83	0	106	53.5	126	0.138	21.7	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 7 of 18

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A64**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Sample ID	<b>1809A64-001AMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>KAFB-106240-5-IDW</b>	Batch ID:	<b>40549</b>	RunNo:	<b>54386</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/25/2018</b>	SeqNo:	<b>1802103</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.1		4.883		84.5	50.6	138	0	0	

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

Page 8 of 18

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A64

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Sample ID	mb-40456	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	PBS	Batch ID:	40456	RunNo:	54347					
Prep Date:	9/19/2018	Analysis Date:	9/21/2018	SeqNo:	1799119	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A64

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	mb-40456		SampType: MBLK	TestCode: EPA Method 8260B: Volatiles						
Client ID:	PBS		Batch ID: 40456	RunNo: 54347						
Prep Date:	9/19/2018		Analysis Date: 9/21/2018	SeqNo: 1799119		Units: mg/Kg				
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.47		0.5000		94.2	70	130			
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		94.4	70	130			
Surr: Toluene-d8	0.45		0.5000		90.2	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		91.8	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	Ics-40456		SampType: LCS	TestCode: EPA Method 8260B: Volatiles						
Client ID:	LCSS		Batch ID: 40456	RunNo: 54347						
Prep Date:	9/19/2018		Analysis Date: 9/21/2018	SeqNo: 1799121		Units: mg/Kg				
Benzene	1.2	0.025	1.000	0	119	70	130			
Toluene	1.0	0.050	1.000	0	102	70	130			
Chlorobenzene	1.1	0.050	1.000	0	112	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A64**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Sample ID	<b>Ics-40456</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8260B: Volatiles</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54347</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/21/2018</b>	SeqNo:	<b>1799121</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	1.3	0.050	1.000	0	126	70	130			
Trichloroethene (TCE)	1.1	0.050	1.000	0	112	70	130			
Surr: Dibromofluoromethane	0.52		0.5000		103	70	130			
Surr: 1,2-Dichloroethane-d4	0.49		0.5000		98.8	70	130			
Surr: Toluene-d8	0.45		0.5000		89.4	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		98.4	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A64

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Sample ID	Ics-40469		SampType: LCS	TestCode: EPA Method 8270C: Semivolatiles						
Client ID:	LCSS		Batch ID: 40469	RunNo: 54318						
Prep Date:	9/20/2018		Analysis Date: 9/21/2018	SeqNo: 1798894	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.1	0.20	1.670	0	66.6	42	110			
4-Chloro-3-methylphenol	2.3	0.50	3.330	0	69.6	42.3	117			
2-Chlorophenol	1.8	0.20	3.330	0	52.9	27.6	117			
1,4-Dichlorobenzene	0.81	0.20	1.670	0	48.7	28.8	105			
2,4-Dinitrotoluene	1.2	0.50	1.670	0	70.5	42	98.7			
N-Nitrosodi-n-propylamine	1.2	0.20	1.670	0	69.4	41.8	112			
4-Nitrophenol	3.2	0.25	3.330	0	95.2	54	113			
Pentachlorophenol	2.6	0.40	3.330	0	78.0	41.5	101			
Phenol	1.8	0.20	3.330	0	53.8	32.2	115			
Pyrene	1.5	0.20	1.670	0	91.5	48.5	121			
1,2,4-Trichlorobenzene	1.0	0.20	1.670	0	60.6	39.9	112			
Surr: 2-Fluorophenol	1.5		3.330		45.1	21.7	87.9			
Surr: Phenol-d5	2.0		3.330		59.2	30.2	92.2			
Surr: 2,4,6-Tribromophenol	2.8		3.330		83.4	47.1	103			
Surr: Nitrobenzene-d5	0.96		1.670		57.3	23.9	102			
Surr: 2-Fluorobiphenyl	1.1		1.670		63.0	32.6	101			
Surr: 4-Terphenyl-d14	1.7		1.670		99.5	37.2	117			

Sample ID	mb-40469		SampType: MBLK	TestCode: EPA Method 8270C: Semivolatiles						
Client ID:	PBS		Batch ID: 40469	RunNo: 54318						
Prep Date:	9/20/2018		Analysis Date: 9/21/2018	SeqNo: 1798895	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	ND	0.50								

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A64

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Sample ID	mb-40469	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	40469	RunNo:	54318					
Prep Date:	9/20/2018	Analysis Date:	9/21/2018	SeqNo:	1798895	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	ND	0.40								
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3'-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A64**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	<b>mb-40469</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8270C: Semivolatiles</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40469</b>	RunNo:	<b>54318</b>					
Prep Date:	<b>9/20/2018</b>	Analysis Date:	<b>9/21/2018</b>	SeqNo:	<b>1798895</b>	Units:	<b>mg/Kg</b>			
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	1.8		3.330		52.8	21.7	87.9			
Surr: Phenol-d5	2.2		3.330		64.6	30.2	92.2			
Surr: 2,4,6-Tribromophenol	2.6		3.330		78.3	47.1	103			
Surr: Nitrobenzene-d5	1.0		1.670		62.3	23.9	102			
Surr: 2-Fluorobiphenyl	1.1		1.670		65.2	32.6	101			
Surr: 4-Terphenyl-d14	1.6		1.670		95.3	37.2	117			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A64**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Sample ID	<b>MB-40525</b>	SampType:	<b>MBLK</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40525</b>	RunNo:	<b>54370</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1799878</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	<b>LCS-40525</b>	SampType:	<b>LCS</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40525</b>	RunNo:	<b>54370</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1799879</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.0	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A64

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Sample ID	<b>MB-40518</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40518</b>	RunNo:	<b>54358</b>					
Prep Date:	<b>9/21/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1800649</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	<b>LCS-40518</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40518</b>	RunNo:	<b>54358</b>					
Prep Date:	<b>9/21/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1800651</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	97.7	80	120			
Barium	ND	100	0.5000	0	98.8	80	120			
Cadmium	ND	1.0	0.5000	0	102	80	120			
Chromium	ND	5.0	0.5000	0	98.0	80	120			
Lead	ND	5.0	0.5000	0	98.1	80	120			
Selenium	ND	1.0	0.5000	0	106	80	120			
Silver	ND	5.0	0.1000	0	111	80	120			

Sample ID	<b>1809A64-001AMS</b>	SampType:	<b>MS</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>KAFB-106240-5-IDW</b>	Batch ID:	<b>40518</b>	RunNo:	<b>54358</b>					
Prep Date:	<b>9/21/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1800675</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	98.4	75	125			
Barium	ND	100	0.5000	0.4971	87.4	75	125			
Cadmium	ND	1.0	0.5000	0	97.8	75	125			
Chromium	ND	5.0	0.5000	0	91.1	75	125			
Lead	ND	5.0	0.5000	0	91.5	75	125			
Selenium	ND	1.0	0.5000	0	94.8	75	125			
Silver	ND	5.0	0.1000	0.02041	101	75	125			

Sample ID	<b>1809A64-001AMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>KAFB-106240-5-IDW</b>	Batch ID:	<b>40518</b>	RunNo:	<b>54358</b>					
Prep Date:	<b>9/21/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1800676</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	103	75	125	0	20	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1809A64

26-Sep-18

Client: EA Engineering Science &amp; Technology

Project: KAFB BFF Data Gap

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	100	0.5000	0.4971	88.3	75	125	0	20	
Cadmium	ND	1.0	0.5000	0	99.7	75	125	0	20	
Chromium	ND	5.0	0.5000	0	93.3	75	125	0	20	
Lead	ND	5.0	0.5000	0	93.2	75	125	0	20	
Selenium	ND	1.0	0.5000	0	99.2	75	125	0	20	
Silver	ND	5.0	0.1000	0.02041	99.3	75	125	0	20	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A64**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Sample ID	<b>Ics-40456</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015D Mod: Gasoline Range</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54305</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797289</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	91.6	70	130			
Surr: BFB	470		500.0		93.2	70	130			

Sample ID	<b>mb-40456</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015D Mod: Gasoline Range</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54305</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797290</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	500		500.0		99.4	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 18 of 18



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87106  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

**Sample Log-In Check List**

Client Name: EA Engineering Alb

Work Order Number: 1809A64

RcptNo: 1

Received By: Jazzmine Burkhead 9/18/2018 3:48:00 PM

Completed By: Ashley Gallegos 9/18/2018 5:37:28 PM

Reviewed By: ENM 9/18/18

*labeled by: JAB 09/19/18*

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH:  
 (<2 or >12 unless noted)  
 Adjusted?  
 Checked by: *JAB 09/19/18*

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.8	Good	Not Present			

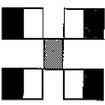
**Chain-of-Custody Record**

Client: EA Engineering  
 Mailing Address: 300 Gold Ave. SW Ste 1300  
Albuquerque, NM 87107  
 Phone #: 505-244-9013  
 email or Fax#: pmass@easternwise.com  
 QA/QC Package:  Standard  Level 4 (Full Validation)  Other  
 Accreditation:  NELAP  Other  
 EDD (Type)

Turn-Around Time:  
 Standard  Rush 5 day  
 Project Name: KAFB BFF  
data gap  
 Project #: 62599DM01.1017.3  
15182

Project Manager:  
Devin Jarcinovic  
 Sampler: L. Anders J. Messenger  
 On Ice:  Yes  No  
 Sample Temperature: 2.6-10(CF)=1.6

Date: 9-18-18 Matrix: Soil Sample Request ID: KAFB-10240-5-IDW-5  
 Container Type and #: 2-802 jar Preservative Type: ICE  
1-402 jar  
 HEAL No.: 1809AUG  
-001



**HALL ENVIRONMENTAL ANALYSIS LABORATORY**  
 www.hallenvironmental.com  
 4901 Hawkins NE - Albuquerque, NM 87109  
 Tel. 505-345-3975 Fax 505-345-4107

**Analysis Request**

BTEX + MTBE + TPH (Gas only)	<input checked="" type="checkbox"/>
BTEX + MTBE + TPH (Method 418.1)	<input type="checkbox"/>
EDB (Method 504.1)	<input type="checkbox"/>
PAH's (8310 or 8270 SIMS)	<input type="checkbox"/>
RCRA 8 Metals	<input checked="" type="checkbox"/>
Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	<input type="checkbox"/>
8081 Pesticides / 8082 PCB's	<input type="checkbox"/>
8260B (VOA)	<input checked="" type="checkbox"/>
8270 (Semi-VOA)	<input checked="" type="checkbox"/>
RCI	<input checked="" type="checkbox"/>
Air Bubbles (Y or N)	<input type="checkbox"/>

Date: 9-18-18 Time: 1548 Relinquished by: Joshua Messenger  
 Date: 09/18/18 Time: 15:48 Received by: Devin Jarcinovic  
 Date: \_\_\_\_\_ Time: \_\_\_\_\_ Relinquished by: \_\_\_\_\_  
 Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received by: \_\_\_\_\_

Remarks: Client

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



**DEPARTMENT OF THE AIR FORCE**  
377TH AIR BASE WING (AFGSC)

13 August 2018

MEMORANDUM FOR: AFCEC/CZO

FROM: 377 MSG/CEIE (Solid Waste Program Manager)

SUBJECT: Landfill Disposal

Reference: EA Engineering, Science, & Technology, Inc, letter dated: 26 July 2018  
USACE Contract No. W912DR-12-D-0006-DM01

Disposal of non-hazardous soil cuttings from groundwater monitoring well KAFB-106240

1. Authorization is granted to EA to dispose of soil generated from installation of groundwater monitoring well KAFB-106240, in support of the Bulk Fuels Facility project, at the Kirtland AFB Construction & Demolition Landfill. The soil will be delivered to the landfill by Advanced Chemical Transport Environmental Services, Inc (ACT), and will be in one 15-cubic-yard roll-off container labeled HTB-1. The roll-off will be transported using one of two 2015 Western Star Roll Off Trucks depending on ACT's vehicle availability: either NM license plate WD121651, or NM license plate WD124756. Lab results are on file in the Solid Waste Management office. EA shall be issued a Kirtland AFB landfill pass for this disposal action. A copy of this letter will accompany the roll-off and will be left with the gate keeper at the landfill.
2. Please direct questions to me at 853-2486.

WHEELOCK.K  
ATRINA.E.140  
2749586  
KATRINA E. WHEELOCK  
Solid Waste Program Manager  
Environmental Management

Digitally signed by  
WHEELOCK.KATRINA.E.  
1402749586  
Date: 2018.08.13  
11:28:26 -06'00'



**DEPARTMENT OF THE AIR FORCE**  
377TH AIR BASE WING (AFGSC)

14 August 2018

MEMORANDUM FOR: AFCEC/CZO

FROM: 377 MSG/CEIE (Solid Waste Program Manager)

SUBJECT: Landfill Disposal

Reference: EA Engineering, Science, & Technology, Inc, letters (3) dated: 26 July 2018  
USACE Contract No. W912DR-12-D-0006-DM01

Disposal of non-hazardous soil cuttings from groundwater monitoring well KAFB-106240

1. Authorization is granted to EA to dispose of soil generated from installation of groundwater monitoring well KAFB-106240, in support of the Bulk Fuels Facility project, at the Kirtland AFB Construction & Demolition Landfill. The soil will be delivered to the landfill by Advanced Chemical Transport Environmental Services, Inc (ACT), and will be in a total of three roll-off containers: one 15 cubic yard container labeled HTB-2, and two 20 cubic yard containers labeled 20B004 and 22023. All roll-offs will be transported using one of two 2015 Western Star Roll Off Trucks depending on ACT's vehicle availability: either NM license plate WD121651, or NM license plate WD124756. Lab results are on file in the Solid Waste Management office. EA shall be issued a Kirtland AFB landfill pass for this disposal action. A copy of this letter will accompany the roll-off and will be left with the gate keeper at the landfill.

2. Please direct questions to me at 853-2486.

**WHEELOCK**, Digitally signed by  
WHEELOCK.KATRIN  
**KATRINA.E.1** A.E.1402749586  
**402749586** Date: 2018.08.14  
09:59:31 -06'00'  
KATRINA E. WHEELOCK  
Solid Waste Program Manager  
Environmental Management



EA Engineering, Science, & Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, New Mexico 87102  
Phone: (505) 224-9013

August 21, 2018

Ms. Katrina Wheelock  
Solid Waste Program Manager  
Environmental Management  
377 MSG/CEIE  
Kirtland AFB, New Mexico 87117

Subject: Request to dispose non-hazardous soil cuttings at Kirtland C&D Landfill  
Roll-off Identification: KAFB-106243-1 (Bin ID #0126.20), KAFB-106243-2 (Bin ID # none)  
KAFB-106243-3 (Bin ID #0210.20)  
USACE Contract No. W912DR-12-D-0006-DM01

Dear Ms. Wheelock,

EA Engineering, Science, and Technology, Inc., PBC (EA) is requesting permission to dispose of non-hazardous soil drill cuttings and plastic liners from three roll-off containers to the Kirtland Air Force Base (AFB) Construction and Demolition (C&D) debris landfill. Roll-off bins included in this request are:

- EA identification of KAFB-106243-1 (Bin ID #0126.20) contains approximately 9 cubic yards of soil.
- EA identification of KAFB-106243-2 (Bin ID # none located) contains approximately 12 cubic yards of soil.
- EA identification of KAFB-106243-3 (Bin ID #0210.20) contains approximately 7 cubic yards of soil.

Between June and July 2018 EA installed a groundwater monitoring well, KAFB-106243, associated with the Kirtland Bulk Fuels Facility environmental restoration project. Well KAFB-106243 is located on City of Albuquerque property on Dakota Street SE north of Bullhead Park. Drill cuttings were containerized in a plastic-lined, steel, roll-off pending laboratory analysis for waste characterization. Any excess moisture in the bin was stabilized using Hydrosorb®, a superabsorbent polymer. All roll-off bins are currently residing in the EA investigation derived waste yard near 1601 Perimeter Circle SE, on Kirtland AFB.

One five-point composite waste characterization sample was collected from each roll-off bin and delivered to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis. The sample was analyzed for all the required parameters per the Kirtland AFB Landfill Acceptance Memorandum (January 2009). The attached analytical results (Report 1807D03) for each composite sample confirms the drill cuttings meet waste acceptance requirements for disposal at the Kirtland C&D landfill.



W912DR-12-D-0006-DM01  
 Kirtland Air Force Base Bulk Fuels Facility Expansion  
 of the Dissolved Plume Groundwater Treatment System Design  
 2 May 2017  
 Page 2 of 2

All of the roll-off containers are owned and/or leased by Advanced Chemical Transport Environmental Services Inc. (ACT) with roll-off identification number, when present, marked clearly on the roll off. ACT will utilize one of the following vehicles for waste transport:

- 2015 Western Star Roll Off Truck, License #: WD121651, registered in New Mexico
- 2015 Western Star Roll Off Truck, License #: WD124756, registered in New Mexico

Ms. Jeanne Dye-Porto (AFCEC/CZO) has reviewed this package and authorized EA to forward it for your review. EA respectfully requests your review of the attached summary table and analytical data for determination if disposal can be authorized at the Kirtland AFB C&D landfill. Upon receiving notification of Kirtland AFB's acceptance of the waste, EA will coordinate transport and disposal of the roll-off contents with ACT.

EA's Kirtland AFB Point of Contact is Mr. Scott Clark; 505-846-9017.

If you have any questions, please do not hesitate to contact me at 505-266-2225, or via e-mail at [landress@eaest.com](mailto:landress@eaest.com).

Sincerely,

Lane Address, PG

Attachments: Summary Analytical Table  
 Hall Environmental Analysis Laboratory Order No: Report 1807D03

cc: Jeanne Dye-Porto, [jeanne.dye-porto@us.af.mil](mailto:jeanne.dye-porto@us.af.mil)  
 Scott Clark, [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)  
 Sheen Kottkamp, [sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)  
 Melissa Clark, [melissa.clark.8@us.af.mil](mailto:melissa.clark.8@us.af.mil)  
 Ben Moayyad, [Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)  
 Devon Jercinovic, [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
 Bernie Bockisch, [bbockisch@eaest.com](mailto:bbockisch@eaest.com)  
 Earl Morse, [emorse@eaest.com](mailto:emorse@eaest.com)

		LOCATION CODE					
		FIELD SAMPLE ID		Rolloff Bin 243-1			
		SAMPLE DATE		23-Jul-18			
		SAMPLE PURPOSE		Waste Characterization			
		ROLL-OFF NO.		KAFB-106243-1			
Parameter	Method	Analyte	Units	TCLP Regulatory Level <sup>a</sup> or KAFB Limits <sup>b</sup>	Result	QUAL	PQL
RCRA Characteristics	SW1010A Mod	IGNITABILITY	°F	See footnote <sup>c</sup>	> 170	--	--
	SW9012B	REACTIVE CYANIDE (as total)	mg/kg	NE	ND	--	0.25
	SW9034	REACTIVE SULFIDE (as total)	mg/kg	NE	ND	--	25
	SW9045D	CORROSIVITY (pH)	S.U.	≥2 or ≤12.5	8.74	J	--
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.002
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.002
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0
		BARIUM	mg/L	100	ND	--	100
		CADMIUM	mg/L	1	ND	--	1.0
		CHROMIUM	mg/L	5	ND	--	5.0
		LEAD	mg/L	5	ND	--	5.0
		SELENIUM	mg/L	1	ND	--	1.0
		SILVER	mg/L	5	ND	--	5.0
TCLP PESTICIDES	SW1311/7470A	MERCURY	mg/L	0.02	ND	--	0.020
		CHLORDANE	mg/L	0.03	ND	--	0.030
		ENDRIN	mg/L	0.02	ND	--	0.020
		GAMMA-BHC (LINDANE)	mg/L	0.4	ND	--	0.40
		HEPTACHLOR	mg/L	0.008	ND	--	0.0080
		HEPTACHLOR EPOXIDE	mg/L	0.008	ND	--	0.0080
		METHOXYCHLOR	mg/L	10	ND	--	10
		TOXAPHENE	mg/L	0.5	ND	--	0.50
TCLP SVOCs	SW1311/8270C	2,4,5-TRICHLOROPHENOL	mg/L	400	ND	--	400
		2,4,6-TRICHLOROPHENOL	mg/L	2	ND	--	2.0
		2,4-DINITROTOLUENE	mg/L	0.13	ND	--	0.13
		2-METHYLPHENOL (o-Cresol)	mg/L	200	ND	--	200
		3- and 4-METHYLPHENOL (m- and o-Cresol)	mg/L	200	ND	--	200
		HEXACHLOROBENZENE	mg/L	0.13	ND	--	0.13
		HEXACHLOROBUTADIENE	mg/L	0.5	ND	--	0.50
		HEXACHLOROETHANE	mg/L	3	ND	--	3.0
		NITROBENZENE	mg/L	2	ND	--	2.0
		PENTACHLOROPHENOL	mg/L	100	ND	--	100
TCLP VOCs	SW1311/8260B	PYRIDINE	mg/L	5	ND	--	5.0
		CRESOLS, TOTAL	mg/L	200	ND	--	200
		1,1-DICHLOROETHENE	mg/L	0.7	ND	--	0.70
		1,2-DICHLOROETHANE	mg/L	0.5	ND	--	0.50
		1,4-DICHLOROETHANE	mg/L	7.5	ND	--	7.5
		2-BUTANONE (MEK)	mg/L	200	ND	--	200
		BENZENE	mg/L	0.5	ND	--	0.50
		CARBON TETRACHLORIDE	mg/L	0.5	ND	--	0.50
		CHLOROETHENE	mg/L	100	ND	--	100
		CHLOROFORM	mg/L	6.0	ND	--	6.0
		TETRACHLOROETHENE	mg/L	0.7	ND	--	0.70
		TRICHLOROETHENE	mg/L	0.5	ND	--	0.50
		VINYL CHLORIDE	mg/L	0.2	ND	--	0.20
TPH	SW8015M/D	DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	8.6
		MOTOR OIL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	43
		GASOLINE RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	5.0
VOLATILES (BTEX)	SW8260B	BENZENE	mg/kg	10	ND	--	0.025
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.050
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.050
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.099

Notes:

<sup>a</sup>TCLP Regulatory Level - Resource Conservation Recovery Act (RCRA) hazardous waste characteristic limits per 40CFR Part 261 Subpart C, Section 261.20 - 261.24.

<sup>b</sup>KAFB Limits - Kirtland AFB landfill requirements per the Department of Air Force Technical Memorandum for Kirtland AFB/Department of Energy/Sandia National Laboratories Restoration Agencies and Their Commercial Contractors (2009).

<sup>c</sup>Ignitability characteristic for solids from 40 CFR Part 261.21: "It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of moisture, or spontaneous chemical change, and when ignited burns so vigorously and persistently that it creates a hazard."

<sup>d</sup>KAFB limit for TPH measured as the sum of gasoline, diesel and motor oil range organics.

<sup>e</sup>KAFB limit for BTEX measured as the sum of benzene, toluene, ethylbenzene, and total xylenes.

> - greater than

BTEX - benzene, toluene, ethylbenzene, total xylenes

°F - degrees fahrenheit

J - estimated value

mg/L - milligram per liter

mg/kg - milligram per kilogram

NE - not established

ND - not detected above the PQL

PQL - practical quantitation limit

QUAL - laboratory data qualifier

Shade - analyte detected above the detection limit

Shade and Bold - analyte detected above KAFB Landfill acceptance limit or TCLP Regulatory Level.

SVOCs - semivolatile organic compounds

S.U. - Standard units

TCLP - Toxicity Characteristic Leaching Procedure

TPH - total petroleum hydrocarbons

VOCs - volatile organic compounds

		LOCATION CODE							
		FIELD SAMPLE ID	Rolloff Bin 243-2						
		SAMPLE DATE	23-Jul-18						
		SAMPLE PURPOSE	Waste Characterization						
		ROLL-OFF NO.	KAFB-106243-2						
Parameter	Method	Analyte	Units	TCLP Regulatory Level <sup>a</sup> or KAFB Limits <sup>b</sup>	Result	QUAL	PQL		
RCRA Characteristics	SW1010A Mod	IGNITABILITY	°F	See footnote <sup>c</sup>	> 170	--	--		
	SW9012B	REACTIVE CYANIDE (as total)	mg/kg	NE	ND	--	0.25		
	SW9034	REACTIVE SULFIDE (as total)	mg/kg	NE	ND	--	25		
	SW9045D	CORROSIVITY (pH)	S. U.	≥2 or ≤12.5	8.71	J	--		
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.002		
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.002		
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0		
		BARIUM	mg/L	100	ND	--	100		
		CADMIUM	mg/L	1	ND	--	1.0		
		CHROMIUM	mg/L	5	ND	--	5.0		
		LEAD	mg/L	5	ND	--	5.0		
		SELENIUM	mg/L	1	ND	--	1.0		
		SILVER	mg/L	5	ND	--	5.0		
SW1311/7470A	MERCURY	mg/L	0.02	ND	--	0.020			
TCLP PESTICIDES	SW1311/8081	CHLORDANE	mg/L	0.03	ND	--	0.030		
		ENDRIN	mg/L	0.02	ND	--	0.020		
		GAMMA-BHC (LINDANE)	mg/L	0.4	ND	--	0.40		
		HEPTACHLOR	mg/L	0.008	ND	--	0.0080		
		HEPTACHLOR EPOXIDE	mg/L	0.008	ND	--	0.0080		
		METHOXYCHLOR	mg/L	10	ND	--	10		
		TOXAPHENE	mg/L	0.5	ND	--	0.50		
TCLP SVOCs	SW1311/8270C	2,4,5-TRICHLOROPHENOL	mg/L	400	ND	--	400		
		2,4,6-TRICHLOROPHENOL	mg/L	2	ND	--	2.0		
		2,4-DINITROTOLUENE	mg/L	0.13	ND	--	0.13		
		2-METHYLPHENOL (o-Cresol)	mg/L	200	ND	--	200		
		3- and 4-METHYLPHENOL (m- and o-Cresol)	mg/L	200	ND	--	200		
		HEXACHLOROBENZENE	mg/L	0.13	ND	--	0.13		
		HEXACHLOROBUTADIENE	mg/L	0.5	ND	--	0.50		
		HEXACHLOROETHANE	mg/L	3	ND	--	3.0		
		NITROBENZENE	mg/L	2	ND	--	2.0		
		PENTACHLOROPHENOL	mg/L	100	ND	--	100		
		PYRIDINE	mg/L	5	ND	--	5.0		
		CRESOLS, TOTAL	mg/L	200	ND	--	200		
TCLP VOCs	SW1311/8260B	1,1-DICHLOROETHENE	mg/L	0.7	ND	--	0.70		
		1,2-DICHLOROETHANE	mg/L	0.5	ND	--	0.50		
		1,4-DICHLOROETHANE	mg/L	7.5	ND	--	7.5		
		2-BUTANONE (MEK)	mg/L	200	ND	--	200		
		BENZENE	mg/L	0.5	ND	--	0.50		
		CARBON TETRACHLORIDE	mg/L	0.5	ND	--	0.50		
		CHLOROETHENE	mg/L	100	ND	--	100		
		CHLOROFORM	mg/L	6.0	ND	--	6.0		
		TETRACHLOROETHENE	mg/L	0.7	ND	--	0.70		
		TRICHLOROETHENE	mg/L	0.5	ND	--	0.50		
		VINYL CHLORIDE	mg/L	0.2	ND	--	0.20		
		TPH	SW8015M/D	DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	8.9
				MOTOR OIL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	45
GASOLINE RANGE ORGANICS	mg/kg			100 <sup>d</sup>	ND	--	4.8		
VOLATILES (BTEX)	SW8260B	BENZENE	mg/kg	10	ND	--	0.024		
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.048		
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.048		
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.097		

Notes:

<sup>a</sup>TCLP Regulatory Level - Resource Conservation Recovery Act (RCRA) hazardous waste characteristic limits per 40CFR Part 261 Subpart C, Section 261.20 - 261.24.

<sup>b</sup>KAFB Limits - Kirtland AFB landfill requirements per the Department of Air Force Technical Memorandum for Kirtland AFB/Department of Energy/Sandia National Laboratories Restoration Agencies and Their Commercial Contractors (2009).

<sup>c</sup>Ignitability characteristic for solids from 40 CFR Part 261.21: "It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of

<sup>d</sup>KAFB limit for TPH measured as the sum of gasoline, diesel and motor oil range organics.

<sup>e</sup>KAFB limit for BTEX measured as the sum of benzene, toluene, ethylbenzene, and total xylenes.

> - greater than

BTEX - benzene, toluene, ethylbenzene, total xylenes

°F - degrees fahrenheit

J - estimated value

mg/L - milligram per liter

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SVOCs - semivolatile organic compounds

S. U. - Standard units

TCLP - Toxicity Characteristic Leaching Procedure

TPH - total petroleum hydrocarbons

VOCs - volatile organic compounds

		LOCATION CODE					
		FIELD SAMPLE ID	Rolloff Bin 243-3				
		SAMPLE DATE	23-Jul-18				
		SAMPLE PURPOSE	Waste Characterization				
		ROLL-OFF NO.	KAFB-106243-3				
Parameter	Method	Analyte	Units	TCLP Regulatory Level <sup>a</sup> or KAFB Limits <sup>b</sup>	Result	QUAL	PQL
RCRA Characteristics	SW1010A Mod	IGNITABILITY	°F	See footnote <sup>c</sup>	> 170	--	--
	SW9012B	REACTIVE CYANIDE (as total)	mg/kg	NE	ND	--	0.25
	SW9034	REACTIVE SULFIDE (as total)	mg/kg	NE	ND	--	25
	SW9045D	CORROSIVITY (pH)	S.U.	≥2 or ≤12.5	9.04	J	--
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.002
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.002
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0
		BARIIUM	mg/L	100	ND	--	100
		CADIUM	mg/L	1	ND	--	1.0
		CHROMIUM	mg/L	5	ND	--	5.0
		LEAD	mg/L	5	ND	--	5.0
		SELENIUM	mg/L	1	ND	--	1.0
		SILVER	mg/L	5	ND	--	5.0
		MERCURY	mg/L	0.02	ND	--	0.020
TCLP PESTICIDES	SW1311/8081	CHLORDANE	mg/L	0.03	ND	--	0.030
		ENDRIN	mg/L	0.02	ND	--	0.020
		GAMMA-BHC (LINDANE)	mg/L	0.4	ND	--	0.40
		HEPTACHLOR	mg/L	0.008	ND	--	0.0080
		HEPTACHLOR EPOXIDE	mg/L	0.008	ND	--	0.0080
		METHOXYCHLOR	mg/L	10	ND	--	10
		TOXAPHENE	mg/L	0.5	ND	--	0.50
TCLP SVOCs	SW1311/8270C	2,4,5-TRICHLOROPHENOL	mg/L	400	ND	--	400
		2,4,6-TRICHLOROPHENOL	mg/L	2	ND	--	2.0
		2,4-DINITROTOLUENE	mg/L	0.13	ND	--	0.13
		2-METHYLPHENOL (o-Cresol)	mg/L	200	ND	--	200
		3- and 4-METHYLPHENOL (m- and o-Cresol)	mg/L	200	ND	--	200
		HEXACHLOROBENZENE	mg/L	0.13	ND	--	0.13
		HEXACHLOROBUTADIENE	mg/L	0.5	ND	--	0.50
		HEXACHLOROETHANE	mg/L	3	ND	--	3.0
		NITROBENZENE	mg/L	2	ND	--	2.0
		PENTACHLOROPHENOL	mg/L	100	ND	--	100
		PYRIDINE	mg/L	5	ND	--	5.0
		CRESOLS, TOTAL	mg/L	200	ND	--	200
TCLP VOCS	SW1311/8260B	1,1-DICHLOROETHENE	mg/L	0.7	ND	--	0.70
		1,2-DICHLOROETHANE	mg/L	0.5	ND	--	0.50
		1,4-DICHLOROETHENE	mg/L	7.5	ND	--	7.5
		2-BUTANONE (MEK)	mg/L	200	ND	--	200
		BENZENE	mg/L	0.5	ND	--	0.50
		CARBON TETRACHLORIDE	mg/L	0.5	ND	--	0.50
		CHLOROBENZENE	mg/L	100	ND	--	100
		CHLOROFORM	mg/L	6.0	ND	--	6.0
		TETRACHLOROETHENE	mg/L	0.7	ND	--	0.70
		TRICHLOROETHENE	mg/L	0.5	ND	--	0.50
		VINYL CHLORIDE	mg/L	0.2	ND	--	0.20
TPH	SW8015M/D	DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	9.5
		MOTOR OIL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	48
		GASOLINE RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	4.9
VOLATILES (BTEX)	SW8260B	BENZENE	mg/kg	10	ND	--	0.024
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.049
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.049
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.097

Notes:

<sup>a</sup>TCLP Regulatory Level - Resource Conservation Recovery Act (RCRA) hazardous waste characteristic limits per 40CFR Part 261 Subpart C, Section 261.20 - 261.24.

<sup>b</sup>KAFB Limits - Kirtland AFB landfill requirements per the Department of Air Force Technical Memorandum for Kirtland AFB/Department of Energy/Sandia National Laboratories Restoration Agencies and Their Commercial Contractors (2009).

<sup>c</sup>Ignitability characteristic for solids from 40 CFR Part 261.21: "It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of

<sup>d</sup>KAFB limit for TPH measured as the sum of gasoline, diesel and motor oil range organics.

<sup>e</sup>KAFB limit for BTEX measured as the sum of benzene, toluene, ethylbenzene, and total xylenes.

> - greater than

BTEX - benzene, toluene, ethylbenzene, total xylenes

°F - degrees fahrenheit

J - estimated value

mg/L - milligram per liter

mg/kg - milligram per kilogram

NE - not established

ND - not detected above the PQL

PQL - practical quantitation limit

QUAL - laboratory data qualifier

Shade - analyte detected above the detection limit

Shade and Bold - analyte detected above KAFB Landfill acceptance limit or TCLP Regulatory Level.

SVOCs - semivolatile organic compounds

S.U. - Standard units

TCLP - Toxicity Characteristic Leaching Procedure

TPH - total petroleum hydrocarbons

VOCs - volatile organic compounds

106243-1,2,3



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

August 15, 2018

Earl Morse  
 EA Engineering  
 320 Gold Ave SW Suite 1210  
 Albuquerque, NM 87102  
 TEL: (505) 224-9013  
 FAX

RE: Kirtland AFB BFF

OrderNo.: 1807D03

Dear Earl Morse:

Hall Environmental Analysis Laboratory received 3 sample(s) on 7/23/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman  
 Laboratory Manager  
 4901 Hawkins NE  
 Albuquerque, NM 87109

## Analytical Report

Lab Order 1807D03

Date Reported: 8/15/2018

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: EA Engineering

Client Sample ID: Rolloff Bin 243-1

Project: Kirtland AFB BFF

Collection Date: 7/23/2018 9:53:00 AM

Lab ID: 1807D03-001

Matrix: SOIL

Received Date: 7/23/2018 12:30:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: rde
Mercury	ND	0.020		mg/L	1	8/1/2018 3:46:49 PM	39538
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: JLF
Arsenic	ND	5.0		mg/L	1	8/2/2018 12:35:52 PM	39510
Barium	ND	100		mg/L	1	8/1/2018 11:46:58 AM	39510
Cadmium	ND	1.0		mg/L	1	8/1/2018 11:46:58 AM	39510
Chromium	ND	5.0		mg/L	1	8/1/2018 11:46:58 AM	39510
Lead	ND	5.0		mg/L	1	8/1/2018 1:37:05 PM	39510
Selenium	ND	1.0		mg/L	1	8/1/2018 11:46:58 AM	39510
Silver	ND	5.0		mg/L	1	8/1/2018 11:46:58 AM	39510
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: AG
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/30/2018 1:41:43 PM	39463
Surr: BFB	111	70-130		%Rec	1	7/30/2018 1:41:43 PM	39463
<b>EPA METHOD 8081: PESTICIDES TCLP</b>							Analyst: JME
Chlordane	ND	0.030		mg/L	1	8/8/2018 3:59:34 PM	39595
Endrin	ND	0.020		mg/L	1	8/8/2018 3:59:34 PM	39595
gamma-BHC (Lindane)	ND	0.40		mg/L	1	8/8/2018 3:59:34 PM	39595
Heptachlor	ND	0.0080		mg/L	1	8/8/2018 3:59:34 PM	39595
Heptachlor epoxide	ND	0.0080		mg/L	1	8/8/2018 3:59:34 PM	39595
Methoxychlor	ND	10		mg/L	1	8/8/2018 3:59:34 PM	39595
Toxaphene	ND	0.50		mg/L	1	8/8/2018 3:59:34 PM	39595
Surr: Decachlorobiphenyl	90.8	58.3-109		%Rec	1	8/8/2018 3:59:34 PM	39595
Surr: Tetrachloro-m-xylene	75.7	40.1-101		%Rec	1	8/8/2018 3:59:34 PM	39595
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: lrm
Diesel Range Organics (DRO)	ND	8.6		mg/Kg	1	8/1/2018 1:51:08 AM	39489
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	8/1/2018 1:51:08 AM	39489
Surr: DNOP	86.7	50.6-138		%Rec	1	8/1/2018 1:51:08 AM	39489
<b>EPA METHOD 8270C TCLP</b>							Analyst: DAM
2-Methylphenol	ND	200		mg/L	1	8/8/2018 4:39:03 PM	39596
3+4-Methylphenol	ND	200		mg/L	1	8/8/2018 4:39:03 PM	39596
2,4-Dinitrotoluene	ND	0.13		mg/L	1	8/8/2018 4:39:03 PM	39596
Hexachlorobenzene	ND	0.13		mg/L	1	8/8/2018 4:39:03 PM	39596
Hexachlorobutadiene	ND	0.50		mg/L	1	8/8/2018 4:39:03 PM	39596
Hexachloroethane	ND	3.0		mg/L	1	8/8/2018 4:39:03 PM	39596
Nitrobenzene	ND	2.0		mg/L	1	8/8/2018 4:39:03 PM	39596
Pentachlorophenol	ND	100		mg/L	1	8/8/2018 4:39:03 PM	39596
Pyridine	ND	5.0		mg/L	1	8/8/2018 4:39:03 PM	39596
2,4,5-Trichlorophenol	ND	400		mg/L	1	8/8/2018 4:39:03 PM	39596

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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## Analytical Report

Lab Order 1807D03

Date Reported: 8/15/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering  
 Project: Kirtland AFB BFF  
 Lab ID: 1807D03-001

Matrix: SOIL

Client Sample ID: Rolloff Bin 243-1  
 Collection Date: 7/23/2018 9:53:00 AM  
 Received Date: 7/23/2018 12:30:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C TCLP</b>							Analyst: DAM
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	8/8/2018 4:39:03 PM	39596
Cresols, Total	ND	200		mg/L	1	8/8/2018 4:39:03 PM	39596
Surr: 2-Fluorophenol	47.7	15-102		%Rec	1	8/8/2018 4:39:03 PM	39596
Surr: Phenol-d5	37.9	15-87.7		%Rec	1	8/8/2018 4:39:03 PM	39596
Surr: 2,4,6-Tribromophenol	65.7	39.9-111		%Rec	1	8/8/2018 4:39:03 PM	39596
Surr: Nitrobenzene-d5	74.7	35.1-107		%Rec	1	8/8/2018 4:39:03 PM	39596
Surr: 2-Fluorobiphenyl	72.8	36.7-100		%Rec	1	8/8/2018 4:39:03 PM	39596
Surr: 4-Terphenyl-d14	85.6	42.6-129		%Rec	1	8/8/2018 4:39:03 PM	39596
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: AG
Benzene	ND	0.025		mg/Kg	1	7/30/2018 1:41:43 PM	39463
Toluene	ND	0.050		mg/Kg	1	7/30/2018 1:41:43 PM	39463
Ethylbenzene	ND	0.050		mg/Kg	1	7/30/2018 1:41:43 PM	39463
Xylenes, Total	ND	0.099		mg/Kg	1	7/30/2018 1:41:43 PM	39463
Surr: 4-Bromofluorobenzene	124	70-130		%Rec	1	7/30/2018 1:41:43 PM	39463
Surr: Toluene-d8	88.3	70-130		%Rec	1	7/30/2018 1:41:43 PM	39463
<b>VOLATILES BY 8260B/1311</b>							Analyst: DJF
Benzene	ND	0.50		mg/L	1	8/2/2018 12:31:15 AM	39479
2-Butanone	ND	200		mg/L	1	8/2/2018 12:31:15 AM	39479
Carbon Tetrachloride	ND	0.50		mg/L	1	8/2/2018 12:31:15 AM	39479
Chlorobenzene	ND	100		mg/L	1	8/2/2018 12:31:15 AM	39479
Chloroform	ND	6.0		mg/L	1	8/2/2018 12:31:15 AM	39479
1,4-Dichlorobenzene	ND	7.5		mg/L	1	8/2/2018 12:31:15 AM	39479
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	8/2/2018 12:31:15 AM	39479
1,1-Dichloroethene	ND	0.70		mg/L	1	8/2/2018 12:31:15 AM	39479
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	8/2/2018 12:31:15 AM	39479
Trichloroethene (TCE)	ND	0.50		mg/L	1	8/2/2018 12:31:15 AM	39479
Vinyl chloride	ND	0.20		mg/L	1	8/2/2018 12:31:15 AM	39479
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	8/2/2018 12:31:15 AM	39479
Surr: 4-Bromofluorobenzene	107	57.3-148		%Rec	1	8/2/2018 12:31:15 AM	39479
Surr: Dibromofluoromethane	98.8	70-130		%Rec	1	8/2/2018 12:31:15 AM	39479
Surr: Toluene-d8	103	70-130		%Rec	1	8/2/2018 12:31:15 AM	39479

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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## Analytical Report

Lab Order 1807D03

Date Reported: 8/15/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: Rolloff Bin 243-2

Project: Kirtland AFB BFF

Collection Date: 7/23/2018 10:14:00 AM

Lab ID: 1807D03-002

Matrix: SOIL

Received Date: 7/23/2018 12:30:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							
Analyst: rde							
Mercury	ND	0.020		mg/L	1	8/1/2018 3:48:33 PM	39538
<b>EPA METHOD 6010B: TCLP METALS</b>							
Analyst: JLF							
Arsenic	ND	5.0		mg/L	1	8/2/2018 12:37:14 PM	39510
Barium	ND	100		mg/L	1	8/1/2018 11:51:07 AM	39510
Cadmium	ND	1.0		mg/L	1	8/1/2018 11:51:07 AM	39510
Chromium	ND	5.0		mg/L	1	8/1/2018 11:51:07 AM	39510
Lead	ND	5.0		mg/L	1	8/1/2018 1:38:39 PM	39510
Selenium	ND	1.0		mg/L	1	8/1/2018 11:51:07 AM	39510
Silver	ND	5.0		mg/L	1	8/1/2018 11:51:07 AM	39510
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							
Analyst: AG							
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/30/2018 3:14:54 PM	39463
Surr: BFB	113	70-130		%Rec	1	7/30/2018 3:14:54 PM	39463
<b>EPA METHOD 8081: PESTICIDES TCLP</b>							
Analyst: JME							
Chlordane	ND	0.030		mg/L	1	8/8/2018 4:12:39 PM	39595
Endrin	ND	0.020		mg/L	1	8/8/2018 4:12:39 PM	39595
gamma-BHC (Lindane)	ND	0.40		mg/L	1	8/8/2018 4:12:39 PM	39595
Heptachlor	ND	0.0080		mg/L	1	8/8/2018 4:12:39 PM	39595
Heptachlor epoxide	ND	0.0080		mg/L	1	8/8/2018 4:12:39 PM	39595
Methoxychlor	ND	10		mg/L	1	8/8/2018 4:12:39 PM	39595
Toxaphene	ND	0.50		mg/L	1	8/8/2018 4:12:39 PM	39595
Surr: Decachlorobiphenyl	89.2	58.3-109		%Rec	1	8/8/2018 4:12:39 PM	39595
Surr: Tetrachloro-m-xylene	77.8	40.1-101		%Rec	1	8/8/2018 4:12:39 PM	39595
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							
Analyst: lrm							
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	8/1/2018 2:57:43 AM	39489
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	8/1/2018 2:57:43 AM	39489
Surr: DNOP	88.1	50.6-138		%Rec	1	8/1/2018 2:57:43 AM	39489
<b>EPA METHOD 8270C TCLP</b>							
Analyst: DAM							
2-Methylphenol	ND	200		mg/L	1	8/8/2018 5:09:04 PM	39596
3+4-Methylphenol	ND	200		mg/L	1	8/8/2018 5:09:04 PM	39596
2,4-Dinitrotoluene	ND	0.13		mg/L	1	8/8/2018 5:09:04 PM	39596
Hexachlorobenzene	ND	0.13		mg/L	1	8/8/2018 5:09:04 PM	39596
Hexachlorobutadiene	ND	0.50		mg/L	1	8/8/2018 5:09:04 PM	39596
Hexachloroethane	ND	3.0		mg/L	1	8/8/2018 5:09:04 PM	39596
Nitrobenzene	ND	2.0		mg/L	1	8/8/2018 5:09:04 PM	39596
Pentachlorophenol	ND	100		mg/L	1	8/8/2018 5:09:04 PM	39596
Pyridine	ND	5.0		mg/L	1	8/8/2018 5:09:04 PM	39596
2,4,5-Trichlorophenol	ND	400		mg/L	1	8/8/2018 5:09:04 PM	39596

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**Hall Environmental Analysis Laboratory, Inc.**

Analytical Report  
 Lab Order 1807D03  
 Date Reported: 8/15/2018

**CLIENT:** EA Engineering **Client Sample ID:** Rolloff Bin 243-2  
**Project:** Kirtland AFB BFF **Collection Date:** 7/23/2018 10:14:00 AM  
**Lab ID:** 1807D03-002 **Matrix:** SOIL **Received Date:** 7/23/2018 12:30:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C TCLP</b>							Analyst: <b>DAM</b>
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	8/8/2018 5:09:04 PM	39596
Cresols, Total	ND	200		mg/L	1	8/8/2018 5:09:04 PM	39596
Surr: 2-Fluorophenol	29.3	15-102		%Rec	1	8/8/2018 5:09:04 PM	39596
Surr: Phenol-d5	26.1	15-87.7		%Rec	1	8/8/2018 5:09:04 PM	39596
Surr: 2,4,6-Tribromophenol	39.2	39.9-111	S	%Rec	1	8/8/2018 5:09:04 PM	39596
Surr: Nitrobenzene-d5	42.5	35.1-107		%Rec	1	8/8/2018 5:09:04 PM	39596
Surr: 2-Fluorobiphenyl	43.2	36.7-100		%Rec	1	8/8/2018 5:09:04 PM	39596
Surr: 4-Terphenyl-d14	70.1	42.6-129		%Rec	1	8/8/2018 5:09:04 PM	39596
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	ND	0.024		mg/Kg	1	7/30/2018 3:14:54 PM	39463
Toluene	ND	0.048		mg/Kg	1	7/30/2018 3:14:54 PM	39463
Ethylbenzene	ND	0.048		mg/Kg	1	7/30/2018 3:14:54 PM	39463
Xylenes, Total	ND	0.097		mg/Kg	1	7/30/2018 3:14:54 PM	39463
Surr: 4-Bromofluorobenzene	127	70-130		%Rec	1	7/30/2018 3:14:54 PM	39463
Surr: Toluene-d8	88.0	70-130		%Rec	1	7/30/2018 3:14:54 PM	39463
<b>VOLATILES BY 8260B/1311</b>							Analyst: <b>DJF</b>
Benzene	ND	0.50		mg/L	1	8/2/2018 1:00:33 AM	39479
2-Butanone	ND	200		mg/L	1	8/2/2018 1:00:33 AM	39479
Carbon Tetrachloride	ND	0.50		mg/L	1	8/2/2018 1:00:33 AM	39479
Chlorobenzene	ND	100		mg/L	1	8/2/2018 1:00:33 AM	39479
Chloroform	ND	6.0		mg/L	1	8/2/2018 1:00:33 AM	39479
1,4-Dichlorobenzene	ND	7.5		mg/L	1	8/2/2018 1:00:33 AM	39479
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	8/2/2018 1:00:33 AM	39479
1,1-Dichloroethene	ND	0.70		mg/L	1	8/2/2018 1:00:33 AM	39479
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	8/2/2018 1:00:33 AM	39479
Trichloroethene (TCE)	ND	0.50		mg/L	1	8/2/2018 1:00:33 AM	39479
Vinyl chloride	ND	0.20		mg/L	1	8/2/2018 1:00:33 AM	39479
Surr: 1,2-Dichloroethane-d4	110	70-130		%Rec	1	8/2/2018 1:00:33 AM	39479
Surr: 4-Bromofluorobenzene	103	57.3-148		%Rec	1	8/2/2018 1:00:33 AM	39479
Surr: Dibromofluoromethane	102	70-130		%Rec	1	8/2/2018 1:00:33 AM	39479
Surr: Toluene-d8	99.0	70-130		%Rec	1	8/2/2018 1:00:33 AM	39479

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1807D03

Date Reported: 8/15/2018

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: EA Engineering

Client Sample ID: Rolloff Bin 243-3

Project: Kirtland AFB BFF

Collection Date: 7/23/2018 10:32:00 AM

Lab ID: 1807D03-003

Matrix: SOIL

Received Date: 7/23/2018 12:30:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b> Analyst: rde							
Mercury	ND	0.020		mg/L	1	8/1/2018 3:50:16 PM	39538
<b>EPA METHOD 6010B: TCLP METALS</b> Analyst: JLF							
Arsenic	ND	5.0		mg/L	1	8/2/2018 12:38:42 PM	39510
Barium	ND	100		mg/L	1	8/1/2018 11:52:55 AM	39510
Cadmium	ND	1.0		mg/L	1	8/1/2018 11:52:55 AM	39510
Chromium	ND	5.0		mg/L	1	8/1/2018 11:52:55 AM	39510
Lead	ND	5.0		mg/L	1	8/1/2018 1:40:11 PM	39510
Selenium	ND	1.0		mg/L	1	8/1/2018 11:52:55 AM	39510
Silver	ND	5.0		mg/L	1	8/1/2018 11:52:55 AM	39510
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b> Analyst: AG							
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/30/2018 4:25:05 PM	39463
Surr: BFB	108	70-130		%Rec	1	7/30/2018 4:25:05 PM	39463
<b>EPA METHOD 8081: PESTICIDES TCLP</b> Analyst: JME							
Chlordane	ND	0.030		mg/L	1	8/8/2018 4:25:47 PM	39595
Endrin	ND	0.020		mg/L	1	8/8/2018 4:25:47 PM	39595
gamma-BHC (Lindane)	ND	0.40		mg/L	1	8/8/2018 4:25:47 PM	39595
Heptachlor	ND	0.0080		mg/L	1	8/8/2018 4:25:47 PM	39595
Heptachlor epoxide	ND	0.0080		mg/L	1	8/8/2018 4:25:47 PM	39595
Methoxychlor	ND	10		mg/L	1	8/8/2018 4:25:47 PM	39595
Toxaphene	ND	0.50		mg/L	1	8/8/2018 4:25:47 PM	39595
Surr: Decachlorobiphenyl	93.9	58.3-109		%Rec	1	8/8/2018 4:25:47 PM	39595
Surr: Tetrachloro-m-xylene	75.2	40.1-101		%Rec	1	8/8/2018 4:25:47 PM	39595
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b> Analyst: Irm							
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	8/1/2018 3:19:48 AM	39489
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/1/2018 3:19:48 AM	39489
Surr: DNOP	87.9	50.6-138		%Rec	1	8/1/2018 3:19:48 AM	39489
<b>EPA METHOD 8270C TCLP</b> Analyst: DAM							
2-Methylphenol	ND	200		mg/L	1	8/8/2018 5:38:46 PM	39596
3+4-Methylphenol	ND	200		mg/L	1	8/8/2018 5:38:46 PM	39596
2,4-Dinitrotoluene	ND	0.13		mg/L	1	8/8/2018 5:38:46 PM	39596
Hexachlorobenzene	ND	0.13		mg/L	1	8/8/2018 5:38:46 PM	39596
Hexachlorobutadiene	ND	0.50		mg/L	1	8/8/2018 5:38:46 PM	39596
Hexachloroethane	ND	3.0		mg/L	1	8/8/2018 5:38:46 PM	39596
Nitrobenzene	ND	2.0		mg/L	1	8/8/2018 5:38:46 PM	39596
Pentachlorophenol	ND	100		mg/L	1	8/8/2018 5:38:46 PM	39596
Pyridine	ND	5.0		mg/L	1	8/8/2018 5:38:46 PM	39596
2,4,5-Trichlorophenol	ND	400		mg/L	1	8/8/2018 5:38:46 PM	39596

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1807D03

Date Reported: 8/15/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering  
 Project: Kirtland AFB BFF  
 Lab ID: 1807D03-003

Matrix: SOIL

Client Sample ID: Rolloff Bin 243-3  
 Collection Date: 7/23/2018 10:32:00 AM  
 Received Date: 7/23/2018 12:30:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C TCLP</b>							Analyst: DAM
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	8/8/2018 5:38:46 PM	39596
Cresols, Total	ND	200		mg/L	1	8/8/2018 5:38:46 PM	39596
Surr: 2-Fluorophenol	42.0	15-102		%Rec	1	8/8/2018 5:38:46 PM	39596
Surr: Phenol-d5	34.2	15-87.7		%Rec	1	8/8/2018 5:38:46 PM	39596
Surr: 2,4,6-Tribromophenol	61.7	39.9-111		%Rec	1	8/8/2018 5:38:46 PM	39596
Surr: Nitrobenzene-d5	63.9	35.1-107		%Rec	1	8/8/2018 5:38:46 PM	39596
Surr: 2-Fluorobiphenyl	66.2	36.7-100		%Rec	1	8/8/2018 5:38:46 PM	39596
Surr: 4-Terphenyl-d14	86.2	42.6-129		%Rec	1	8/8/2018 5:38:46 PM	39596
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: AG
Benzene	ND	0.024		mg/Kg	1	7/30/2018 4:25:05 PM	39463
Toluene	ND	0.049		mg/Kg	1	7/30/2018 4:25:05 PM	39463
Ethylbenzene	ND	0.049		mg/Kg	1	7/30/2018 4:25:05 PM	39463
Xylenes, Total	ND	0.097		mg/Kg	1	7/30/2018 4:25:05 PM	39463
Surr: 4-Bromofluorobenzene	121	70-130		%Rec	1	7/30/2018 4:25:05 PM	39463
Surr: Toluene-d8	85.0	70-130		%Rec	1	7/30/2018 4:25:05 PM	39463
<b>VOLATILES BY 8260B/1311</b>							Analyst: DJF
Benzene	ND	0.50		mg/L	1	8/2/2018 1:29:44 AM	39479
2-Butanone	ND	200		mg/L	1	8/2/2018 1:29:44 AM	39479
Carbon Tetrachloride	ND	0.50		mg/L	1	8/2/2018 1:29:44 AM	39479
Chlorobenzene	ND	100		mg/L	1	8/2/2018 1:29:44 AM	39479
Chloroform	ND	6.0		mg/L	1	8/2/2018 1:29:44 AM	39479
1,4-Dichlorobenzene	ND	7.5		mg/L	1	8/2/2018 1:29:44 AM	39479
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	8/2/2018 1:29:44 AM	39479
1,1-Dichloroethene	ND	0.70		mg/L	1	8/2/2018 1:29:44 AM	39479
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	8/2/2018 1:29:44 AM	39479
Trichloroethene (TCE)	ND	0.50		mg/L	1	8/2/2018 1:29:44 AM	39479
Vinyl chloride	ND	0.20		mg/L	1	8/2/2018 1:29:44 AM	39479
Surr: 1,2-Dichloroethane-d4	117	70-130		%Rec	1	8/2/2018 1:29:44 AM	39479
Surr: 4-Bromofluorobenzene	104	57.3-148		%Rec	1	8/2/2018 1:29:44 AM	39479
Surr: Dibromofluoromethane	110	70-130		%Rec	1	8/2/2018 1:29:44 AM	39479
Surr: Toluene-d8	105	70-130		%Rec	1	8/2/2018 1:29:44 AM	39479

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

1807003-0013 ROLLOFF BIN 243-1  
 Collected date/time: 07/23/18 09:53

SAMPLE RESULTS - 01  
 L1013158

CNE LAB. NATIONWIDE 

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		8/3/2018 6:42:53 AM	WG1147091
Fluic	1		8/3/2018 6:42:53 AM	WG1147094
Initial pH	9.29		8/3/2018 6:42:53 AM	WG1147094
Final pH	6.09		8/3/2018 6:42:53 AM	WG1147094



Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.250	1	08/02/2018 08:02	WG1145303

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		25.0	1	08/04/2018 15:15	WG1147295

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	8.74	TS	1	07/31/2018 14:45	WG1145320

Sample Narrative:  
 L1013158-01 WG1145335: 8.74 at 18.7C

Wet Chemistry by Method D931010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DN1 at 170		1	07/29/2018 09:18	WG1144608

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
2,4,5-TP (Sivex)	ND		0.00200	1	1	08/06/2018 20:23	WG1145303
2,4-C	ND		0.00200	10	1	08/06/2018 20:23	WG1145303
(S) 2,4-Dichlorophenyl Acetic Acid	55.2		14.0-158			08/06/2018 20:23	WG1145303

ACCOUNT:  
 Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
 L1013158

DATE/TIME:  
 08/08/18 10:01

1807D03-002B ROLLOFF BIN 243-2

SAMPLE RESULTS - 02

ONE LAB. NATIONWIDE 

Collected date/time: 07/23/18 10:14

L1013158

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		8/3/2018 6:42:53 AM	WG1147094
Fluid	1		8/3/2018 6:42:53 AM	WG1147094
Initial pH	8.98		8/3/2018 6:42:53 AM	WG1147094
Final pH	5.10		8/3/2018 6:42:53 AM	WG1147094

Tc

Ss

Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.250	1	08/02/2018 08:03	WG1145892

Cn

Sr

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		25.0	1	08/04/2018 15:15	WG1147295

Qc

Gl

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	8.71	TB	1	07/31/2018 14:45	WG1145335

Al

Sc

Sample Narrative:

L1013158-02 WG1145335: 8.71 at 19.2C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DNI at 170		1	07/29/2018 09:18	WG1144598

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND		0.00200	1	1	08/06/2018 20:37	WG1148019
2,4-D	ND		0.00200	10	1	08/06/2018 20:37	WG1148019
(S) 2,4-Dichlorophenyl Acetic Acid	52.4		14.0-158			08/06/2018 20:37	WG1148019

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT:

SDG: L1013158

DATE/TIME: 08/08/18 10:01

1807D03-003B ROLLOFF BIN 243-3  
 Collected date/time: 07/23/18 10:32

SAMPLE RESULTS - 03  
 L1013158

ONE LAB. NATIONWIDE. 

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		8/3/2018 6:42:53 AM	WG1147094
Fluid	1		8/3/2018 6:42:53 AM	WG1147094
Initial pH	9.01		8/3/2018 6:42:53 AM	WG1147094
Final pH	4.94		8/3/2018 6:42:53 AM	WG1147094

2 Tc

3 Ss

4 Cn

Wet Chemistry by Method 9012 B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND	J3 J6	0.250	1	08/02/2018 08:06	WG1145882

5 Sr

6 Qc

Wet Chemistry by Method 9034-9030B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		25.0	1	08/04/2018 15:15	WG1147295

7 Gl

Al

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	9.04	T6	1	07/31/2018 14:45	WG1145335

8 Sc

Sample Narrative:

L1013158-03 WG1145335: 9.04 at 19:50

Wet Chemistry by Method D93/1010A

Analyte	Result Deg. F	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DNI at 170		1	07/29/2018 09:18	WG1144698

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND		0.00200	1	1	08/06/2018 20:50	WG1148019
2,4-D	ND		0.00200	10	1	08/06/2018 20:50	WG1148019
(S) 2,4-Dichlorophenyl Acetic Acid	39.2		14.0-158			08/06/2018 20:50	WG1148019

ACCOUNT:  
 Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
 L1013158

DATE/TIME:  
 08/08/18 10:01

QUALITY CONTROL SUMMARY

L1013158-01-02-03

WG1145892

Wet Chemistry by Method 9012 B

Method Blank (MB)

(MB) R3330309-1 08/02/18 07:54

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Cyanide	U		0.0390	0.250

L1013158-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1013158-2-07 08/02/18 08:00 • (DUP) R3330309-4 08/02/18 08:01

Analyte	Original Result mg/kg	DUP Result (dry)	Dilution	DUP RPD %	DUP RPD Limits
Reactive Cyanide	U	0.000	1	0.000	20

L1013158-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1013158-04 08/02/18 08:14 • (DUP) R3330309-7 08/02/18 08:15

Analyte	Original Result mg/kg	DUP Result	Dilution	DUP RPD %	DUP RPD Limits
Reactive Cyanide	ND	0.0512	1	0.000	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3330309-2 08/02/18 07:55 • (LCS-D) R3330309-3 08/02/18 07:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	Rec. Limits %	LCSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	2.50	2.65	2.40	106	50.0-150	96.0	9.90	20

L1013158-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1013158-03 08/02/18 08:06 • (MS) R3330309-5 08/02/18 08:07 • (MSD) R3330309-6 08/02/18 08:08

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	1.51	ND	0.959	1.43	85.9	1	75.0-125	13	13	39.5	20

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT:

SDG: L1013158

DATE/TIME: 08/08/18 10:01

QUALITY CONTROL SUMMARY

L1013158-01.02.03

WG1147295  
Wet Chemistry by Method 8034-9030B

M Mixed Blank (MB)

(MB) R3330955-1 08/04/18 15:15

Analyte	MB Result mg/kg U	MB Qualifier	MB MDL mg/kg 163	MB RDL mg/kg 25.0
Reactive Sulfide				

L1013158-02 Original Sample (OS) - Duplicate (DUP)

(OS) L1013158-02 08/04/18 15:15 • (DUP) R3330955-4 08/04/18 15:15

Analyte	Original Result mg/kg ND	DUP Result mg/kg ND	Dilution	DUP PPD %	DUP PPD Limits %
Reactive Sulfide			1	0.000	20

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCS/D)

(LCS) R3330955-2 08/04/18 15:15 • (LCS/D) R3330955-3 08/04/18 15:15

Analyte	Salike Amount mg/kg 100	LCS Result mg/kg 72.9	LCS Rec. %	LCS Rec. Limits 70.0-130	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Reactive Sulfide			72.9	72.9			0.000	20





ONE LAB. NATIONWIDE

# QUALITY CONTROL SUMMARY

11013158-01.02.01

**WG1145335**

Wet Chemistry by Method 9045D

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)

(LCS) R3329907-1 07/31/18 14:45 - (LCSD) R3329907-2 07/31/18 14:45

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Composn by pH	10.0	9.99	10.0	99.9	100	99.0-101			0.100	1

**Sample Narrative:**

LCS: 9.99 at 18.9C  
 LCSD: 10 at 19C

ACCOUNT: Hill Environmental Analysis Laboratory  
 PROJECT: 11013158  
 SDG: 11013158  
 DATE/TIME: 08/08/18 10:01



UTAH LAB. NATIONAL INSTITUTE

# QUALITY CONTROL SUMMARY

L101285-02

**WG1144698**

Wet Chemistry by Method C.95/1010A

L101285-02 Original Sample (O/S) • Duplicate (DUP)

(O/S) L101285-02 07/29/18 09:18 • (DUP) R3329323-3 07/29/18 09:18

Original Result	DUP Result	Dilution	DUP RPD	DUP RPD Limits
Dry, F DNI at 170	Dry, F DNI at 170	1	0.000	% 10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3329323-1 07/29/18 09:18 • (LCSD) R3329323-2 07/29/18 09:18

Analyte	Ignitability	Soike Amount	LCS Result	Dry, F	LCSD Result	Dry, F	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
87.0	82.6	82.6	101	101	56.0-704	0.000	%	%	%	100	100	0.000	%

Ta
SS
Cn
ST
OC
Cl
W
Sc

ACCOUNT: Hill Environmental Analysis Laboratory  
 PROJECT:   
 SDG: 1013158  
 DATE/TIME: 08/08/18 10:01

GLOSSARY OF TERMS

ONE LAB. NATIONWIDE.



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils]
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 GI
- 8 AI
- 9 Sc

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1013158

DATE/TIME:  
08/08/18 10:01

WG1148019

Chlorinated Acid Herbicides (GCI) by Method 8151A

QUALITY CONTROL SUMMARY

1103158-01.02.03

ONE LAB NATIONWIDE

Method Blank (MB)

(MB) R3331302-1 08/06/18 16:06

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
2,4-D	U		0.000667	0.00200
2,4,5-TP (S)hex	U		0.000667	0.00200
(S) 2,4-Dichlorophenoxy Acetic Acid	54.8			14.0-358

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)

(LCS) R3331302-2 08/06/18 16:20 - (LCSD) R3331302-3 08/06/18 16:33

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec	LCSD Rec	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%	%	%	%	%
2,4-D	0.00500	0.00344	0.00345	68.8	69.0	55.0-120			0.290	20
2,4,5-TP (S)hex	0.00500	0.00298	0.00302	59.6	60.4	55.0-120			1.33	20
(S) 2,4-Dichlorophenoxy Acetic Acid				54.6	56.6	14.0-358				



**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807D03

15-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	MB-39489	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID:	39489	RunNo:	53063					
Prep Date:	7/30/2018	Analysis Date:	8/1/2018	SeqNo:	1747164	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.5		10.00		85.0	50.6	138			

Sample ID	LCS-39489	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS	Batch ID:	39489	RunNo:	53063					
Prep Date:	7/30/2018	Analysis Date:	8/1/2018	SeqNo:	1747165	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	93.7	70	130			
Surr: DNOP	4.0		5.000		79.6	50.6	138			

Sample ID	1807D03-001AMS	SampType:	MS	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	Rolloff Bin 243-1	Batch ID:	39489	RunNo:	53063					
Prep Date:	7/30/2018	Analysis Date:	8/1/2018	SeqNo:	1747363	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	9.6	47.76	0	95.5	53.5	126			
Surr: DNOP	4.0		4.776		82.9	50.6	138			

Sample ID	1807D03-001AMSD	SampType:	MSD	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	Rolloff Bin 243-1	Batch ID:	39489	RunNo:	53063					
Prep Date:	7/30/2018	Analysis Date:	8/1/2018	SeqNo:	1747364	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	9.8	48.92	0	96.4	53.5	126	3.45	21.7	
Surr: DNOP	4.0		4.892		81.0	50.6	138	0	0	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1807D03

15-Aug-18

Client: EA Engineering  
Project: Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	MB-39595	SampType: MBLK		TestCode: EPA Method 8081: Pesticides TCLP						
Client ID:	PBW	Batch ID: 39595		RunNo: 53310						
Prep Date:	8/6/2018	Analysis Date: 8/8/2018		SeqNo: 1755085		Units: mg/L				
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0023		0.002500		93.7	58.3	109			
Surr: Tetrachloro-m-xylene	0.0019		0.002500		74.4	40.1	101			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	LCS-39595	SampType: LCS		TestCode: EPA Method 8081: Pesticides TCLP						
Client ID:	LCSW	Batch ID: 39595		RunNo: 53310						
Prep Date:	8/6/2018	Analysis Date: 8/8/2018		SeqNo: 1755086		Units: mg/L				
Endrin	0.00046	0.00010	0.0005000	0	92.3	49.5	127			
gamma-BHC (Lindane)	0.00043	0.00010	0.0005000	0	85.2	49.9	124			
Heptachlor	0.00037	0.00010	0.0005000	0	75.0	41	122			
Heptachlor epoxide	0.00045	0.00010	0.0005000	0	89.6	52.2	121			
Methoxychlor	0.00046	0.00010	0.0005000	0	92.7	40.2	134			
Surr: Decachlorobiphenyl	0.0022		0.002500		88.7	58.3	109			
Surr: Tetrachloro-m-xylene	0.0011		0.002500		43.6	40.1	101			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

Page 8 of 17

**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807D03  
 15-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	Ics-39463		SampType: LCS4	TestCode: EPA Method 8260B: Volatiles Short List						
Client ID:	BatchQC		Batch ID: 39463	RunNo: 53058						
Prep Date:	7/27/2018		Analysis Date: 7/30/2018	SeqNo: 1745295	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.91	0.025	1.000	0	91.1	80	120			
Toluene	0.96	0.050	1.000	0	95.9	80	120			
Ethylbenzene	1.0	0.050	1.000	0	99.5	80	120			
Xylenes, Total	3.0	0.10	3.000	0	98.5	80	120			
Surr: 4-Bromofluorobenzene	0.57		0.5000		115	70	130			
Surr: Toluene-d8	0.43		0.5000		86.1	70	130			

Sample ID	mb-39463		SampType: MBLK	TestCode: EPA Method 8260B: Volatiles Short List						
Client ID:	PBS		Batch ID: 39463	RunNo: 53058						
Prep Date:	7/27/2018		Analysis Date: 7/30/2018	SeqNo: 1745296	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.66		0.5000		133	70	130			S
Surr: Toluene-d8	0.45		0.5000		89.9	70	130			

Sample ID	1807d03-002ams		SampType: MS4	TestCode: EPA Method 8260B: Volatiles Short List						
Client ID:	Rolloff Bin 243-2		Batch ID: 39463	RunNo: 53058						
Prep Date:	7/27/2018		Analysis Date: 7/30/2018	SeqNo: 1745964	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.83	0.024	0.9747	0	85.4	80	120			
Toluene	0.88	0.049	0.9747	0.007790	89.6	80	120			
Ethylbenzene	0.91	0.049	0.9747	0	93.1	82	121			
Xylenes, Total	2.8	0.097	2.924	0.02151	95.4	80.2	120			
Surr: 4-Bromofluorobenzene	0.55		0.4873		113	70	130			
Surr: Toluene-d8	0.42		0.4873		87.0	70	130			

Sample ID	1807d03-002amsd		SampType: MSD4	TestCode: EPA Method 8260B: Volatiles Short List						
Client ID:	Rolloff Bin 243-2		Batch ID: 39463	RunNo: 53058						
Prep Date:	7/27/2018		Analysis Date: 7/30/2018	SeqNo: 1745965	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.81	0.023	0.9398	0	86.7	80	120	2.11	20	
Toluene	0.85	0.047	0.9398	0.007790	89.9	80	120	3.34	20	
Ethylbenzene	0.87	0.047	0.9398	0	93.0	82	121	3.75	20	
Xylenes, Total	2.8	0.094	2.820	0.02151	97.1	80.2	120	1.83	20	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807D03

15-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	1807d03-002amsd	SampType:	MSD4	TestCode:	EPA Method 8260B: Volatiles Short List					
Client ID:	Rolloff Bin 243-2	Batch ID:	39463	RunNo:	53058					
Prep Date:	7/27/2018	Analysis Date:	7/30/2018	SeqNo:	1745965	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.50		0.4699		107	70	130	0	0	
Surr: Toluene-d8	0.41		0.4699		86.4	70	130	0	0	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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## QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807D03

15-Aug-18

Client: EA Engineering  
Project: Kirtland AFB BFF

Sample ID	mb-39479	SampType:	MBLK	TestCode:	Volatiles by 8260B/1311					
Client ID:	PBS	Batch ID:	39479	RunNo:	53128					
Prep Date:	7/30/2018	Analysis Date:	8/2/2018	SeqNo:	1748526	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.23		0.2000		116	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		94.4	57.3	148			
Surr: Dibromofluoromethane	0.21		0.2000		104	70	130			
Surr: Toluene-d8	0.22		0.2000		109	70	130			

Sample ID	lcs-39479	SampType:	LCS	TestCode:	Volatiles by 8260B/1311					
Client ID:	LCSS	Batch ID:	39479	RunNo:	53128					
Prep Date:	7/30/2018	Analysis Date:	8/2/2018	SeqNo:	1748527	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.43	0.30	0.4000	0	107	70	130			
Chlorobenzene	0.40	0.30	0.4000	0	101	70	130			
1,1-Dichloroethene	0.45	0.30	0.4000	0	113	70	130			
Trichloroethene (TCE)	0.41	0.30	0.4000	0	103	70	130			
Surr: 1,2-Dichloroethane-d4	0.23		0.2000		114	70	130			
Surr: 4-Bromofluorobenzene	0.22		0.2000		111	57.3	148			
Surr: Dibromofluoromethane	0.22		0.2000		112	70	130			
Surr: Toluene-d8	0.20		0.2000		101	70	130			

Sample ID	1807D03-001AMS	SampType:	MS	TestCode:	Volatiles by 8260B/1311					
Client ID:	Rolloff Bin 243-1	Batch ID:	39479	RunNo:	53128					
Prep Date:	7/30/2018	Analysis Date:	8/2/2018	SeqNo:	1748531	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.41	0.30	0.4000	0	102	44.5	152			
Chlorobenzene	0.40	0.30	0.4000	0	101	70	130			
1,1-Dichloroethene	0.45	0.30	0.4000	0	113	79.1	132			
Trichloroethene (TCE)	0.40	0.30	0.4000	0	100	70	130			
Surr: 1,2-Dichloroethane-d4	0.23		0.2000		114	70	130			

## Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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## QC SUMMARY REPORT

WO#: 1807D03

Hall Environmental Analysis Laboratory, Inc.

15-Aug-18

Client: EA Engineering  
Project: Kirtland AFB BFF

Sample ID	1807D03-001AMS	SampType:	MS	TestCode:	Volatiles by 8260B/1311					
Client ID:	Rolloff Bin 243-1	Batch ID:	39479	RunNo:	53128					
Prep Date:	7/30/2018	Analysis Date:	8/2/2018	SeqNo:	1748531	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.20		0.2000		99.5	57.3	148			
Surr: Dibromofluoromethane	0.22		0.2000		109	70	130			
Surr: Toluene-d8	0.20		0.2000		98.9	70	130			

Sample ID	1807d03-001amsd	SampType:	MSD	TestCode:	Volatiles by 8260B/1311					
Client ID:	Rolloff Bin 243-1	Batch ID:	39479	RunNo:	53128					
Prep Date:	7/30/2018	Analysis Date:	8/2/2018	SeqNo:	1748532	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.38	0.30	0.4000	0	94.8	44.5	152	7.21	20	
Chlorobenzene	0.40	0.30	0.4000	0	100	70	130	0.493	20	
1,1-Dichloroethene	0.44	0.30	0.4000	0	109	79.1	132	3.22	20	
Trichloroethene (TCE)	0.38	0.30	0.4000	0	94.5	70	130	5.99	20	
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		105	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.20		0.2000		99.9	57.3	148	0	0	
Surr: Dibromofluoromethane	0.20		0.2000		98.7	70	130	0	0	
Surr: Toluene-d8	0.21		0.2000		103	70	130	0	0	

## Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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## QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807D03

15-Aug-18

Client: EA Engineering  
Project: Kirtland AFB BFF

Sample ID	Ics-39596		SampType: LCS	TestCode: EPA Method 8270C TCLP						
Client ID:	LCSS		Batch ID: 39596	RunNo: 53304						
Prep Date:	8/6/2018		Analysis Date: 8/8/2018	SeqNo: 1754616	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.081	0.00010	0.1000	0	80.6	47.8	99.2			
3+4-Methylphenol	0.15	0.00010	0.2000	0	77.2	41.5	118			
2,4-Dinitrotoluene	0.082	0.00010	0.1000	0	82.5	44.4	81			S
Hexachlorobenzene	0.088	0.00010	0.1000	0	87.7	49.5	91.6			
Hexachlorobutadiene	0.071	0.00010	0.1000	0	71.0	38.6	93			
Hexachloroethane	0.067	0.00010	0.1000	0	66.6	39.4	79.9			
Nitrobenzene	0.082	0.00010	0.1000	0	82.2	47.4	96.2			
Pentachlorophenol	0.078	0.00010	0.1000	0	78.4	39.4	79.9			
Pyridine	0.038	0.00010	0.1000	0	38.3	15	79.9			
2,4,5-Trichlorophenol	0.093	0.00010	0.1000	0	93.0	47.4	118			
2,4,6-Trichlorophenol	0.097	0.00010	0.1000	0	97.4	47.4	101			
Cresols, Total	0.23	0.00010	0.3000	0	78.3	44.1	111			
Surr: 2-Fluorophenol	0.10		0.2000		49.9	15	102			
Surr: Phenol-d5	0.084		0.2000		42.0	15	87.7			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		73.7	39.9	111			
Surr: Nitrobenzene-d5	0.078		0.1000		77.9	35.1	107			
Surr: 2-Fluorobiphenyl	0.074		0.1000		73.7	36.7	100			
Surr: 4-Terphenyl-d14	0.093		0.1000		92.6	42.6	129			

Sample ID	Icsd-39596		SampType: LCSD	TestCode: EPA Method 8270C TCLP						
Client ID:	LCSS02		Batch ID: 39596	RunNo: 53304						
Prep Date:	8/6/2018		Analysis Date: 8/8/2018	SeqNo: 1754617	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.072	0.00010	0.1000	0	71.8	47.8	99.2	11.5	20	
3+4-Methylphenol	0.13	0.00010	0.2000	0	67.1	41.5	118	13.9	20	
2,4-Dinitrotoluene	0.064	0.00010	0.1000	0	63.5	44.4	81	26.0	20	R
Hexachlorobenzene	0.080	0.00010	0.1000	0	79.6	49.5	91.6	9.61	20	
Hexachlorobutadiene	0.062	0.00010	0.1000	0	62.2	38.6	93	13.2	20	
Hexachloroethane	0.061	0.00010	0.1000	0	60.7	39.4	79.9	9.24	20	
Nitrobenzene	0.072	0.00010	0.1000	0	71.9	47.4	96.2	13.3	20	
Pentachlorophenol	0.071	0.00010	0.1000	0	71.2	39.4	79.9	9.62	20	
Pyridine	0.019	0.00010	0.1000	0	19.1	15	79.9	66.9	20	R
2,4,5-Trichlorophenol	0.078	0.00010	0.1000	0	78.0	47.4	118	17.5	20	
2,4,6-Trichlorophenol	0.079	0.00010	0.1000	0	79.0	47.4	101	20.9	20	R
Cresols, Total	0.21	0.00010	0.3000	0	68.7	44.1	111	13.1	20	
Surr: 2-Fluorophenol	0.092		0.2000		46.1	15	102	0	20	
Surr: Phenol-d5	0.073		0.2000		36.6	15	87.7	0	20	
Surr: 2,4,6-Tribromophenol	0.12		0.2000		61.2	39.9	111	0	20	

## Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807D03  
 15-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	icsd-39596	SampType:	LCSD	TestCode:	EPA Method 8270C TCLP					
Client ID:	LCSS02	Batch ID:	39596	RunNo:	53304					
Prep Date:	8/6/2018	Analysis Date:	8/8/2018	SeqNo:	1754617	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.069		0.1000		69.0	35.1	107	0	20	
Surr: 2-Fluorobiphenyl	0.070		0.1000		70.0	36.7	100	0	20	
Surr: 4-Terphenyl-d14	0.082		0.1000		81.6	42.6	129	0	20	

Sample ID	mb-39596	SampType:	MBLK	TestCode:	EPA Method 8270C TCLP					
Client ID:	PBS	Batch ID:	39596	RunNo:	53304					
Prep Date:	8/6/2018	Analysis Date:	8/8/2018	SeqNo:	1754618	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.093		0.2000		46.5	15	102			
Surr: Phenol-d5	0.075		0.2000		37.4	15	87.7			
Surr: 2,4,6-Tribromophenol	0.14		0.2000		71.4	39.9	111			
Surr: Nitrobenzene-d5	0.069		0.1000		69.2	35.1	107			
Surr: 2-Fluorobiphenyl	0.069		0.1000		69.1	36.7	100			
Surr: 4-Terphenyl-d14	0.084		0.1000		84.0	42.6	129			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807D03

15-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	MB-39538	SampType:	MBLK	TestCode:	MERCURY, TCLP						
Client ID:	PBW	Batch ID:	39538	RunNo:	53136						
Prep Date:	8/1/2018	Analysis Date:	8/1/2018	SeqNo:	1748004	Units:	mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND	0.020								

Sample ID	LCS-39538	SampType:	LCS	TestCode:	MERCURY, TCLP						
Client ID:	LCSW	Batch ID:	39538	RunNo:	53136						
Prep Date:	8/1/2018	Analysis Date:	8/1/2018	SeqNo:	1748005	Units:	mg/L				
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury		ND	0.020	0.005000	0	99.1	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

Page 15 of 17

**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807D03  
 15-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	MB-39510	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	39510	RunNo:	53113					
Prep Date:	7/31/2018	Analysis Date:	8/1/2018	SeqNo:	1747864	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0								

Sample ID	LCS-39510	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	LCSW	Batch ID:	39510	RunNo:	53113					
Prep Date:	7/31/2018	Analysis Date:	8/1/2018	SeqNo:	1747866	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0	0.5000	0	92.0	80	120			

Sample ID	MB-39510	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	39510	RunNo:	53113					
Prep Date:	7/31/2018	Analysis Date:	8/1/2018	SeqNo:	1747992	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	LCS-39510	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	LCSW	Batch ID:	39510	RunNo:	53113					
Prep Date:	7/31/2018	Analysis Date:	8/1/2018	SeqNo:	1747994	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	103	80	120			
Barium	ND	100	0.5000	0	97.5	80	120			
Cadmium	ND	1.0	0.5000	0	101	80	120			
Chromium	ND	5.0	0.5000	0	96.1	80	120			
Selenium	ND	1.0	0.5000	0	96.4	80	120			
Silver	ND	5.0	0.1000	0	111	80	120			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807D03

15-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	ics-39463	SampType:	LCS	TestCode:	EPA Method 8015D Mod: Gasoline Range					
Client ID:	LCSS	Batch ID:	39463	RunNo:	53058					
Prep Date:	7/27/2018	Analysis Date:	7/30/2018	SeqNo:	1745288	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	106	70	130			
Surr: BFB	520		500.0		105	70	130			

Sample ID	mb-39463	SampType:	MBLK	TestCode:	EPA Method 8015D Mod: Gasoline Range					
Client ID:	PBS	Batch ID:	39463	RunNo:	53058					
Prep Date:	7/27/2018	Analysis Date:	7/30/2018	SeqNo:	1745289	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	590		500.0		118	70	130			

Sample ID	1807d03-001ams	SampType:	MS	TestCode:	EPA Method 8015D Mod: Gasoline Range					
Client ID:	Rolloff Bin 243-1	Batch ID:	39463	RunNo:	53058					
Prep Date:	7/27/2018	Analysis Date:	7/30/2018	SeqNo:	1745948	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.7	23.54	0	99.1	64.7	142			
Surr: BFB	470		470.8		100	70	130			

Sample ID	1807d03-001amsd	SampType:	MSD	TestCode:	EPA Method 8015D Mod: Gasoline Range					
Client ID:	Rolloff Bin 243-1	Batch ID:	39463	RunNo:	53058					
Prep Date:	7/27/2018	Analysis Date:	7/30/2018	SeqNo:	1745949	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.8	23.97	0	99.5	64.7	142	2.21	20	
Surr: BFB	490		479.4		103	70	130	0	0	

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EA Engineering Alb      Work Order Number: 1807D03      RcptNo: 1

Received By: **Isaiah Ortiz**      7/23/2018 12:30:00 PM      *IO*  
 Completed By: **Ashley Gallegos**      7/25/2018 9:15:47 AM      *AG*  
 Reviewed By: *SO*      *07/27/18*      Labeled by: ENM 7/27/18

**Chain of Custody**

1. Is Chain of Custody complete?      Yes       No       Not Present   
 2. How was the sample delivered?      Client

**Log In**

3. Was an attempt made to cool the samples?      Yes       No       NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C      Yes       No       NA   
 5. Sample(s) in proper container(s)?      Yes       No   
 6. Sufficient sample volume for indicated test(s)?      Yes       No   
 7. Are samples (except VOA and ONG) properly preserved?      Yes       No   
 8. Was preservative added to bottles?      Yes       No       NA   
 9. VOA vials have zero headspace?      Yes       No       No VOA Vials   
 10. Were any sample containers received broken?      Yes       No   
 11. Does paperwork match bottle labels?      Yes       No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody?      Yes       No   
 13. Is it clear what analyses were requested?      Yes       No   
 14. Were all holding times able to be met?      Yes       No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: ENM 7/27/18  
 (≥ 2 or ≥ 12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: \_\_\_\_\_

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order?      Yes       No       NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

16. Additional remarks:

**17. Cooler Information**

Cooler No.	Temp °C	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	4.1	Good	Not Present			

## CHAIN-OF-CUSTODY RECORD

255 Shilling Circle, Suite 400, Hunt Valley, MD 21081  
 Tel: (410) 884-7000 Fax: (410) 771-1655

**PROJECT NAME:** Kirtland AFB BFF

**PROJECT NUMBER:** 62599DM01.10173

**LAB NAME AND CONTACT:** Hall Environmental

**DO NUMBER:** 15182

**PROJECT PHASE/TASK:** Data Gap Wells

**PROJECT CONTACT:** E. Morse

**PROJECT TEL NO AND FAX NO:** 505-238-4410

**FAX AND MAIL REPORTS/SEND TO:** RECIPIENT 1 (Name and Company)  
Amanda Smith/ amsmith@east.com

**FAX AND MAIL REPORTS/SEND TO:** RECIPIENT 2 (Name and Company)  
Pam Moss/ pmoss@east.com, enorse@east.com

**FAX AND MAIL REPORTS/SEND TO:** RECIPIENT 3 (Name and Company)

ITEM	SAMPLE IDENTIFIER	SAMPLE DESCRIPTION/LOCATION	MATRIX (see codes on SOP)	DATE COLLECTED	TIME COLLECTED	DATA PKG LEVEL (see codes on SOP)	LAB TAT (business days)	Bottle Type	ANALYSES REQUIRED (Include Method Number)							COMMENTS/ SCREENING READINGS (see 1031a)	LAB ID (see 1031a)
									TPH GRO, DRG, RRO (8015D)	Reactive Cyanide/ Sulfide (9012B/9034)	Conductivity - PH (9045D)	Igibility (1010A)	TPH VOC, SVOC, Herb, Metals (1311/8260B/8270C/8018/1815A/6010B/7470A)	BTX (8260B)	TPH GRO, DRG, RRO (8015D)		
1	1807DD3 106243-1	Rolloff Bin 243-1	soil	7-23-18 0953	IV 7 3				X	X	X	X	X	X			
2	106243-2	Rolloff Bin 243-2	soil	7-23-18 1014	IV 7 3				X	X	X	X	X	X			
3	106243-3	Rolloff Bin 243-3	soil	7-23-18 1039	IV 7 3				X	X	X	X	X	X			
4	106244-5 4/7/19	Rolloff Bin 244-5	soil	7-23-19 0915	IV 7 3				X	X	X	X	X	X			
5																	
6																	
7																	
8																	
9																	
10																	

**FedEx Number:** See Pam email about spraying samples - 7/12/19

**Field Sampler/EA Engineering:** P. Ferrant

**Printed Name and Signature:** Peter Ferrant

**DATE:** 7-23-2018

**TIME:** 12:30

**RECEIVED BY:** Isaac Ortiz

**DATE:** 7-23-2018

**TIME:** 12:30

**Printed Name and Signature:**

**Printed Name and Signature:**

**Printed Name and Signature:**

**TEMP:** 41.0C



# NON-HAZARDOUS WASTE MANIFEST

DZ15124

~~DZ15117~~ JL

Please print or type (Form designed for use on elite (12 pitch) typewriter)

<b>NON-HAZARDOUS WASTE MANIFEST</b>		1. Generator's US EPA ID No. NM9570024423		Manifest Document No. <del>DZ15122</del> JL	2. Page 1 of 1
3. Generator's Name and Mailing Address KIRTLAND AIR FORCE BASE 2050 WYOMING BLVD SE BLDG 20685, ENVIRONMENTAL KIRTLAND AIR FORCE BASE, NM 87117					
4. Generator's Phone No. 505-846-9017					
5. Transporter 1 Company Name Advanced Chemical Transport Inc./DBA ACTENVIRO		6. US EPA ID Number CAR000070540		A. State Transporter's ID	
7. Transporter 2 Company Name		8. US EPA ID Number		B. Transporter 1 Phone	
				C. State Transporter's ID	
				D. Transporter 2 Phone	
9. Designated Facility Name and Site Address TWIN ENVIRO SERVICES - PHANTOM LANDFILL 2500 FREMONT COUNTY ROAD 67 PENROSE, CO 81240 719-372-6671		10. US EPA ID Number COR000208454		E. State Facility's ID	
				F. Facility's Phone	
11. WASTE DESCRIPTION		Containers No. Type		13. Total Quantity	
Non-RCRA/Non-DOT Regulated Material Solid Sludges (DRILL CUTTINGS)		02 CM		4 TON	
b.					
c.					
d.					
G. Additional Descriptions for Materials Listed Above		Project Number 179540		Document #: <del>DZ15124</del> <del>DZ15117</del> DZ15124	
1) P-20170421-D KIT- (2) 15 CM				H. Handling Codes for Wastes Listed Above	
15. Special Handling Instructions and Additional Information		24 HOUR EMERGENCY CONTACT: SCOTT CLARK 505 385 3679 PT 4371 / HTBI			
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
Printed/Typed Name		Signature		Date	
Holly O'Grady		Holly O'Grady		10 / 10 / 18	
17. Transporter 1 Acknowledgement of Receipt of Materials		Signature		Date	
Martin Aranda		[Signature]		10 / 10 / 18	
18. Transporter 2 Acknowledgement of Receipt of Materials		Signature		Date	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.					
Printed/Typed Name		Signature		Date	
D Sullivan		D Sullivan		11 / 13 / 18	

NON-HAZARDOUS WASTE





Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 26, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: KAFB BFF Data Gap Wells

OrderNo.: 1809A62

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/18/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a white background.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1809A62

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106243-4-IDW-S

Project: KAFB BFF Data Gap Wells

Collection Date: 9/18/2018 12:15:00 PM

Lab ID: 1809A62-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: <b>rde</b>
Mercury	ND	0.020		mg/L	1	9/24/2018 3:38:40 PM	40525
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: <b>pmf</b>
Arsenic	ND	5.0		mg/L	1	9/24/2018 12:21:49 PM	40518
Barium	ND	100		mg/L	1	9/24/2018 12:21:49 PM	40518
Cadmium	ND	1.0		mg/L	1	9/24/2018 12:21:49 PM	40518
Chromium	ND	5.0		mg/L	1	9/24/2018 12:21:49 PM	40518
Lead	ND	5.0		mg/L	1	9/24/2018 12:21:49 PM	40518
Selenium	ND	1.0		mg/L	1	9/24/2018 12:21:49 PM	40518
Silver	ND	5.0		mg/L	1	9/24/2018 12:21:49 PM	40518
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>AG</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	9/20/2018 6:13:55 PM	40456
Surr: BFB	99.1	70-130		%Rec	1	9/20/2018 6:13:55 PM	40456
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	9/20/2018 6:43:45 PM	40460
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/20/2018 6:43:45 PM	40460
Surr: DNOP	105	50.6-138		%Rec	1	9/20/2018 6:43:45 PM	40460
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
Acenaphthene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Acenaphthylene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Aniline	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Anthracene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Azobenzene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Benz(a)anthracene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Benzo(a)pyrene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Benzo(b)fluoranthene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Benzo(g,h,i)perylene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Benzo(k)fluoranthene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Benzoic acid	ND	0.47		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Benzyl alcohol	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Bis(2-chloroethoxy)methane	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Bis(2-chloroethyl)ether	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Bis(2-chloroisopropyl)ether	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Bis(2-ethylhexyl)phthalate	ND	0.47		mg/Kg	1	9/21/2018 9:24:27 PM	40469
4-Bromophenyl phenyl ether	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Butyl benzyl phthalate	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Carbazole	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
4-Chloro-3-methylphenol	ND	0.47		mg/Kg	1	9/21/2018 9:24:27 PM	40469

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A62

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106243-4-IDW-S

Project: KAFB BFF Data Gap Wells

Collection Date: 9/18/2018 12:15:00 PM

Lab ID: 1809A62-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
4-Chloroaniline	ND	0.47		mg/Kg	1	9/21/2018 9:24:27 PM	40469
2-Chloronaphthalene	ND	0.24		mg/Kg	1	9/21/2018 9:24:27 PM	40469
2-Chlorophenol	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
4-Chlorophenyl phenyl ether	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Chrysene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Di-n-butyl phthalate	0.52	0.38		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Di-n-octyl phthalate	ND	0.38		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Dibenz(a,h)anthracene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Dibenzofuran	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
1,2-Dichlorobenzene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
1,3-Dichlorobenzene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
1,4-Dichlorobenzene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
3,3'-Dichlorobenzidine	ND	0.24		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Diethyl phthalate	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Dimethyl phthalate	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
2,4-Dichlorophenol	ND	0.38		mg/Kg	1	9/21/2018 9:24:27 PM	40469
2,4-Dimethylphenol	ND	0.28		mg/Kg	1	9/21/2018 9:24:27 PM	40469
4,6-Dinitro-2-methylphenol	ND	0.38		mg/Kg	1	9/21/2018 9:24:27 PM	40469
2,4-Dinitrophenol	ND	0.47		mg/Kg	1	9/21/2018 9:24:27 PM	40469
2,4-Dinitrotoluene	ND	0.47		mg/Kg	1	9/21/2018 9:24:27 PM	40469
2,6-Dinitrotoluene	ND	0.47		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Fluoranthene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Fluorene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Hexachlorobenzene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Hexachlorobutadiene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Hexachlorocyclopentadiene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Hexachloroethane	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Indeno(1,2,3-cd)pyrene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Isophorone	ND	0.38		mg/Kg	1	9/21/2018 9:24:27 PM	40469
1-Methylnaphthalene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
2-Methylnaphthalene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
2-Methylphenol	ND	0.38		mg/Kg	1	9/21/2018 9:24:27 PM	40469
3+4-Methylphenol	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
N-Nitrosodi-n-propylamine	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
N-Nitrosodiphenylamine	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Naphthalene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
2-Nitroaniline	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
3-Nitroaniline	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
4-Nitroaniline	ND	0.38		mg/Kg	1	9/21/2018 9:24:27 PM	40469

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A62

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106243-4-IDW-S

Project: KAFB BFF Data Gap Wells

Collection Date: 9/18/2018 12:15:00 PM

Lab ID: 1809A62-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
Nitrobenzene	ND	0.38		mg/Kg	1	9/21/2018 9:24:27 PM	40469
2-Nitrophenol	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
4-Nitrophenol	ND	0.24		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Pentachlorophenol	ND	0.38		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Phenanthrene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Phenol	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Pyrene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Pyridine	ND	0.38		mg/Kg	1	9/21/2018 9:24:27 PM	40469
1,2,4-Trichlorobenzene	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
2,4,5-Trichlorophenol	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
2,4,6-Trichlorophenol	ND	0.19		mg/Kg	1	9/21/2018 9:24:27 PM	40469
Surr: 2-Fluorophenol	39.2	21.7-87.9		%Rec	1	9/21/2018 9:24:27 PM	40469
Surr: Phenol-d5	50.9	30.2-92.2		%Rec	1	9/21/2018 9:24:27 PM	40469
Surr: 2,4,6-Tribromophenol	78.6	47.1-103		%Rec	1	9/21/2018 9:24:27 PM	40469
Surr: Nitrobenzene-d5	43.5	23.9-102		%Rec	1	9/21/2018 9:24:27 PM	40469
Surr: 2-Fluorobiphenyl	48.1	32.6-101		%Rec	1	9/21/2018 9:24:27 PM	40469
Surr: 4-Terphenyl-d14	64.8	37.2-117		%Rec	1	9/21/2018 9:24:27 PM	40469
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: <b>DJF</b>
Benzene	ND	0.023		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Toluene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Ethylbenzene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Methyl tert-butyl ether (MTBE)	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,2,4-Trimethylbenzene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,3,5-Trimethylbenzene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,2-Dichloroethane (EDC)	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,2-Dibromoethane (EDB)	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Naphthalene	ND	0.094		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1-Methylnaphthalene	ND	0.19		mg/Kg	1	9/21/2018 2:14:15 PM	40456
2-Methylnaphthalene	ND	0.19		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Acetone	ND	0.70		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Bromobenzene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Bromodichloromethane	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Bromoform	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Bromomethane	ND	0.14		mg/Kg	1	9/21/2018 2:14:15 PM	40456
2-Butanone	ND	0.47		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Carbon disulfide	ND	0.47		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Carbon tetrachloride	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Chlorobenzene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Chloroethane	ND	0.094		mg/Kg	1	9/21/2018 2:14:15 PM	40456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A62

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106243-4-IDW-S

Project: KAFB BFF Data Gap Wells

Collection Date: 9/18/2018 12:15:00 PM

Lab ID: 1809A62-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
Chloroform	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Chloromethane	ND	0.14		mg/Kg	1	9/21/2018 2:14:15 PM	40456
2-Chlorotoluene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
4-Chlorotoluene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
cis-1,2-DCE	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
cis-1,3-Dichloropropene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,2-Dibromo-3-chloropropane	ND	0.094		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Dibromochloromethane	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Dibromomethane	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,2-Dichlorobenzene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,3-Dichlorobenzene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,4-Dichlorobenzene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Dichlorodifluoromethane	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,1-Dichloroethane	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,1-Dichloroethene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,2-Dichloropropane	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,3-Dichloropropane	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
2,2-Dichloropropane	ND	0.094		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,1-Dichloropropene	ND	0.094		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Hexachlorobutadiene	ND	0.094		mg/Kg	1	9/21/2018 2:14:15 PM	40456
2-Hexanone	ND	0.47		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Isopropylbenzene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
4-Isopropyltoluene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
4-Methyl-2-pentanone	ND	0.47		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Methylene chloride	ND	0.14		mg/Kg	1	9/21/2018 2:14:15 PM	40456
n-Butylbenzene	ND	0.14		mg/Kg	1	9/21/2018 2:14:15 PM	40456
n-Propylbenzene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
sec-Butylbenzene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Styrene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
tert-Butylbenzene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,1,1,2-Tetrachloroethane	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,1,2,2-Tetrachloroethane	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Tetrachloroethene (PCE)	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
trans-1,2-DCE	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
trans-1,3-Dichloropropene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,2,3-Trichlorobenzene	ND	0.094		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,2,4-Trichlorobenzene	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,1,1-Trichloroethane	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,1,2-Trichloroethane	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A62

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106243-4-IDW-S

Project: KAFB BFF Data Gap Wells

Collection Date: 9/18/2018 12:15:00 PM

Lab ID: 1809A62-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
Trichloroethene (TCE)	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Trichlorofluoromethane	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
1,2,3-Trichloropropane	ND	0.094		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Vinyl chloride	ND	0.047		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Xylenes, Total	ND	0.094		mg/Kg	1	9/21/2018 2:14:15 PM	40456
Surr: Dibromofluoromethane	91.5	70-130		%Rec	1	9/21/2018 2:14:15 PM	40456
Surr: 1,2-Dichloroethane-d4	89.6	70-130		%Rec	1	9/21/2018 2:14:15 PM	40456
Surr: Toluene-d8	89.6	70-130		%Rec	1	9/21/2018 2:14:15 PM	40456
Surr: 4-Bromofluorobenzene	94.2	70-130		%Rec	1	9/21/2018 2:14:15 PM	40456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified



Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Reactive Cyanide	ND		0.250	1	09/24/2018 09:22	<u>WG1169232</u>

2 Tc

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Reactive Sulfide	ND		25.0	1	09/23/2018 17:49	<u>WG1168677</u>

3 Ss

4 Cn

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
Corrosivity by pH	8.97	<u>TS</u>	1	09/21/2018 13:15	<u>WG1169412</u>

5 Sr

6 Qc

7 GI

Sample Narrative:

L1027463-01 WG1169412: 8.97 at 23C

AI

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	Deg. F			date / time	
Ignitability	DNI at 170		1	09/20/2018 20:01	<u>WG1169226</u>

8 Sc

ACCOUNT:  
 Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
 L1027463

DATE/TIME:  
 09/25/18 08:29

**WG1169232**

Wet Chemistry by Method 9012 B

Method Blank (MB)

**QUALITY CONTROL SUMMARY**

L1027463-01

LINE LAB, NATIONWIDE

(MB) R3344432-1 09/24/18 09:14

Analyte	MB Result	MB MDL	MB RDL
Reactive Cyanide	µg	0.0390	0.250

L1027473-01 Original Sample (OS) - Duplicate (DUP)

(OS) L1027473-01 09/24/18 09:29 • (DUP) R3344432-4 09/24/18 09:30

Analyte	Original Result	DUP Result	DUP RPD	DUP RPD Limits
Reactive Cyanide	mg/kg	0.020	%	%
	ND	0.020	1	0.020
				20

L1027473-07 Original Sample (OS) - Duplicate (DUP)

(OS) L1027473-07 09/24/18 10:08 • (DUP) R3344432-9 09/24/18 10:09

Analyte	Original Result	DUP Result	DUP RPD	DUP RPD Limits
Reactive Cyanide	mg/kg	4.60	%	%
	3.53	4.60	5	23.5
				20

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3344432-2 09/24/18 09:15 • (LCS-D) R3344432-3 09/24/18 09:16

Analyte	Spike Amount	LCS Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Reactive Cyanide	mg/kg	mg/kg	%	%	%	%	%	%	%
	7.50	2.74	2.77	110	50.0-150	11	11	0.937	20

L1027473-02 Original Sample (OS) - Matrix Spike (MS) - Matrix Spike Duplicate (MSD)

(OS) L1027473-02 09/24/18 09:31 • (MS) R3344432-5 09/24/18 09:32 • (MSD) R3344432-6 09/24/18 09:33

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Reactive Cyanide	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%	%	%	%	%
	1.67	ND	1.26	1.30	75.8	77.9	1	75.0-125	75	75	2.86	20

L1027473-10 Original Sample (OS) - Matrix Spike (MS) - Matrix Spike Duplicate (MSD)

(OS) L1027473-10 09/24/18 09:44 • (MS) R3344432-7 09/24/18 09:45 • (MSD) R3344432-8 09/24/18 09:46

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Reactive Cyanide	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%	%	%	%	%
	1.67	ND	1.56	1.62	86.4	90.1	1	75.0-125	86	86	3.89	20

ACCOUNT:

Hill Environmental Analysis Laboratory

PROJECT:

SDG:  
L1027463

DATE/TIME:  
09/25/18 08:29



ONE LAE, NATIONWIDE

# QUALITY CONTROL SUMMARY

L1027463-01

WG1168677

Wet Chemistry by Method 9034-9030B

Method: Blank (MB)

MB Result	MB Qualifier	MB MDL	MB PCL
(MB) R3344333-1 09/23/18 17:49 mg/kg		mg/kg	mg/kg
U	7.53	25.0	25.0

L1027463-01 Original Sample (OS) - Duplicate (DUP)

(OS) L1027463-01 09/23/18 17:49 - (DUP) R3344333-5 09/23/18 17:49

Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
mg/kg	mg/kg	%	%		%
54.8	54.8	1	0.000		20

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3344333-2 09/23/18 17:49 - (LCS-D) R3344333-3 09/23/18 17:49

Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
mg/kg	mg/kg	mg/kg	%	%	%			%	%
100	73.1	73.1	73.1	73.1	70.0-130			0.000	20

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT:

SDG: L1027463

DATE/TIME: 09/25/18 08:29

# QUALITY CONTROL SUMMARY

L1027463-C1

**WG1169412**

Wet Chemistry by Method 9045D

L1027473-09 Original Sample (OS) - Duplicate (DUP)

(OS) L1027473-09 09/27/18 13:15 • (DUP) R3343953-4 09/27/18 13:15

Analyte	Original Result	DUP Result	DUP RPD	DUP Qualifier	DUP RPD Limits
Corrosivity by pH	7.22	7.21	0.13%	1	1

**Sample Narrative:**

OS: 7.22 at 22.8C  
 DUP: 7.21 at 22.1C

**Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCS-D)**

(LCS) R3343953-4 09/27/18 13:15 • (LCS-D) R3343953-2 09/27/18 13:15

Analyte	Spike Amount	LCS Result	LCS Rec	LCSD Result	LCSD Rec	Rec. Limits	LCSD Qualifier	LCSD Qualifier	RPD	RPD Limits
Corrosivity by pH	10.0	9.99	100%	9.99	100%	9.9-10.1	1	1	0.100%	1

**Sample Narrative:**

LCS: 10 at 21.3C  
 LCS-D: 9.99 at 21.3C

ACCOUNT: Hill Environmental Analysis Laboratory

PROJECT:

SDG: L1027463

DATE/TIME: 09/25/18 08:29

QUALITY CONTROL SUMMARY										
L1027463-01										
WG1169226										
Wet Chemistry by Method D55/10-1A										
L1027405-01 Original Sample (OS) • Duplicate (DUP)										
OS L1027405-01 09/20/18 20:07 • (DUP) R334373-3 09/20/18 20:01										
Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits				
Ignitability	Deg. F DN at 170	Deg. F DN at 170		%		%				
			1	0.000		10				
L1027473-10 Original Sample (OS) • Duplicate (DUP)										
OS L1027473-10 09/20/18 20:01 • (DUP) R334373-4 09/20/18 20:01										
Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits				
Ignitability	Deg. F DN at 170	Deg. F DN at 170		%		%				
			1	0.000		10				
Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)										
LCS R3343731-1 09/20/18 20:01 • (LCSD) R3343731-2 09/20/18 20:01										
Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Ignitability	Deg. F 87.0	Deg. F 82.7	Deg. F 82.7	% 101	% 101	% 95.0-104	% (0)	% (0)	% 0.000	% 10

ONE LAB. NATIONWIDE.

ACCOUNT: Hall Environmental/Analytical Laboratory  
 PROJECT:   
 SDG: L027463  
 DATE/TIME: 09/25/18 08:29



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cnl)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but are laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
PI	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
TB	Sample(s) received past/too close to holding time expiration.

- Tc
- Ss
- Cn
- Sr
- Qc
- Gl
- Al
- Sc

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT:

SDG: L1027463

DATE/TIME: 09/25/18 08:29

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1809A62

26-Sep-18

Client: EA Engineering Science &amp; Technology

Project: KAFB BFF Data Gap Wells

Sample ID	<b>LCS-40460</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40460</b>	RunNo:	<b>54275</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797655</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.00	0	101	70	130			
Surr: DNOP	4.4		5.000		87.3	50.6	138			

Sample ID	<b>MB-40460</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40460</b>	RunNo:	<b>54275</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797656</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		101	50.6	138			

Sample ID	<b>LCS-40485</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40485</b>	RunNo:	<b>54322</b>					
Prep Date:	<b>9/20/2018</b>	Analysis Date:	<b>9/21/2018</b>	SeqNo:	<b>1798291</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.0		5.000		100	50.6	138			

Sample ID	<b>MB-40485</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40485</b>	RunNo:	<b>54322</b>					
Prep Date:	<b>9/20/2018</b>	Analysis Date:	<b>9/21/2018</b>	SeqNo:	<b>1798292</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		108	50.6	138			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A62

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A62

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	<b>mb-40456</b>		SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260B: Volatiles</b>						
Client ID:	<b>PBS</b>		Batch ID: <b>40456</b>	RunNo: <b>54347</b>						
Prep Date:	<b>9/19/2018</b>		Analysis Date: <b>9/21/2018</b>	SeqNo: <b>1799119</b>		Units: <b>mg/Kg</b>				
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.47		0.5000		94.2	70	130			
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		94.4	70	130			
Surr: Toluene-d8	0.45		0.5000		90.2	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		91.8	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	<b>ics-40456</b>		SampType: <b>LCS</b>	TestCode: <b>EPA Method 8260B: Volatiles</b>						
Client ID:	<b>LCSS</b>		Batch ID: <b>40456</b>	RunNo: <b>54347</b>						
Prep Date:	<b>9/19/2018</b>		Analysis Date: <b>9/21/2018</b>	SeqNo: <b>1799121</b>		Units: <b>mg/Kg</b>				
Benzene	1.2	0.025	1.000	0	119	70	130			
Toluene	1.0	0.050	1.000	0	102	70	130			
Chlorobenzene	1.1	0.050	1.000	0	112	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 8 of 15

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A62**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	<b>Ics-40456</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8260B: Volatiles</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54347</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/21/2018</b>	SeqNo:	<b>1799121</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	1.3	0.050	1.000	0	126	70	130			
Trichloroethene (TCE)	1.1	0.050	1.000	0	112	70	130			
Surr: Dibromofluoromethane	0.52		0.5000		103	70	130			
Surr: 1,2-Dichloroethane-d4	0.49		0.5000		98.8	70	130			
Surr: Toluene-d8	0.45		0.5000		89.4	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		98.4	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Kirtland AFB BFF  
 Completion Report for Data Gap Monitoring Wells  
 SWMUs ST-106/SS-111

June 2020

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1809A62

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	Ics-40469		SampType: LCS			TestCode: EPA Method 8270C: Semivolatiles				
Client ID:	LCSS		Batch ID: 40469			RunNo: 54318				
Prep Date:	9/20/2018		Analysis Date: 9/21/2018			SeqNo: 1798894 Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.1	0.20	1.670	0	66.6	42	110			
4-Chloro-3-methylphenol	2.3	0.50	3.330	0	69.6	42.3	117			
2-Chlorophenol	1.8	0.20	3.330	0	52.9	27.6	117			
1,4-Dichlorobenzene	0.81	0.20	1.670	0	48.7	28.8	105			
2,4-Dinitrotoluene	1.2	0.50	1.670	0	70.5	42	98.7			
N-Nitrosodi-n-propylamine	1.2	0.20	1.670	0	69.4	41.8	112			
4-Nitrophenol	3.2	0.25	3.330	0	95.2	54	113			
Pentachlorophenol	2.6	0.40	3.330	0	78.0	41.5	101			
Phenol	1.8	0.20	3.330	0	53.8	32.2	115			
Pyrene	1.5	0.20	1.670	0	91.5	48.5	121			
1,2,4-Trichlorobenzene	1.0	0.20	1.670	0	60.6	39.9	112			
Surr: 2-Fluorophenol	1.5		3.330		45.1	21.7	87.9			
Surr: Phenol-d5	2.0		3.330		59.2	30.2	92.2			
Surr: 2,4,6-Tribromophenol	2.8		3.330		83.4	47.1	103			
Surr: Nitrobenzene-d5	0.96		1.670		57.3	23.9	102			
Surr: 2-Fluorobiphenyl	1.1		1.670		63.0	32.6	101			
Surr: 4-Terphenyl-d14	1.7		1.670		99.5	37.2	117			

Sample ID	mb-40469		SampType: MBLK			TestCode: EPA Method 8270C: Semivolatiles				
Client ID:	PBS		Batch ID: 40469			RunNo: 54318				
Prep Date:	9/20/2018		Analysis Date: 9/21/2018			SeqNo: 1798895 Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	ND	0.50								

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A62

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	mb-40469	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	40469	RunNo:	54318					
Prep Date:	9/20/2018	Analysis Date:	9/21/2018	SeqNo:	1798895	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	ND	0.40								
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3'-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1809A62

26-Sep-18

Client: EA Engineering Science &amp; Technology

Project: KAFB BFF Data Gap Wells

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	mb-40469	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	40469	RunNo:	54318					
Prep Date:	9/20/2018	Analysis Date:	9/21/2018	SeqNo:	1798895	Units:	mg/Kg			
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	1.8		3.330		52.8	21.7	87.9			
Surr: Phenol-d5	2.2		3.330		64.6	30.2	92.2			
Surr: 2,4,6-Tribromophenol	2.6		3.330		78.3	47.1	103			
Surr: Nitrobenzene-d5	1.0		1.670		62.3	23.9	102			
Surr: 2-Fluorobiphenyl	1.1		1.670		65.2	32.6	101			
Surr: 4-Terphenyl-d14	1.6		1.670		95.3	37.2	117			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A62**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	<b>MB-40525</b>	SampType:	<b>MBLK</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40525</b>	RunNo:	<b>54370</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1799878</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	<b>LCS-40525</b>	SampType:	<b>LCS</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40525</b>	RunNo:	<b>54370</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1799879</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.0	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

Page 13 of 15

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A62

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	<b>MB-40518</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40518</b>	RunNo:	<b>54358</b>					
Prep Date:	<b>9/21/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1800649</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	<b>LCS-40518</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40518</b>	RunNo:	<b>54358</b>					
Prep Date:	<b>9/21/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1800651</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	97.7	80	120			
Barium	ND	100	0.5000	0	98.8	80	120			
Cadmium	ND	1.0	0.5000	0	102	80	120			
Chromium	ND	5.0	0.5000	0	98.0	80	120			
Lead	ND	5.0	0.5000	0	98.1	80	120			
Selenium	ND	1.0	0.5000	0	106	80	120			
Silver	ND	5.0	0.1000	0	111	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A62

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	<b>Ics-40456</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015D Mod: Gasoline Range</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54305</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797289</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	91.6	70	130			
Surr: BFB	470		500.0		93.2	70	130			

Sample ID	<b>mb-40456</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015D Mod: Gasoline Range</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54305</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797290</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	500		500.0		99.4	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87105  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

**Sample Log-In Check List**

Client Name: EA Engineering Alb

Work Order Number: 1809A62

RcptNo: 1

Received By: Jazzmine Burkhead 9/18/2018 3:48:00 PM

Completed By: Ashley Gallegos 9/18/2018 5:31:06 PM

Reviewed By: ENM

9/18/18

Labeled by: JAB 09/19/18

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: JAB 09/19/18

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.8	Good	Not Present			





EA Engineering, Science, & Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, New Mexico 87102  
Phone: (505) 224-9013

August 21, 2018

Ms. Katrina Wheelock  
Solid Waste Program Manager  
Environmental Management  
377 MSG/CEIE  
Kirtland AFB, New Mexico 87117

Subject: Request to dispose non-hazardous soil cuttings at Kirtland C&D Landfill  
Roll-off Identification: KAFB-106244-5 (Bin ID #0543-20)  
USACE Contract No. W912DR-12-D-0006-DM01

Dear Ms. Wheelock,

EA Engineering, Science, and Technology, Inc., PBC (EA) is requesting permission to dispose of non-hazardous soil drill cuttings and plastic liners from one roll-off container to the Kirtland Air Force Base (AFB) Construction and Demolition (C&D) debris landfill. Roll-off bin with the EA identification of KAFB-106244-5 (Bin ID #0543-20) contains approximately 1 cubic yard of soil.

Between June and July 2018 EA installed a groundwater monitoring well, KAFB-106244, associated with the Kirtland Bulk Fuels Facility environmental restoration project. Well KAFB-106244 is located on City of Albuquerque property south of the VA Hospital just west of Bullhead Park. Drill cuttings were containerized in a plastic-lined, steel, roll-off pending laboratory analysis for waste characterization. Any excess moisture in the bin was stabilized using Hydrosorb®, a superabsorbent polymer. All roll-off bins are currently residing in the EA investigation derived waste yard near 1601 Perimeter Circle SE, on Kirtland AFB.

One five-point composite waste characterization sample was collected from the roll-off bin and delivered to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis. The sample was analyzed for all the required parameters per the Kirtland AFB Landfill Acceptance Memorandum (January 2009). The attached analytical results (Report 1807D06) for the composite sample confirms the drill cuttings meet waste acceptance requirements for disposal at the Kirtland C&D landfill.

All of the roll-off containers are owned and/or leased by Advanced Chemical Transport Environmental Services Inc. (ACT) with roll-off identification number, when present, marked clearly on the roll off. ACT will utilize one of the following vehicles for waste transport:



W912DR-12-D-0006-DM01  
 Kirtland Air Force Base Bulk Fuels Facility Expansion  
 of the Dissolved Plume Groundwater Treatment System Design  
 2 May 2017  
 Page 2 of 2

- 2015 Western Star Roll Off Truck, License #: WD121651, registered in New Mexico
- 2015 Western Star Roll Off Truck, License #: WD124756, registered in New Mexico

Ms. Jeanne Dye-Porto (AFCEC/CZO) has reviewed this package and authorized EA to forward it for your review. EA respectfully requests your review of the attached summary table and analytical data for determination if disposal can be authorized at the Kirtland AFB C&D landfill. Upon receiving notification of Kirtland AFB's acceptance of the waste, EA will coordinate transport and disposal of the roll-off contents with ACT.

EA's Kirtland AFB Point of Contact is Mr. Scott Clark; 505-846-9017.

If you have any questions, please do not hesitate to contact me at 505-266-2225, or via e-mail at [landress@eaest.com](mailto:landress@eaest.com).

Sincerely,

Lane Andress, PG

Attachments: Summary Analytical Table  
 Hall Environmental Analysis Laboratory Order No: Report 1807D06

cc: Jeanne Dye-Porto, [jeanne.dye-porto@us.af.mil](mailto:jeanne.dye-porto@us.af.mil)  
 Scott Clark, [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)  
 Sheen Kottkamp, [sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)  
 Melissa Clark, [melissa.clark.8@us.af.mil](mailto:melissa.clark.8@us.af.mil)  
 Ben Moayyad, [Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)  
 Devon Jercinovic, [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
 Bernie Bockisch, [bbockisch@eaest.com](mailto:bbockisch@eaest.com)  
 Earl Morse, [emorse@eaest.com](mailto:emorse@eaest.com)

			LOCATION CODE						
			FIELD SAMPLE ID						
			Rolloff Bin 244-5						
			SAMPLE DATE						
			23-Jul-18						
			SAMPLE PURPOSE						
			Waste Characterization						
			ROLL-OFF NO.						
			KAFB-106244-5						
Parameter	Method	Analyte	Units	TCLP Regulatory	Result	QUAL	PQL		
RCRA Characteristics	SW1010A Mod	IGNITABILITY	°F	See footnote <sup>2</sup>	>170	--	--		
	SW9012B	REACTIVE CYANIDE (as total)	mg/kg	NE	ND	--	0.25		
	SW9034	REACTIVE SULFIDE (as total)	mg/kg	NE	ND	--	25		
	SW9045D	CORROSIVITY (pH)	S.U.	≥2 or ≤12.5	7.72	J	--		
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.002		
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.002		
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0		
		BARIUM	mg/L	100	ND	--	100		
		CADMIUM	mg/L	1	ND	--	1.0		
		CHROMIUM	mg/L	5	ND	--	5.0		
		LEAD	mg/L	5	ND	--	5.0		
		SELENIUM	mg/L	1	ND	--	1.0		
		SILVER	mg/L	5	ND	--	5.0		
	SW1311/7470A	MERCURY	mg/L	0.02	ND	--	0.020		
TCLP PESTICIDES	SW1311/8081	CHLORDANE	mg/L	0.03	ND	--	0.030		
		ENDRIN	mg/L	0.02	ND	--	0.020		
		GAMMA-BHC (LINDANE)	mg/L	0.4	ND	--	0.40		
		HEPTACHLOR	mg/L	0.008	ND	--	0.0080		
		HEPTACHLOR EPOXIDE	mg/L	0.008	ND	--	0.0080		
		METHOXYCHLOR	mg/L	10	ND	--	10		
		TOXAPHENE	mg/L	0.5	ND	--	0.50		
		TCLP SVOCs	SW1311/8270C	2,4,5-TRICHLOROPHENOL	mg/L	400	ND	--	400
2,4,6-TRICHLOROPHENOL	mg/L			2	ND	--	2.0		
2,4-DINITROTOLUENE	mg/L			0.13	ND	--	0.13		
2-METHYLPHENOL (o-Cresol)	mg/L			200	ND	--	200		
3- and 4-METHYLPHENOL (m- and o-Cresol)	mg/L			200	ND	--	200		
HEXACHLOROBENZENE	mg/L			0.13	ND	--	0.13		
HEXACHLOROBUTADIENE	mg/L			0.5	ND	--	0.50		
HEXACHLOROETHANE	mg/L			3	ND	--	3.0		
NITROBENZENE	mg/L			2	ND	--	2.0		
PENTACHLOROPHENOL	mg/L			100	ND	--	100		
PYRIDINE	mg/L			5	ND	--	5.0		
CRESOLS, TOTAL	mg/L	200	ND	--	200				
TCLP VOCs	SW1311/8260B	1,1-DICHLOROETHENE	mg/L	0.7	ND	--	0.70		
		1,2-DICHLOROETHANE	mg/L	0.5	ND	--	0.50		
		1,4-DICHLOROETHENE	mg/L	7.5	ND	--	7.5		
		2-BUTANONE (MEK)	mg/L	200	ND	--	200		
		BENZENE	mg/L	0.5	ND	--	0.50		
		CARBON TETRACHLORIDE	mg/L	0.5	ND	--	0.50		
		CHLOROBENZENE	mg/L	100	ND	--	100		
		CHLOROFORM	mg/L	6.0	ND	--	6.0		
		TETRACHLOROETHENE	mg/L	0.7	ND	--	0.70		
		TRICHLOROETHENE	mg/L	0.5	ND	--	0.50		
		VINYL CHLORIDE	mg/L	0.2	ND	--	0.20		
		TPH	SW8015M/D	DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	9.4
				MOTOR OIL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	4.7
GASOLINE RANGE ORGANICS	mg/kg			100 <sup>d</sup>	ND	--	4.8		
VOLATILES (BTEX)	SW8260B	BENZENE	mg/kg	10	ND	--	0.024		
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.048		
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.048		
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.097		

Notes:

- <sup>1</sup>TCLP Regulatory Level - Resource Conservation Recovery Act (RCRA) hazardous waste characteristic limits per 40CFR Part 261 Subpart C, Section 261.20 - 261.24.
- <sup>2</sup>KAFB Limits - Kirtland AFB landfill requirements per the Department of Air Force Technical Memorandum for Kirtland AFB/Department of Energy/Sandia National Laboratories Restoration Agencies and Their Commercial Contractors (2009).
- <sup>3</sup>Ignitability characteristic for solids from 40 CFR Part 261.21: "It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of moisture, or..."
- <sup>4</sup>KAFB limit for TPH measured as the sum of gasoline, diesel and motor oil range organics.
- <sup>5</sup>KAFB limit for BTEX measured as the sum of benzene, toluene, ethylbenzene, and total xylenes.
- > - greater than
- BTEX - benzene, toluene, ethylbenzene, total xylenes
- °F - degrees fahrenheit
- J - estimated value
- mg/L - milligram per liter
- mg/kg - milligram per kilogram
- NE - not established
- ND - not detected above the PQL
- PQL - practical quantitation limit
- QUAL - laboratory data qualifier
- Shade- analyte detected above the detection limit
- Shade and Bold- analyte detected above KAFB Landfill acceptance limit or TCLP Regulatory Level
- SVOCs - semivolatile organic compounds
- S.U. - Standard units
- TCLP - Toxicity Characteristic Leaching Procedure
- TPH - total petroleum hydrocarbons
- VOCs - volatile organic compounds

106244-5



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

August 15, 2018

Earl Morse  
EA Engineering  
320 Gold Ave SW Suite 1210  
Albuquerque, NM 87102  
TEL: (505) 224-9013  
FAX

RE: Kirtland AFB BFF

OrderNo.: 1807D06

Dear Earl Morse:

Hall Environmental Analysis Laboratory received 1 sample(s) on 7/23/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order 1807D06

Date Reported: 8/15/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: Rolloff Bin 244-5

Project: Kirtland AFB BFF

Collection Date: 7/23/2018 9:15:00 AM

Lab ID: 1807D06-001

Matrix: SOIL

Received Date: 7/23/2018 12:30:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: rde
Mercury	ND	0.020		mg/L	1	8/1/2018 3:45:07 PM	39538
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: pmf
Arsenic	ND	5.0		mg/L	1	8/1/2018 11:27:19 AM	39510
Barium	ND	100		mg/L	1	8/1/2018 11:27:19 AM	39510
Cadmium	ND	1.0		mg/L	1	8/1/2018 11:27:19 AM	39510
Chromium	ND	5.0		mg/L	1	8/1/2018 11:27:19 AM	39510
Lead	ND	5.0		mg/L	1	8/1/2018 1:27:52 PM	39510
Selenium	ND	1.0		mg/L	1	8/1/2018 11:27:19 AM	39510
Silver	ND	5.0		mg/L	1	8/1/2018 11:27:19 AM	39510
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: AG
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/30/2018 4:48:31 PM	39463
Surr: BFB	111	70-130		%Rec	1	7/30/2018 4:48:31 PM	39463
<b>EPA METHOD 8081: PESTICIDES TCLP</b>							Analyst: JME
Chlordane	ND	0.030		mg/L	1	8/8/2018 4:39:00 PM	39595
Endrin	ND	0.020		mg/L	1	8/8/2018 4:39:00 PM	39595
gamma-BHC (Lindane)	ND	0.40		mg/L	1	8/8/2018 4:39:00 PM	39595
Heptachlor	ND	0.0080		mg/L	1	8/8/2018 4:39:00 PM	39595
Heptachlor epoxide	ND	0.0080		mg/L	1	8/8/2018 4:39:00 PM	39595
Methoxychlor	ND	10		mg/L	1	8/8/2018 4:39:00 PM	39595
Toxaphene	ND	0.50		mg/L	1	8/8/2018 4:39:00 PM	39595
Surr: Decachlorobiphenyl	99.4	58.3-109		%Rec	1	8/8/2018 4:39:00 PM	39595
Surr: Tetrachloro-m-xylene	81.2	40.1-101		%Rec	1	8/8/2018 4:39:00 PM	39595
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: lrm
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/2/2018 2:16:53 PM	39489
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/2/2018 2:16:53 PM	39489
Surr: DNOP	92.4	50.6-138		%Rec	1	8/2/2018 2:16:53 PM	39489
<b>EPA METHOD 8270C TCLP</b>							Analyst: DAM
2-Methylphenol	ND	200		mg/L	1	8/8/2018 6:08:32 PM	39596
3+4-Methylphenol	ND	200		mg/L	1	8/8/2018 6:08:32 PM	39596
2,4-Dinitrotoluene	ND	0.13		mg/L	1	8/8/2018 6:08:32 PM	39596
Hexachlorobenzene	ND	0.13		mg/L	1	8/8/2018 6:08:32 PM	39596
Hexachlorobutadiene	ND	0.50		mg/L	1	8/8/2018 6:08:32 PM	39596
Hexachloroethane	ND	3.0		mg/L	1	8/8/2018 6:08:32 PM	39596
Nitrobenzene	ND	2.0		mg/L	1	8/8/2018 6:08:32 PM	39596
Pentachlorophenol	ND	100		mg/L	1	8/8/2018 6:08:32 PM	39596
Pyridine	ND	5.0		mg/L	1	8/8/2018 6:08:32 PM	39596
2,4,5-Trichlorophenol	ND	400		mg/L	1	8/8/2018 6:08:32 PM	39596

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Hall Environmental Analysis Laboratory, Inc.

## Analytical Report

Lab Order 1807D06

Date Reported: 8/15/2018

CLIENT: EA Engineering  
 Project: Kirtland AFB BFF  
 Lab ID: 1807D06-001

Matrix: SOIL

Client Sample ID: Rolloff Bin 244-5  
 Collection Date: 7/23/2018 9:15:00 AM  
 Received Date: 7/23/2018 12:30:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C TCLP</b>							Analyst: <b>DAM</b>
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	8/8/2018 6:08:32 PM	39596
Cresols, Total	ND	200		mg/L	1	8/8/2018 6:08:32 PM	39596
Surr: 2-Fluorophenol	37.6	15-102		%Rec	1	8/8/2018 6:08:32 PM	39596
Surr: Phenol-d5	30.8	15-87.7		%Rec	1	8/8/2018 6:08:32 PM	39596
Surr: 2,4,6-Tribromophenol	62.9	39.9-111		%Rec	1	8/8/2018 6:08:32 PM	39596
Surr: Nitrobenzene-d5	62.2	35.1-107		%Rec	1	8/8/2018 6:08:32 PM	39596
Surr: 2-Fluorobiphenyl	75.3	36.7-100		%Rec	1	8/8/2018 6:08:32 PM	39596
Surr: 4-Terphenyl-d14	83.7	42.6-129		%Rec	1	8/8/2018 6:08:32 PM	39596
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	ND	0.024		mg/Kg	1	7/30/2018 4:48:31 PM	39463
Toluene	ND	0.048		mg/Kg	1	7/30/2018 4:48:31 PM	39463
Ethylbenzene	ND	0.048		mg/Kg	1	7/30/2018 4:48:31 PM	39463
Xylenes, Total	ND	0.097		mg/Kg	1	7/30/2018 4:48:31 PM	39463
Surr: 4-Bromofluorobenzene	125	70-130		%Rec	1	7/30/2018 4:48:31 PM	39463
Surr: Toluene-d8	86.4	70-130		%Rec	1	7/30/2018 4:48:31 PM	39463
<b>VOLATILES BY 8260B/1311</b>							Analyst: <b>DJF</b>
Benzene	ND	0.50		mg/L	1	8/2/2018 1:59:06 AM	39479
2-Butanone	ND	200		mg/L	1	8/2/2018 1:59:06 AM	39479
Carbon Tetrachloride	ND	0.50		mg/L	1	8/2/2018 1:59:06 AM	39479
Chlorobenzene	ND	100		mg/L	1	8/2/2018 1:59:06 AM	39479
Chloroform	ND	6.0		mg/L	1	8/2/2018 1:59:06 AM	39479
1,4-Dichlorobenzene	ND	7.5		mg/L	1	8/2/2018 1:59:06 AM	39479
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	8/2/2018 1:59:06 AM	39479
1,1-Dichloroethene	ND	0.70		mg/L	1	8/2/2018 1:59:06 AM	39479
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	8/2/2018 1:59:06 AM	39479
Trichloroethene (TCE)	ND	0.50		mg/L	1	8/2/2018 1:59:06 AM	39479
Vinyl chloride	ND	0.20		mg/L	1	8/2/2018 1:59:06 AM	39479
Surr: 1,2-Dichloroethane-d4	107	70-130		%Rec	1	8/2/2018 1:59:06 AM	39479
Surr: 4-Bromofluorobenzene	108	57.3-148		%Rec	1	8/2/2018 1:59:06 AM	39479
Surr: Dibromofluoromethane	105	70-130		%Rec	1	8/2/2018 1:59:06 AM	39479
Surr: Toluene-d8	107	70-130		%Rec	1	8/2/2018 1:59:06 AM	39479

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 2 of 12

1807D06-D01B ROLLOFF BIN 244-5  
 Collected date/time: 07/23/18 09:15

SAMPLE RESULTS - 01  
 L1013162

CLP LAB - NATIONWIDE 

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		8/3/2018 5:42:53 AM	WG1147094
Fluid	1		8/3/2018 5:42:53 AM	WG1147094
Initial pH	8.50		8/3/2018 5:42:53 AM	WG1147094
Final pH	5.98		8/3/2018 5:42:53 AM	WG1147094

- Tf
- Ss
- Cn
- Sr
- Qc
- GI
- 
- Sc

Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.250	1	08/02/2018 08:09	WG1145311

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		25.0	1	08/04/2018 15:15	WG1147265

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	7.72	Is	1	07/31/2018 14:45	WG1145335

Sample Narrative:  
 L1013162-01 WG1145335 7.72 at 19.2C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DNal 170		1	07/29/2018 09:18	WG1144632

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
2,4,5-TP (Sivec)	ND		0.00200	1	1	08/06/2018 21:04	WG1144039
2,4-D	ND		0.00200	10	1	08/06/2018 21:04	WG1144039
(S) 2,4-Dichlorophenoxy Acetic Acid	54.2		4.0-758			09/06/2018 21:04	WG1144039

ACCOUNT:  
 Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
 L1013162

DATE/TIME:  
 08/08/18 10:01

**WG1145892**

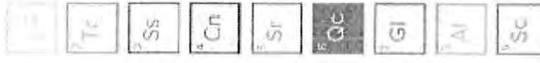
Wet Chemistry by Method 9012 E

Method Blank (MB)

**QUALITY CONTROL SUMMARY**

L1013162-01

ONE LAB NATIONWIDE



(MB) R3330309-1 08/02/18 07:54

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Cyanide	U		0.0300	0.250

L1013132-07 Original Sample (OS) - Duplicate (DUP)

(OS) L1013132-07 08/02/18 08:00 - (DUP) R3330309-4 08/02/18 08:01

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Reactive Cyanide	U	0.000	1	0.000		20

L1013481-04 Original Sample (OS) - Duplicate (DUP)

(OS) L1013481-04 08/02/18 08:14 - (DUP) R3330309-7 08/02/18 08:15

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Reactive Cyanide	ND	0.0512	1	0.000		20

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)

(LCS) R3330309-2 08/02/18 07:55 - (LCSD) R3330309-3 08/02/18 07:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	2.50	2.65	2.40	106	50.0-150			99.0	20

L1013158-03 Original Sample (OS) - Matrix Spike (MS) - Matrix Spike Duplicate (MSD)

(OS) L1013158-03 08/02/18 08:06 - (MS) R3330309-5 08/02/18 08:07 - (MSD) R3330309-6 08/02/18 08:08

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	1.57	ND	0.959	1.43	1	75.0-125	MS	MSD	29.5	20

ACCOUNT: Hall Environmental Analysis Laboratory

SDG: L1013162

DATE/TIME: 08/09/18 10:01

QUALITY CONTROL SUMMARY

LI013162-01

WG1147295

Met Chemistry by Method 8034-90100

Method Blank (MS)

MB Result	MB MDL	MB RSL
mg/kg	mg/kg	mg/kg
U	7.63	25.0

LI013162-02 Original Sample (OS) - Duplicate (DUP)

(OS) LI013162-02 08/04/18 15:15 - (DUP) R3330955-4 08/04/18 15:15

Original Result	DUP Result	Dilution	DUP %FD	DUP Qualifier	DUP RPD Limits
mg/kg	mg/kg	%	%		%
ND	ND	1	0.000		20

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)

(LCS) R3330955-2 08/04/18 15:15 - (LCSD) R3330955-3 08/04/18 15:15

Spike Amount	LCS Result	LCSD Result	LCS Rec	LCSD Rec	Rec. Limits	RPD	RPD Limits
mg/kg	mg/kg	mg/kg	%	%	%	%	%
100	72.9	72.9	72.9	72.9	70.0-30	0.000	20

Fz  
 Ss  
 Cn  
 Sr  
 Qc  
 GI  
 H  
 Sc

ACCOUNT: Heli Environmental Analysis Laboratory  
 PROJECT: L1013162  
 SDG: L1013162  
 DATE/TIME: 28/08/18 10:01

**WG1145335**

Wet Chemistry by Method 9043D

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)

L1013162-01

(LCS) H3329907-1 07/31/18 14:45 - (LCSD) R3329907-2 07/31/18 14:45

Analyte	Spiked Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Conductivity by pH	10.0	9.99	10.0	99.9	100	59.0-101			0.100	1

**Sample Narrative:**

LCS: 0.99 at 18.9C  
LCSD: 10.0 at 19C

Tc  
 SS  
 Cn  
 Sr  
 Qc  
 GI  
 AI  
 Sc

DATE/TIME:  
08/08/18 10:01

SDS:  
L1013162

PROJECT:

ACCOUNT:  
Hall Environmental Analysis Laboratory

QUALITY CONTROL SUMMARY

WG1144698

Wet Chemistry by Method D93/1010A

L1012695-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1012695 C2 07/29/18 09:18 • (DUP) R332952-3-3 07/29/18 09:18

Analyte	Original Result	DUP Result	Dilution	DUP-RPD	DUP Qualifier	DUP-RPD Limits
Ignitability	DN at 170	DN at 170	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)

(LCS) R332952-3-1 07/29/18 09:18 • (LCS-D) R332952-3-2 07/29/18 09:18

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec	LCSD Rec	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Ignitability	82.3	82.6	82.5	101	101	96.3-103			0.000	10

OS  
 SS  
 Cn  
 Sr  
 QC  
 GI  
 G  
 Sc

ACCOUNT: Hill Environmental Analysis Laboratory  
 PROJECT: L1013162  
 SCG: L1013162  
 DATE/TIME: 08/08/18 10:01

**WG1148019**

Chlorinated Acid Herbicides (GC) by Method 8151A

**QUALITY CONTROL SUMMARY**

L1013162-01

ONE LAB NATIONWIDE

Method Blank (MB)

(MB) R3331302-1 08/06/18 16:06

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4-D	U	0.000667	0.000667	0.002002
2,4,5-TP (Silvex)	U	0.000667	0.000667	0.002002
(3,4-Dichlorophenyl) Acetic Acid	54.9			14.0-158

Laboratory Control Samples (LCS) - Laboratory Control Sample Duplicate (LCSD)

(LCS) R3331302-2 08/06/18 16:20 - (LCSD) R3331302-3 08/06/18 16:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec %	LCSD Rec %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
2,4-D	0.00500	0.00344	0.00545	68.8	89.0	56.3-123			0.290	20
2,4,5-TP (Silvex)	0.00500	0.00298	0.00302	59.5	60.4	55.3-120			1.33	20
(3,4-Dichlorophenyl) Acetic Acid				54.9	55.6	14.0-158				



ACCOUNT: I Hall Environmental Analysis Laboratory

PROJECT:

SDG: L1013162

DATE/TIME: 08/06/18 10:01

GLOSSARY OF TERMS

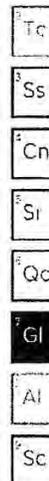
ONE LAB. NATIONWIDE 

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.



Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT:

SDG: L1013162

DATE/TIME: 08/08/18 10:01

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807D06

15-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	MB-39489	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID:	39489	RunNo:	53063					
Prep Date:	7/30/2018	Analysis Date:	8/1/2018	SeqNo:	1747164	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.5		10.00		85.0	50.6	138			

Sample ID	LCS-39489	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS	Batch ID:	39489	RunNo:	53063					
Prep Date:	7/30/2018	Analysis Date:	8/1/2018	SeqNo:	1747165	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	93.7	70	130			
Surr: DNOP	4.0		5.000		79.6	50.6	138			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 3 of 12

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1807D06

15-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0023		0.002500		93.7	58.3	109			
Surr: Tetrachloro-m-xylene	0.0019		0.002500		74.4	40.1	101			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00046	0.00010	0.0005000	0	92.3	49.5	127			
gamma-BHC (Lindane)	0.00043	0.00010	0.0005000	0	85.2	49.9	124			
Heptachlor	0.00037	0.00010	0.0005000	0	75.0	41	122			
Heptachlor epoxide	0.00045	0.00010	0.0005000	0	89.6	52.2	121			
Methoxychlor	0.00046	0.00010	0.0005000	0	92.7	40.2	134			
Surr: Decachlorobiphenyl	0.0022		0.002500		88.7	58.3	109			
Surr: Tetrachloro-m-xylene	0.0011		0.002500		43.6	40.1	101			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not in Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

Page 4 of 12

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807D06

15-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	Ics-39463		SampType: LCS4	TestCode: EPA Method 8260B: Volatiles Short List						
Client ID:	BatchQC		Batch ID: 39463	RunNo: 53058						
Prep Date:	7/27/2018		Analysis Date: 7/30/2018	SeqNo: 1745295		Units: mg/Kg				
Benzene	0.91	0.025	1.000	0	91.1	80	120			
Toluene	0.96	0.050	1.000	0	95.9	80	120			
Ethylbenzene	1.0	0.050	1.000	0	99.5	80	120			
Xylenes, Total	3.0	0.10	3.000	0	98.5	80	120			
Surr: 4-Bromofluorobenzene	0.57		0.5000		115	70	130			
Surr: Toluene-d8	0.43		0.5000		86.1	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	mb-39463		SampType: MBLK	TestCode: EPA Method 8260B: Volatiles Short List						
Client ID:	PBS		Batch ID: 39463	RunNo: 53058						
Prep Date:	7/27/2018		Analysis Date: 7/30/2018	SeqNo: 1745296		Units: mg/Kg				
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.66		0.5000		133	70	130			S
Surr: Toluene-d8	0.45		0.5000		89.9	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 5 of 12

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1807D06

15-Aug-18

Client: EA Engineering  
Project: Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	mb-39479	SampType: MBLK	TestCode: Volatiles by 8260B/1311							
Client ID:	PBS	Batch ID: 39479	RunNo: 53128							
Prep Date: 7/30/2018	Analysis Date: 8/2/2018	SeqNo: 1748526		Units: mg/L						
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.23		0.2000		116	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		94.4	57.3	148			
Surr: Dibromofluoromethane	0.21		0.2000		104	70	130			
Surr: Toluene-d8	0.22		0.2000		109	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	lcs-39479	SampType: LCS	TestCode: Volatiles by 8260B/1311							
Client ID:	LCSS	Batch ID: 39479	RunNo: 53128							
Prep Date: 7/30/2018	Analysis Date: 8/2/2018	SeqNo: 1748527		Units: mg/L						
Benzene	0.43	0.30	0.4000	0	107	70	130			
Chlorobenzene	0.40	0.30	0.4000	0	101	70	130			
1,1-Dichloroethene	0.45	0.30	0.4000	0	113	70	130			
Trichloroethene (TCE)	0.41	0.30	0.4000	0	103	70	130			
Surr: 1,2-Dichloroethane-d4	0.23		0.2000		114	70	130			
Surr: 4-Bromofluorobenzene	0.22		0.2000		111	57.3	148			
Surr: Dibromofluoromethane	0.22		0.2000		112	70	130			
Surr: Toluene-d8	0.20		0.2000		101	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807D06

15-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	Ics-39596		SampType: LCS	TestCode: EPA Method 8270C TCLP						
Client ID:	LCSS		Batch ID: 39596	RunNo: 53304						
Prep Date:	8/6/2018		Analysis Date: 8/8/2018	SeqNo: 1754616	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.081	0.00010	0.1000	0	80.6	47.8	99.2			
3+4-Methylphenol	0.15	0.00010	0.2000	0	77.2	41.5	118			
2,4-Dinitrotoluene	0.082	0.00010	0.1000	0	82.5	44.4	81			S
Hexachlorobenzene	0.088	0.00010	0.1000	0	87.7	49.5	91.6			
Hexachlorobutadiene	0.071	0.00010	0.1000	0	71.0	38.6	93			
Hexachloroethane	0.067	0.00010	0.1000	0	66.6	39.4	79.9			
Nitrobenzene	0.082	0.00010	0.1000	0	82.2	47.4	96.2			
Pentachlorophenol	0.078	0.00010	0.1000	0	78.4	39.4	79.9			
Pyridine	0.038	0.00010	0.1000	0	38.3	15	79.9			
2,4,5-Trichlorophenol	0.093	0.00010	0.1000	0	93.0	47.4	118			
2,4,6-Trichlorophenol	0.097	0.00010	0.1000	0	97.4	47.4	101			
Cresols, Total	0.23	0.00010	0.3000	0	78.3	44.1	111			
Surr: 2-Fluorophenol	0.10		0.2000		49.9	15	102			
Surr: Phenol-d5	0.084		0.2000		42.0	15	87.7			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		73.7	39.9	111			
Surr: Nitrobenzene-d5	0.078		0.1000		77.9	35.1	107			
Surr: 2-Fluorobiphenyl	0.074		0.1000		73.7	36.7	100			
Surr: 4-Terphenyl-d14	0.093		0.1000		92.6	42.6	129			

Sample ID	Icsd-39596		SampType: LCSD	TestCode: EPA Method 8270C TCLP						
Client ID:	LCSS02		Batch ID: 39596	RunNo: 53304						
Prep Date:	8/6/2018		Analysis Date: 8/8/2018	SeqNo: 1754617	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.072	0.00010	0.1000	0	71.8	47.8	99.2	11.5	20	
3+4-Methylphenol	0.13	0.00010	0.2000	0	67.1	41.5	118	13.9	20	
2,4-Dinitrotoluene	0.064	0.00010	0.1000	0	63.5	44.4	81	26.0	20	R
Hexachlorobenzene	0.080	0.00010	0.1000	0	79.6	49.5	91.6	9.61	20	
Hexachlorobutadiene	0.062	0.00010	0.1000	0	62.2	38.6	93	13.2	20	
Hexachloroethane	0.061	0.00010	0.1000	0	60.7	39.4	79.9	9.24	20	
Nitrobenzene	0.072	0.00010	0.1000	0	71.9	47.4	96.2	13.3	20	
Pentachlorophenol	0.071	0.00010	0.1000	0	71.2	39.4	79.9	9.62	20	
Pyridine	0.019	0.00010	0.1000	0	19.1	15	79.9	66.9	20	R
2,4,5-Trichlorophenol	0.078	0.00010	0.1000	0	78.0	47.4	118	17.5	20	
2,4,6-Trichlorophenol	0.079	0.00010	0.1000	0	79.0	47.4	101	20.9	20	R
Cresols, Total	0.21	0.00010	0.3000	0	68.7	44.1	111	13.1	20	
Surr: 2-Fluorophenol	0.092		0.2000		46.1	15	102	0	20	
Surr: Phenol-d5	0.073		0.2000		36.6	15	87.7	0	20	
Surr: 2,4,6-Tribromophenol	0.12		0.2000		61.2	39.9	111	0	20	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1807D06

15-Aug-18

Client: EA Engineering  
Project: Kirtland AFB BFF

Sample ID	icsd-39596	SampType:	LCSD	TestCode:	EPA Method 8270C TCLP					
Client ID:	LCSS02	Batch ID:	39596	RunNo:	53304					
Prep Date:	8/6/2018	Analysis Date:	8/8/2018	SeqNo:	1754617	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.069		0.1000		69.0	35.1	107	0	20	
Surr: 2-Fluorobiphenyl	0.070		0.1000		70.0	36.7	100	0	20	
Surr: 4-Terphenyl-d14	0.082		0.1000		81.6	42.6	129	0	20	

Sample ID	mb-39596	SampType:	MBLK	TestCode:	EPA Method 8270C TCLP					
Client ID:	PBS	Batch ID:	39596	RunNo:	53304					
Prep Date:	8/6/2018	Analysis Date:	8/8/2018	SeqNo:	1754618	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.093		0.2000		46.5	15	102			
Surr: Phenol-d5	0.075		0.2000		37.4	15	87.7			
Surr: 2,4,6-Tribromophenol	0.14		0.2000		71.4	39.9	111			
Surr: Nitrobenzene-d5	0.069		0.1000		69.2	35.1	107			
Surr: 2-Fluorobiphenyl	0.069		0.1000		69.1	36.7	100			
Surr: 4-Terphenyl-d14	0.084		0.1000		84.0	42.6	129			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1807D06

15-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	MB-39538	SampType:	MBLK	TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	39538	RunNo:	53136					
Prep Date:	8/1/2018	Analysis Date:	8/1/2018	SeqNo:	1748004	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	LCS-39538	SampType:	LCS	TestCode:	MERCURY, TCLP					
Client ID:	LCSW	Batch ID:	39538	RunNo:	53136					
Prep Date:	8/1/2018	Analysis Date:	8/1/2018	SeqNo:	1748005	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.1	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1807D06

15-Aug-18

Client: EA Engineering  
Project: Kirtland AFB BFF

Sample ID: 1807D06-001AMS	SampType: MS	TestCode: EPA Method 6010B: TCLP Metals								
Client ID: Rolloff Bin 244-5	Batch ID: 39510	RunNo: 53113								
Prep Date: 7/31/2018	Analysis Date: 8/1/2018	SeqNo: 1747831 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	99.2	75	125			
Barium	ND	100	0.5000	1.802	87.5	75	125			
Cadmium	ND	1.0	0.5000	0	102	75	125			
Chromium	ND	5.0	0.5000	0	91.1	75	125			
Selenium	ND	1.0	0.5000	0	94.5	75	125			
Silver	ND	5.0	0.1000	0.01426	111	75	125			

Sample ID: 1807D06-001AMSD	SampType: MSD	TestCode: EPA Method 6010B: TCLP Metals								
Client ID: Rolloff Bin 244-5	Batch ID: 39510	RunNo: 53113								
Prep Date: 7/31/2018	Analysis Date: 8/1/2018	SeqNo: 1747832 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	95.5	75	125	0	20	
Barium	ND	100	0.5000	1.802	90.6	75	125	0	20	
Cadmium	ND	1.0	0.5000	0	104	75	125	0	20	
Chromium	ND	5.0	0.5000	0	92.1	75	125	0	20	
Selenium	ND	1.0	0.5000	0	99.1	75	125	0	20	
Silver	ND	5.0	0.1000	0.01426	113	75	125	0	20	

Sample ID: MB-39510	SampType: MBLK	TestCode: EPA Method 6010B: TCLP Metals								
Client ID: PBW	Batch ID: 39510	RunNo: 53113								
Prep Date: 7/31/2018	Analysis Date: 8/1/2018	SeqNo: 1747864 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0								

Sample ID: LCS-39510	SampType: LCS	TestCode: EPA Method 6010B: TCLP Metals								
Client ID: LCSW	Batch ID: 39510	RunNo: 53113								
Prep Date: 7/31/2018	Analysis Date: 8/1/2018	SeqNo: 1747866 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0	0.5000	0	92.0	80	120			

Sample ID: 1807D06-001AMS	SampType: MS	TestCode: EPA Method 6010B: TCLP Metals								
Client ID: Rolloff Bin 244-5	Batch ID: 39510	RunNo: 53113								
Prep Date: 7/31/2018	Analysis Date: 8/1/2018	SeqNo: 1747881 Units: mg/L								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0	0.5000	0	87.2	75	125			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807D06

15-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>MB-39510</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39510</b>	RunNo:	<b>53113</b>					
Prep Date:	<b>7/31/2018</b>	Analysis Date:	<b>8/1/2018</b>	SeqNo:	<b>1747992</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	<b>LCS-39510</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39510</b>	RunNo:	<b>53113</b>					
Prep Date:	<b>7/31/2018</b>	Analysis Date:	<b>8/1/2018</b>	SeqNo:	<b>1747994</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	103	80	120			
Barium	ND	100	0.5000	0	97.5	80	120			
Cadmium	ND	1.0	0.5000	0	101	80	120			
Chromium	ND	5.0	0.5000	0	96.1	80	120			
Selenium	ND	1.0	0.5000	0	96.4	80	120			
Silver	ND	5.0	0.1000	0	111	80	120			

Sample ID	<b>1807D06-001AMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>Rolloff Bin 244-5</b>	Batch ID:	<b>39510</b>	RunNo:	<b>53113</b>					
Prep Date:	<b>7/31/2018</b>	Analysis Date:	<b>8/1/2018</b>	SeqNo:	<b>1747995</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0	0.5000	0	88.4	75	125	0	20	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1807D06

15-Aug-18

Client: EA Engineering  
Project: Kirtland AFB BFF

Sample ID	lcs-39463	SampType:	LCS	TestCode:	EPA Method 8015D Mod: Gasoline Range					
Client ID:	LCSS	Batch ID:	39463	RunNo:	53058					
Prep Date:	7/27/2018	Analysis Date:	7/30/2018	SeqNo:	1745288	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	106	70	130			
Surr: BFB	520		500.0		105	70	130			

Sample ID	mb-39463	SampType:	MBLK	TestCode:	EPA Method 8015D Mod: Gasoline Range					
Client ID:	PBS	Batch ID:	39463	RunNo:	53058					
Prep Date:	7/27/2018	Analysis Date:	7/30/2018	SeqNo:	1745289	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	590		500.0		118	70	130			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

**Sample Log-In Check List**

Client Name: EA Engineering Alb      Work Order Number: 1807D06      RptNo: 1

Received By: Isalah Ortiz      7/23/2018 12:30:00 PM      *IO*  
 Completed By: Ashley Gallegos      7/25/2018 9:32:01 AM      *AG*  
 Reviewed By: *IO*      7/27/18      labeled by: ENM 7/27/18

**Chain of Custody**

1. Is Chain of Custody complete?      Yes       No       Not Present   
 2. How was the sample delivered?      Client

**Log In**

3. Was an attempt made to cool the samples?      Yes       No       NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C      Yes       No       NA   
 5. Sample(s) in proper container(s)?      Yes       No   
 6. Sufficient sample volume for indicated test(s)?      Yes       No   
 7. Are samples (except VOA and ONG) properly preserved?      Yes       No   
 8. Was preservative added to bottles?      Yes       No       NA   
 9. VOA vials have zero headspace?      Yes       No       No VOA Vials   
 10. Were any sample containers received broken?      Yes       No   
 11. Does paperwork match bottle labels?      Yes       No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody?      Yes       No   
 13. Is it clear what analyses were requested?      Yes       No   
 14. Were all holding times able to be met?      Yes       No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: ENM 7/27/18  
 (≤ 2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: \_\_\_\_\_

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order?      Yes       No       NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

16. Additional remarks:

**17. Cooler Information**

Cooler No.	Temp °C	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	4.1	Good	Not Present			

## CHAIN-OF-CUSTODY RECORD

**EA**  
222 Soaring Circle Suite 400, Hunt Valley MD 21071  
Tel No: (410) 664-7000  
Fax No: (410) 777-0585

**PROJECT NAME:**  
Kirtland AFB BFF

**PROJECT NUMBER:**  
62599DM01.10173

**DO NUMBER:**  
15182

**PROJECT CONTACT:**  
E. Morse

**LAB NAME AND CONTACT:**  
Hail Environmental  
Amanda Smith / asmith@eatest.com

**LAB PO NUMBER:**  
15182

**PROJECT TEL NO AND FAX NO:**  
505-238-4410

**9 FAX AND MAIL REPORTS SENT TO:**  
RECIPIENT 1 (Name and Contact): Amanda Smith / asmith@eatest.com

**9 FAX AND MAIL REPORTS SENT TO:**  
RECIPIENT 2 (Name and Contact): Pam Moss / pmoss@eatest.com, emorse@eatest.com

**9 FAX AND MAIL REPORTS SENT TO:**  
RECIPIENT 3 (Name and Contact):

10 ITEM	11 SAMPLE IDENTIFIER	12 SAMPLE DESCRIPTION/LOCATION	13 MATRIX (see codes on SOP)	14 DATE COLLECTED	15 TIME COLLECTED	16 DATA PKG LEVEL (see codes on SOP)	17 LAB TAT (business days)	18 Bottle Type	2 ANALYSES REQUIRED (Include Method Number)										20 SAMPLE TYPE (see codes on SOP)	21 COMMENTS / SCREENING READINGS	22 LAB ID (see lab's web)
									TPC VOC, SVOC, Pest, Herb, Metals (1311/8260B/8270C/8081/8151A/6010B/7470A)	BTEX (8260B)	TPH GRO, DRO, RRO (8015D)	Reactive Cyanide / Sulfide (9012B/9034)	Corrosivity - PH (9045D)	Inhibitory (1010A)							
1	1807D06 106243-1 7/14	Rolloff Bin 243-1	soil	7-23-18 0953	IV	IV	7	3	X	X	X	X	X	X	X	X	Composite				
2	106243-2 7/14	Rolloff Bin 243-2	soil	7-23-18 1614	IV	IV	7	3	X	X	X	X	X	X	X	X	Composite				
3	106243-3 7/14	Rolloff Bin 243-3	soil	7-23-18 1037	IV	IV	7	3	X	X	X	X	X	X	X	X	Composite				
4	106244-5 7/14	Roll off Bin 244-5	soil	7-23-18 0915	IV	IV	7	3	X	X	X	X	X	X	X	X	Composite				
5																					
6																					
7																					
8																					
9																					
10																					

**19 COURIER AND SHIPPING NUMBER:**

**23 SAMPLE PREPARED COMPANY:** (please print)  
Field Sampler/EA Engineering  
P. Ferran

**24 RELINQUISHED BY:**  
Peter Ferran: Peter Ferran

**25 RECEIVED BY:**  
Isaiah Ortiz

**26 DATE:** 7-23-2018

**27 TIME:** 12:30

**28 DATE:** 7-23-2018

**29 TIME:** 12:30

**30 PRINTED NAME AND SIGNATURE:**  
P. Ferran

**31 PRINTED NAME AND SIGNATURE:**  
Isaiah Ortiz

**32 PRINTED NAME AND SIGNATURE:**

**33 PRINTED NAME AND SIGNATURE:**



**DEPARTMENT OF THE AIR FORCE**  
377TH AIR BASE WING (AFGSC)

27 August 2018

MEMORANDUM FOR: AFCEC/CZO

FROM: 377 MSG/CEIE (Solid Waste Program Manager)

SUBJECT: Landfill Disposal

Reference: EA Engineering, Science, & Technology, Inc, letters (2) dated: 21 August 2018  
USACE Contract No. W912DR-12-D-0006-DM01

Disposal of non-hazardous soil cuttings from groundwater monitoring well KAFB-106244 and KAFB-106243

1. Authorization is granted to EA to dispose of soil generated from installation of groundwater monitoring wells KAFB-106244 and KAFB-106243, in support of the Bulk Fuels Facility project, at the Kirtland AFB Construction & Demolition Landfill. The soil will be delivered to the landfill by Advanced Chemical Transport Environmental Services, Inc (ACT), and will be in four 20-cubic-yard roll-off containers labeled 0126.20, 106243-2, 0210.20, and 0543-20. The roll-offs will be transported using one of two 2015 Western Star roll-off trucks depending on ACT's vehicle availability: either NM license plate WD121651, or NM license plate WD124756. Lab results are on file in the Solid Waste Management office. EA shall be issued a Kirtland AFB landfill pass for this disposal action. A copy of this letter will accompany each roll-off and will be left with the gate keeper at the landfill.

2. Please direct questions to me at 853-2486.

**WHEELOCK.** Digitally signed by  
WHEELOCK.KATRI  
**KATRINA.E.1** NA.E.1402749586  
**402749586** Date: 2018.08.27  
14:50:33 -06'00'  
**KATRINA E. WHEELOCK**  
Solid Waste Program Manager  
Environmental Management



EA Engineering, Science, & Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, New Mexico 87102  
Phone: (505) 224-9013

August 2, 2018

Ms. Katrina Wheelock  
Solid Waste Program Manager  
Environmental Management  
377 MSG/CEIE  
Kirtland AFB, New Mexico 87117

Subject: Request to dispose non-hazardous soil cuttings at Kirtland C&D Landfill  
Roll-off Identification: KAFB-106244-4 (Bin ID #104052)  
USACE Contract No. W912DR-12-D-0006-DM01

Dear Ms. Wheelock,

EA Engineering, Science, and Technology, Inc., PBC (EA) is requesting permission to dispose of non-hazardous soil drill cuttings and plastic liners from one roll-off container to the Kirtland Air Force Base (AFB) Construction and Demolition (C&D) debris landfill. Roll-off bin with the EA identification of KAFB-106244-4 (Bin ID #104052) contains approximately 8 cubic yards of soil.

Between June and July 2018 EA installed a groundwater monitoring well, KAFB-106244, associated with the Kirtland Bulk Fuels Facility environmental restoration project. Well KAFB-106244 is located on City of Albuquerque property south of the VA Hospital just west of Bullhead Park. Drill cuttings were containerized in a plastic-lined, steel, roll-off pending laboratory analysis for waste characterization. Any excess moisture in the bin was stabilized using Hydrosorb®, a superabsorbent polymer. All roll-off bins are currently residing in the EA investigation derived waste yard near 1601 Perimeter Circle SE, on Kirtland AFB.

One five-point composite waste characterization sample was collected from the roll-off bin and delivered to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis. The sample was analyzed for all the required parameters per the Kirtland AFB Landfill Acceptance Memorandum (January 2009). The attached analytical results (Report 1807805) for the composite sample confirms the drill cuttings meet waste acceptance requirements for disposal at the Kirtland C&D landfill.

All of the roll-off containers are owned and/or leased by Advanced Chemical Transport Environmental Services Inc. (ACT) with roll-off identification number, when present, marked clearly on the roll off. ACT will utilize one of the following vehicles for waste transport:



W912DR-12-D-0006-DM01  
 Kirtland Air Force Base Bulk Fuels Facility Expansion  
 of the Dissolved Plume Groundwater Treatment System Design  
 2 May 2017  
 Page 2 of 2

- 2015 Western Star Roll Off Truck, License #: WD121651, registered in New Mexico
- 2015 Western Star Roll Off Truck, License #: WD124756, registered in New Mexico

Mr. Sheen Kottkamp (AFCEC/CZO) has reviewed this package and authorized EA to forward it for your review. EA respectfully requests your review of the attached summary table and analytical data for determination if disposal can be authorized at the Kirtland AFB C&D landfill. Upon receiving notification of Kirtland AFB's acceptance of the waste, EA will coordinate transport and disposal of the roll-off contents with ACT.

EA's Kirtland AFB Point of Contact is Mr. Scott Clark; 505-846-9017.

If you have any questions, please do not hesitate to contact me at 505-266-2225, or via e-mail at [landress@eaest.com](mailto:landress@eaest.com).

Sincerely,

Lane Andress, PG

Attachments: Summary Analytical Table  
 Hall Environmental Analysis Laboratory Order No: 1807805

cc: Jeanne Dye-Porto, [jeanne.dye-porto@us.af.mil](mailto:jeanne.dye-porto@us.af.mil)  
 Scott Clark, [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)  
 Sheen Kottkamp, [sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)  
 Melissa Clark, [melissa.clark.8@us.af.mil](mailto:melissa.clark.8@us.af.mil)  
 Ben Moayyad, [Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)  
 Devon Jercinovic, [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
 Bernie Bockisch, [bbockisch@eaest.com](mailto:bbockisch@eaest.com)  
 Earl Morse, [emorse@eaest.com](mailto:emorse@eaest.com)

		LOCATION CODE					
		FIELD SAMPLE ID	KAFB-106244-4-IDW				
		SAMPLE DATE	16-Jul-18				
		SAMPLE PURPOSE	Waste Characterization				
		ROLL-OFF NO.	KAFB-106244-4				
Parameter	Method	Analyte	Units	TCLP Regulatory Level <sup>a</sup> or KAFB Limits <sup>b</sup>	Result	QUAL	PQL
RCRA Characteristics	SW1010A Mod	IGNITABILITY	*F	See footnote <sup>c</sup>	>170	--	--
	SW9012B	REACTIVE CYANIDE (as total)	mg/kg	NE	ND	--	0.25
	SW9034	REACTIVE SULFIDE (as total)	mg/kg	NE	386	--	25
	SW9045D	CORROSIVITY (pH)	S.U.	≥2 or ≤12.5	8.72	J	--
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.002
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.002
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0
		BARIUM	mg/L	100	0.51	J	100
		CADMIUM	mg/L	1	ND	--	1.0
		CHROMIUM	mg/L	5	0.0078	J	5.0
		LEAD	mg/L	5	ND	--	5.0
		SELENIUM	mg/L	1	ND	--	1.0
		SILVER	mg/L	5	0.002	J	5.0
TCLP PESTICIDES	SW1311/7470A	MERCURY	mg/L	0.02	ND	--	0.020
		CHLORDANE	mg/L	0.03	ND	--	0.030
TCLP PESTICIDES	SW1311/8081	ENDRIN	mg/L	0.02	ND	--	0.020
		GAMMA-BHC (LINDANE)	mg/L	0.4	ND	--	0.40
		HEPTACHLOR	mg/L	0.008	ND	--	0.0080
		HEPTACHLOR EPOXIDE	mg/L	0.008	ND	--	0.0080
		METHOXYCHLOR	mg/L	10	ND	--	10
		TOXAPHENE	mg/L	0.5	ND	--	0.50
		TCLP SVOCs	SW1311/8270C	2,4,5-TRICHLOROPHENOL	mg/L	400	ND
2,4,6-TRICHLOROPHENOL	mg/L			2	ND	--	2.0
2,4-DINITROTOLUENE	mg/L			0.13	ND	--	0.13
2-METHYLPHENOL (o-Cresol)	mg/L			200	ND	--	200
3- and 4-METHYLPHENOL (m- and o-Cresol)	mg/L			200	ND	--	200
HEXACHLOROBENZENE	mg/L			0.13	ND	--	0.13
HEXACHLOROBUTADIENE	mg/L			0.5	ND	--	0.50
HEXACHLOROETHANE	mg/L			3	ND	--	3.0
NITROBENZENE	mg/L			2	ND	--	2.0
PENTACHLOROPHENOL	mg/L			100	ND	--	100
PYRIDINE	mg/L			5	ND	--	5.0
TCLP VOCs	SW1311/8260B	CRESOLS, TOTAL	mg/L	200	ND	--	200.0
		1,1-DICHLOROETHENE	mg/L	0.7	ND	--	0.70
		1,2-DICHLOROETHANE	mg/L	0.5	ND	--	0.50
		1,4-DICHLOROETHANE	mg/L	7.5	ND	--	7.5
		2-BUTANONE (MEK)	mg/L	200	ND	--	200
		BENZENE	mg/L	0.5	ND	--	0.50
		CARBON TETRACHLORIDE	mg/L	0.5	ND	--	0.50
		CHLOROETHYLENE	mg/L	100	ND	--	100
		CHLOROFORM	mg/L	6.0	ND	--	6.0
		TETRACHLOROETHENE	mg/L	0.7	ND	--	0.70
		TRICHLOROETHENE	mg/L	0.5	ND	--	0.50
TPH	SW8015M/D	VINYL CHLORIDE	mg/L	0.2	ND	--	0.20
		DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	9.7
		MOTOR OIL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	49
VOLATILES (BTEX)	SW8260B	GASOLINE RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	5.0
		BENZENE	mg/kg	10	ND	--	0.025
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.050
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.050
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.10

Notes:  
<sup>a</sup>TCLP Regulatory Level - Resource Conservation Recovery Act (RCRA) hazardous waste characteristic limits per 40CFR Part 261 Subpart C, Section 261.20 - 261.24.  
<sup>b</sup>KAFB Limits - Kirtland AFB landfill requirements per the Department of Air Force Technical Memorandum for Kirtland AFB/Department of Energy/Sandia National Laboratories Restoration Agencies and Their Commercial Contractors (2009).  
<sup>c</sup>Ignitability characteristic for solids from 40 CFR Part 261.21: "It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of moisture, or  
<sup>d</sup>KAFB limit for TPH measured as the sum of gasoline, diesel and motor oil range organics.  
<sup>e</sup>KAFB limit for BTEX measured as the sum of benzene, toluene, ethylbenzene, and total xylenes.  
 > - greater than  
 BTEX - benzene, toluene, ethylbenzene, total xylenes  
 \*F - degrees fahrenheit  
 J - Analyte detected below quantitation limit or estimated value  
 mg/L - milligram per liter  
 mg/kg - milligram per kilogram  
 NE - not established  
 ND - not detected above the PQL  
 PQL - practical quantitation limit  
 QUAL - laboratory data qualifier  
 Shade- analyte detected above the detection limit  
 Shade and Bold- analyte detected above KAFB Landfill acceptance limit or TCLP Regulatory Level.  
 SVOCs - semivolatle organic compounds  
 S.U. - Standard units  
 TCLP - Toxicity Characteristic Leaching Procedure  
 TPH - total petroleum hydrocarbons  
 VOCs - volatile organic compounds



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

July 27, 2018

Earl Morse

EA Engineering Science & Technology  
320 Gold Ave SW Suite 1210  
Albuquerque, NM 87102  
TEL:  
FAX

RE: Kirtland AFB BFF

OrderNo.: 1807805

Dear Earl Morse:

Hall Environmental Analysis Laboratory received 1 sample(s) on 7/16/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order 1807805

Date Reported: 7/27/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106244-4-IDW

Project: Kirtland AFB BFF

Collection Date: 7/16/2018 11:00:00 AM

Lab ID: 1807805-001

Matrix: SOIL

Received Date: 7/16/2018 12:05:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: rde
Mercury	ND	0.020		mg/L	1	7/23/2018 3:41:18 PM	39343
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: JLF
Arsenic	ND	5.0		mg/L	1	7/24/2018 12:33:33 PM	39357
Barium	0.51	100	J	mg/L	1	7/24/2018 12:33:33 PM	39357
Cadmium	ND	1.0		mg/L	1	7/24/2018 12:33:33 PM	39357
Chromium	0.0078	5.0	J	mg/L	1	7/24/2018 12:33:33 PM	39357
Lead	ND	5.0		mg/L	1	7/24/2018 1:45:19 PM	39357
Selenium	ND	1.0		mg/L	1	7/24/2018 12:33:33 PM	39357
Silver	0.0020	5.0	J	mg/L	1	7/24/2018 12:33:33 PM	39357
<b>EPA METHOD 8081: PESTICIDES TCLP</b>							Analyst: JME
Chlordane	ND	0.030		mg/L	1	7/23/2018 2:05:08 PM	39318
Endrin	ND	0.020		mg/L	1	7/23/2018 2:05:08 PM	39318
gamma-BHC (Lindane)	ND	0.40		mg/L	1	7/23/2018 2:05:08 PM	39318
Heptachlor	ND	0.0080		mg/L	1	7/23/2018 2:05:08 PM	39318
Heptachlor epoxide	ND	0.0080		mg/L	1	7/23/2018 2:05:08 PM	39318
Methoxychlor	ND	10		mg/L	1	7/23/2018 2:05:08 PM	39318
Toxaphene	ND	0.50		mg/L	1	7/23/2018 2:05:08 PM	39318
Surr: Decachlorobiphenyl	83.1	58.3-109		%Rec	1	7/23/2018 2:05:08 PM	39318
Surr: Tetrachloro-m-xylene	101	40.1-101	S	%Rec	1	7/23/2018 2:05:08 PM	39318
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: lrm
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	7/17/2018 11:00:20 PM	39230
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	7/17/2018 11:00:20 PM	39230
Surr: DNOP	82.6	70-130		%Rec	1	7/17/2018 11:00:20 PM	39230
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: NSB
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/17/2018 6:09:55 PM	39222
Surr: BFB	98.1	15-316		%Rec	1	7/17/2018 6:09:55 PM	39222
<b>EPA METHOD 8270C TCLP</b>							Analyst: DAM
2-Methylphenol	ND	200		mg/L	1	7/23/2018 4:12:35 PM	39319
3+4-Methylphenol	ND	200		mg/L	1	7/23/2018 4:12:35 PM	39319
2,4-Dinitrotoluene	ND	0.13		mg/L	1	7/23/2018 4:12:35 PM	39319
Hexachlorobenzene	ND	0.13		mg/L	1	7/23/2018 4:12:35 PM	39319
Hexachlorobutadiene	ND	0.50		mg/L	1	7/23/2018 4:12:35 PM	39319
Hexachloroethane	ND	3.0		mg/L	1	7/23/2018 4:12:35 PM	39319
Nitrobenzene	ND	2.0		mg/L	1	7/23/2018 4:12:35 PM	39319
Pentachlorophenol	ND	100		mg/L	1	7/23/2018 4:12:35 PM	39319
Pyridine	ND	5.0		mg/L	1	7/23/2018 4:12:35 PM	39319
2,4,5-Trichlorophenol	ND	400		mg/L	1	7/23/2018 4:12:35 PM	39319

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Page 1 of 12

## Analytical Report

Lab Order 1807805

Date Reported: 7/27/2018

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106244-4-IDW

Project: Kirtland AFB BFF

Collection Date: 7/16/2018 11:00:00 AM

Lab ID: 1807805-001

Matrix: SOIL

Received Date: 7/16/2018 12:05:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C TCLP</b>							Analyst: DAM
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	7/23/2018 4:12:35 PM	39319
Cresols, Total	ND	200		mg/L	1	7/23/2018 4:12:35 PM	39319
Surr: 2-Fluorophenol	51.4	22.1-97.5		%Rec	1	7/23/2018 4:12:35 PM	39319
Surr: Phenol-d5	44.9	15-82.7		%Rec	1	7/23/2018 4:12:35 PM	39319
Surr: 2,4,6-Tribromophenol	80.2	39-129		%Rec	1	7/23/2018 4:12:35 PM	39319
Surr: Nitrobenzene-d5	77.5	44.6-120		%Rec	1	7/23/2018 4:12:35 PM	39319
Surr: 2-Fluorobiphenyl	73.8	38.3-115		%Rec	1	7/23/2018 4:12:35 PM	39319
Surr: 4-Terphenyl-d14	70.3	29.6-79.7		%Rec	1	7/23/2018 4:12:35 PM	39319
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: RAA
Benzene	ND	0.025		mg/Kg	1	7/24/2018 2:54:18 PM	39222
Toluene	ND	0.050		mg/Kg	1	7/24/2018 2:54:18 PM	39222
Ethylbenzene	ND	0.050		mg/Kg	1	7/24/2018 2:54:18 PM	39222
Xylenes, Total	ND	0.10		mg/Kg	1	7/24/2018 2:54:18 PM	39222
Surr: 1,2-Dichloroethane-d4	96.8	70-130		%Rec	1	7/24/2018 2:54:18 PM	39222
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	1	7/24/2018 2:54:18 PM	39222
Surr: Dibromofluoromethane	91.7	70-130		%Rec	1	7/24/2018 2:54:18 PM	39222
Surr: Toluene-d8	105	70-130		%Rec	1	7/24/2018 2:54:18 PM	39222
<b>VOLATILES BY 8260B/1311</b>							Analyst: DJF
Benzene	ND	0.50		mg/L	1	7/18/2018 6:29:00 PM	39241
2-Butanone	ND	200		mg/L	1	7/18/2018 6:29:00 PM	39241
Carbon Tetrachloride	ND	0.50		mg/L	1	7/18/2018 6:29:00 PM	39241
Chlorobenzene	ND	100		mg/L	1	7/18/2018 6:29:00 PM	39241
Chloroform	ND	6.0		mg/L	1	7/18/2018 6:29:00 PM	39241
1,4-Dichlorobenzene	ND	7.5		mg/L	1	7/18/2018 6:29:00 PM	39241
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	7/18/2018 6:29:00 PM	39241
1,1-Dichloroethene	ND	0.70		mg/L	1	7/18/2018 6:29:00 PM	39241
Hexachlorobutadiene	ND	0.50		mg/L	1	7/18/2018 6:29:00 PM	39241
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	7/18/2018 6:29:00 PM	39241
Trichloroethene (TCE)	ND	0.50		mg/L	1	7/18/2018 6:29:00 PM	39241
Vinyl chloride	ND	0.20		mg/L	1	7/18/2018 6:29:00 PM	39241
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	7/18/2018 6:29:00 PM	39241
Surr: 4-Bromofluorobenzene	90.6	57.3-148		%Rec	1	7/18/2018 6:29:00 PM	39241
Surr: Dibromofluoromethane	101	70-130		%Rec	1	7/18/2018 6:29:00 PM	39241
Surr: Toluene-d8	118	70-130		%Rec	1	7/18/2018 6:29:00 PM	39241

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Page 2 of 12

1807805-001B-KAFB-106244-4-IDW SAMPLE RESULTS - 01 ONE LAB. NATIONWIDE  
 Collected date/time: 07/18/18 11:00 L1009943

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		7/18/2018 8:14:48 AM	WG1139424
Fluid	1		7/18/2018 8:14:48 AM	WG1139424
Initial pH	8.70		7/18/2018 8:14:48 AM	WG1139424
Final pH	4.87		7/18/2018 8:14:48 AM	WG1139424

- Cp
- Tc
- Ss
- Cn
- Sr
- Qc
- GI
- AI
- Sc

Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.250	1	07/18/2018 14:31	WG1140185

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Sulfide	386		25.0	1	07/18/2018 15:25	WG1139407

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	8.72	T8	1	07/20/2018 12:08	WG1140167

Sample Narrative:

L1009943-01 WG1140167: 8.72 at 23.1C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DNI at 170		1	07/19/2018 09:26	WG1140064

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND		0.00200	1	1	07/20/2018 01:26	WG1139668
2,4-D	ND		0.00200	10		07/20/2018 01:26	WG1139668
(S) 2,4-Dichlorophenyl Acetic Acid	75.6		14.0-158			07/20/2018 01:26	WG1139668

ACCOUNT: Hill Environmental Analysis Laboratory PROJECT: SDG: L1009943 DATE/TIME: 07/20/18 17:39

WG1140186

Well Chemistry by Method 9012 B

QUALITY CONTROL SUMMARY

L1009943-01

ONETAB-NATIONWIDE

Method Blank (MB)

(MB) R3326953-1	07/18/18 13:34	MB Result	MB Qualifier	MB MDL	MB RDL
		mg/kg	mg/kg	mg/kg	mg/kg
Analyte		U		0.0390	0.250
Reactive Cyanide					

L1010004-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1010004-06 07/18/18 14:13 • (DUP) R3326953-4 07/18/18 14:14

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/kg	mg/kg		%		%
Reactive Cyanide	ND	0.114	1	5.60	J	20

L1009943-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1009943-01 07/18/18 14:31 • (DUP) R3326953-7 07/18/18 14:32

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/kg	mg/kg		%		%
Reactive Cyanide	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3326953-2 07/18/18 13:35 • (LCSD) R3326953-3 07/18/18 13:36

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Reactive Cyanide	2.50	2.77	2.68	111	107	50.0-150			3.06	20

L1009528-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1009528-02 07/18/18 14:26 • (MS) R3326953-5 07/18/18 14:27 • (MSD) R3326953-6 07/18/18 14:28

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Reactive Cyanide	1.67	ND	1.40	0.950	69.0	42.3	1	75.0-125	JG	JG	38.0	20

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cr
- 5 Sr
- 6 Cc
- 7 Gf
- 8 Al
- 9 Sc

ACCOUNTS: PROJECT: SDC: DATE/TIME: 07/20/18 17:59  
 Hill Environmental Analysis Laboratory  
 1009943

QUALITY CONTROL SUMMARY

WG139407

Wet Chemistry by Method 9034-90308

L1009943-01

ONE LAB NATIONWIDE

Method Blank (MB)

(MB) R3326595-1 07/18/18 15:25		MB MDL	MB RDL
Analyte	mg/kg	mg/kg	mg/kg
Reactive Sulfide	U	7.63	25.0

L1009943-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1009943-01 07/18/18 15:25 • (DUP) R3326595-4 07/18/18 15:25

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/kg	mg/kg	%	%	%	%
Reactive Sulfide	385	386	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3326595-2 07/18/18 15:25 • (LCSD) R3326595-3 07/18/18 15:25

Analyte	Spike Amount	LCS Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	%	%	%	%	%	%
Reactive Sulfide	100	84.4	84.4	90.5	70.0-130	6.90	6.90	20

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Oc
- 7 Gl
- 8 Al
- 9 Sc

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT

SOS: L1009943

DATE/TIME: 07/20/18 17:39

WG1140167

Wet Chemistry by Method: 9045D

QUALITY CONTROL SUMMARY

11009943101

ONETAB: NATIONWIDE

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3327215-1 07/20/18 12:08 • (LCSD) R3327215-2 07/20/18 12:08

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	RPD	RPD Limits
Corrosivity by pH	10.0	9.96	9.96	99.6 %	99.5 %	99.0-101 %	0.000 %	1 %

Sample Narrative:

LCS: 9.96 at 21C  
LCSD: 9.96 at 21.2C

1	Cp
2	Tc
3	Ss
4	Cn
5	St
6	Qc
7	Gl
8	Al
9	Sc

ACCOUNT: Hill Environmental Analysis Laboratory

PROJECT: L0009943

SITE: L0009943

DATE/TIME: 07/20/18 17:39

WG1140064

Wet Chemistry by Method: D93/1010A

QUALITY CONTROL SUMMARY

LC09943-01

ONE LAB NATIONWIDE

L1010226-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1010226-02 07/19/18 09:26 - (DUP) R3326778-3 07/19/18 09:26

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RPD Limits
Ignitability	Deg. F DNI at 170	Deg. F DNI at 170	1	% 0.000	% 10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3326778-1 07/19/18 09:26 - (LCSD) R3326778-2 07/19/18 09:26

Analyte	Spike Amount	LCS Result	Deg. F	LCSD Result	Deg. F	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Ignitability	Deg. F 82.0	Deg. F 82.7	82.7	Deg. F 82.7	82.7	% 101	% 101	% 96.0-104	% 101	% 101	% 0.000	% 10

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

ACCOUNT: Hall Environmental Analysis Laboratory  
 PROJECT: L1009545  
 DATE/TIME: 07/20/18 17:39

WG1139668  
Chlorinated Atrazine Herbicides (GC) by Method 8151A  
L10093433.01

ONE LAB, NATIONWIDE

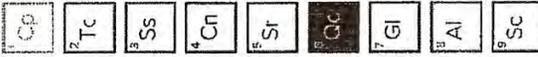
Method Blank (MB)

MB Result	MB Qualifier	MB MDL	MB RDL
2,4-D mg/l	0.000667	0.000667	0.00200
2,4,5-TP (Sixex) U	0.000667	0.00200	0.00200
(S) 2,4-Dichlorophenyl Acetic Acid		14.0-158	

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3327061-2 07/19/18 2101 • (LCSD) R3327061-3 07/19/18 2115

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
2,4-D	0.00500	0.00377	0.00376	75.4	75.2	56.0-120	0.266	0.266	20	20
2,4,5-TP (Sixex)	0.00500	0.00387	0.00391	77.4	78.2	55.0-120	0.03	0.03	20	20
(S) 2,4-Dichlorophenyl Acetic Acid				83.4	81.0	14.0-158				



ACCOUNT: Hill Environmental Analysis Laboratory  
PROJECT:  
SIC: L1009343  
DATE/TIME: 07/20/18 17:39

GLOSSARY OF TERMS

ONE LAB. NATIONWIDE



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit
ND	Not detected at the Reporting Limit (or MDL where applicable)
RDL	Reported Detection Limit
Rec	Recovery
RPD	Relative Percent Difference
SDG	Sample Delivery Group
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable)
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample-specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Cl

<sup>8</sup>Al

<sup>9</sup>Sc

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.

ACCOUNT	PROJECT	SDG	DATE/TIME
Hell Environmental Analysis Laboratory		L1009943	07/20/18 17:39

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807805

27-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	MB-39239	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID:	39239	RunNo:	52741					
Prep Date:	7/17/2018	Analysis Date:	7/17/2018	SeqNo:	1732300	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.0		10.00		90.3	70	130			

Sample ID	LCS-39239	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS	Batch ID:	39239	RunNo:	52741					
Prep Date:	7/17/2018	Analysis Date:	7/17/2018	SeqNo:	1732301	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.2		5.000		83.0	70	130			

Sample ID	MB-39230	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID:	39230	RunNo:	52741					
Prep Date:	7/16/2018	Analysis Date:	7/17/2018	SeqNo:	1732990	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		105	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 3 of 12

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1807805

27-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Sample ID	MB-39222	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	39222	RunNo:	52767					
Prep Date:	7/16/2018	Analysis Date:	7/17/2018	SeqNo:	1733195	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	880		1000		88.1	15	316			

Sample ID	LCS-39222	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	39222	RunNo:	52767					
Prep Date:	7/16/2018	Analysis Date:	7/17/2018	SeqNo:	1733196	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	102	75.9	131			
Surr: BFB	970		1000		96.6	15	316			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1807805

27-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	MB-39318	SampType:	MBLK	TestCode:	EPA Method 8081: Pesticides TCLP						
Client ID:	PBW	Batch ID:	39318	RunNo:	52925						
Prep Date:	7/20/2018	Analysis Date:	7/23/2018	SeqNo:	1739291	Units:	mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Chlordane	ND	0.030									
Endrin	ND	0.020									
gamma-BHC (Lindane)	ND	0.40									
Heptachlor	ND	0.0080									
Heptachlor epoxide	ND	0.0080									
Methoxychlor	ND	10									
Toxaphene	ND	0.50									
Surr: Decachlorobiphenyl	0.0020		0.002500		80.3	58.3	109				
Surr: Tetrachloro-m-xylene	0.0021		0.002500		83.4	40.1	101				

Sample ID	LCS-39318	SampType:	LCS	TestCode:	EPA Method 8081: Pesticides TCLP						
Client ID:	LCSW	Batch ID:	39318	RunNo:	52925						
Prep Date:	7/20/2018	Analysis Date:	7/23/2018	SeqNo:	1739292	Units:	mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Endrin	0.00040	0.00010	0.0005000	0	79.1	42.6	125				
gamma-BHC (Lindane)	0.00039	0.00010	0.0005000	0	77.5	29.5	142				
Heptachlor	0.00036	0.00010	0.0005000	0	72.5	18.6	138				
Heptachlor epoxide	0.00040	0.00010	0.0005000	0	79.2	40.3	127				
Methoxychlor	0.00036	0.00010	0.0005000	0	72.9	36.5	143				
Surr: Decachlorobiphenyl	0.0016		0.002500		65.8	58.3	109				
Surr: Tetrachloro-m-xylene	0.0015		0.002500		61.2	40.1	101				

Sample ID	LCSD-39318	SampType:	LCSD	TestCode:	EPA Method 8081: Pesticides TCLP						
Client ID:	LCSS02	Batch ID:	39318	RunNo:	52925						
Prep Date:	7/20/2018	Analysis Date:	7/23/2018	SeqNo:	1739293	Units:	mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Endrin	0.00051	0.00010	0.0005000	0	102	42.6	125	25.2	20	R	
gamma-BHC (Lindane)	0.00050	0.00010	0.0005000	0	99.2	29.5	142	24.5	20	R	
Heptachlor	0.00043	0.00010	0.0005000	0	85.9	18.6	138	17.0	20		
Heptachlor epoxide	0.00050	0.00010	0.0005000	0	100	40.3	127	23.5	20	R	
Methoxychlor	0.00050	0.00010	0.0005000	0	99.9	36.5	143	31.1	20	R	
Surr: Decachlorobiphenyl	0.0021		0.002500		82.8	58.3	109	0	0		
Surr: Tetrachloro-m-xylene	0.0023		0.002500		91.4	40.1	101	0	0		

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 5 of 12

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1807805

27-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	mb-39222		SampType: MBLK	TestCode: EPA Method 8260B: Volatiles Short List						
Client ID:	PBS		Batch ID: 39222	RunNo: 52771						
Prep Date:	7/16/2018		Analysis Date: 7/17/2018	SeqNo: 1740141		Units: mg/Kg				
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 1,2-Dichloroethane-d4	0.54		0.5000		107	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		97.3	70	130			
Surr: Dibromofluoromethane	0.54		0.5000		108	70	130			
Surr: Toluene-d8	0.53		0.5000		105	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	Ics-39222		SampType: LCS	TestCode: EPA Method 8260B: Volatiles Short List						
Client ID:	LCSS		Batch ID: 39222	RunNo: 52771						
Prep Date:	7/16/2018		Analysis Date: 7/17/2018	SeqNo: 1740142		Units: mg/Kg				
Benzene	0.93	0.025	1.000	0	93.2	70	130			
Toluene	1.0	0.050	1.000	0	102	70	130			
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		99.9	70	130			
Surr: 4-Bromofluorobenzene	0.53		0.5000		107	70	130			
Surr: Dibromofluoromethane	0.49		0.5000		97.1	70	130			
Surr: Toluene-d8	0.52		0.5000		103	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 6 of 12

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807805

27-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	mb-39241		SampType: MBLK		TestCode: Volatiles by 8260B/1311					
Client ID:	PBS		Batch ID: 39241		RunNo: 52804					
Prep Date:	7/17/2018		Analysis Date: 7/18/2018		SeqNo: 1734598		Units: mg/L			
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Hexachlorobutadiene	ND	0.50								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.19		0.2000		93.5	70	130			
Surr: 4-Bromofluorobenzene	0.21		0.2000		107	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		94.3	70	130			
Surr: Toluene-d8	0.22		0.2000		112	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	Ics-39241		SampType: LCS		TestCode: Volatiles by 8260B/1311					
Client ID:	LCSS		Batch ID: 39241		RunNo: 52804					
Prep Date:	7/17/2018		Analysis Date: 7/18/2018		SeqNo: 1734599		Units: mg/L			
Benzene	0.40	0.30	0.4000	0	101	70	130			
Chlorobenzene	0.41	0.30	0.4000	0	102	70	130			
1,1-Dichloroethene	0.42	0.30	0.4000	0	104	70	130			
Trichloroethene (TCE)	0.40	0.30	0.4000	0	100	70	130			
Surr: 1,2-Dichloroethane-d4	0.22		0.2000		109	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		97.3	57.3	148			
Surr: Dibromofluoromethane	0.21		0.2000		107	70	130			
Surr: Toluene-d8	0.21		0.2000		103	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1807805

27-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Sample ID	Ics-39319		SampType: LCS	TestCode: EPA Method 8270C TCLP						
Client ID:	LCSS		Batch ID: 39319	RunNo: 52921						
Prep Date:	7/20/2018		Analysis Date: 7/23/2018	SeqNo: 1738868	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.078	0.0010	0.1000	0	78.2	47.8	99.2			
3+4-Methylphenol	0.15	0.0010	0.2000	0	75.1	41.5	118			
2,4-Dinitrotoluene	0.075	0.0010	0.1000	0	75.2	44.4	81			
Hexachlorobenzene	0.079	0.0010	0.1000	0	79.3	49.5	91.6			
Hexachlorobutadiene	0.063	0.0010	0.1000	0	62.7	38.6	93			
Hexachloroethane	0.061	0.0010	0.1000	0	61.2	39.4	79.9			
Nitrobenzene	0.069	0.0010	0.1000	0	69.4	47.4	96.2			
Pentachlorophenol	0.074	0.0010	0.1000	0	73.8	39.4	79.9			
Pyridine	0.055	0.0010	0.1000	0	54.7	15	79.9			
2,4,5-Trichlorophenol	0.083	0.0010	0.1000	0	82.8	47.4	118			
2,4,6-Trichlorophenol	0.081	0.0010	0.1000	0	80.9	47.4	101			
Cresols, Total	0.23	0.0010	0.3000	0	76.1	44.1	111			
Surr: 2-Fluorophenol	0.11		0.2000		57.3	22.1	97.5			
Surr: Phenol-d5	0.12		0.2000		58.6	15	82.7			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		75.8	39	129			
Surr: Nitrobenzene-d5	0.075		0.1000		74.5	44.6	120			
Surr: 2-Fluorobiphenyl	0.070		0.1000		70.0	38.3	115			
Surr: 4-Terphenyl-d14	0.075		0.1000		75.3	29.6	79.7			

Sample ID	mb-39319		SampType: MBLK	TestCode: EPA Method 8270C TCLP						
Client ID:	PBS		Batch ID: 39319	RunNo: 52921						
Prep Date:	7/20/2018		Analysis Date: 7/23/2018	SeqNo: 1738869	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.075		0.2000		37.4	22.1	97.5			
Surr: Phenol-d5	0.064		0.2000		32.2	15	82.7			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		72.8	39	129			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807805

27-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Sample ID	mb-39319	SampType:	MBLK	TestCode:	EPA Method 8270C TCLP					
Client ID:	PBS	Batch ID:	39319	RunNo:	52921					
Prep Date:	7/20/2018	Analysis Date:	7/23/2018	SeqNo:	1738869	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.053		0.1000		52.8	44.6	120			
Surr: 2-Fluorobiphenyl	0.057		0.1000		56.6	38.3	115			
Surr: 4-Terphenyl-d14	0.056		0.1000		56.3	29.6	79.7			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807805

27-Jul-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland AFB BFF

Sample ID	MB-39343	SampType:	MBLK	TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	39343	RunNo:	52914					
Prep Date:	7/23/2018	Analysis Date:	7/23/2018	SeqNo:	1738737	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	LCS-39343	SampType:	LCS	TestCode:	MERCURY, TCLP					
Client ID:	LCSW	Batch ID:	39343	RunNo:	52914					
Prep Date:	7/23/2018	Analysis Date:	7/23/2018	SeqNo:	1738738	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.020	0.005000	0	101	80	120			J

Sample ID	TCLP#2-3747	SampType:	MBLK	TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	39343	RunNo:	52914					
Prep Date:	7/23/2018	Analysis Date:	7/23/2018	SeqNo:	1738739	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807805  
 27-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	MB-39357	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	39357	RunNo:	52931					
Prep Date:	7/23/2018	Analysis Date:	7/24/2018	SeqNo:	1739577	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	LCS-39357	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	LCSW	Batch ID:	39357	RunNo:	52931					
Prep Date:	7/23/2018	Analysis Date:	7/24/2018	SeqNo:	1739579	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Arsenic	0.50	5.0	0.5000	0	100	80	120			J
Barium	0.46	100	0.5000	0	92.5	80	120			J
Cadmium	0.53	1.0	0.5000	0	105	80	120			J
Chromium	0.49	5.0	0.5000	0	97.2	80	120			J
Selenium	0.52	1.0	0.5000	0	105	80	120			J
Silver	0.11	5.0	0.1000	0	112	80	120			J

Sample ID	1807805-001AMS	SampType:	MS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	KAFB-106244-4-IDW	Batch ID:	39357	RunNo:	52931					
Prep Date:	7/23/2018	Analysis Date:	7/24/2018	SeqNo:	1739584	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Arsenic	0.50	5.0	0.5000	0	100	75	125			J
Barium	0.96	100	0.5000	0.5090	89.9	75	125			J
Cadmium	0.52	1.0	0.5000	0	104	75	125			J
Chromium	0.48	5.0	0.5000	0.007810	94.3	75	125			J
Selenium	0.52	1.0	0.5000	0	105	75	125			J
Silver	0.10	5.0	0.1000	0.002050	101	75	125			J

Sample ID	1807805-001AMSD	SampType:	MSD	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	KAFB-106244-4-IDW	Batch ID:	39357	RunNo:	52931					
Prep Date:	7/23/2018	Analysis Date:	7/24/2018	SeqNo:	1739585	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Arsenic	0.52	5.0	0.5000	0	103	75	125	2.99	20	J
Barium	0.95	100	0.5000	0.5090	88.6	75	125	0.678	20	J
Cadmium	0.52	1.0	0.5000	0	103	75	125	0.423	20	J
Chromium	0.48	5.0	0.5000	0.007810	93.5	75	125	0.817	20	J

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1807805

27-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Sample ID	1807805-001AMSD	SampType	MSD	TestCode	EPA Method 6010B: TCLP Metals					
Client ID	KAFB-106244-4-IDW	Batch ID	39357	RunNo	52931					
Prep Date	7/23/2018	Analysis Date	7/24/2018	SeqNo	1739585	Units	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.51	1.0	0.5000	0	102	75	125	2.56	20	J
Silver	0.10	5.0	0.1000	0.002050	100	75	125	0.653	20	J

Sample ID	MB-39357	SampType	MBLK	TestCode	EPA Method 6010B: TCLP Metals					
Client ID	PBW	Batch ID	39357	RunNo	52931					
Prep Date	7/23/2018	Analysis Date	7/24/2018	SeqNo	1739723	Units	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0								

Sample ID	LCS-39357	SampType	LCS	TestCode	EPA Method 6010B: TCLP Metals					
Client ID	LCSW	Batch ID	39357	RunNo	52931					
Prep Date	7/23/2018	Analysis Date	7/24/2018	SeqNo	1739725	Units	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.46	5.0	0.5000	0	91.3	80	120			J

Sample ID	1807805-001AMS	SampType	MS	TestCode	EPA Method 6010B: TCLP Metals					
Client ID	KAFB-106244-4-IDW	Batch ID	39357	RunNo	52931					
Prep Date	7/23/2018	Analysis Date	7/24/2018	SeqNo	1739737	Units	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.45	5.0	0.5000	0	90.6	75	125			J

Sample ID	1807805-001AMSD	SampType	MSD	TestCode	EPA Method 6010B: TCLP Metals					
Client ID	KAFB-106244-4-IDW	Batch ID	39357	RunNo	52931					
Prep Date	7/23/2018	Analysis Date	7/24/2018	SeqNo	1739738	Units	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.45	5.0	0.5000	0	90.4	75	125	0.278	20	J

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EA Engineering Alb      Work Order Number: 1807805      RcptNo: 1

Received By: **Isaiah Ortiz**      7/16/2018 12:05:00 PM      *IO*  
 Completed By: **Anne Thome**      7/16/2018 12:31:58 PM      *Anne Thome*  
 Reviewed By: **ENM**      **7/16/18**

*Labeled by: AT 07/16/18*

**Chain of Custody**

1. Is Chain of Custody complete?      Yes       No       Not Present   
 2. How was the sample delivered?      Client

**Log In**

3. Was an attempt made to cool the samples?      Yes       No       NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C      Yes       No       NA   
 5. Sample(s) in proper container(s)?      Yes       No   
 6. Sufficient sample volume for indicated test(s)?      Yes       No   
 7. Are samples (except VOA and ONG) properly preserved?      Yes       No   
 8. Was preservative added to bottles?      Yes       No       NA   
 9. VOA vials have zero headspace?      Yes       No       No VOA Vials   
 10. Were any sample containers received broken?      Yes       No   
 11. Does paperwork match bottle labels?      Yes       No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody?      Yes       No   
 13. Is it clear what analyses were requested?      Yes       No   
 14. Were all holding times able to be met?      Yes       No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH:	_____
(<2 or >12 unless noted)	
Adjusted?	_____
Checked by:	_____

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order?      Yes       No       NA

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

16. Additional remarks:

**17. Cooler Information**

Cooler No.	Temp °C	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	3.4	Good	Not Present			





EA Engineering, Science, & Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, New Mexico 87102  
Phone: (505) 224-9013

July 26, 2018

Ms. Katrina Wheelock  
Solid Waste Program Manager  
Environmental Management  
377 MSG/CEIE  
Kirtland AFB, New Mexico 87117

Subject: Request to dispose non-hazardous soil cuttings at Kirtland C&D Landfill  
Roll-off Identification: KAFB-106244-1 (Bin ID# HTB-3)  
USACE Contract No. W912DR-12-D-0006-DM01

Dear Ms. Wheelock,

EA Engineering, Science, and Technology, Inc., PBC (EA) is requesting permission to dispose of non-hazardous soil drill cuttings and plastic liners from one roll-off container to the Kirtland Air Force Base (AFB) Construction and Demolition (C&D) debris landfill. Roll-off bin with the EA identification of KAFB-106244 #1 (Bin ID # HTB-3) contains approximately eight (8) cubic yards of soil.

Between June and July 2018 EA installed a groundwater monitoring well, KAFB-106244, associated with the Kirtland Bulk Fuels Facility environmental restoration project. Well KAFB-106244 is located on Air Force leased property south of the VA Hospital just west of Bullhead Park. Drill cuttings were containerized in a plastic-lined, steel, roll-off pending laboratory analysis for waste characterization. Any excess moisture in the bin was stabilized using Hydrosorb®, a superabsorbent polymer. All roll-off bins are currently residing in the EA investigation derived waste yard near 1601 Perimeter Circle SE, on Kirtland AFB.

One five-point composite waste characterization sample was collected from the roll-off bin and delivered to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis. The sample was analyzed for all the required parameters per the Kirtland AFB Landfill Acceptance Memorandum (January 2009). The attached analytical results (Report 1807138) for the composite sample confirms the drill cuttings meet waste acceptance requirements for disposal at the Kirtland C&D landfill.

All of the roll-off containers are owned and/or leased by Advanced Chemical Transport Environmental Services Inc. (ACT) with roll-off identification number, when present, marked clearly on the roll off. ACT will utilize one of the following vehicles for waste transport:



W912DR-12-D-0006-DM01  
 Kirtland Air Force Base Bulk Fuels Facility Expansion  
 of the Dissolved Plume Groundwater Treatment System Design  
 2 May 2017  
 Page 2 of 2

- 2015 Western Star Roll Off Truck, License #: WD121651, registered in New Mexico
- 2015 Western Star Roll Off Truck, License #: WD124756, registered in New Mexico

Mr. Sheen Kottkamp has reviewed this package and authorized EA to forward it for your review. EA respectfully requests your review of the attached summary table and analytical data for determination if disposal can be authorized at the Kirtland AFB C&D landfill. Upon receiving notification of Kirtland AFB's acceptance of the waste, EA will coordinate transport and disposal of the roll-off contents with ACT.

EA's Kirtland AFB Point of Contact is Mr. Scott Clark; 505-846-9017.

If you have any questions, please do not hesitate to contact me at 505-266-2225, or via e-mail at [landress@eaest.com](mailto:landress@eaest.com).

Sincerely,

Lane Andress, PG

Attachments: Summary Analytical Table  
 Hall Environmental Analysis Laboratory Order No: 1807138

cc: Jeanne Dye-Porto, [jeanne.dye-porto@us.af.mil](mailto:jeanne.dye-porto@us.af.mil)  
 Scott Clark, [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)  
 Sheen Kottkamp, [sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)  
 Melissa Clark, [melissa.clark.8@us.af.mil](mailto:melissa.clark.8@us.af.mil)  
 Ben Moayyad, [Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)  
 Devon Jercinovic, [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
 Bernie Bockisch, [bbockisch@eaest.com](mailto:bbockisch@eaest.com)  
 Earl Morse, [emorse@eaest.com](mailto:emorse@eaest.com)

		LOCATION CODE					
		FIELD SAMPLE ID		KAFB-106244-1B-IDW			
		SAMPLE DATE		3-Jul-18			
		SAMPLE PURPOSE		Waste Characterization			
		ROLL-OFF NO.		KAFB-106244-1			
Parameter	Method	Analyte	Units	TCLP Regulatory Level <sup>a</sup> or KAFB Limits <sup>b</sup>	Result	QUAL	PQL
RCRA Characteristics	SW1010A Mod	IGNITABILITY	*F	See footnote <sup>c</sup>	> 170	--	--
	SW9012B	REACTIVE CYANIDE (as total)	mg/kg	NE	ND	--	0.25
	SW9034	REACTIVE SULFIDE (as total)	mg/kg	NE	ND	--	25
	SW9045D	CORROSIVITY (pH)	S.U.	≥2 or ≤12.5	8.48	--	--
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.002
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.002
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0
		BARIUM	mg/L	100	ND	--	100
		CADMIUM	mg/L	1	ND	--	1.0
		CHROMIUM	mg/L	5	ND	--	5.0
		LEAD	mg/L	5	ND	--	5.0
		SELENIUM	mg/L	1	ND	--	1.0
		SILVER	mg/L	5	ND	--	5.0
	SW1311/7470A	MERCURY	mg/L	0.02	ND	--	0.020
TCLP PESTICIDES	SW1311/8081	CHLORDANE	mg/L	0.03	ND	--	0.030
		ENDRIN	mg/L	0.02	ND	--	0.020
		GAMMA-BHC (LINDANE)	mg/L	0.4	ND	--	0.40
		HEPTACHLOR	mg/L	0.008	ND	--	0.0080
		HEPTACHLOR EPOXIDE	mg/L	0.008	ND	--	0.0080
		METHOXYCHLOR	mg/L	10	ND	--	10
		TOXAPHENE	mg/L	0.5	ND	--	0.50
TCLP SVOCs	SW1311/8270C	2,4,5-TRICHLOROPHENOL	mg/L	400	ND	--	400
		2,4,6-TRICHLOROPHENOL	mg/L	2	ND	--	2.0
		2,4-DINITROTOLUENE	mg/L	0.13	ND	--	0.13
		2-METHYLPHENOL (o-Cresol)	mg/L	200	ND	--	200
		3- and 4-METHYLPHENOL (m- and o-Cresol)	mg/L	200	ND	--	200
		HEXACHLOROBTADIENE	mg/L	0.13	ND	--	0.13
		HEXACHLOROETHANE	mg/L	0.5	ND	--	0.50
		HEXACHLOROETHANE	mg/L	3	ND	--	3.0
		NITROBENZENE	mg/L	2	ND	--	2.0
		PENTACHLOROPHENOL	mg/L	100	ND	--	100
		PYRIDINE	mg/L	5	ND	--	5.0
		CRESOLS, TOTAL	mg/L	200	ND	--	200
TCLP VOCs	SW1311/8260B	1,1-DICHLOROETHENE	mg/L	0.7	ND	--	0.70
		1,2-DICHLOROETHANE	mg/L	0.5	ND	--	0.50
		1,4-DICHLOROETHANE	mg/L	7.5	ND	--	7.5
		2-BUTANONE (MEK)	mg/L	200	ND	--	200
		BENZENE	mg/L	0.5	ND	--	0.50
		CARBON TETRACHLORIDE	mg/L	0.5	ND	--	0.50
		CHLOROBENZENE	mg/L	100	ND	--	100
		CHLOROFORM	mg/L	6.0	ND	--	6.0
		TETRACHLOROETHENE	mg/L	0.7	ND	--	0.70
		TRICHLOROETHENE	mg/L	0.5	ND	--	0.50
		VINYL CHLORIDE	mg/L	0.2	ND	--	0.20
		TPH	SW8015M/D	DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND
MOTOR OIL RANGE ORGANICS	mg/kg			100 <sup>d</sup>	ND	--	49
GASOLINE RANGE ORGANICS	mg/kg			100 <sup>d</sup>	ND	--	4.6
VOLATILES (BTEX)	SW8260B	BENZENE	mg/kg	10	ND	--	0.023
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.046
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.046
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.093

Notes:

- <sup>a</sup>TCLP Regulatory Level - Resource Conservation Recovery Act (RCRA) hazardous waste characteristic limits per 40CFR Part 261 Subpart C, Section 261.20 - 261.24.
- <sup>b</sup>KAFB Limits - Kirtland AFB landfill requirements per the Department of Air Force Technical Memorandum for Kirtland AFB/Department of Energy/Sandia National Laboratories Restoration Agencies and Their Commercial Contractors (2009).
- <sup>c</sup>Ignitability characteristic for solids from 40 CFR Part 261.21: "It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of moisture, or spontaneous chemical change, and when ignited burns so vigorously and persistently that it creates a hazard."
- <sup>d</sup>KAFB limit for TPH measured as the sum of gasoline, diesel and motor oil range organics.
- <sup>e</sup>KAFB limit for BTEX measured as the sum of benzene, toluene, ethylbenzene, and total xylenes.
- > - greater than
- BTEX - benzene, toluene, ethylbenzene, total xylenes
- \*F - degrees fahrenheit
- J - Analyte detected below quantitation limit
- mg/L - milligram per liter
- mg/kg - milligram per kilogram
- NE - not established
- ND - not detected above the PQL
- PQL - practical quantitation limit
- QUAL - laboratory data qualifier
- Shade- analyte detected above the detection limit
- Shade and Bold- analyte detected above KAFB Landfill acceptance limit or TCLP Regulatory Level.
- SVOCs - semivolatile organic compounds
- S.U. - Standard units
- TCLP - Toxicity Characteristic Leaching Procedure
- TPH - total petroleum hydrocarbons
- VOCs - volatile organic compounds

244-1B



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

July 18, 2018

Amanda Smith  
EA Engineering Science & Technology  
320 Gold Ave SW Suite 1210  
Albuquerque, NM 87102  
TEL:  
FAX

RE: Kirtland AFB BFF

OrderNo.: 1807138

Dear Amanda Smith:

Hall Environmental Analysis Laboratory received 1 sample(s) on 7/3/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

Analytical Report

Lab Order 1807138

Date Reported: 7/18/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science & Technology

Client Sample ID: KAFB-106244-1B-IDW

Project: Kirtland AFB BFF

Collection Date: 7/3/2018 10:20:00 AM

Lab ID: 1807138-001

Matrix: SOIL

Received Date: 7/3/2018 1:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8081: PESTICIDES TCLP</b>						Analyst: JME
Chlordane	ND	0.030		mg/L	1	7/11/2018 1:39:55 PM
Endrin	ND	0.020		mg/L	1	7/11/2018 1:39:55 PM
gamma-BHC (Lindane)	ND	0.40		mg/L	1	7/11/2018 1:39:55 PM
Heptachlor	ND	0.0080		mg/L	1	7/11/2018 1:39:55 PM
Heptachlor epoxide	ND	0.0080		mg/L	1	7/11/2018 1:39:55 PM
Methoxychlor	ND	10		mg/L	1	7/11/2018 1:39:55 PM
Toxaphene	ND	0.50		mg/L	1	7/11/2018 1:39:55 PM
Surr: Decachlorobiphenyl	90.7	43.3-136		%Rec	1	7/11/2018 1:39:55 PM
Surr: Tetrachloro-m-xylene	73.9	30.7-130		%Rec	1	7/11/2018 1:39:55 PM
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: TOM
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	7/6/2018 8:55:54 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	7/6/2018 8:55:54 PM
Surr: DNOP	110	70-130		%Rec	1	7/6/2018 8:55:54 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	7/6/2018 4:31:06 PM
Surr: BFB	94.4	15-316		%Rec	1	7/6/2018 4:31:06 PM
<b>MERCURY, TCLP</b>						Analyst: rde
Mercury	ND	0.020		mg/L	1	7/12/2018 3:04:13 PM
<b>EPA METHOD 6010B: TCLP METALS</b>						Analyst: ELS
Arsenic	ND	5.0		mg/L	1	7/10/2018 7:52:46 AM
Barium	ND	100		mg/L	1	7/10/2018 7:52:46 AM
Cadmium	ND	1.0		mg/L	1	7/10/2018 7:52:46 AM
Chromium	ND	5.0		mg/L	1	7/10/2018 7:52:46 AM
Lead	ND	5.0		mg/L	1	7/10/2018 7:52:46 AM
Selenium	ND	1.0		mg/L	1	7/10/2018 7:52:46 AM
Silver	ND	5.0		mg/L	1	7/10/2018 7:52:46 AM
<b>EPA METHOD 8270C TCLP</b>						Analyst: DAM
2-Methylphenol	ND	200		mg/L	1	7/12/2018 1:53:56 PM
3+4-Methylphenol	ND	200		mg/L	1	7/12/2018 1:53:56 PM
2,4-Dinitrotoluene	ND	0.13		mg/L	1	7/12/2018 1:53:56 PM
Hexachlorobenzene	ND	0.13		mg/L	1	7/12/2018 1:53:56 PM
Hexachlorobutadiene	ND	0.50		mg/L	1	7/12/2018 1:53:56 PM
Hexachloroethane	ND	3.0		mg/L	1	7/12/2018 1:53:56 PM
Nitrobenzene	ND	2.0		mg/L	1	7/12/2018 1:53:56 PM
Pentachlorophenol	ND	100		mg/L	1	7/12/2018 1:53:56 PM
Pyridine	ND	5.0		mg/L	1	7/12/2018 1:53:56 PM
2,4,5-Trichlorophenol	ND	400		mg/L	1	7/12/2018 1:53:56 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1807138

Date Reported: 7/18/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106244-1B-IDW

Project: Kirtland AFB BFF

Collection Date: 7/3/2018 10:20:00 AM

Lab ID: 1807138-001

Matrix: SOIL

Received Date: 7/3/2018 1:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8270C TCLP</b>						Analyst: DAM
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	7/12/2018 1:53:56 PM
Cresols, Total	ND	200		mg/L	1	7/12/2018 1:53:56 PM
Surr: 2-Fluorophenol	40.1	22.1-97.5		%Rec	1	7/12/2018 1:53:56 PM
Surr: Phenol-d5	33.1	15-82.7		%Rec	1	7/12/2018 1:53:56 PM
Surr: 2,4,6-Tribromophenol	81.8	39-129		%Rec	1	7/12/2018 1:53:56 PM
Surr: Nitrobenzene-d5	59.5	44.6-120		%Rec	1	7/12/2018 1:53:56 PM
Surr: 2-Fluorobiphenyl	57.6	38.3-115		%Rec	1	7/12/2018 1:53:56 PM
Surr: 4-Terphenyl-d14	92.2	29.6-79.7	S	%Rec	1	7/12/2018 1:53:56 PM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: AG
Benzene	ND	0.023		mg/Kg	1	7/10/2018 3:38:34 PM
Toluene	ND	0.046		mg/Kg	1	7/10/2018 3:38:34 PM
Ethylbenzene	ND	0.046		mg/Kg	1	7/10/2018 3:38:34 PM
Xylenes, Total	ND	0.093		mg/Kg	1	7/10/2018 3:38:34 PM
Surr: 4-Bromofluorobenzene	120	70-130		%Rec	1	7/10/2018 3:38:34 PM
Surr: Toluene-d8	94.6	70-130		%Rec	1	7/10/2018 3:38:34 PM
<b>VOLATILES BY 8260B/1311</b>						Analyst: RAA
Benzene	ND	0.50		mg/L	1	7/10/2018 10:32:00 PM
2-Butanone	ND	200		mg/L	1	7/10/2018 10:32:00 PM
Carbon Tetrachloride	ND	0.50		mg/L	1	7/10/2018 10:32:00 PM
Chlorobenzene	ND	100		mg/L	1	7/10/2018 10:32:00 PM
Chloroform	ND	6.0		mg/L	1	7/10/2018 10:32:00 PM
1,4-Dichlorobenzene	ND	7.5		mg/L	1	7/10/2018 10:32:00 PM
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	7/10/2018 10:32:00 PM
1,1-Dichloroethene	ND	0.70		mg/L	1	7/10/2018 10:32:00 PM
Hexachlorobutadiene	ND	0.50		mg/L	1	7/10/2018 10:32:00 PM
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	7/10/2018 10:32:00 PM
Trichloroethene (TCE)	ND	0.50		mg/L	1	7/10/2018 10:32:00 PM
Vinyl chloride	ND	0.20		mg/L	1	7/10/2018 10:32:00 PM
Surr: 1,2-Dichloroethane-d4	98.8	70-130		%Rec	1	7/10/2018 10:32:00 PM
Surr: 4-Bromofluorobenzene	95.8	57.3-148		%Rec	1	7/10/2018 10:32:00 PM
Surr: Dibromofluoromethane	92.4	70-130		%Rec	1	7/10/2018 10:32:00 PM
Surr: Toluene-d8	94.3	70-130		%Rec	1	7/10/2018 10:32:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not in Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

1807138-001B KAFB-106244-1B-IDW  
 Collected date/time: 07/03/18 10:20

SAMPLE RESULTS - 01  
 L1007319

ONE LAB. NATIONWIDE. 

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		7/10/2018 10:54:52 AM	WG1135724
Fluid	2		7/10/2018 10:54:52 AM	WG1135724
Initial pH	9.04		7/10/2018 10:54:52 AM	WG1135724
Final pH	5.98		7/10/2018 10:54:52 AM	WG1135724

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.250	1	07/12/2018 15:18	WG1136234

<sup>5</sup> Sr

<sup>6</sup> Qc

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		25.0	1	07/11/2018 14:26	WG1136124

<sup>7</sup> Gl

Al

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	8.48	T6	1	07/09/2018 13:10	WG1135254

<sup>8</sup> Sc

Sample Narrative:  
 L1007319-01 WG1135254: 8.48 at 19.9C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DNI at 170		1	07/08/2018 13:05	WG1124893

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND		0.00200	1	1	07/12/2018 16:03	WG1136734
2,4-D	ND		0.00200	10	1	07/12/2018 16:03	WG1136734
(S) 2,4-Dichlorophenyl Acetic Acid	69.6		14.0-158			07/12/2018 16:03	WG1136734

ACCOUNT:  
 Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
 L1007319

DATE/TIME:  
 07/13/18 13:50



ONE LAB. NATIONWIDE.

# QUALITY CONTROL SUMMARY

L1007319-01

WG1136284

Wet Chemistry by Method 9012 B

Method Blank (MB)

(MB) R3325145-1 07/12/18 15:11

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Cyanide	U		0.0390	0.250

L1007494-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1007494-01 07/12/18 15:57 • (DUP) R3325145-5 07/12/18 15:58

Analyte	Original Result (dry) mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	5.65	3.89	1	36.8	J <sub>2</sub>	20

L1007964-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1007964-01 07/12/18 16:04 • (DUP) R3325145-6 07/12/18 16:08

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	0.405	0.405	1	49.6	P <sub>1</sub>	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3325145-2 07/12/18 15:12 • (LCSD) R3325145-3 07/12/18 15:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	2.50	2.68	2.55	107	102	50.0-150			5.11	20

L1007964-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1007964-02 07/12/18 16:09 • (MS) R3325145-7 07/12/18 16:10 • (MSD) R3325145-8 07/12/18 16:11

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	1.67	0.270	1.90	1.86	97.7	95.4	1	75.0-125			1.98	20

1	Tc
2	SS
3	Cn
4	Si
5	QC
6	GI
7	Al
8	Sc

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT: L1007319

DATE/TIME: 07/13/18 13:50

ONE LAB. NATIONWIDE

QUALITY CONTROL SUMMARY

L1007319-01

WG1136124

Wet Chemistry by Method 9034-90308

Method Blank (MB)

(MB) R3324766-1 07/11/18 14:26

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Sulfide	U		7.63	25.0

L1006552-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1006552-13 07/11/18 14:26 • (DUP) R3324766-4 07/11/18 14:26

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Sulfide	84.4	84.4	1	0.000		20

L1007858-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1007858-02 07/11/18 14:26 • (DUP) R3324766-5 07/11/18 14:26

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Sulfide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3324766-2 07/11/18 14:26 • (LCSD) R3324766-3 07/11/18 14:26

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	LCSD Result mg/kg	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Reactive Sulfide	100	84.4	84.4	90.5	90.5	70.0-130		6.90	20	

ACCOUNT:  
Hill Environmental Analysis Laboratory

PROJECT:

SDG:  
L1007319

DATE/TIME:  
07/13/18 13:50



ONE LAB. NATIONWIDE.

# QUALITY CONTROL SUMMARY

L1007319-01

**WG1135254**

Wet Chemistry by Method 9045D

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)

(LCS) R3324071-1 07/09/18 19:10 - (LCSD) R3324071-2 07/09/18 19:10

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Corrosivity by pH	10.0	9.97	9.98	99.7	99.8	99.0-101			0.100	1

**Sample Narrative:**

LCS: 9.97 at 19.5C  
 LCSD: 9.98 at 19.6C

2	Tc
3	SS
4	Cn
5	Sr
6	Qc
7	Gl
8	Al
9	Sc

DATE/TIME:  
07/13/18 13:50

SDG:  
L1007319

PROJECT:

ACCOUNT:  
Hall Environmental Analysis Laboratory

ONE LAB. NATIONWIDE.

QUALITY CONTROL SUMMARY

L1007319-01

WG1134893

Wet Chemistry by Method D93/1010A

L1005548-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1005548-02 07/08/18 13:05 • (DUP) R3323903-3 07/08/18 13:05

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ignitability	Deg. F DNI at 170	Deg. F DNI at 170	1	% 0.000	% 10	% 10

L1007457-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1007457-01 07/08/18 13:05 • (DUP) R3323903-4 07/08/18 13:05

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ignitability	Deg. F DNI at 170	Deg. F DNI at 170	1	% 0.000	% 10	% 10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3323903-1 07/08/18 13:05 • (LCSD) R3323903-2 07/08/18 13:05

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Ignitability	Deg. F 82.0	Deg. F 82.4	Deg. F 82.4	% 100	% 100	% 96.0-104	% 100	% 100	% 0.000	% 10

7 Tc  
8 Ss  
4 Cn  
5 Sr  
6 Qc  
7 GI  
Al  
Sc

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1007319

DATE/TIME:  
07/19/18 13:50

**WG1136734**

Chlorinated Acid Herbicides (GC) by Method 8151A

**QUALITY CONTROL SUMMARY**

L1007319-01

ONE LAB. NATIONWIDE

Method Blank (MB)

(MB) R3325173-1 07/12/18 15:24

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4-D	U		0.000667	0.00200
2,4,5-TP (Silvex)	U		0.000667	0.00200
(S) 2,4-Dichlorophenyl Acetic Acid	79.2			14.0-158

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)

(LCS) R3325173-2 07/12/18 15:37 • (LCSD) R3325173-3 07/12/18 15:50

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
2,4-D	0.00500	0.00424	0.00433	84.8	86.6	56.0-120			2.10	20
2,4,5-TP (Silvex)	0.00500	0.00423	0.00445	84.6	89.0	55.0-120			5.07	20
(S) 2,4-Dichlorophenyl Acetic Acid				76.0	78.0	14.0-158				

2 Tc	3 Ss	4 Cn	5 Si	6 Qc	7 GI	AI	5 Sc
------	------	------	------	------	------	----	------

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1007319

DATE/TIME:  
07/13/18 13:50

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils]
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate, used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in the field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.



Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1007319

DATE/TIME:  
07/13/18 13:50

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807138

18-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID: <b>MB-39058</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>39058</b>	RunNo: <b>52498</b>								
Prep Date: <b>7/5/2018</b>	Analysis Date: <b>7/6/2018</b>	SeqNo: <b>1721687</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.9		10.00		99.1	70	130			

Sample ID: <b>LCS-39058</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>39058</b>	RunNo: <b>52498</b>								
Prep Date: <b>7/5/2018</b>	Analysis Date: <b>7/6/2018</b>	SeqNo: <b>1722611</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.00	0	102	70	130			
Surr: DNOP	4.7		5.000		94.7	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 3 of 11

**QC SUMMARY REPORT**

WO#: 1807138

**Hall Environmental Analysis Laboratory, Inc.**

18-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Sample ID	MB-39050	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	39050	RunNo:	52519					
Prep Date:	7/5/2018	Analysis Date:	7/6/2018	SeqNo:	1722508	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		96.0	15	316			

Sample ID	LCS-39050	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	39050	RunNo:	52519					
Prep Date:	7/5/2018	Analysis Date:	7/6/2018	SeqNo:	1722509	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	95.2	75.9	131			
Surr: BFB	1000		1000		101	15	316			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807138

18-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	MB-39117	SampType: MBLK		TestCode: EPA Method 8081: Pesticides TCLP						
Client ID:	PBW	Batch ID: 39117		RunNo: 52631						
Prep Date:	7/10/2018	Analysis Date: 7/11/2018		SeqNo: 1727281		Units: mg/L				
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0023		0.002500		90.0	43.3	136			
Surr: Tetrachloro-m-xylene	0.0022		0.002500		87.5	30.7	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	LCS-39117	SampType: LCS		TestCode: EPA Method 8081: Pesticides TCLP						
Client ID:	LCSW	Batch ID: 39117		RunNo: 52631						
Prep Date:	7/10/2018	Analysis Date: 7/11/2018		SeqNo: 1727282		Units: mg/L				
Endrin	0.00042	0.00010	0.0005000	0	83.3	42.6	125			
gamma-BHC (Lindane)	0.00039	0.00010	0.0005000	0	77.1	29.5	142			
Heptachlor	0.00033	0.00010	0.0005000	0	66.9	18.6	138			
Heptachlor epoxide	0.00042	0.00010	0.0005000	0	83.6	40.3	127			
Methoxychlor	0.00043	0.00010	0.0005000	0	85.0	36.5	143			
Surr: Decachlorobiphenyl	0.0021		0.002500		82.4	43.3	136			
Surr: Tetrachloro-m-xylene	0.0015		0.002500		60.8	30.7	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 5 of 11

**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807138  
 18-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	Ics-39050		SampType: LCS4	TestCode: EPA Method 8260B: Volatiles Short List						
Client ID:	BatchQC		Batch ID: 39050	RunNo: 52594						
Prep Date:	7/5/2018		Analysis Date: 7/10/2018	SeqNo: 1725924		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.025	1.000	0	97.6	80	120			
Toluene	1.0	0.050	1.000	0	101	80	120			
Ethylbenzene	1.0	0.050	1.000	0	103	80	120			
Xylenes, Total	3.1	0.10	3.000	0	102	80	120			
Surr: 4-Bromofluorobenzene	0.55		0.5000		110	70	130			
Surr: Toluene-d8	0.46		0.5000		92.4	70	130			

Sample ID	mb-39050		SampType: MBLK	TestCode: EPA Method 8260B: Volatiles Short List						
Client ID:	PBS		Batch ID: 39050	RunNo: 52594						
Prep Date:	7/5/2018		Analysis Date: 7/10/2018	SeqNo: 1725925		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.61		0.5000		122	70	130			
Surr: Toluene-d8	0.47		0.5000		94.3	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807138  
 18-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	mb-39098		SampType:	MBLK		TestCode:	Volatiles by 8260B/1311			
Client ID:	PBS		Batch ID:	39098		RunNo:	52596			
Prep Date:	7/9/2018		Analysis Date:	7/10/2018		SeqNo:	1726139		Units: mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Hexachlorobutadiene	ND	0.50								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		101	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		97.2	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		94.3	70	130			
Surr: Toluene-d8	0.19		0.2000		94.1	70	130			

Sample ID	lcs-39098		SampType:	LCS		TestCode:	Volatiles by 8260B/1311			
Client ID:	LCSS		Batch ID:	39098		RunNo:	52632			
Prep Date:	7/9/2018		Analysis Date:	7/11/2018		SeqNo:	1727297		Units: mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.35	0.10	0.4000	0	88.4	70	130			
Chlorobenzene	0.38	0.10	0.4000	0	95.3	70	130			
1,1-Dichloroethene	0.37	0.10	0.4000	0	92.9	70	130			
Trichloroethene (TCE)	0.35	0.10	0.4000	0	87.7	70	130			
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		103	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		95.3	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		97.1	70	130			
Surr: Toluene-d8	0.19		0.2000		94.5	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807138  
 18-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID <b>ics-39116</b>		SampType: <b>LCS</b>		TestCode: <b>EPA Method 8270C TCLP</b>						
Client ID: <b>LCSS</b>		Batch ID: <b>39116</b>		RunNo: <b>52664</b>						
Prep Date: <b>7/10/2018</b>		Analysis Date: <b>7/12/2018</b>		SeqNo: <b>1728897</b>		Units: <b>mg/L</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.079	0.00010	0.1000	0	79.4	47.8	99.2			
3+4-Methylphenol	0.16	0.00010	0.2000	0	79.5	41.5	118			
2,4-Dinitrotoluene	0.066	0.00010	0.1000	0	66.1	44.4	81			
Hexachlorobenzene	0.078	0.00010	0.1000	0	78.5	49.5	91.6			
Hexachlorobutadiene	0.072	0.00010	0.1000	0	71.7	38.6	93			
Hexachloroethane	0.072	0.00010	0.1000	0	71.9	39.4	79.9			
Nitrobenzene	0.079	0.00010	0.1000	0	78.9	47.4	96.2			
Pentachlorophenol	0.073	0.00010	0.1000	0	72.6	39.4	79.9			
Pyridine	0.051	0.00010	0.1000	0	51.1	15	79.9			
2,4,5-Trichlorophenol	0.078	0.00010	0.1000	0	77.9	47.4	118			
2,4,6-Trichlorophenol	0.081	0.00010	0.1000	0	80.5	47.4	101			
Cresols, Total	0.24	0.00010	0.3000	0	79.5	44.1	111			
Surr: 2-Fluorophenol	0.14		0.2000		68.0	22.1	97.5			
Surr: Phenol-d5	0.13		0.2000		64.4	15	82.7			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		77.2	39	129			
Surr: Nitrobenzene-d5	0.080		0.1000		79.7	44.6	120			
Surr: 2-Fluorobiphenyl	0.074		0.1000		74.2	38.3	115			
Surr: 4-Terphenyl-d14	0.083		0.1000		83.0	29.6	79.7			S

Sample ID <b>icsd-39116</b>		SampType: <b>LCSD</b>		TestCode: <b>EPA Method 8270C TCLP</b>						
Client ID: <b>LCSS02</b>		Batch ID: <b>39116</b>		RunNo: <b>52664</b>						
Prep Date: <b>7/10/2018</b>		Analysis Date: <b>7/12/2018</b>		SeqNo: <b>1728898</b>		Units: <b>mg/L</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.095	0.00010	0.1000	0	95.1	47.8	99.2	18.0	20	
3+4-Methylphenol	0.19	0.00010	0.2000	0	93.4	41.5	118	16.1	20	
2,4-Dinitrotoluene	0.069	0.00010	0.1000	0	68.8	44.4	81	3.94	20	
Hexachlorobenzene	0.087	0.00010	0.1000	0	86.7	49.5	91.6	9.93	20	
Hexachlorobutadiene	0.081	0.00010	0.1000	0	80.8	38.6	93	12.0	20	
Hexachloroethane	0.082	0.00010	0.1000	0	82.5	39.4	79.9	13.8	20	S
Nitrobenzene	0.091	0.00010	0.1000	0	90.8	47.4	96.2	14.0	20	
Pentachlorophenol	0.081	0.00010	0.1000	0	81.1	39.4	79.9	11.1	20	S
Pyridine	0.052	0.00010	0.1000	0	51.8	15	79.9	1.32	20	
2,4,5-Trichlorophenol	0.089	0.00010	0.1000	0	88.7	47.4	118	13.0	20	
2,4,6-Trichlorophenol	0.088	0.00010	0.1000	0	87.6	47.4	101	8.38	20	
Cresols, Total	0.28	0.00010	0.3000	0	94.0	44.1	111	16.7	20	
Surr: 2-Fluorophenol	0.16		0.2000		77.9	22.1	97.5	0	20	
Surr: Phenol-d5	0.14		0.2000		70.6	15	82.7	0	20	
Surr: 2,4,6-Tribromophenol	0.17		0.2000		86.2	39	129	0	20	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

## QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1807138

18-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Sample ID	lcsl-39116	SampType:	LCSD	TestCode:	EPA Method 8270C TCLP					
Client ID:	LCSS02	Batch ID:	39116	RunNo:	52664					
Prep Date:	7/10/2018	Analysis Date:	7/12/2018	SeqNo:	1728898	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.092		0.1000		92.4	44.6	120	0	20	
Surr: 2-Fluorobiphenyl	0.084		0.1000		83.5	38.3	115	0	20	
Surr: 4-Terphenyl-d14	0.084		0.1000		84.3	29.6	79.7	0	20	S

Sample ID	mb-39116	SampType:	MBLK	TestCode:	EPA Method 8270C TCLP					
Client ID:	PBS	Batch ID:	39116	RunNo:	52664					
Prep Date:	7/10/2018	Analysis Date:	7/12/2018	SeqNo:	1728899	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.14		0.2000		68.5	22.1	97.5			
Surr: Phenol-d5	0.13		0.2000		63.5	15	82.7			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		76.0	39	129			
Surr: Nitrobenzene-d5	0.078		0.1000		78.1	44.6	120			
Surr: 2-Fluorobiphenyl	0.074		0.1000		74.3	38.3	115			
Surr: 4-Terphenyl-d14	0.083		0.1000		83.2	29.6	79.7			S

## Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807138  
 18-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	MB-39172	SampType:	MBLK	TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	39172	RunNo:	52657					
Prep Date:	7/12/2018	Analysis Date:	7/12/2018	SeqNo:	1728621					
				Units:	mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	LCS-39172	SampType:	LCS	TestCode:	MERCURY, TCLP					
Client ID:	LCSW	Batch ID:	39172	RunNo:	52657					
Prep Date:	7/12/2018	Analysis Date:	7/12/2018	SeqNo:	1728622					
				Units:	mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	102	80	120			

Sample ID	TCLP#1-3771	SampType:	MBLK	TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	39172	RunNo:	52657					
Prep Date:	7/12/2018	Analysis Date:	7/12/2018	SeqNo:	1728623					
				Units:	mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807138

18-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Sample ID	MB-39111	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	39111	RunNo:	52556					
Prep Date:	7/9/2018	Analysis Date:	7/10/2018	SeqNo:	1723913	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	LCS-39111	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	LCSW	Batch ID:	39111	RunNo:	52556					
Prep Date:	7/9/2018	Analysis Date:	7/10/2018	SeqNo:	1723914	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	98.6	80	120			
Barium	ND	100	0.5000	0	100	80	120			
Cadmium	ND	1.0	0.5000	0	103	80	120			
Chromium	ND	5.0	0.5000	0	100	80	120			
Lead	ND	5.0	0.5000	0	93.2	80	120			
Selenium	ND	1.0	0.5000	0	103	80	120			
Silver	ND	5.0	0.1000	0	109	80	120			

Sample ID	MB-39111	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	39111	RunNo:	52556					
Prep Date:	7/9/2018	Analysis Date:	7/10/2018	SeqNo:	1723916	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0								

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 11 of 11



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1807138

RcptNo: 1

Received By: Anne Thorne 7/3/2018 1:50:00 PM

*Anne Thorne*

Completed By: Anne Thorne 7/5/2018 7:10:10 AM

*Anne Thorne*

Reviewed By: *JO 7.5.18*

*Labeled by: 07/05/18 AT*

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH:	_____
	(<2 or >12 unless noted)
Adjusted?	_____
Checked by:	_____

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.7	Good	Not Present			

		<b>CHAIN-OF-CUSTODY RECORD</b>		1 COC NUMBER: <b>COC-KAFB-106244-1B-1DPH</b>	
205 Shilling Circle Suite 400, Hunt Valley MD 21081 Tel: 410 771-1825 Fax: 410 771-1825		14 LAB NAME AND CONTACT: <b>Hall Environmental</b>		15 FAX AND MAIL REPORTS SEND TO: RECIPIENT 1 (Name and Company): <b>Amanda Smith/asmith@eastest.com</b>	
PROJECT NUMBER: <b>62599DM01.1017.3.13</b> <b>C</b>		16 LAB NO NUMBER: <b>15182</b>		15 FAX AND MAIL REPORTS SEND TO: RECIPIENT 2 (Name and Company): <b>Pam Moss/pmoss@eastest.com</b>	
PROJECT PHASE/STAGE: <b>Data Gap Wells</b>		17 PROJECT TEL NO AND FAX NO: <b>505-238-4410</b>		15 FAX AND MAIL REPORTS SEND TO: RECIPIENT 3 (Name and Company): <b>Eart Morse/emorse@eastest.com</b>	
PROJECT CONTACT: <b>E. Morse</b>		18 DATE COLLECTED: <b>7-3-18</b>		19 ANALYSES REQUIRED (Include Method Numbers)	
3 SAMPLE IDENTIFIER: <b>KAFB-106244-1B-1DPH</b>		3 SAMPLE DESCRIPTION/LOCATION: <b>Roll-off Bin</b>		Corrosivity - PH (9045D) X Sulfide (9012B/9034) X TPH GRO, DRO, RRO (8015D) X BTEX (8260B) X TCLP VOC, SVOC, Pesticides, Herb, Metals (1311/8260B/8270C/808/18151A/6010B/7470A) X	
4 ITEM: 1		5 MATRIX: Soil		6 SAMPLE TYPE (see codes on SOP): composite	
7 DATE COLLECTED: 7-3-18		8 TIME COLLECTED: 1020		10 COMMENTS/SCREENING READINGS (for lab use): <b>1807138-00</b> <b>A-016546</b>	
9 LAB NO AND FAX NO: 505-238-4410		11 DATE COLLECTED: 7-3-18		12 TIME COLLECTED: IV	
10 PROJECT TEL NO AND FAX NO: 505-238-4410		13 DATE COLLECTED: 7-3-18		14 TIME COLLECTED: 1020	
11 PROJECT TEL NO AND FAX NO: 505-238-4410		15 DATE COLLECTED: 7-3-18		16 TIME COLLECTED: IV	
12 PROJECT TEL NO AND FAX NO: 505-238-4410		17 DATE COLLECTED: 7-3-18		18 TIME COLLECTED: IV	
13 PROJECT TEL NO AND FAX NO: 505-238-4410		19 DATE COLLECTED: 7-3-18		20 TIME COLLECTED: IV	
14 PROJECT TEL NO AND FAX NO: 505-238-4410		21 DATE COLLECTED: 7-3-18		22 TIME COLLECTED: IV	
15 PROJECT TEL NO AND FAX NO: 505-238-4410		23 DATE COLLECTED: 7-3-18		24 TIME COLLECTED: IV	
16 PROJECT TEL NO AND FAX NO: 505-238-4410		25 DATE COLLECTED: 7-3-18		26 TIME COLLECTED: IV	
17 PROJECT TEL NO AND FAX NO: 505-238-4410		27 DATE COLLECTED: 7-3-18		28 TIME COLLECTED: IV	
18 PROJECT TEL NO AND FAX NO: 505-238-4410		29 DATE COLLECTED: 7-3-18		30 TIME COLLECTED: IV	
19 PROJECT TEL NO AND FAX NO: 505-238-4410		31 DATE COLLECTED: 7-3-18		32 TIME COLLECTED: IV	
20 PROJECT TEL NO AND FAX NO: 505-238-4410		33 DATE COLLECTED: 7-3-18		34 TIME COLLECTED: IV	
21 PROJECT TEL NO AND FAX NO: 505-238-4410		35 DATE COLLECTED: 7-3-18		36 TIME COLLECTED: IV	
22 PROJECT TEL NO AND FAX NO: 505-238-4410		37 DATE COLLECTED: 7-3-18		38 TIME COLLECTED: IV	
23 PROJECT TEL NO AND FAX NO: 505-238-4410		39 DATE COLLECTED: 7-3-18		40 TIME COLLECTED: IV	
24 PROJECT TEL NO AND FAX NO: 505-238-4410		41 DATE COLLECTED: 7-3-18		42 TIME COLLECTED: IV	
25 PROJECT TEL NO AND FAX NO: 505-238-4410		43 DATE COLLECTED: 7-3-18		44 TIME COLLECTED: IV	
26 PROJECT TEL NO AND FAX NO: 505-238-4410		45 DATE COLLECTED: 7-3-18		46 TIME COLLECTED: IV	
27 PROJECT TEL NO AND FAX NO: 505-238-4410		47 DATE COLLECTED: 7-3-18		48 TIME COLLECTED: IV	
28 PROJECT TEL NO AND FAX NO: 505-238-4410		49 DATE COLLECTED: 7-3-18		50 TIME COLLECTED: IV	
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34 PROJECT TEL NO AND FAX NO: 505-238-4410		61 DATE COLLECTED: 7-3-18		62 TIME COLLECTED: IV	
35 PROJECT TEL NO AND FAX NO: 505-238-4410		63 DATE COLLECTED: 7-3-18		64 TIME COLLECTED: IV	
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EA Engineering, Science, & Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, New Mexico 87102  
Phone: (505) 224-9013

July 26, 2018

Ms. Katrina Wheelock  
Solid Waste Program Manager  
Environmental Management  
377 MSG/CEIE  
Kirtland AFB, New Mexico 87117

Subject: Request to dispose non-hazardous soil cuttings at Kirtland C&D Landfill  
Roll-off Identification: KAFB-106244-2 (Bin ID #4536)  
USACE Contract No. W912DR-12-D-0006-DM01

Dear Ms. Wheelock,

EA Engineering, Science, and Technology, Inc., PBC (EA) is requesting permission to dispose of non-hazardous soil drill cuttings and plastic liners from one roll-off container to the Kirtland Air Force Base (AFB) Construction and Demolition (C&D) debris landfill. Roll-off bin with the EA identification of KAFB-106244 #2 (Bin ID #4536) contains approximately 13 cubic yards of soil.

Between June and July 2018 EA installed a groundwater monitoring well, KAFB-106244, associated with the Kirtland Bulk Fuels Facility environmental restoration project. Well KAFB-106244 is located on Air Force leased property south of the VA Hospital just west of Bullhead Park. Drill cuttings were containerized in a plastic-lined, steel, roll-off pending laboratory analysis for waste characterization. Any excess moisture in the bin was stabilized using Hydrosorb®, a superabsorbent polymer. All roll-off bins are currently residing in the EA investigation derived waste yard near 1601 Perimeter Circle SE, on Kirtland AFB.

One five-point composite waste characterization sample was collected from the roll-off bin and delivered to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis. The sample was analyzed for all the required parameters per the Kirtland AFB Landfill Acceptance Memorandum (January 2009). The attached analytical results (Report 1807140) for the composite sample confirms the drill cuttings meet waste acceptance requirements for disposal at the Kirtland C&D landfill.

All of the roll-off containers are owned and/or leased by Advanced Chemical Transport Environmental Services Inc. (ACT) with roll-off identification number, when present, marked clearly on the roll off. ACT will utilize one of the following vehicles for waste transport:



W912DR-12-D-0006-DM01  
 Kirtland Air Force Base Bulk Fuels Facility Expansion  
 of the Dissolved Plume Groundwater Treatment System Design  
 2 May 2017  
 Page 2 of 2

- 2015 Western Star Roll Off Truck, License #: WD121651, registered in New Mexico
- 2015 Western Star Roll Off Truck, License #: WD124756, registered in New Mexico

Mr. Sheen Kottkamp has reviewed this package and authorized EA to forward it for your review. EA respectfully requests your review of the attached summary table and analytical data for determination if disposal can be authorized at the Kirtland AFB C&D landfill. Upon receiving notification of Kirtland AFB's acceptance of the waste, EA will coordinate transport and disposal of the roll-off contents with ACT.

EA's Kirtland AFB Point of Contact is Mr. Scott Clark; 505-846-9017.

If you have any questions, please do not hesitate to contact me at 505-266-2225, or via e-mail at [landress@eaest.com](mailto:landress@eaest.com).

Sincerely,

Lane Andress, PG

Attachments: Summary Analytical Table  
 Hall Environmental Analysis Laboratory Order No: 1807140

cc: Jeanne Dye-Porto, [jeanne.dye-porto@us.af.mil](mailto:jeanne.dye-porto@us.af.mil)  
 Scott Clark, [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)  
 Sheen Kottkamp, [sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)  
 Melissa Clark, [melissa.clark.8@us.af.mil](mailto:melissa.clark.8@us.af.mil)  
 Ben Moayyad, [Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)  
 Devon Jercinovic, [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
 Bernie Bockisch, [bbockisch@eaest.com](mailto:bbockisch@eaest.com)  
 Earl Morse, [emorse@eaest.com](mailto:emorse@eaest.com)

		LOCATION CODE					
		FIELD SAMPLE ID	KAFB-106244-2-IDW				
		SAMPLE DATE	3-Jul-18				
		SAMPLE PURPOSE	Waste Characterization				
		ROLL-OFF NO.	KAFB-106244-2				
Parameter	Method	Analyte	Units	TCLP Regulatory Level <sup>a</sup> or KAFB Limits <sup>b</sup>	Result	QUAL	PQL
RCRA Characteristics	SW1010A Mod	IGNITABILITY	°F	See footnote <sup>c</sup>	> 170	--	--
	SW9012B	REACTIVE CYANIDE (as total)	mg/kg	NE	1.28	--	0.25
	SW9034	REACTIVE SULFIDE (as total)	mg/kg	NE	ND	--	25
	SW9045D	CORROSIVITY (pH)	S. U.	≥2 or ≤12.5	9.31	--	--
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.002
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.002
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0
		BARIUM	mg/L	100	ND	--	100
		CADMIUM	mg/L	1	ND	--	1.0
		CHROMIUM	mg/L	5	ND	--	5.0
		LEAD	mg/L	5	ND	--	5.0
		SELENIUM	mg/L	1	ND	--	1.0
	SW1311/7470A	MERCURY	mg/L	0.02	ND	--	0.020
TCLP PESTICIDES	SW1311/8081	CHLORDANE	mg/L	0.03	ND	--	0.030
		ENDRIN	mg/L	0.02	ND	--	0.020
		GAMMA-BHC (LINDANE)	mg/L	0.4	ND	--	0.40
		HEPTACHLOR	mg/L	0.008	ND	--	0.0080
		HEPTACHLOR EPOXIDE	mg/L	0.008	ND	--	0.0080
		METHOXYCHLOR	mg/L	10	ND	--	10
		TOXAPHENE	mg/L	0.5	ND	--	0.50
TCLP SVOCs	SW1311/8270C	2,4,5-TRICHLOROPHENOL	mg/L	400	ND	--	400
		2,4,6-TRICHLOROPHENOL	mg/L	2	ND	--	2.0
		2,4-DINITROTOLUENE	mg/L	0.13	ND	--	0.13
		2-METHYLPHENOL (o-Cresol)	mg/L	200	ND	--	200
		3- and 4-METHYLPHENOL (m- and o-Cresol)	mg/L	200	ND	--	200
		HEXACHLOROENZENE	mg/L	0.13	ND	--	0.13
		HEXACHLOROBUTADIENE	mg/L	0.5	ND	--	0.50
		HEXACHLOROETHANE	mg/L	3	ND	--	3.0
		NITROBENZENE	mg/L	2	ND	--	2.0
		PENTACHLOROPHENOL	mg/L	100	ND	--	100
TCLP VOCs	SW1311/8260B	PYRIDINE	mg/L	5	ND	--	5.0
		CRESOLS, TOTAL	mg/L	200	ND	--	200.0
		1,1-DICHLOROETHENE	mg/L	0.7	ND	--	0.70
		1,2-DICHLOROETHANE	mg/L	0.5	ND	--	0.50
		1,4-DICHLOROETHANE	mg/L	7.5	ND	--	7.5
		2-BUTANONE (MEK)	mg/L	200	ND	--	200
		BENZENE	mg/L	0.5	ND	--	0.50
		CARBON TETRACHLORIDE	mg/L	0.5	ND	--	0.50
		CHLOROBENZENE	mg/L	100	ND	--	100
		CHLOROFORM	mg/L	6.0	ND	--	6.0
		TETRACHLOROETHENE	mg/L	0.7	ND	--	0.70
		TRICHLOROETHENE	mg/L	0.5	ND	--	0.50
		VINYL CHLORIDE	mg/L	0.2	ND	--	0.20
TPH	SW8015M/D	DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	9.9
		MOTOR OIL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	50
		GASOLINE RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	4.8
VOLATILES (BTEX)	SW8260B	BENZENE	mg/kg	10	ND	--	0.024
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.048
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.048
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.096

Notes:

- <sup>a</sup>TCLP Regulatory Level - Resource Conservation Recovery Act (RCRA) hazardous waste characteristic limits per 40CFR Part 261 Subpart C, Section 261.20 - 261.24.
- <sup>b</sup>KAFB Limits - Kirtland AFB landfill requirements per the Department of Air Force Technical Memorandum for Kirtland AFB/Department of Energy/Sandia National Laboratories Restoration Agencies and Their Commercial Contractors (2009).
- <sup>c</sup>Ignitability characteristic for solids from 40 CFR Part 261.21: "It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of..."
- <sup>d</sup>KAFB limit for TPH measured as the sum of gasoline, diesel and motor oil range organics.
- <sup>e</sup>KAFB limit for BTEX measured as the sum of benzene, toluene, ethylbenzene, and total xylenes.
- > - greater than
- BTEX - benzene, toluene, ethylbenzene, total xylenes
- °F - degrees fahrenheit
- J - Analyte detected below quantitation limit
- mg/L - milligram per liter
- mg/kg - milligram per kilogram
- NE - not established
- ND - not detected above the PQL
- PQL - practical quantitation limit
- QUAL - laboratory data qualifier
- Shade - analyte detected above the detection limit
- Shade and Bold - analyte detected above KAFB Landfill acceptance limit or TCLP Regulatory Level.
- SVOCs - semivolatle organic compounds
- S.U. - Standard units
- TCLP - Toxicity Characteristic Leaching Procedure
- TPH - total petroleum hydrocarbons
- VOCs - volatile organic compounds

244-2



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

July 18, 2018

Amanda Smith  
EA Engineering Science & Technology  
320 Gold Ave SW Suite 1210  
Albuquerque, NM 87102  
TEL:  
FAX

RE: Kirtland AFB BFF

OrderNo.: 1807140

Dear Amanda Smith:

Hall Environmental Analysis Laboratory received 1 sample(s) on 7/3/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a white background.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

Analytical Report

Lab Order 1807140

Date Reported: 7/18/2018

Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science & Technology

Client Sample ID: KAFB-106244-2-IDW

Project: Kirtland AFB BFF

Collection Date: 7/3/2018 11:00:00 AM

Lab ID: 1807140-001

Matrix: SOIL

Received Date: 7/3/2018 1:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8081: PESTICIDES TCLP</b>						Analyst: JME
Chlordane	ND	0.030		mg/L	1	7/11/2018 2:06:11 PM
Endrin	ND	0.020		mg/L	1	7/11/2018 2:06:11 PM
gamma-BHC (Lindane)	ND	0.40		mg/L	1	7/11/2018 2:06:11 PM
Heptachlor	ND	0.0080		mg/L	1	7/11/2018 2:06:11 PM
Heptachlor epoxide	ND	0.0080		mg/L	1	7/11/2018 2:06:11 PM
Methoxychlor	ND	10		mg/L	1	7/11/2018 2:06:11 PM
Toxaphene	ND	0.50		mg/L	1	7/11/2018 2:06:11 PM
Surr: Decachlorobiphenyl	89.1	43.3-136		%Rec	1	7/11/2018 2:06:11 PM
Surr: Tetrachloro-m-xylene	75.4	30.7-130		%Rec	1	7/11/2018 2:06:11 PM
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: TOM
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	7/6/2018 9:45:11 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	7/6/2018 9:45:11 PM
Surr: DNOP	111	70-130		%Rec	1	7/6/2018 9:45:11 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/6/2018 5:18:01 PM
Surr: BFB	96.2	15-316		%Rec	1	7/6/2018 5:18:01 PM
<b>MERCURY, TCLP</b>						Analyst: rde
Mercury	ND	0.020		mg/L	1	7/12/2018 3:07:59 PM
<b>EPA METHOD 6010B: TCLP METALS</b>						Analyst: ELS
Arsenic	ND	5.0		mg/L	1	7/10/2018 8:06:38 AM
Barium	ND	100		mg/L	1	7/10/2018 8:06:38 AM
Cadmium	ND	1.0		mg/L	1	7/10/2018 8:06:38 AM
Chromium	ND	5.0		mg/L	1	7/10/2018 8:06:38 AM
Lead	ND	5.0		mg/L	1	7/10/2018 8:06:38 AM
Selenium	ND	1.0		mg/L	1	7/10/2018 8:06:38 AM
Silver	ND	5.0		mg/L	1	7/10/2018 8:06:38 AM
<b>EPA METHOD 8270C TCLP</b>						Analyst: DAM
2-Methylphenol	ND	200		mg/L	1	7/12/2018 2:53:13 PM
3+4-Methylphenol	ND	200		mg/L	1	7/12/2018 2:53:13 PM
2,4-Dinitrotoluene	ND	0.13		mg/L	1	7/12/2018 2:53:13 PM
Hexachlorobenzene	ND	0.13		mg/L	1	7/12/2018 2:53:13 PM
Hexachlorobutadiene	ND	0.50		mg/L	1	7/12/2018 2:53:13 PM
Hexachloroethane	ND	3.0		mg/L	1	7/12/2018 2:53:13 PM
Nitrobenzene	ND	2.0		mg/L	1	7/12/2018 2:53:13 PM
Pentachlorophenol	ND	100		mg/L	1	7/12/2018 2:53:13 PM
Pyridine	ND	5.0		mg/L	1	7/12/2018 2:53:13 PM
2,4,5-Trichlorophenol	ND	400		mg/L	1	7/12/2018 2:53:13 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1807140

Date Reported: 7/18/2018

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106244-2-IDW

Project: Kirtland AFB BFF

Collection Date: 7/3/2018 11:00:00 AM

Lab ID: 1807140-001

Matrix: SOIL

Received Date: 7/3/2018 1:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8270C TCLP</b>						Analyst: <b>DAM</b>
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	7/12/2018 2:53:13 PM
Cresols, Total	ND	200		mg/L	1	7/12/2018 2:53:13 PM
Surr: 2-Fluorophenol	42.4	22.1-97.5		%Rec	1	7/12/2018 2:53:13 PM
Surr: Phenol-d5	35.9	15-82.7		%Rec	1	7/12/2018 2:53:13 PM
Surr: 2,4,6-Tribromophenol	72.6	39-129		%Rec	1	7/12/2018 2:53:13 PM
Surr: Nitrobenzene-d5	56.3	44.6-120		%Rec	1	7/12/2018 2:53:13 PM
Surr: 2-Fluorobiphenyl	58.0	38.3-115		%Rec	1	7/12/2018 2:53:13 PM
Surr: 4-Terphenyl-d14	88.9	29.6-79.7	S	%Rec	1	7/12/2018 2:53:13 PM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>AG</b>
Benzene	ND	0.024		mg/Kg	1	7/10/2018 4:25:18 PM
Toluene	ND	0.048		mg/Kg	1	7/10/2018 4:25:18 PM
Ethylbenzene	ND	0.048		mg/Kg	1	7/10/2018 4:25:18 PM
Xylenes, Total	ND	0.096		mg/Kg	1	7/10/2018 4:25:18 PM
Surr: 4-Bromofluorobenzene	125	70-130		%Rec	1	7/10/2018 4:25:18 PM
Surr: Toluene-d8	95.6	70-130		%Rec	1	7/10/2018 4:25:18 PM
<b>VOLATILES BY 8260B/1311</b>						Analyst: <b>RAA</b>
Benzene	ND	0.50		mg/L	1	7/10/2018 11:20:00 PM
2-Butanone	ND	200		mg/L	1	7/10/2018 11:20:00 PM
Carbon Tetrachloride	ND	0.50		mg/L	1	7/10/2018 11:20:00 PM
Chlorobenzene	ND	100		mg/L	1	7/10/2018 11:20:00 PM
Chloroform	ND	6.0		mg/L	1	7/10/2018 11:20:00 PM
1,4-Dichlorobenzene	ND	7.5		mg/L	1	7/10/2018 11:20:00 PM
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	7/10/2018 11:20:00 PM
1,1-Dichloroethene	ND	0.70		mg/L	1	7/10/2018 11:20:00 PM
Hexachlorobutadiene	ND	0.50		mg/L	1	7/10/2018 11:20:00 PM
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	7/10/2018 11:20:00 PM
Trichloroethene (TCE)	ND	0.50		mg/L	1	7/10/2018 11:20:00 PM
Vinyl chloride	ND	0.20		mg/L	1	7/10/2018 11:20:00 PM
Surr: 1,2-Dichloroethane-d4	99.6	70-130		%Rec	1	7/10/2018 11:20:00 PM
Surr: 4-Bromofluorobenzene	97.3	57.3-148		%Rec	1	7/10/2018 11:20:00 PM
Surr: Dibromofluoromethane	95.3	70-130		%Rec	1	7/10/2018 11:20:00 PM
Surr: Toluene-d8	94.2	70-130		%Rec	1	7/10/2018 11:20:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

1807140-001B KAFB-106244-2-IDW  
 Collected date/time: 07/03/18 11:00

SAMPLE RESULTS - 01  
 L1007375

ONE LAB. NATIONWIDE.



Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		7/10/2018 10:54:52 AM	WG1135724
Fluid	1		7/10/2018 10:54:52 AM	WG1135724
Initial pH	9.15		7/10/2018 10:54:52 AM	WG1135724
Final pH	4.96		7/10/2018 10:54:52 AM	WG1135724

2 Tc

3 Ss

4 Cn

Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Cyanide	1.28		0.250	1	07/12/2018 15:56	WG1136234

5 Sr

6 Qc

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		25.0	1	07/11/2018 14:26	WG1136124

7 GI

AI

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	9.31	TS	1	07/09/2018 16:05	WG1135379

8 Sc

Sample Narrative:

L1007375-01 WG1135379: 9.31 at 20.7C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DNI at 170		1	07/12/2018 10:18	WG1136710

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND		0.00200	1	1	07/12/2018 18:42	WG1136734
2,4-D	ND		0.00200	10	1	07/12/2018 18:42	WG1136734
(S) 2,4-Dichlorophenyl Acetic Acid	79.8		14.0-158			07/12/2018 18:42	WG1136734

ACCOUNT:  
 Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
 L1007375

DATE/TIME:  
 07/16/18 09:44

ONE LAB. NATIONWIDE.

QUALITY CONTROL SUMMARY

L1007375-01

WG1136284

Wet Chemistry by Method 9012 B

Method Blank (MB)

(MB) R3325145-1 07/12/18 15:11

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Cyanide	U		0.0390	0.250

L1007494-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1007494-01 07/12/18 15:57 • (DUP) R3325145-5 07/12/18 15:58

Analyte	Original Result mg/kg	DUP Result (dry) mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	5.65	3.89	1	36.8	U <sub>2</sub>	20

L1007964-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1007964-01 07/12/18 16:04 • (DUP) R3325145-6 07/12/18 16:08

Analyte	Original Result mg/kg	DUP Result (dry) mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	0.405	0.405	1	49.6	U <sub>1</sub>	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3325145-2 07/12/18 15:12 • (LCS-D) R3325145-3 07/12/18 15:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	2.50	2.68	2.55	107	102	50.0-150			5.11	20

L1007964-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1007964-02 07/12/18 16:09 • (MS) R3325145-7 07/12/18 16:10 • (MSD) R3325145-8 07/12/18 16:11

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	1.67	0.270	1.90	1.86	97.7	95.4	1	75.0-125			1.98	20

ACCOUNT:

Hall Environmental Analysis Laboratory

PROJECT:

SDG: L1007375

DATE/TIME: 07/16/18 09:44

ONE LAB. NATIONWIDE.

QUALITY CONTROL SUMMARY

L1007375-01

WG1136124

Wet Chemistry by Method 9034-9030B

Method Blank (MB)

(MB) R3324766-1 07/11/18 14:26

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Sulfide	U	7.53	25.0	25.0

L1006552-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1006552-13 07/11/18 14:26 • (DUP) R3324766-4 07/11/18 14:26

Analyte	Original Result mg/kg	DUP Result mg/kg	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Sulfide	84.4	84.4	1	0.000	20

L1007858-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1007858-02 07/11/18 14:26 • (DUP) R3324766-5 07/11/18 14:26

Analyte	Original Result mg/kg	DUP Result mg/kg	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Sulfide	ND	ND	1	0.000	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3324766-2 07/11/18 14:26 • (LCSD) R3324766-3 07/11/18 14:26

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	LCSD Result mg/kg	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Reactive Sulfide	100	84.4	84.4	90.5	90.5	70.0-130	84.4	90.5	6.90	20

1 C  
2 SS  
3 Cn  
4 St  
5 QC  
6 GI  
7 AI  
8 SC

ACCOUNT: Hall Environmental Analysis Laboratory  
PROJECT: SDG: L1007375  
DATE/TIME: 07/16/18 09:44

**WG1135379**

Wet Chemistry by Method 9045D

**QUALITY CONTROL SUMMARY**

L1007375-01

ONE LAB. NATIONWIDE.

L1007375-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1007375-01 07/09/18 16:05 • (DUP) R3324145-4 07/09/18 16:05

Analyte	Original Result		DUP Result		DUP RPD		DUP Qualifier		DUP RPD Limits	
	SU	%	SU	%	Dilution	DUP RPD %	DUP Qualifier %	DUP RPD %	DUP RPD %	DUP RPD %
Corrosivity by pH	9.31		9.29	1	1	0.215				1

**Sample Narrative:**

OS: 9.31 at 20.7C  
DUP: 9.29 at 20.6C

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3324145-1 07/09/18 16:05 • (LCSD) R3324145-2 07/09/18 16:05

Analyte	Spike Amount		LCS Result		LCSD Result		LCS Rec.		LCSD Rec.		Rec. Limits		LCS Qualifier		LCSD Qualifier		RPD Limits	
	SU	%	SU	%	SU	%	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier %	LCSD Qualifier %	RPD %	RPD %	RPD %	RPD %	RPD %	RPD %	
Corrosivity by pH	10.0		9.95	99.4	9.94	99.5	99.4	99.4	99.0-101	99.4	99.4	0.101	0.101	0.101	0.101	0.101	0.101	1

**Sample Narrative:**

LCS: 9.95 at 20C  
LCSD: 9.94 at 20.1C

ACCOUNT: Hall Environmental Analysis Laboratory  
PROJECT: L1007375  
SDG: L1007375  
DATE/TIME: 07/16/18 09:44



ONE LAB. NATIONWIDE.

# QUALITY CONTROL SUMMARY

L1007375-01

**WG1136710**

Wet Chemistry by Method 093/1010A

L1007111-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1007111-01 07/12/18 10:18 • (DUP) R3324969-3 07/12/18 10:18

Analyte	Original Result		DUP Result		Dilution		DUP RPD		DUP Qualifier		DUP RPD Limits	
	Deg. F	DNI at 170	Deg. F	DNI at 170			%		%		%	
Ignitability	82.0	82.6	82.6	82.6	1		0.000		101		10	

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)												
(LCS) R3324969-1 07/12/18 10:18 • (LCSD) R3324969-2 07/12/18 10:18												
Analyte	Spike Amount		LCS Result		LCSD Result		LCS Rec.		LCSD Rec.		Rec. Limits	
	Deg. F	DNI at 170	Deg. F	DNI at 170	Deg. F	DNI at 170	%		%		%	
Ignitability	82.0	82.6	82.6	82.6	82.6	82.6	101	101	101	101	96.0-104	10

LCS Qualifier				LCSD Qualifier				RPD							
LCS	Qual	Rec.	Limits	LCSD	Qual	Rec.	Limits	RPD	Qual	Rec.	Limits	RPD	Qual	Rec.	Limits
1	0	101	10	1	0	101	10	0.000	0	101	10	0.000	0	101	10

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT:

SDG: L1007375

DATE/TIME: 07/16/18 09:44

**WG1136734**

Chlorinated Acid Herbicides (GC) by Method 8151A

**QUALITY CONTROL SUMMARY**

L1007375-01

ONE LAB. NATIONWIDE.

Method Blank (MB)

(MB) R3325173-1 07/12/18 15:24

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4-D	U		0.000667	0.00200
2,4,5-TP (Silvex)	U		0.000667	0.00200
(S) 2,4-Dichlorophenyl Acetic Acid	79.2			14.0-158

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3325173-2 07/12/18 15:37 • (LCSD) R3325173-3 07/12/18 15:50

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
2,4-D	0.00500	0.00424	0.00433	84.8	86.6	56.0-120			2.10	20
2,4,5-TP (Silvex)	0.00500	0.00423	0.00445	84.6	89.0	55.0-120			5.07	20
(S) 2,4-Dichlorophenyl Acetic Acid				76.0	78.0	14.0-158				

ACCOUNT:

Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1007375

DATE/TIME:  
07/16/18 09:44

GLOSSARY OF TERMS

ONE LAB. NATIONWIDE

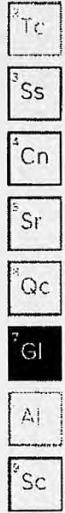


Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.



Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1007375

DATE/TIME:  
07/16/18 09:44

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807140

18-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID: <b>MB-39058</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>39058</b>	RunNo: <b>52498</b>								
Prep Date: <b>7/5/2018</b>	Analysis Date: <b>7/6/2018</b>	SeqNo: <b>1721687</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.9		10.00		99.1	70	130			

Sample ID: <b>LCS-39058</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>39058</b>	RunNo: <b>52498</b>								
Prep Date: <b>7/5/2018</b>	Analysis Date: <b>7/6/2018</b>	SeqNo: <b>1722611</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.00	0	102	70	130			
Surr: DNOP	4.7		5.000		94.7	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 3 of 11

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807140

18-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Sample ID	MB-39050	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	39050	RunNo:	52519					
Prep Date:	7/5/2018	Analysis Date:	7/6/2018	SeqNo:	1722508	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		96.0	15	316			

Sample ID	LCS-39050	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	39050	RunNo:	52519					
Prep Date:	7/5/2018	Analysis Date:	7/6/2018	SeqNo:	1722509	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	95.2	75.9	131			
Surr: BFB	1000		1000		101	15	316			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807140

18-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	MB-39117	SampType: MBLK		TestCode: EPA Method 8081: Pesticides TCLP						
Client ID:	PBW	Batch ID: 39117		RunNo: 52631						
Prep Date:	7/10/2018	Analysis Date: 7/11/2018		SeqNo: 1727281		Units: mg/L				
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0023		0.002500		90.0	43.3	136			
Surr: Tetrachloro-m-xylene	0.0022		0.002500		87.5	30.7	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	LCS-39117	SampType: LCS		TestCode: EPA Method 8081: Pesticides TCLP						
Client ID:	LCSW	Batch ID: 39117		RunNo: 52631						
Prep Date:	7/10/2018	Analysis Date: 7/11/2018		SeqNo: 1727282		Units: mg/L				
Endrin	0.00042	0.00010	0.0005000	0	83.3	42.6	125			
gamma-BHC (Lindane)	0.00039	0.00010	0.0005000	0	77.1	29.5	142			
Heptachlor	0.00033	0.00010	0.0005000	0	66.9	18.6	138			
Heptachlor epoxide	0.00042	0.00010	0.0005000	0	83.6	40.3	127			
Methoxychlor	0.00043	0.00010	0.0005000	0	85.0	36.5	143			
Surr: Decachlorobiphenyl	0.0021		0.002500		82.4	43.3	136			
Surr: Tetrachloro-m-xylene	0.0015		0.002500		60.8	30.7	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807140  
 18-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	lcs-39050		SampType: LCS4	TestCode: EPA Method 8260B: Volatiles Short List						
Client ID:	BatchQC		Batch ID: 39050	RunNo: 52594						
Prep Date:	7/5/2018		Analysis Date: 7/10/2018	SeqNo: 1725924	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.025	1.000	0	97.6	80	120			
Toluene	1.0	0.050	1.000	0	101	80	120			
Ethylbenzene	1.0	0.050	1.000	0	103	80	120			
Xylenes, Total	3.1	0.10	3.000	0	102	80	120			
Surr: 4-Bromofluorobenzene	0.55		0.5000		110	70	130			
Surr: Toluene-d8	0.46		0.5000		92.4	70	130			

Sample ID	mb-39050		SampType: MBLK	TestCode: EPA Method 8260B: Volatiles Short List						
Client ID:	PBS		Batch ID: 39050	RunNo: 52594						
Prep Date:	7/5/2018		Analysis Date: 7/10/2018	SeqNo: 1725925	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.61		0.5000		122	70	130			
Surr: Toluene-d8	0.47		0.5000		94.3	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807140

18-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	mb-39098		SampType: MBLK	TestCode: Volatiles by 8260B/1311						
Client ID:	PBS		Batch ID: 39098	RunNo: 52596						
Prep Date:	7/9/2018		Analysis Date: 7/10/2018	SeqNo: 1726139		Units: mg/L				
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Hexachlorobutadiene	ND	0.50								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		101	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		97.2	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		94.3	70	130			
Surr: Toluene-d8	0.19		0.2000		94.1	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	lcs-39098		SampType: LCS	TestCode: Volatiles by 8260B/1311						
Client ID:	LCSS		Batch ID: 39098	RunNo: 52632						
Prep Date:	7/9/2018		Analysis Date: 7/11/2018	SeqNo: 1727297		Units: mg/L				
Benzene	0.35	0.10	0.4000	0	88.4	70	130			
Chlorobenzene	0.38	0.10	0.4000	0	95.3	70	130			
1,1-Dichloroethene	0.37	0.10	0.4000	0	92.9	70	130			
Trichloroethene (TCE)	0.35	0.10	0.4000	0	87.7	70	130			
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		103	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		95.3	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		97.1	70	130			
Surr: Toluene-d8	0.19		0.2000		94.5	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1807140  
18-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	Ics-39116		SampType: LCS	TestCode: EPA Method 8270C TCLP						
Client ID:	LCSS		Batch ID: 39116	RunNo: 52664						
Prep Date:	7/10/2018		Analysis Date: 7/12/2018	SeqNo: 1728897	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.079	0.00010	0.1000	0	79.4	47.8	99.2			
3+4-Methylphenol	0.16	0.00010	0.2000	0	79.5	41.5	118			
2,4-Dinitrotoluene	0.066	0.00010	0.1000	0	66.1	44.4	81			
Hexachlorobenzene	0.078	0.00010	0.1000	0	78.5	49.5	91.6			
Hexachlorobutadiene	0.072	0.00010	0.1000	0	71.7	38.6	93			
Hexachloroethane	0.072	0.00010	0.1000	0	71.9	39.4	79.9			
Nitrobenzene	0.079	0.00010	0.1000	0	78.9	47.4	96.2			
Pentachlorophenol	0.073	0.00010	0.1000	0	72.6	39.4	79.9			
Pyridine	0.051	0.00010	0.1000	0	51.1	15	79.9			
2,4,5-Trichlorophenol	0.078	0.00010	0.1000	0	77.9	47.4	118			
2,4,6-Trichlorophenol	0.081	0.00010	0.1000	0	80.5	47.4	101			
Cresols, Total	0.24	0.00010	0.3000	0	79.5	44.1	111			
Surr: 2-Fluorophenol	0.14		0.2000		68.0	22.1	97.5			
Surr: Phenol-d5	0.13		0.2000		64.4	15	82.7			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		77.2	39	129			
Surr: Nitrobenzene-d5	0.080		0.1000		79.7	44.6	120			
Surr: 2-Fluorobiphenyl	0.074		0.1000		74.2	38.3	115			
Surr: 4-Terphenyl-d14	0.083		0.1000		83.0	29.6	79.7			S

Sample ID	Icsd-39116		SampType: LCSD	TestCode: EPA Method 8270C TCLP						
Client ID:	LCSS02		Batch ID: 39116	RunNo: 52664						
Prep Date:	7/10/2018		Analysis Date: 7/12/2018	SeqNo: 1728898	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.095	0.00010	0.1000	0	95.1	47.8	99.2	18.0	20	
3+4-Methylphenol	0.19	0.00010	0.2000	0	93.4	41.5	118	16.1	20	
2,4-Dinitrotoluene	0.069	0.00010	0.1000	0	68.8	44.4	81	3.94	20	
Hexachlorobenzene	0.087	0.00010	0.1000	0	86.7	49.5	91.6	9.93	20	
Hexachlorobutadiene	0.081	0.00010	0.1000	0	80.8	38.6	93	12.0	20	
Hexachloroethane	0.082	0.00010	0.1000	0	82.5	39.4	79.9	13.8	20	S
Nitrobenzene	0.091	0.00010	0.1000	0	90.8	47.4	96.2	14.0	20	
Pentachlorophenol	0.081	0.00010	0.1000	0	81.1	39.4	79.9	11.1	20	S
Pyridine	0.052	0.00010	0.1000	0	51.8	15	79.9	1.32	20	
2,4,5-Trichlorophenol	0.089	0.00010	0.1000	0	88.7	47.4	118	13.0	20	
2,4,6-Trichlorophenol	0.088	0.00010	0.1000	0	87.6	47.4	101	8.38	20	
Cresols, Total	0.28	0.00010	0.3000	0	94.0	44.1	111	16.7	20	
Surr: 2-Fluorophenol	0.16		0.2000		77.9	22.1	97.5	0	20	
Surr: Phenol-d5	0.14		0.2000		70.6	15	82.7	0	20	
Surr: 2,4,6-Tribromophenol	0.17		0.2000		86.2	39	129	0	20	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807140

18-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Sample ID	<b>lcsd-39116</b>	SampType:	<b>LCSD</b>	TestCode:	<b>EPA Method 8270C TCLP</b>					
Client ID:	<b>LCSS02</b>	Batch ID:	<b>39116</b>	RunNo:	<b>52664</b>					
Prep Date:	<b>7/10/2018</b>	Analysis Date:	<b>7/12/2018</b>	SeqNo:	<b>1728898</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.092		0.1000		92.4	44.6	120	0	20	
Surr: 2-Fluorobiphenyl	0.084		0.1000		83.5	38.3	115	0	20	
Surr: 4-Terphenyl-d14	0.084		0.1000		84.3	29.6	79.7	0	20	S

Sample ID	<b>mb-39116</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8270C TCLP</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>39116</b>	RunNo:	<b>52664</b>					
Prep Date:	<b>7/10/2018</b>	Analysis Date:	<b>7/12/2018</b>	SeqNo:	<b>1728899</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.14		0.2000		68.5	22.1	97.5			
Surr: Phenol-d5	0.13		0.2000		63.5	15	82.7			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		76.0	39	129			
Surr: Nitrobenzene-d5	0.078		0.1000		78.1	44.6	120			
Surr: 2-Fluorobiphenyl	0.074		0.1000		74.3	38.3	115			
Surr: 4-Terphenyl-d14	0.083		0.1000		83.2	29.6	79.7			S

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 9 of 11

**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807140  
 18-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	MB-39172	SampType:	MBLK	TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	39172	RunNo:	52657					
Prep Date:	7/12/2018	Analysis Date:	7/12/2018	SeqNo:	1728621					
				Units:	mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	LCS-39172	SampType:	LCS	TestCode:	MERCURY, TCLP					
Client ID:	LCSW	Batch ID:	39172	RunNo:	52657					
Prep Date:	7/12/2018	Analysis Date:	7/12/2018	SeqNo:	1728622					
				Units:	mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	102	80	120			

Sample ID	TCLP#1-3771	SampType:	MBLK	TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	39172	RunNo:	52657					
Prep Date:	7/12/2018	Analysis Date:	7/12/2018	SeqNo:	1728623					
				Units:	mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807140  
 18-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID: <b>MB-39111</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 6010B: TCLP Metals</b>								
Client ID: <b>PBW</b>	Batch ID: <b>39111</b>	RunNo: <b>52556</b>								
Prep Date: <b>7/9/2018</b>	Analysis Date: <b>7/10/2018</b>	SeqNo: <b>1723913</b>	Units: <b>mg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID: <b>LCS-39111</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 6010B: TCLP Metals</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>39111</b>	RunNo: <b>52556</b>								
Prep Date: <b>7/9/2018</b>	Analysis Date: <b>7/10/2018</b>	SeqNo: <b>1723914</b>	Units: <b>mg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	98.6	80	120			
Barium	ND	100	0.5000	0	100	80	120			
Cadmium	ND	1.0	0.5000	0	103	80	120			
Chromium	ND	5.0	0.5000	0	100	80	120			
Lead	ND	5.0	0.5000	0	93.2	80	120			
Selenium	ND	1.0	0.5000	0	103	80	120			
Silver	ND	5.0	0.1000	0	109	80	120			

Sample ID: <b>MB-39111</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 6010B: TCLP Metals</b>								
Client ID: <b>PBW</b>	Batch ID: <b>39111</b>	RunNo: <b>52556</b>								
Prep Date: <b>7/9/2018</b>	Analysis Date: <b>7/10/2018</b>	SeqNo: <b>1723916</b>	Units: <b>mg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0								

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1807140

RcptNo: 1

Received By: Anne Thorne 7/3/2018 1:50:00 PM

*Anne Thorne*

Completed By: Anne Thorne 7/5/2018 7:42:48 AM

*Anne Thorne*

Reviewed By: *JL 7.5.18*

Labeled by: *AT 07/05/18*

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: \_\_\_\_\_

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:		Date:	
By Whom:		Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:			
Client Instructions:			

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.1	Good	Not Present			

		225 Schilling Cir. Ste. 402, Hunt Valley, MD 21071 Tel. No. (410) 984-7000 Fax. No. (410) 771-6225		1 COC NUMBER: COC-KAFB-106244-2-IDW													
PROJECT NAME: Kirtland AFB BFF		PROJECT NUMBER: 62599DM01.1017.3.13		LAB NAME AND CONTACT: Hall Environmental Amanda Smith/asmith@east.com													
PROJECT PHASE/SITE/TASK: Data Gap Wells		DO NUMBER: 15182		FAX AND MAIL REPORTS/SEND TO: RECIPIENT 1 (Name and Company) Pam Mess/pmess@east.com													
PROJECT CONTRACT: E. Morse		PROJECT TEL NO AND FAX NO: 505-238-4410		FAX AND MAIL REPORTS/SEND TO: RECIPIENT 2 (Name and Company) Earl Morse/emorse@east.com													
PROJECT CONTRACT NO: 505-238-4410		LAB TEL NO AND FAX NO: Tel. - 505-345-3975 Fax - 505-345-4107		ANALYSES REQUIRED (include Method Numbers)													
1	1 KAFB-106244-2-IDW	19 SAMPLE DESCRIPTION/LOCATION Rolloff Bin 2	20 MATRIX Soil	21 DATE COLLECTED 7-3-18	22 TIME COLLECTED 1100	23 DATA PKG LEVEL IV	24 LAB TAT (Business days) 7	25 Bottle Type 3	26 TCLP VOC, SVOC, Pesticides, Herb, Metals (1311/8260B/8270C/808)	27 BTEX (8260B)	28 TPH GRO, DRO, RRO (8015D)	29 Reactive Cyanide/Sulfide (9012B/9034)	30 Corrosivity - PH (9045D)	31 Inhibability (1010A)	32 SAMPLE TYPE (see codes on SOP) composite	33 COMMENTS/SCREENING READINGS BOT146-001	34 LAB ID (for lab use)
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
35 SAMPLER(S) AND COMPANY: (please print) Field Sampler/EA Engineering P. Ferrati / J. Messinger		36 COURIER AND SHIPPING NUMBER: FedEx Number: N/A - Hand delivered to lab		37 RECEIVED BY DATE 7-3-18 1300		38 TIME 5:1		39 DATE 07/03/18		40 TIME 1350							
41 PRINTED NAME AND SIGNATURE: Joshua Messinger		42 PRINTED NAME AND SIGNATURE: Annethorn		43 PRINTED NAME AND SIGNATURE: Annethorn		44 PRINTED NAME AND SIGNATURE: Annethorn		45 PRINTED NAME AND SIGNATURE: Annethorn		46 PRINTED NAME AND SIGNATURE: Annethorn							

Distribution: 1 | Original - Laboratory (To be returned with Analytical Report); 1 | Copy 1 - Project File



EA Engineering, Science, & Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, New Mexico 87102  
Phone: (505) 224-9013

July 26, 2018

Ms. Katrina Wheelock  
Solid Waste Program Manager  
Environmental Management  
377 MSG/CEIE  
Kirtland AFB, New Mexico 87117

Subject: Request to dispose non-hazardous soil cuttings at Kirtland C&D Landfill  
Roll-off Identification: KAFB-106244-3 (Bin ID #104051)  
USACE Contract No. W912DR-12-D-0006-DM01

Dear Ms. Wheelock,

EA Engineering, Science, and Technology, Inc., PBC (EA) is requesting permission to dispose of non-hazardous soil drill cuttings and plastic liners from one roll-off container to the Kirtland Air Force Base (AFB) Construction and Demolition (C&D) debris landfill. Roll-off bin with the EA identification of KAFB-106244 #3 (Bin ID #104051) contains approximately 6 cubic yards of soil.

Between June and July 2018 EA installed a groundwater monitoring well, KAFB-106244, associated with the Kirtland Bulk Fuels Facility environmental restoration project. Well KAFB-106244 is located on Air Force leased property south of the VA Hospital just west of Bullhead Park. Drill cuttings were containerized in a plastic-lined, steel, roll-off pending laboratory analysis for waste characterization. Any excess moisture in the bin was stabilized using Hydrosorb®, a superabsorbent polymer. All roll-off bins are currently residing in the EA investigation derived waste yard near 1601 Perimeter Circle SE, on Kirtland AFB.

One five-point composite waste characterization sample was collected from the roll-off bin and delivered to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis. The sample was analyzed for all the required parameters per the Kirtland AFB Landfill Acceptance Memorandum (January 2009). The attached analytical results (Report 1807139) for the composite sample confirms the drill cuttings meet waste acceptance requirements for disposal at the Kirtland C&D landfill.

All of the roll-off containers are owned and/or leased by Advanced Chemical Transport Environmental Services Inc. (ACT) with roll-off identification number, when present, marked clearly on the roll off. ACT will utilize one of the following vehicles for waste transport:



W912DR-12-D-0006-DM01  
 Kirtland Air Force Base Bulk Fuels Facility Expansion  
 of the Dissolved Plume Groundwater Treatment System Design  
 2 May 2017  
 Page 2 of 2

- 2015 Western Star Roll Off Truck, License #: WD121651, registered in New Mexico
- 2015 Western Star Roll Off Truck, License #: WD124756, registered in New Mexico

Mr. Sheen Kottkamp has reviewed this package and authorized EA to forward it for your review. EA respectfully requests your review of the attached summary table and analytical data for determination if disposal can be authorized at the Kirtland AFB C&D landfill. Upon receiving notification of Kirtland AFB's acceptance of the waste, EA will coordinate transport and disposal of the roll-off contents with ACT.

EA's Kirtland AFB Point of Contact is Mr. Scott Clark; 505-846-9017.

If you have any questions, please do not hesitate to contact me at 505-266-2225, or via e-mail at [landress@eaest.com](mailto:landress@eaest.com).

Sincerely,

Lane Andress, PG

Attachments: Summary Analytical Table  
 Hall Environmental Analysis Laboratory Order No: 1807139

cc: Jeanne Dye-Porto, [jeanne.dye-porto@us.af.mil](mailto:jeanne.dye-porto@us.af.mil)  
 Scott Clark, [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)  
 Sheen Kottkamp, [sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)  
 Melissa Clark, [melissa.clark.8@us.af.mil](mailto:melissa.clark.8@us.af.mil)  
 Ben Moayyad, [Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)  
 Devon Jercinovic, [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
 Bernie Bockisch, [bbockisch@eaest.com](mailto:bbockisch@eaest.com)  
 Earl Morse, [emorse@eaest.com](mailto:emorse@eaest.com)

		LOCATION CODE					
		FIELD SAMPLE ID	KAFB-106244-3-IDW				
		SAMPLE DATE	3-Jul-18				
		SAMPLE PURPOSE	Waste Characterization				
		ROLL-OFF NO.	KAFB-106244-3				
Parameter	Method	Analyte	Units	TCLP Regulatory Level <sup>a</sup> or KAFB Limits <sup>b</sup>	Result	QUAL	PQL
RCRA Characteristics	SW1010A Mod	IGNITABILITY	*F	See footnote <sup>c</sup>	> 170	--	--
	SW9012B	REACTIVE CYANIDE (as total)	mg/kg	NE	ND	--	0.25
	SW9034	REACTIVE SULFIDE (as total)	mg/kg	NE	ND	--	25
	SW9045D	CORROSIVITY (pH)	S.U.	≥2 or ≤12.5	8.87	--	--
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.002
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.002
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0
		BARIIUM	mg/L	100	ND	--	100
		CADMIUM	mg/L	1	ND	--	1.0
		CHROMIUM	mg/L	5	ND	--	5.0
		LEAD	mg/L	5	ND	--	5.0
		SELENIUM	mg/L	1	ND	--	1.0
	SILVER	mg/L	5	ND	--	5.0	
SW1311/7470A	MERCURY	mg/L	0.02	ND	--	0.020	
TCLP PESTICIDES	SW1311/8081	CHLORDANE	mg/L	0.03	ND	--	0.030
		ENDRIN	mg/L	0.02	ND	--	0.020
		GAMMA-BHC (LINDANE)	mg/L	0.4	ND	--	0.40
		HEPTACHLOR	mg/L	0.008	ND	--	0.0080
		HEPTACHLOR EPOXIDE	mg/L	0.008	ND	--	0.0080
		METHOXYCHLOR	mg/L	10	ND	--	10
TOXAPHENE	mg/L	0.5	ND	--	0.50		
TCLP SVOCs	SW1311/8270C	2,4,5-TRICHLOROPHENOL	mg/L	400	ND	--	400
		2,4,6-TRICHLOROPHENOL	mg/L	2	ND	--	2.0
		2,4-DINITROTOLUENE	mg/L	0.13	ND	--	0.13
		2-METHYLPHENOL (o-Cresol)	mg/L	200	ND	--	200
		3- and 4-METHYLPHENOL (m- and o-Cresol)	mg/L	200	ND	--	200
		HEXACHLOROBENZENE	mg/L	0.13	ND	--	0.13
		HEXACHLOROBUTADIENE	mg/L	0.5	ND	--	0.50
		HEXACHLOROETHANE	mg/L	3	ND	--	3.0
		NITROBENZENE	mg/L	2	ND	--	2.0
		PENTACHLOROPHENOL	mg/L	100	ND	--	100
		PYRIDINE	mg/L	5	ND	--	5.0
CRESOLS, TOTAL	mg/L	200	ND	--	200.0		
TCLP VOCs	SW1311/8260B	1,1-DICHLOROETHENE	mg/L	0.7	ND	--	0.70
		1,2-DICHLOROETHANE	mg/L	0.5	ND	--	0.50
		1,4-DICHLOROBENZENE	mg/L	7.5	ND	--	7.5
		2-BUTANONE (MEK)	mg/L	200	ND	--	200
		BENZENE	mg/L	0.5	ND	--	0.50
		CARBON TETRACHLORIDE	mg/L	0.5	ND	--	0.50
		CHLOROBENZENE	mg/L	100	ND	--	100
		CHLOROFORM	mg/L	6.0	ND	--	6.0
		TETRACHLOROETHENE	mg/L	0.7	ND	--	0.70
		TRICHLOROETHENE	mg/L	0.5	ND	--	0.50
VINYL CHLORIDE	mg/L	0.2	ND	--	0.20		
TPH	SW8015M/D	DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	9.9
		MOTOR OIL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	50
		GASOLINE RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	4.9
VOLATILES (BTEX)	SW8260B	BENZENE	mg/kg	10	ND	--	0.025
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.049
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.049
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.099

244-3



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

July 18, 2018

Amanda Smith

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland AFB BFF

OrderNo.: 1807139

Dear Amanda Smith:

Hall Environmental Analysis Laboratory received 1 sample(s) on 7/3/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1807139

Date Reported: 7/18/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106244-3-IDW

Project: Kirtland AFB BFF

Collection Date: 7/3/2018 11:25:00 AM

Lab ID: 1807139-001

Matrix: SOIL

Received Date: 7/3/2018 1:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8081: PESTICIDES TCLP</b>						Analyst: JME
Chlordane	ND	0.030		mg/L	1	7/11/2018 1:53:06 PM
Endrin	ND	0.020		mg/L	1	7/11/2018 1:53:06 PM
gamma-BHC (Lindane)	ND	0.40		mg/L	1	7/11/2018 1:53:06 PM
Heptachlor	ND	0.0080		mg/L	1	7/11/2018 1:53:06 PM
Heptachlor epoxide	ND	0.0080		mg/L	1	7/11/2018 1:53:06 PM
Methoxychlor	ND	10		mg/L	1	7/11/2018 1:53:06 PM
Toxaphene	ND	0.50		mg/L	1	7/11/2018 1:53:06 PM
Surr: Decachlorobiphenyl	85.5	43.3-136		%Rec	1	7/11/2018 1:53:06 PM
Surr: Tetrachloro-m-xylene	80.5	30.7-130		%Rec	1	7/11/2018 1:53:06 PM
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: TOM
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	7/6/2018 9:20:33 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	7/6/2018 9:20:33 PM
Surr: DNOP	104	70-130		%Rec	1	7/6/2018 9:20:33 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/6/2018 4:54:32 PM
Surr: BFB	94.9	15-316		%Rec	1	7/6/2018 4:54:32 PM
<b>MERCURY, TCLP</b>						Analyst: rde
Mercury	ND	0.020		mg/L	1	7/12/2018 3:06:06 PM
<b>EPA METHOD 6010B: TCLP METALS</b>						Analyst: ELS
Arsenic	ND	5.0		mg/L	1	7/10/2018 7:54:53 AM
Barium	ND	100		mg/L	1	7/10/2018 7:54:53 AM
Cadmium	ND	1.0		mg/L	1	7/10/2018 7:54:53 AM
Chromium	ND	5.0		mg/L	1	7/10/2018 7:54:53 AM
Lead	ND	5.0		mg/L	1	7/10/2018 7:54:53 AM
Selenium	ND	1.0		mg/L	1	7/10/2018 7:54:53 AM
Silver	ND	5.0		mg/L	1	7/10/2018 7:54:53 AM
<b>EPA METHOD 8270C TCLP</b>						Analyst: DAM
2-Methylphenol	ND	200		mg/L	1	7/12/2018 2:23:38 PM
3+4-Methylphenol	ND	200		mg/L	1	7/12/2018 2:23:38 PM
2,4-Dinitrotoluene	ND	0.13		mg/L	1	7/12/2018 2:23:38 PM
Hexachlorobenzene	ND	0.13		mg/L	1	7/12/2018 2:23:38 PM
Hexachlorobutadiene	ND	0.50		mg/L	1	7/12/2018 2:23:38 PM
Hexachloroethane	ND	3.0		mg/L	1	7/12/2018 2:23:38 PM
Nitrobenzene	ND	2.0		mg/L	1	7/12/2018 2:23:38 PM
Pentachlorophenol	ND	100		mg/L	1	7/12/2018 2:23:38 PM
Pyridine	ND	5.0		mg/L	1	7/12/2018 2:23:38 PM
2,4,5-Trichlorophenol	ND	400		mg/L	1	7/12/2018 2:23:38 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Page 1 of 12

## Analytical Report

Lab Order 1807139

Date Reported: 7/18/2018

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106244-3-IDW

Project: Kirtland AFB BFF

Collection Date: 7/3/2018 11:25:00 AM

Lab ID: 1807139-001

Matrix: SOIL

Received Date: 7/3/2018 1:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8270C TCLP</b>						Analyst: DAM
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	7/12/2018 2:23:38 PM
Cresols, Total	ND	200		mg/L	1	7/12/2018 2:23:38 PM
Surr: 2-Fluorophenol	26.7	22.1-97.5		%Rec	1	7/12/2018 2:23:38 PM
Surr: Phenol-d5	21.2	15-82.7		%Rec	1	7/12/2018 2:23:38 PM
Surr: 2,4,6-Tribromophenol	60.1	39-129		%Rec	1	7/12/2018 2:23:38 PM
Surr: Nitrobenzene-d5	41.4	44.6-120	S	%Rec	1	7/12/2018 2:23:38 PM
Surr: 2-Fluorobiphenyl	44.7	38.3-115		%Rec	1	7/12/2018 2:23:38 PM
Surr: 4-Terphenyl-d14	90.0	29.6-79.7	S	%Rec	1	7/12/2018 2:23:38 PM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: AG
Benzene	ND	0.025		mg/Kg	1	7/10/2018 4:01:58 PM
Toluene	ND	0.049		mg/Kg	1	7/10/2018 4:01:58 PM
Ethylbenzene	ND	0.049		mg/Kg	1	7/10/2018 4:01:58 PM
Xylenes, Total	ND	0.099		mg/Kg	1	7/10/2018 4:01:58 PM
Surr: 4-Bromofluorobenzene	121	70-130		%Rec	1	7/10/2018 4:01:58 PM
Surr: Toluene-d8	91.7	70-130		%Rec	1	7/10/2018 4:01:58 PM
<b>VOLATILES BY 8260B/1311</b>						Analyst: RAA
Benzene	ND	0.50		mg/L	1	7/10/2018 10:56:00 PM
2-Butanone	ND	200		mg/L	1	7/10/2018 10:56:00 PM
Carbon Tetrachloride	ND	0.50		mg/L	1	7/10/2018 10:56:00 PM
Chlorobenzene	ND	100		mg/L	1	7/10/2018 10:56:00 PM
Chloroform	ND	6.0		mg/L	1	7/10/2018 10:56:00 PM
1,4-Dichlorobenzene	ND	7.5		mg/L	1	7/10/2018 10:56:00 PM
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	7/10/2018 10:56:00 PM
1,1-Dichloroethene	ND	0.70		mg/L	1	7/10/2018 10:56:00 PM
Hexachlorobutadiene	ND	0.50		mg/L	1	7/10/2018 10:56:00 PM
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	7/10/2018 10:56:00 PM
Trichloroethene (TCE)	ND	0.50		mg/L	1	7/10/2018 10:56:00 PM
Vinyl chloride	ND	0.20		mg/L	1	7/10/2018 10:56:00 PM
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	7/10/2018 10:56:00 PM
Surr: 4-Bromofluorobenzene	93.5	57.3-148		%Rec	1	7/10/2018 10:56:00 PM
Surr: Dibromofluoromethane	95.2	70-130		%Rec	1	7/10/2018 10:56:00 PM
Surr: Toluene-d8	93.4	70-130		%Rec	1	7/10/2018 10:56:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

1807139-001B KAFB-106244-3-IDW  
 Collected date/time: 07/03/18 11:25

SAMPLE RESULTS - 01  
 L1007320

ONE LAB. NATIONWIDE.



Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		7/10/2018 10:54:52 AM	WG1135724
Fluid	1		7/10/2018 10:54:52 AM	WG1135724
Initial pH	9.03		7/10/2018 10:54:52 AM	WG1135724
Final pH	5.01		7/10/2018 10:54:52 AM	WG1135724

2 Tc

3 Ss

4 Cn

Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.250	1	07/12/2018 15:19	WG1136234

5 Sr

6 Qc

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		25.0	1	07/11/2018 14:26	WG1136124

7 Gl

8 Aj

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	8.87	T&S	1	07/09/2018 13:10	WG1135254

9 Sc

Sample Narrative:

L1007320-01 WG1135254: 8.87 at 20C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DNI at 170		1	07/11/2018 14:43	WG1136121

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND		0.00200	1	1	07/12/2018 16:17	WG1136734
2,4-D	ND		0.00200	10	1	07/12/2018 16:17	WG1136734
(S) 2,4-Dichlorophenyl Acetic Acid	82.4		14.0-158			07/12/2018 16:17	WG1136734

ACCOUNT:  
 Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
 L1007320

DATE/TIME:  
 07/13/18 13:50

ONE LAB, NATIONWIDE.

QUALITY CONTROL SUMMARY

L1007320-01

WG1136284

Wet Chemistry by Method 9012 B

Method Blank (MB)

(MB) R3325145-1 07/12/18 15:11

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Cyanide	U		0.0390	0.250

L1007494-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1007494-01 07/12/18 15:57 • (DUP) R3325145-5 07/12/18 15:58

Analyte	Original Result mg/kg	DUP Result (dry) mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	5.65	3.89	1	36.8	U	20

L1007964-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1007964-01 07/12/18 16:04 • (DUP) R3325145-6 07/12/18 16:08

Analyte	Original Result mg/kg	DUP Result (dry) mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	0.405	0.405	1	49.6	P	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3325145-2 07/12/18 15:12 • (LCS-D) R3325145-3 07/12/18 15:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	2.50	2.68	107	102	50.0-150			5.11	20

L1007964-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1007964-02 07/12/18 16:09 • (MS) R3325145-7 07/12/18 16:10 • (MSD) R3325145-8 07/12/18 16:11

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	1.67	0.270	1.90	1.86	95.4	1	75.0-125			1.98	20

ACCOUNT:  
Hell Environmental Analysis Laboratory

PROJECT:  
SDG:  
L1007320

DATE/TIME:  
07/13/18 13:50

ONE LAB. NATIONWIDE.

QUALITY CONTROL SUMMARY

L1007320-01

WG1136124

Wet Chemistry by Method 9034-9030B

Method Blank (MB)

(MB) R3324766-1	07/11/18 14:26	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte		mg/kg	mg/kg	mg/kg	mg/kg
Reactive Sulfide	U	7.53	25.0		

L1006552-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1006552-13 07/11/18 14:26 • (DUP) R3324766-4 07/11/18 14:26

Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
mg/kg	mg/kg	%	%		%
84.4	84.4	1	0.000		20

L1007858-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1007858-02 07/11/18 14:26 • (DUP) R3324766-5 07/11/18 14:26

Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
mg/kg	mg/kg	%	%		%
ND	ND	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3324766-2 07/11/18 14:26 • (LCSD) R3324766-3 07/11/18 14:26

Spike Amount	LCS Result	LCS Rec.	LCSD Result	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
mg/kg	mg/kg	%	mg/kg	%	%	%	%	%	%
100	84.4	84.4	90.5	90.5	70.0-130			6.90	20

TC  
SS  
Cu  
Sr  
QC  
GI  
Al  
Sc

ACCOUNT: Hall Environmental Analysis Laboratory  
PROJECT: SDG: L1007320  
DATE/TIME: 07/13/18 13:50



ONE LAB. NATIONWIDE.

# QUALITY CONTROL SUMMARY

L1007320-01

**WG1135254**

Wet Chemistry by Method 9045D

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)

(LCS) R3324071-1 07/09/18 13:10 • (LCSD) R3324071-2 07/09/18 13:10

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Corrosivity by pH	10.0	9.97	9.98	99.7	99.8	99.0-101			0.100	1

Sample Narrative:

LCS: 9.97 at 19.5C

LCSD: 9.98 at 19.6C

1	Tc
2	Ss
3	Cn
4	Sr
5	Qc
6	Gl
7	Al
8	Sc

ACCOUNT: Hall Environmental Analysis Laboratory  
 PROJECT: LA COMBUSTION  
 SDG: L1007320  
 DATE/TIME: 07/13/18 13:50



ONE LAB. NATIONWIDE.

**QUALITY CONTROL SUMMARY**

L1007320-01

**WG1136121**

Wet Chemistry by Method 093/1010A

L1003048-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1003048-01 07/11/18 14:43 • (DUP) R3324777-3 07/11/18 14:43

Analyte	Original Result		DUP Result		Dilution	DUP RPD		DUP RPD Limits	
	Deg. F	Deg. F	Deg. F	Deg. F		%	%	%	%
Ignitability	70.7	70.7	70.7	70.7	1	0.000			10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)										
(LCS) R3324777-1 07/11/18 14:43 • (LCSD) R3324777-2 07/11/18 14:43										
Analyte	Spike Amount		LCS Result		LCSD Result		LCS Rec.		LCSD Rec.	
	Deg. F	Deg. F	Deg. F	Deg. F	Deg. F	Deg. F	%	%	%	%
Ignitability	82.0	82.0	82.7	82.7	82.7	82.7	101	101	101	101

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)									
(LCS) R3324777-1 07/11/18 14:43 • (LCSD) R3324777-2 07/11/18 14:43									
Analyte	LCS Qualifier		LCSD Qualifier		RPD		RPD Limits		
	%	%	%	%	%	%	%		
Ignitability	0.000	0.000	0.000	0.000	0.000	0.000	10		

ACCOUNT: Heli Environmental Analysis Laboratory  
 PROJECT: L1007320  
 SDG: L1007320  
 DATE/TIME: 07/13/18 13:50

**WG1136734**

Chlorinated Acid Herbicides (GC) by Method 8151A

**QUALITY CONTROL SUMMARY**

L1007320-01

ONE LAB. NATIONWIDE.

Method Blank (MB)

(MB) R3325173-1 07/12/18 15:24

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4-D	U	0.000667	0.000667	0.00200
2,4,5-TP (Silvex)	U	0.000667	0.000667	0.00200
(S) 2,4-Dichlorophenyl Acetic Acid	79.2			14.0-158

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD):

(LCS) R3325173-2 07/12/18 15:37 • (LCSD) R3325173-3 07/12/18 15:50

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
2,4-D	0.00500	0.00424	0.00433	84.8	86.6	56.0-120			2.10	20
2,4,5-TP (Silvex)	0.00500	0.00423	0.00445	84.6	89.0	55.0-120			5.07	20
(S) 2,4-Dichlorophenyl Acetic Acid				76.0	78.0	14.0-158				

2	Tc
3	Ss
4	Cn
5	Sl
5	Qc
7	Gl
	Al
9	Sc

ACCOUNT: Hell Environmental Analysis Laboratory  
 PROJECT: L1007320  
 SDG: L1007320  
 DATE/TIME: 07/13/18 13:50

GLOSSARY OF TERMS

ONE LAB. NATIONWIDE.



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions, please contact your project representative.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. (this will only be present on a dry report basis for soils).
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cr)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analysis required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.

- Cp
- Tc
- Ss
- Cn
- Sr
- Qc
- Gl
- Al
- Sc

ANALYTICAL REPORT

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT:

SDG: L100/320

DATE/TIME: 07/13/18 13:50

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807139

18-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	<b>MB-39058</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>39058</b>	RunNo:	<b>52498</b>					
Prep Date:	<b>7/5/2018</b>	Analysis Date:	<b>7/6/2018</b>	SeqNo:	<b>1721687</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.9		10.00		99.1	70	130			

Sample ID	<b>LCS-39058</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>39058</b>	RunNo:	<b>52498</b>					
Prep Date:	<b>7/5/2018</b>	Analysis Date:	<b>7/6/2018</b>	SeqNo:	<b>1722611</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.00	0	102	70	130			
Surr: DNOP	4.7		5.000		94.7	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1807139

18-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Sample ID	MB-39050	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	39050	RunNo:	52519					
Prep Date:	7/5/2018	Analysis Date:	7/6/2018	SeqNo:	1722508	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		96.0	15	316			

Sample ID	LCS-39050	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	39050	RunNo:	52519					
Prep Date:	7/5/2018	Analysis Date:	7/6/2018	SeqNo:	1722509	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	95.2	75.9	131			
Surr: BFB	1000		1000		101	15	316			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 4 of 12

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807139

18-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	MB-39117	SampType: MBLK		TestCode: EPA Method 8081: Pesticides TCLP						
Client ID:	PBW	Batch ID: 39117		RunNo: 52631						
Prep Date:	7/10/2018	Analysis Date: 7/11/2018		SeqNo: 1727281		Units: mg/L				
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0023		0.002500		90.0	43.3	136			
Surr: Tetrachloro-m-xylene	0.0022		0.002500		87.5	30.7	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	LCS-39117	SampType: LCS		TestCode: EPA Method 8081: Pesticides TCLP						
Client ID:	LCSW	Batch ID: 39117		RunNo: 52631						
Prep Date:	7/10/2018	Analysis Date: 7/11/2018		SeqNo: 1727282		Units: mg/L				
Endrin	0.00042	0.00010	0.0005000	0	83.3	42.6	125			
gamma-BHC (Lindane)	0.00039	0.00010	0.0005000	0	77.1	29.5	142			
Heptachlor	0.00033	0.00010	0.0005000	0	66.9	18.6	138			
Heptachlor epoxide	0.00042	0.00010	0.0005000	0	83.6	40.3	127			
Methoxychlor	0.00043	0.00010	0.0005000	0	85.0	36.5	143			
Surr: Decachlorobiphenyl	0.0021		0.002500		82.4	43.3	136			
Surr: Tetrachloro-m-xylene	0.0015		0.002500		60.8	30.7	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 5 of 12

**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807139  
 18-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	Ics-39050		SampType: LCS4	TestCode: EPA Method 8260B: Volatiles Short List						
Client ID:	BatchQC		Batch ID: 39050	RunNo: 52594						
Prep Date:	7/5/2018		Analysis Date: 7/10/2018	SeqNo: 1725924		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.025	1.000	0	97.6	80	120			
Toluene	1.0	0.050	1.000	0	101	80	120			
Ethylbenzene	1.0	0.050	1.000	0	103	80	120			
Xylenes, Total	3.1	0.10	3.000	0	102	80	120			
Surr: 4-Bromofluorobenzene	0.55		0.5000		110	70	130			
Surr: Toluene-d8	0.46		0.5000		92.4	70	130			

Sample ID	mb-39050		SampType: MBLK	TestCode: EPA Method 8260B: Volatiles Short List						
Client ID:	PBS		Batch ID: 39050	RunNo: 52594						
Prep Date:	7/5/2018		Analysis Date: 7/10/2018	SeqNo: 1725925		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.61		0.5000		122	70	130			
Surr: Toluene-d8	0.47		0.5000		94.3	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807139

18-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Hexachlorobutadiene	ND	0.50								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		101	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		97.2	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		94.3	70	130			
Surr: Toluene-d8	0.19		0.2000		94.1	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.35	0.10	0.4000	0	88.4	70	130			
Chlorobenzene	0.38	0.10	0.4000	0	95.3	70	130			
1,1-Dichloroethene	0.37	0.10	0.4000	0	92.9	70	130			
Trichloroethene (TCE)	0.35	0.10	0.4000	0	87.7	70	130			
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		103	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		95.3	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		97.1	70	130			
Surr: Toluene-d8	0.19		0.2000		94.5	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807139  
 18-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID <b>lcs-39116</b>		SampType: <b>LCS</b>		TestCode: <b>EPA Method 8270C TCLP</b>						
Client ID: <b>LCSS</b>		Batch ID: <b>39116</b>		RunNo: <b>52664</b>						
Prep Date: <b>7/10/2018</b>		Analysis Date: <b>7/12/2018</b>		SeqNo: <b>1728897</b> Units: <b>mg/L</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.079	0.00010	0.1000	0	79.4	47.8	99.2			
3+4-Methylphenol	0.16	0.00010	0.2000	0	79.5	41.5	118			
2,4-Dinitrotoluene	0.066	0.00010	0.1000	0	66.1	44.4	81			
Hexachlorobenzene	0.078	0.00010	0.1000	0	78.5	49.5	91.6			
Hexachlorobutadiene	0.072	0.00010	0.1000	0	71.7	38.6	93			
Hexachloroethane	0.072	0.00010	0.1000	0	71.9	39.4	79.9			
Nitrobenzene	0.079	0.00010	0.1000	0	78.9	47.4	96.2			
Pentachlorophenol	0.073	0.00010	0.1000	0	72.6	39.4	79.9			
Pyridine	0.051	0.00010	0.1000	0	51.1	15	79.9			
2,4,5-Trichlorophenol	0.078	0.00010	0.1000	0	77.9	47.4	118			
2,4,6-Trichlorophenol	0.081	0.00010	0.1000	0	80.5	47.4	101			
Cresols, Total	0.24	0.00010	0.3000	0	79.5	44.1	111			
Surr: 2-Fluorophenol	0.14		0.2000		68.0	22.1	97.5			
Surr: Phenol-d5	0.13		0.2000		64.4	15	82.7			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		77.2	39	129			
Surr: Nitrobenzene-d5	0.080		0.1000		79.7	44.6	120			
Surr: 2-Fluorobiphenyl	0.074		0.1000		74.2	38.3	115			
Surr: 4-Terphenyl-d14	0.083		0.1000		83.0	29.6	79.7			S

Sample ID <b>lcsd-39116</b>		SampType: <b>LCSD</b>		TestCode: <b>EPA Method 8270C TCLP</b>						
Client ID: <b>LCSS02</b>		Batch ID: <b>39116</b>		RunNo: <b>52664</b>						
Prep Date: <b>7/10/2018</b>		Analysis Date: <b>7/12/2018</b>		SeqNo: <b>1728898</b> Units: <b>mg/L</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.095	0.00010	0.1000	0	95.1	47.8	99.2	18.0	20	
3+4-Methylphenol	0.19	0.00010	0.2000	0	93.4	41.5	118	16.1	20	
2,4-Dinitrotoluene	0.069	0.00010	0.1000	0	68.8	44.4	81	3.94	20	
Hexachlorobenzene	0.087	0.00010	0.1000	0	86.7	49.5	91.6	9.93	20	
Hexachlorobutadiene	0.081	0.00010	0.1000	0	80.8	38.6	93	12.0	20	
Hexachloroethane	0.082	0.00010	0.1000	0	82.5	39.4	79.9	13.8	20	S
Nitrobenzene	0.091	0.00010	0.1000	0	90.8	47.4	96.2	14.0	20	
Pentachlorophenol	0.081	0.00010	0.1000	0	81.1	39.4	79.9	11.1	20	S
Pyridine	0.052	0.00010	0.1000	0	51.8	15	79.9	1.32	20	
2,4,5-Trichlorophenol	0.089	0.00010	0.1000	0	88.7	47.4	118	13.0	20	
2,4,6-Trichlorophenol	0.088	0.00010	0.1000	0	87.6	47.4	101	8.38	20	
Cresols, Total	0.28	0.00010	0.3000	0	94.0	44.1	111	16.7	20	
Surr: 2-Fluorophenol	0.16		0.2000		77.9	22.1	97.5	0	20	
Surr: Phenol-d5	0.14		0.2000		70.6	15	82.7	0	20	
Surr: 2,4,6-Tribromophenol	0.17		0.2000		86.2	39	129	0	20	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807139

18-Jul-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Sample ID	<b>lcsd-39116</b>	SampType:	<b>LCSD</b>	TestCode:	<b>EPA Method 8270C TCLP</b>					
Client ID:	<b>LCSS02</b>	Batch ID:	<b>39116</b>	RunNo:	<b>52664</b>					
Prep Date:	<b>7/10/2018</b>	Analysis Date:	<b>7/12/2018</b>	SeqNo:	<b>1728898</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.092		0.1000		92.4	44.6	120	0	20	
Surr: 2-Fluorobiphenyl	0.084		0.1000		83.5	38.3	115	0	20	
Surr: 4-Terphenyl-d14	0.084		0.1000		84.3	29.6	79.7	0	20	S

Sample ID	<b>mb-39116</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8270C TCLP</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>39116</b>	RunNo:	<b>52664</b>					
Prep Date:	<b>7/10/2018</b>	Analysis Date:	<b>7/12/2018</b>	SeqNo:	<b>1728899</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.14		0.2000		68.5	22.1	97.5			
Surr: Phenol-d5	0.13		0.2000		63.5	15	82.7			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		76.0	39	129			
Surr: Nitrobenzene-d5	0.078		0.1000		78.1	44.6	120			
Surr: 2-Fluorobiphenyl	0.074		0.1000		74.3	38.3	115			
Surr: 4-Terphenyl-d14	0.083		0.1000		83.2	29.6	79.7			S

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807139  
 18-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	MB-39172	SampType:	MBLK	TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	39172	RunNo:	52657					
Prep Date:	7/12/2018	Analysis Date:	7/12/2018	SeqNo:	1728621					
				Units:	mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	LCS-39172	SampType:	LCS	TestCode:	MERCURY, TCLP					
Client ID:	LCSW	Batch ID:	39172	RunNo:	52657					
Prep Date:	7/12/2018	Analysis Date:	7/12/2018	SeqNo:	1728622					
				Units:	mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	102	80	120			

Sample ID	TCLP#1-3771	SampType:	MBLK	TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	39172	RunNo:	52657					
Prep Date:	7/12/2018	Analysis Date:	7/12/2018	SeqNo:	1728623					
				Units:	mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

**Qualifiers:**

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- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807139

18-Jul-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland AFB BFF

Sample ID	<b>MB-39111</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39111</b>	RunNo:	<b>52556</b>					
Prep Date:	<b>7/9/2018</b>	Analysis Date:	<b>7/10/2018</b>	SeqNo:	<b>1723913</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	<b>LCS-39111</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39111</b>	RunNo:	<b>52556</b>					
Prep Date:	<b>7/9/2018</b>	Analysis Date:	<b>7/10/2018</b>	SeqNo:	<b>1723914</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	98.6	80	120			
Barium	ND	100	0.5000	0	100	80	120			
Cadmium	ND	1.0	0.5000	0	103	80	120			
Chromium	ND	5.0	0.5000	0	100	80	120			
Lead	ND	5.0	0.5000	0	93.2	80	120			
Selenium	ND	1.0	0.5000	0	103	80	120			
Silver	ND	5.0	0.1000	0	109	80	120			

Sample ID	<b>MB-39111</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39111</b>	RunNo:	<b>52556</b>					
Prep Date:	<b>7/9/2018</b>	Analysis Date:	<b>7/10/2018</b>	SeqNo:	<b>1723916</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0								

Sample ID	<b>1807139-001AMS</b>	SampType:	<b>MS</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>KAFB-106244-3-IDW</b>	Batch ID:	<b>39111</b>	RunNo:	<b>52556</b>					
Prep Date:	<b>7/9/2018</b>	Analysis Date:	<b>7/10/2018</b>	SeqNo:	<b>1723919</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	101	75	125			
Barium	ND	100	0.5000	1.284	90.9	75	125			
Cadmium	ND	1.0	0.5000	0	103	75	125			
Chromium	ND	5.0	0.5000	0.005180	101	75	125			
Lead	ND	5.0	0.5000	0	93.0	75	125			
Selenium	ND	1.0	0.5000	0	94.7	75	125			
Silver	ND	5.0	0.1000	0.001720	110	75	125			

**Qualifiers:**

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D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

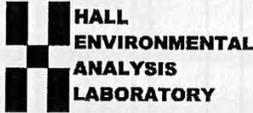
WO#: 1807139  
 18-Jul-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	1807139-001AMSD	SampType:	MSD	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	KAFB-106244-3-IDW	Batch ID:	39111	RunNo:	52556					
Prep Date:	7/9/2018	Analysis Date:	7/10/2018	SeqNo:	1725110	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	99.1	75	125	0	20	
Barium	ND	100	0.5000	1.284	88.4	75	125	0	20	
Cadmium	ND	1.0	0.5000	0	103	75	125	0	20	
Chromium	ND	5.0	0.5000	0.005180	100	75	125	0	20	
Lead	ND	5.0	0.5000	0	93.1	75	125	0	20	
Selenium	ND	1.0	0.5000	0	98.1	75	125	0	20	
Silver	ND	5.0	0.1000	0.001720	110	75	125	0	20	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
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- P Sample pH Not In Range
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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1807139

RcptNo: 1

Received By: Anne Thorne 7/3/2018 1:50:00 PM

*Anne Thorne*

Completed By: Anne Thorne 7/5/2018 7:24:27 AM

*Anne Thorne*

Reviewed By:

*Ju 7.5.18*  
*Labeled by: AT 07/05/18*

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH:	_____
(<2 or >12 unless noted)	
Adjusted?	_____
Checked by:	_____

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	_____	Date	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

16. Additional remarks:

**17. Cooler Information**

Cooler No.	Temp °C	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	2.2	Good	Not Present			

		225 Sibley Circle, Suite 400, Here Valley And 21037 TX Ac 76192 884-7000 Fax Ac 6493 771-1625		1 COC NUMBER: COC-KAFB-106244-3-IDW										
PROJECT NAME: Kirtland AFB BFF		PROJECT NUMBER: 62599DM01.1017.3.13 C		11 FAX AND MAIL REPORTS/SEND TO: RECIPIENT 1 (Name and Company) Amanda Smith/asmith@eatest.com										
PROJECT PHASE/TASK: Data Gap Wells		DO NUMBER: 15182		12 FAX AND MAIL REPORTS/SEND TO: RECIPIENT 2 (Name and Company) Pam Moss/pmoos@eatest.com										
PROJECT CONTACT: E. Morse		PROJECT TEL NO AND FAX NO: 505-238-4410		13 FAX AND MAIL REPORTS/SEND TO: RECIPIENT 3 (Name and Company) Earl Morse/emorse@eatest.com										
14 SAMPLE IDENTIFIER KAFB-106244-3-IDW		15 SAMPLE DESCRIPTION/LOCATION Rolloff Bin 3		16 ANALYSES REQUIRED (Indicate Method Numbers)										
1	DATE COLLECTED	17 DATE COLLECTED	18 DATA PKG LEVEL	19 LAB TAT (Business days)	Bottle Type	20 TGP VOC, SVOC, Pest, Herb, Metals (1311/8260B/8270C/808 1/8151A/6010B/7470A)	21 BTEX (8260B)	22 TPH GRO, DRO, RRO (8015D)	23 Reactive Cyanide/Sulfide (9012B/9034)	24 Corrosivity - PH (9045D)	25 Igittability (1010A)	26 SAMPLE TYPE (see codes on SOP)	27 COMMENTS/SCREENING READINGS	28 LAB ID (for lab use)
2												composite	1807139-01	
3														
4														
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10														
29 SAMPLERS AND COMPANY: (please print) P. Ferrari / J. Messenger		30 COURIER AND SHIPPING NUMBER: PedEx Number: AUA - Hand delivered to lab		31 RECEIVED BY 2.2										
Printed Name and Signature Joshua Messenger		DATE 7-3-18		TIME 1350										
Printed Name and Signature P. Ferrari / J. Messenger		DATE 7-3-18		TIME 1350										
Printed Name and Signature Joshua Messenger		DATE 07/03/18		TIME 1350										
Printed Name and Signature P. Ferrari / J. Messenger		DATE 07/03/18		TIME 1350										

Distribution: 1 | Original - Laboratory (To be returned with Analytical Report) | Copy 1 - Project File



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

July 30, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland BFF Truman Yard Spill

OrderNo.: 1807753

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 4 sample(s) on 7/13/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1807753

Date Reported: 7/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Truman Spill 1

Project: Kirtland BFF Truman Yard Spill

Collection Date: 7/13/2018 8:49:00 AM

Lab ID: 1807753-001

Matrix: SOIL

Received Date: 7/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>Irm</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	7/19/2018 4:53:00 PM	39231
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	7/19/2018 4:53:00 PM	39231
Surr: DNOP	115	70-130		%Rec	1	7/19/2018 4:53:00 PM	39231
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/17/2018 11:27:52 AM	39222
Surr: BFB	91.7	15-316		%Rec	1	7/17/2018 11:27:52 AM	39222
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
Acenaphthene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Acenaphthylene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Aniline	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Anthracene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Azobenzene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Benz(a)anthracene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Benzo(a)pyrene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Benzo(b)fluoranthene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Benzo(g,h,i)perylene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Benzo(k)fluoranthene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Benzoic acid	ND	0.49		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Benzyl alcohol	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Bis(2-chloroethoxy)methane	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Bis(2-chloroethyl)ether	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Bis(2-chloroisopropyl)ether	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Bis(2-ethylhexyl)phthalate	ND	0.49		mg/Kg	1	7/19/2018 5:43:36 PM	39226
4-Bromophenyl phenyl ether	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Butyl benzyl phthalate	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Carbazole	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
4-Chloro-3-methylphenol	ND	0.49		mg/Kg	1	7/19/2018 5:43:36 PM	39226
4-Chloroaniline	ND	0.49		mg/Kg	1	7/19/2018 5:43:36 PM	39226
2-Chloronaphthalene	ND	0.25		mg/Kg	1	7/19/2018 5:43:36 PM	39226
2-Chlorophenol	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
4-Chlorophenyl phenyl ether	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Chrysene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Di-n-butyl phthalate	ND	0.39		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Di-n-octyl phthalate	ND	0.39		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Dibenz(a,h)anthracene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Dibenzofuran	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
1,2-Dichlorobenzene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
1,3-Dichlorobenzene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1807753

Date Reported: 7/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Truman Spill 1

Project: Kirtland BFF Truman Yard Spill

Collection Date: 7/13/2018 8:49:00 AM

Lab ID: 1807753-001

Matrix: SOIL

Received Date: 7/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
1,4-Dichlorobenzene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
3,3'-Dichlorobenzidine	ND	0.25		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Diethyl phthalate	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Dimethyl phthalate	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
2,4-Dichlorophenol	ND	0.39		mg/Kg	1	7/19/2018 5:43:36 PM	39226
2,4-Dimethylphenol	ND	0.29		mg/Kg	1	7/19/2018 5:43:36 PM	39226
4,6-Dinitro-2-methylphenol	ND	0.39		mg/Kg	1	7/19/2018 5:43:36 PM	39226
2,4-Dinitrophenol	ND	0.49		mg/Kg	1	7/19/2018 5:43:36 PM	39226
2,4-Dinitrotoluene	ND	0.49		mg/Kg	1	7/19/2018 5:43:36 PM	39226
2,6-Dinitrotoluene	ND	0.49		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Fluoranthene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Fluorene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Hexachlorobenzene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Hexachlorobutadiene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Hexachlorocyclopentadiene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Hexachloroethane	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Indeno(1,2,3-cd)pyrene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Isophorone	ND	0.39		mg/Kg	1	7/19/2018 5:43:36 PM	39226
1-Methylnaphthalene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
2-Methylnaphthalene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
2-Methylphenol	ND	0.39		mg/Kg	1	7/19/2018 5:43:36 PM	39226
3+4-Methylphenol	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
N-Nitrosodi-n-propylamine	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
N-Nitrosodiphenylamine	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Naphthalene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
2-Nitroaniline	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
3-Nitroaniline	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
4-Nitroaniline	ND	0.39		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Nitrobenzene	ND	0.39		mg/Kg	1	7/19/2018 5:43:36 PM	39226
2-Nitrophenol	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
4-Nitrophenol	ND	0.25		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Pentachlorophenol	ND	0.39		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Phenanthrene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Phenol	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Pyrene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
Pyridine	ND	0.39		mg/Kg	1	7/19/2018 5:43:36 PM	39226
1,2,4-Trichlorobenzene	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
2,4,5-Trichlorophenol	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226
2,4,6-Trichlorophenol	ND	0.20		mg/Kg	1	7/19/2018 5:43:36 PM	39226

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1807753

Date Reported: 7/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Truman Spill 1

Project: Kirtland BFF Truman Yard Spill

Collection Date: 7/13/2018 8:49:00 AM

Lab ID: 1807753-001

Matrix: SOIL

Received Date: 7/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
Surr: 2-Fluorophenol	51.2	41.1-115	%Rec	1	1	7/19/2018 5:43:36 PM	39226
Surr: Phenol-d5	59.4	46.8-124	%Rec	1	1	7/19/2018 5:43:36 PM	39226
Surr: 2,4,6-Tribromophenol	64.5	49.3-130	%Rec	1	1	7/19/2018 5:43:36 PM	39226
Surr: Nitrobenzene-d5	56.8	44.6-124	%Rec	1	1	7/19/2018 5:43:36 PM	39226
Surr: 2-Fluorobiphenyl	59.0	46.1-123	%Rec	1	1	7/19/2018 5:43:36 PM	39226
Surr: 4-Terphenyl-d14	76.3	29.8-107	%Rec	1	1	7/19/2018 5:43:36 PM	39226
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: <b>DJF</b>
Benzene	ND	0.024	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
Toluene	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
Ethylbenzene	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
Methyl tert-butyl ether (MTBE)	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
1,2,4-Trimethylbenzene	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
1,3,5-Trimethylbenzene	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
1,2-Dichloroethane (EDC)	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
1,2-Dibromoethane (EDB)	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
Naphthalene	ND	0.096	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
1-Methylnaphthalene	ND	0.19	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
2-Methylnaphthalene	ND	0.19	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
Acetone	ND	0.72	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
Bromobenzene	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
Bromodichloromethane	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
Bromoform	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
Bromomethane	ND	0.14	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
2-Butanone	ND	0.48	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
Carbon disulfide	ND	0.48	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
Carbon tetrachloride	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
Chlorobenzene	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
Chloroethane	ND	0.096	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
Chloroform	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
Chloromethane	ND	0.14	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
2-Chlorotoluene	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
4-Chlorotoluene	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
cis-1,2-DCE	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
cis-1,3-Dichloropropene	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
1,2-Dibromo-3-chloropropane	ND	0.096	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
Dibromochloromethane	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
Dibromomethane	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
1,2-Dichlorobenzene	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222
1,3-Dichlorobenzene	ND	0.048	mg/Kg	1	1	7/17/2018 2:14:59 PM	39222

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1807753

Date Reported: 7/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Truman Spill 1

Project: Kirtland BFF Truman Yard Spill

Collection Date: 7/13/2018 8:49:00 AM

Lab ID: 1807753-001

Matrix: SOIL

Received Date: 7/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
1,4-Dichlorobenzene	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
Dichlorodifluoromethane	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
1,1-Dichloroethane	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
1,1-Dichloroethene	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
1,2-Dichloropropane	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
1,3-Dichloropropane	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
2,2-Dichloropropane	ND	0.096		mg/Kg	1	7/17/2018 2:14:59 PM	39222
1,1-Dichloropropene	ND	0.096		mg/Kg	1	7/17/2018 2:14:59 PM	39222
Hexachlorobutadiene	ND	0.096		mg/Kg	1	7/17/2018 2:14:59 PM	39222
2-Hexanone	ND	0.48		mg/Kg	1	7/17/2018 2:14:59 PM	39222
Isopropylbenzene	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
4-Isopropyltoluene	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
4-Methyl-2-pentanone	ND	0.48		mg/Kg	1	7/17/2018 2:14:59 PM	39222
Methylene chloride	ND	0.14		mg/Kg	1	7/17/2018 2:14:59 PM	39222
n-Butylbenzene	ND	0.14		mg/Kg	1	7/17/2018 2:14:59 PM	39222
n-Propylbenzene	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
sec-Butylbenzene	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
Styrene	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
tert-Butylbenzene	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
1,1,1,2-Tetrachloroethane	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
1,1,2,2-Tetrachloroethane	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
Tetrachloroethene (PCE)	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
trans-1,2-DCE	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
trans-1,3-Dichloropropene	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
1,2,3-Trichlorobenzene	ND	0.096		mg/Kg	1	7/17/2018 2:14:59 PM	39222
1,2,4-Trichlorobenzene	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
1,1,1-Trichloroethane	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
1,1,2-Trichloroethane	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
Trichloroethene (TCE)	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
Trichlorofluoromethane	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
1,2,3-Trichloropropane	ND	0.096		mg/Kg	1	7/17/2018 2:14:59 PM	39222
Vinyl chloride	ND	0.048		mg/Kg	1	7/17/2018 2:14:59 PM	39222
Xylenes, Total	ND	0.096		mg/Kg	1	7/17/2018 2:14:59 PM	39222
Surr: Dibromofluoromethane	106	70-130		%Rec	1	7/17/2018 2:14:59 PM	39222
Surr: 1,2-Dichloroethane-d4	106	70-130		%Rec	1	7/17/2018 2:14:59 PM	39222
Surr: Toluene-d8	104	70-130		%Rec	1	7/17/2018 2:14:59 PM	39222
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	1	7/17/2018 2:14:59 PM	39222

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1807753

Date Reported: 7/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Truman Spill 2

Project: Kirtland BFF Truman Yard Spill

Collection Date: 7/13/2018 8:56:00 AM

Lab ID: 1807753-002

Matrix: SOIL

Received Date: 7/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>Irm</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	7/19/2018 5:15:03 PM	39231
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	7/19/2018 5:15:03 PM	39231
Surr: DNOP	102	70-130		%Rec	1	7/19/2018 5:15:03 PM	39231
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/17/2018 11:51:21 AM	39222
Surr: BFB	91.2	15-316		%Rec	1	7/17/2018 11:51:21 AM	39222
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
Acenaphthene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Acenaphthylene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Aniline	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Anthracene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Azobenzene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Benz(a)anthracene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Benzo(a)pyrene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Benzo(b)fluoranthene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Benzo(g,h,i)perylene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Benzo(k)fluoranthene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Benzoic acid	ND	0.50		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Benzyl alcohol	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Bis(2-chloroethoxy)methane	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Bis(2-chloroethyl)ether	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Bis(2-chloroisopropyl)ether	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Bis(2-ethylhexyl)phthalate	ND	0.50		mg/Kg	1	7/19/2018 7:14:30 PM	39226
4-Bromophenyl phenyl ether	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Butyl benzyl phthalate	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Carbazole	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
4-Chloro-3-methylphenol	ND	0.50		mg/Kg	1	7/19/2018 7:14:30 PM	39226
4-Chloroaniline	ND	0.50		mg/Kg	1	7/19/2018 7:14:30 PM	39226
2-Chloronaphthalene	ND	0.25		mg/Kg	1	7/19/2018 7:14:30 PM	39226
2-Chlorophenol	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
4-Chlorophenyl phenyl ether	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Chrysene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Di-n-butyl phthalate	ND	0.40		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Di-n-octyl phthalate	ND	0.40		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Dibenz(a,h)anthracene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Dibenzofuran	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
1,2-Dichlorobenzene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
1,3-Dichlorobenzene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1807753

Date Reported: 7/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Truman Spill 2

Project: Kirtland BFF Truman Yard Spill

Collection Date: 7/13/2018 8:56:00 AM

Lab ID: 1807753-002

Matrix: SOIL

Received Date: 7/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
1,4-Dichlorobenzene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
3,3'-Dichlorobenzidine	ND	0.25		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Diethyl phthalate	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Dimethyl phthalate	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
2,4-Dichlorophenol	ND	0.40		mg/Kg	1	7/19/2018 7:14:30 PM	39226
2,4-Dimethylphenol	ND	0.30		mg/Kg	1	7/19/2018 7:14:30 PM	39226
4,6-Dinitro-2-methylphenol	ND	0.40		mg/Kg	1	7/19/2018 7:14:30 PM	39226
2,4-Dinitrophenol	ND	0.50		mg/Kg	1	7/19/2018 7:14:30 PM	39226
2,4-Dinitrotoluene	ND	0.50		mg/Kg	1	7/19/2018 7:14:30 PM	39226
2,6-Dinitrotoluene	ND	0.50		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Fluoranthene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Fluorene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Hexachlorobenzene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Hexachlorobutadiene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Hexachlorocyclopentadiene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Hexachloroethane	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Indeno(1,2,3-cd)pyrene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Isophorone	ND	0.40		mg/Kg	1	7/19/2018 7:14:30 PM	39226
1-Methylnaphthalene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
2-Methylnaphthalene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
2-Methylphenol	ND	0.40		mg/Kg	1	7/19/2018 7:14:30 PM	39226
3+4-Methylphenol	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
N-Nitrosodi-n-propylamine	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
N-Nitrosodiphenylamine	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Naphthalene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
2-Nitroaniline	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
3-Nitroaniline	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
4-Nitroaniline	ND	0.40		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Nitrobenzene	ND	0.40		mg/Kg	1	7/19/2018 7:14:30 PM	39226
2-Nitrophenol	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
4-Nitrophenol	ND	0.25		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Pentachlorophenol	ND	0.40		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Phenanthrene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Phenol	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Pyrene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
Pyridine	ND	0.40		mg/Kg	1	7/19/2018 7:14:30 PM	39226
1,2,4-Trichlorobenzene	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
2,4,5-Trichlorophenol	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226
2,4,6-Trichlorophenol	ND	0.20		mg/Kg	1	7/19/2018 7:14:30 PM	39226

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1807753

Date Reported: 7/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Truman Spill 2

Project: Kirtland BFF Truman Yard Spill

Collection Date: 7/13/2018 8:56:00 AM

Lab ID: 1807753-002

Matrix: SOIL

Received Date: 7/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
Surr: 2-Fluorophenol	39.6	41.1-115	S	%Rec	1	7/19/2018 7:14:30 PM	39226
Surr: Phenol-d5	48.5	46.8-124		%Rec	1	7/19/2018 7:14:30 PM	39226
Surr: 2,4,6-Tribromophenol	43.8	49.3-130	S	%Rec	1	7/19/2018 7:14:30 PM	39226
Surr: Nitrobenzene-d5	45.8	44.6-124		%Rec	1	7/19/2018 7:14:30 PM	39226
Surr: 2-Fluorobiphenyl	44.2	46.1-123	S	%Rec	1	7/19/2018 7:14:30 PM	39226
Surr: 4-Terphenyl-d14	68.1	29.8-107		%Rec	1	7/19/2018 7:14:30 PM	39226
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: <b>DJF</b>
Benzene	ND	0.024		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Toluene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Ethylbenzene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Methyl tert-butyl ether (MTBE)	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1,2,4-Trimethylbenzene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1,3,5-Trimethylbenzene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1,2-Dichloroethane (EDC)	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1,2-Dibromoethane (EDB)	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Naphthalene	ND	0.095		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1-Methylnaphthalene	ND	0.19		mg/Kg	1	7/17/2018 3:44:20 PM	39222
2-Methylnaphthalene	ND	0.19		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Acetone	ND	0.71		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Bromobenzene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Bromodichloromethane	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Bromoform	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Bromomethane	ND	0.14		mg/Kg	1	7/17/2018 3:44:20 PM	39222
2-Butanone	ND	0.48		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Carbon disulfide	ND	0.48		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Carbon tetrachloride	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Chlorobenzene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Chloroethane	ND	0.095		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Chloroform	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Chloromethane	ND	0.14		mg/Kg	1	7/17/2018 3:44:20 PM	39222
2-Chlorotoluene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
4-Chlorotoluene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
cis-1,2-DCE	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
cis-1,3-Dichloropropene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1,2-Dibromo-3-chloropropane	ND	0.095		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Dibromochloromethane	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Dibromomethane	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1,2-Dichlorobenzene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1,3-Dichlorobenzene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1807753

Date Reported: 7/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Truman Spill 2

Project: Kirtland BFF Truman Yard Spill

Collection Date: 7/13/2018 8:56:00 AM

Lab ID: 1807753-002

Matrix: SOIL

Received Date: 7/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
1,4-Dichlorobenzene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Dichlorodifluoromethane	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1,1-Dichloroethane	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1,1-Dichloroethene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1,2-Dichloropropane	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1,3-Dichloropropane	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
2,2-Dichloropropane	ND	0.095		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1,1-Dichloropropene	ND	0.095		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Hexachlorobutadiene	ND	0.095		mg/Kg	1	7/17/2018 3:44:20 PM	39222
2-Hexanone	ND	0.48		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Isopropylbenzene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
4-Isopropyltoluene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
4-Methyl-2-pentanone	ND	0.48		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Methylene chloride	ND	0.14		mg/Kg	1	7/17/2018 3:44:20 PM	39222
n-Butylbenzene	ND	0.14		mg/Kg	1	7/17/2018 3:44:20 PM	39222
n-Propylbenzene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
sec-Butylbenzene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Styrene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
tert-Butylbenzene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1,1,1,2-Tetrachloroethane	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1,1,2,2-Tetrachloroethane	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Tetrachloroethene (PCE)	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
trans-1,2-DCE	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
trans-1,3-Dichloropropene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1,2,3-Trichlorobenzene	ND	0.095		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1,2,4-Trichlorobenzene	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1,1,1-Trichloroethane	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1,1,2-Trichloroethane	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Trichloroethene (TCE)	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Trichlorofluoromethane	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
1,2,3-Trichloropropane	ND	0.095		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Vinyl chloride	ND	0.048		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Xylenes, Total	ND	0.095		mg/Kg	1	7/17/2018 3:44:20 PM	39222
Surr: Dibromofluoromethane	97.1	70-130		%Rec	1	7/17/2018 3:44:20 PM	39222
Surr: 1,2-Dichloroethane-d4	99.7	70-130		%Rec	1	7/17/2018 3:44:20 PM	39222
Surr: Toluene-d8	108	70-130		%Rec	1	7/17/2018 3:44:20 PM	39222
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	7/17/2018 3:44:20 PM	39222

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1807753

Date Reported: 7/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Truman Spill 3

Project: Kirtland BFF Truman Yard Spill

Collection Date: 7/13/2018 9:01:00 AM

Lab ID: 1807753-003

Matrix: SOIL

Received Date: 7/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>Irm</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	7/19/2018 5:37:17 PM	39231
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	7/19/2018 5:37:17 PM	39231
Surr: DNOP	132	70-130	S	%Rec	1	7/19/2018 5:37:17 PM	39231
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	7/17/2018 12:14:51 PM	39222
Surr: BFB	92.3	15-316		%Rec	1	7/17/2018 12:14:51 PM	39222
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>JDC</b>
Acenaphthene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Acenaphthylene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Aniline	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Anthracene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Azobenzene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Benz(a)anthracene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Benzo(a)pyrene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Benzo(b)fluoranthene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Benzo(g,h,i)perylene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Benzo(k)fluoranthene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Benzoic acid	ND	0.50		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Benzyl alcohol	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Bis(2-chloroethoxy)methane	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Bis(2-chloroethyl)ether	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Bis(2-chloroisopropyl)ether	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Bis(2-ethylhexyl)phthalate	ND	0.50		mg/Kg	1	7/26/2018 1:27:22 PM	39389
4-Bromophenyl phenyl ether	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Butyl benzyl phthalate	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Carbazole	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
4-Chloro-3-methylphenol	ND	0.50		mg/Kg	1	7/26/2018 1:27:22 PM	39389
4-Chloroaniline	ND	0.50		mg/Kg	1	7/26/2018 1:27:22 PM	39389
2-Chloronaphthalene	ND	0.25		mg/Kg	1	7/26/2018 1:27:22 PM	39389
2-Chlorophenol	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
4-Chlorophenyl phenyl ether	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Chrysene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Di-n-butyl phthalate	ND	0.40		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Di-n-octyl phthalate	ND	0.40		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Dibenz(a,h)anthracene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Dibenzofuran	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
1,2-Dichlorobenzene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
1,3-Dichlorobenzene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1807753

Date Reported: 7/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Truman Spill 3

Project: Kirtland BFF Truman Yard Spill

Collection Date: 7/13/2018 9:01:00 AM

Lab ID: 1807753-003

Matrix: SOIL

Received Date: 7/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: JDC
1,4-Dichlorobenzene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
3,3'-Dichlorobenzidine	ND	0.25		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Diethyl phthalate	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Dimethyl phthalate	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
2,4-Dichlorophenol	ND	0.40		mg/Kg	1	7/26/2018 1:27:22 PM	39389
2,4-Dimethylphenol	ND	0.30		mg/Kg	1	7/26/2018 1:27:22 PM	39389
4,6-Dinitro-2-methylphenol	ND	0.40		mg/Kg	1	7/26/2018 1:27:22 PM	39389
2,4-Dinitrophenol	ND	0.50		mg/Kg	1	7/26/2018 1:27:22 PM	39389
2,4-Dinitrotoluene	ND	0.50		mg/Kg	1	7/26/2018 1:27:22 PM	39389
2,6-Dinitrotoluene	ND	0.50		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Fluoranthene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Fluorene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Hexachlorobenzene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Hexachlorobutadiene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Hexachlorocyclopentadiene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Hexachloroethane	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Indeno(1,2,3-cd)pyrene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Isophorone	ND	0.40		mg/Kg	1	7/26/2018 1:27:22 PM	39389
1-Methylnaphthalene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
2-Methylnaphthalene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
2-Methylphenol	ND	0.40		mg/Kg	1	7/26/2018 1:27:22 PM	39389
3+4-Methylphenol	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
N-Nitrosodi-n-propylamine	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
N-Nitrosodiphenylamine	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Naphthalene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
2-Nitroaniline	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
3-Nitroaniline	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
4-Nitroaniline	ND	0.40		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Nitrobenzene	ND	0.40		mg/Kg	1	7/26/2018 1:27:22 PM	39389
2-Nitrophenol	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
4-Nitrophenol	ND	0.25		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Pentachlorophenol	ND	0.40		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Phenanthrene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Phenol	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Pyrene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
Pyridine	ND	0.40		mg/Kg	1	7/26/2018 1:27:22 PM	39389
1,2,4-Trichlorobenzene	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
2,4,5-Trichlorophenol	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389
2,4,6-Trichlorophenol	ND	0.20		mg/Kg	1	7/26/2018 1:27:22 PM	39389

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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## Analytical Report

Lab Order 1807753

Date Reported: 7/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Truman Spill 3

Project: Kirtland BFF Truman Yard Spill

Collection Date: 7/13/2018 9:01:00 AM

Lab ID: 1807753-003

Matrix: SOIL

Received Date: 7/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: JDC
Surr: 2-Fluorophenol	64.0	41.1-115	%Rec	1	7/26/2018 1:27:22 PM	39389	
Surr: Phenol-d5	72.9	46.8-124	%Rec	1	7/26/2018 1:27:22 PM	39389	
Surr: 2,4,6-Tribromophenol	78.7	49.3-130	%Rec	1	7/26/2018 1:27:22 PM	39389	
Surr: Nitrobenzene-d5	72.2	44.6-124	%Rec	1	7/26/2018 1:27:22 PM	39389	
Surr: 2-Fluorobiphenyl	74.5	46.1-123	%Rec	1	7/26/2018 1:27:22 PM	39389	
Surr: 4-Terphenyl-d14	95.3	29.8-107	%Rec	1	7/26/2018 1:27:22 PM	39389	
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
Benzene	ND	0.023	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
Toluene	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
Ethylbenzene	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
Methyl tert-butyl ether (MTBE)	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
1,2,4-Trimethylbenzene	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
1,3,5-Trimethylbenzene	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
1,2-Dichloroethane (EDC)	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
1,2-Dibromoethane (EDB)	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
Naphthalene	ND	0.093	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
1-Methylnaphthalene	ND	0.19	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
2-Methylnaphthalene	ND	0.19	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
Acetone	ND	0.70	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
Bromobenzene	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
Bromodichloromethane	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
Bromoform	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
Bromomethane	ND	0.14	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
2-Butanone	ND	0.46	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
Carbon disulfide	ND	0.46	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
Carbon tetrachloride	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
Chlorobenzene	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
Chloroethane	ND	0.093	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
Chloroform	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
Chloromethane	ND	0.14	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
2-Chlorotoluene	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
4-Chlorotoluene	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
cis-1,2-DCE	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
cis-1,3-Dichloropropene	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
1,2-Dibromo-3-chloropropane	ND	0.093	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
Dibromochloromethane	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
Dibromomethane	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
1,2-Dichlorobenzene	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	
1,3-Dichlorobenzene	ND	0.046	mg/Kg	1	7/17/2018 4:14:13 PM	39222	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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## Analytical Report

Lab Order 1807753

Date Reported: 7/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Truman Spill 3

Project: Kirtland BFF Truman Yard Spill

Collection Date: 7/13/2018 9:01:00 AM

Lab ID: 1807753-003

Matrix: SOIL

Received Date: 7/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
1,4-Dichlorobenzene	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
Dichlorodifluoromethane	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
1,1-Dichloroethane	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
1,1-Dichloroethene	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
1,2-Dichloropropane	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
1,3-Dichloropropane	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
2,2-Dichloropropane	ND	0.093		mg/Kg	1	7/17/2018 4:14:13 PM	39222
1,1-Dichloropropene	ND	0.093		mg/Kg	1	7/17/2018 4:14:13 PM	39222
Hexachlorobutadiene	ND	0.093		mg/Kg	1	7/17/2018 4:14:13 PM	39222
2-Hexanone	ND	0.46		mg/Kg	1	7/17/2018 4:14:13 PM	39222
Isopropylbenzene	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
4-Isopropyltoluene	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
4-Methyl-2-pentanone	ND	0.46		mg/Kg	1	7/17/2018 4:14:13 PM	39222
Methylene chloride	ND	0.14		mg/Kg	1	7/17/2018 4:14:13 PM	39222
n-Butylbenzene	ND	0.14		mg/Kg	1	7/17/2018 4:14:13 PM	39222
n-Propylbenzene	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
sec-Butylbenzene	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
Styrene	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
tert-Butylbenzene	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
1,1,1,2-Tetrachloroethane	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
1,1,2,2-Tetrachloroethane	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
Tetrachloroethene (PCE)	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
trans-1,2-DCE	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
trans-1,3-Dichloropropene	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
1,2,3-Trichlorobenzene	ND	0.093		mg/Kg	1	7/17/2018 4:14:13 PM	39222
1,2,4-Trichlorobenzene	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
1,1,1-Trichloroethane	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
1,1,2-Trichloroethane	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
Trichloroethene (TCE)	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
Trichlorofluoromethane	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
1,2,3-Trichloropropane	ND	0.093		mg/Kg	1	7/17/2018 4:14:13 PM	39222
Vinyl chloride	ND	0.046		mg/Kg	1	7/17/2018 4:14:13 PM	39222
Xylenes, Total	ND	0.093		mg/Kg	1	7/17/2018 4:14:13 PM	39222
Surr: Dibromofluoromethane	95.7	70-130		%Rec	1	7/17/2018 4:14:13 PM	39222
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	7/17/2018 4:14:13 PM	39222
Surr: Toluene-d8	111	70-130		%Rec	1	7/17/2018 4:14:13 PM	39222
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	1	7/17/2018 4:14:13 PM	39222

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1807753

Date Reported: 7/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Truman Spill 4

Project: Kirtland BFF Truman Yard Spill

Collection Date: 7/13/2018 9:06:00 AM

Lab ID: 1807753-004

Matrix: SOIL

Received Date: 7/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>Irm</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	7/19/2018 5:59:35 PM	39231
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	7/19/2018 5:59:35 PM	39231
Surr: DNOP	88.6	70-130		%Rec	1	7/19/2018 5:59:35 PM	39231
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/17/2018 12:38:23 PM	39222
Surr: BFB	95.3	15-316		%Rec	1	7/17/2018 12:38:23 PM	39222
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
Acenaphthene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Acenaphthylene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Aniline	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Anthracene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Azobenzene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Benz(a)anthracene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Benzo(a)pyrene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Benzo(b)fluoranthene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Benzo(g,h,i)perylene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Benzo(k)fluoranthene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Benzoic acid	ND	0.50		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Benzyl alcohol	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Bis(2-chloroethoxy)methane	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Bis(2-chloroethyl)ether	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Bis(2-chloroisopropyl)ether	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Bis(2-ethylhexyl)phthalate	ND	0.50		mg/Kg	1	7/23/2018 11:44:52 AM	39226
4-Bromophenyl phenyl ether	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Butyl benzyl phthalate	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Carbazole	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
4-Chloro-3-methylphenol	ND	0.50		mg/Kg	1	7/23/2018 11:44:52 AM	39226
4-Chloroaniline	ND	0.50		mg/Kg	1	7/23/2018 11:44:52 AM	39226
2-Chloronaphthalene	ND	0.25		mg/Kg	1	7/23/2018 11:44:52 AM	39226
2-Chlorophenol	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
4-Chlorophenyl phenyl ether	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Chrysene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Di-n-butyl phthalate	ND	0.40		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Di-n-octyl phthalate	ND	0.40		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Dibenz(a,h)anthracene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Dibenzofuran	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
1,2-Dichlorobenzene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
1,3-Dichlorobenzene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
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	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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## Analytical Report

Lab Order 1807753

Date Reported: 7/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Truman Spill 4

Project: Kirtland BFF Truman Yard Spill

Collection Date: 7/13/2018 9:06:00 AM

Lab ID: 1807753-004

Matrix: SOIL

Received Date: 7/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
1,4-Dichlorobenzene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
3,3'-Dichlorobenzidine	ND	0.25		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Diethyl phthalate	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Dimethyl phthalate	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
2,4-Dichlorophenol	ND	0.40		mg/Kg	1	7/23/2018 11:44:52 AM	39226
2,4-Dimethylphenol	ND	0.30		mg/Kg	1	7/23/2018 11:44:52 AM	39226
4,6-Dinitro-2-methylphenol	ND	0.40		mg/Kg	1	7/23/2018 11:44:52 AM	39226
2,4-Dinitrophenol	ND	0.50		mg/Kg	1	7/23/2018 11:44:52 AM	39226
2,4-Dinitrotoluene	ND	0.50		mg/Kg	1	7/23/2018 11:44:52 AM	39226
2,6-Dinitrotoluene	ND	0.50		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Fluoranthene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Fluorene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Hexachlorobenzene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Hexachlorobutadiene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Hexachlorocyclopentadiene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Hexachloroethane	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Indeno(1,2,3-cd)pyrene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Isophorone	ND	0.40		mg/Kg	1	7/23/2018 11:44:52 AM	39226
1-Methylnaphthalene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
2-Methylnaphthalene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
2-Methylphenol	ND	0.40		mg/Kg	1	7/23/2018 11:44:52 AM	39226
3+4-Methylphenol	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
N-Nitrosodi-n-propylamine	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
N-Nitrosodiphenylamine	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Naphthalene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
2-Nitroaniline	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
3-Nitroaniline	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
4-Nitroaniline	ND	0.40		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Nitrobenzene	ND	0.40		mg/Kg	1	7/23/2018 11:44:52 AM	39226
2-Nitrophenol	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
4-Nitrophenol	ND	0.25		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Pentachlorophenol	ND	0.40		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Phenanthrene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Phenol	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Pyrene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
Pyridine	ND	0.40		mg/Kg	1	7/23/2018 11:44:52 AM	39226
1,2,4-Trichlorobenzene	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
2,4,5-Trichlorophenol	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226
2,4,6-Trichlorophenol	ND	0.20		mg/Kg	1	7/23/2018 11:44:52 AM	39226

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<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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## Analytical Report

Lab Order 1807753

Date Reported: 7/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Truman Spill 4

Project: Kirtland BFF Truman Yard Spill

Collection Date: 7/13/2018 9:06:00 AM

Lab ID: 1807753-004

Matrix: SOIL

Received Date: 7/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: DAM
Surr: 2-Fluorophenol	47.3	41.1-115	%Rec	1	7/23/2018 11:44:52 AM	39226	
Surr: Phenol-d5	56.4	46.8-124	%Rec	1	7/23/2018 11:44:52 AM	39226	
Surr: 2,4,6-Tribromophenol	52.2	49.3-130	%Rec	1	7/23/2018 11:44:52 AM	39226	
Surr: Nitrobenzene-d5	60.8	44.6-124	%Rec	1	7/23/2018 11:44:52 AM	39226	
Surr: 2-Fluorobiphenyl	60.2	46.1-123	%Rec	1	7/23/2018 11:44:52 AM	39226	
Surr: 4-Terphenyl-d14	65.4	29.8-107	%Rec	1	7/23/2018 11:44:52 AM	39226	
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
Benzene	ND	0.025	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
Toluene	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
Ethylbenzene	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
Methyl tert-butyl ether (MTBE)	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
1,2,4-Trimethylbenzene	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
1,3,5-Trimethylbenzene	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
1,2-Dichloroethane (EDC)	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
1,2-Dibromoethane (EDB)	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
Naphthalene	ND	0.098	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
1-Methylnaphthalene	ND	0.20	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
2-Methylnaphthalene	ND	0.20	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
Acetone	ND	0.74	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
Bromobenzene	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
Bromodichloromethane	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
Bromoform	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
Bromomethane	ND	0.15	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
2-Butanone	ND	0.49	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
Carbon disulfide	ND	0.49	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
Carbon tetrachloride	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
Chlorobenzene	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
Chloroethane	ND	0.098	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
Chloroform	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
Chloromethane	ND	0.15	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
2-Chlorotoluene	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
4-Chlorotoluene	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
cis-1,2-DCE	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
cis-1,3-Dichloropropene	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
1,2-Dibromo-3-chloropropane	ND	0.098	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
Dibromochloromethane	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
Dibromomethane	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
1,2-Dichlorobenzene	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	
1,3-Dichlorobenzene	ND	0.049	mg/Kg	1	7/17/2018 4:44:12 PM	39222	

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1807753

Date Reported: 7/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Truman Spill 4

Project: Kirtland BFF Truman Yard Spill

Collection Date: 7/13/2018 9:06:00 AM

Lab ID: 1807753-004

Matrix: SOIL

Received Date: 7/13/2018 10:20:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
1,4-Dichlorobenzene	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
Dichlorodifluoromethane	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
1,1-Dichloroethane	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
1,1-Dichloroethene	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
1,2-Dichloropropane	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
1,3-Dichloropropane	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
2,2-Dichloropropane	ND	0.098		mg/Kg	1	7/17/2018 4:44:12 PM	39222
1,1-Dichloropropene	ND	0.098		mg/Kg	1	7/17/2018 4:44:12 PM	39222
Hexachlorobutadiene	ND	0.098		mg/Kg	1	7/17/2018 4:44:12 PM	39222
2-Hexanone	ND	0.49		mg/Kg	1	7/17/2018 4:44:12 PM	39222
Isopropylbenzene	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
4-Isopropyltoluene	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
4-Methyl-2-pentanone	ND	0.49		mg/Kg	1	7/17/2018 4:44:12 PM	39222
Methylene chloride	ND	0.15		mg/Kg	1	7/17/2018 4:44:12 PM	39222
n-Butylbenzene	ND	0.15		mg/Kg	1	7/17/2018 4:44:12 PM	39222
n-Propylbenzene	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
sec-Butylbenzene	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
Styrene	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
tert-Butylbenzene	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
1,1,1,2-Tetrachloroethane	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
1,1,2,2-Tetrachloroethane	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
Tetrachloroethene (PCE)	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
trans-1,2-DCE	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
trans-1,3-Dichloropropene	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
1,2,3-Trichlorobenzene	ND	0.098		mg/Kg	1	7/17/2018 4:44:12 PM	39222
1,2,4-Trichlorobenzene	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
1,1,1-Trichloroethane	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
1,1,2-Trichloroethane	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
Trichloroethene (TCE)	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
Trichlorofluoromethane	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
1,2,3-Trichloropropane	ND	0.098		mg/Kg	1	7/17/2018 4:44:12 PM	39222
Vinyl chloride	ND	0.049		mg/Kg	1	7/17/2018 4:44:12 PM	39222
Xylenes, Total	ND	0.098		mg/Kg	1	7/17/2018 4:44:12 PM	39222
Surr: Dibromofluoromethane	99.0	70-130		%Rec	1	7/17/2018 4:44:12 PM	39222
Surr: 1,2-Dichloroethane-d4	105	70-130		%Rec	1	7/17/2018 4:44:12 PM	39222
Surr: Toluene-d8	114	70-130		%Rec	1	7/17/2018 4:44:12 PM	39222
Surr: 4-Bromofluorobenzene	95.4	70-130		%Rec	1	7/17/2018 4:44:12 PM	39222

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	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807753

30-Jul-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Truman Yard Spill

Sample ID	<b>MB-39231</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>39231</b>	RunNo:	<b>52744</b>					
Prep Date:	<b>7/16/2018</b>	Analysis Date:	<b>7/17/2018</b>	SeqNo:	<b>1732326</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.9		10.00		99.5	70	130			

Sample ID	<b>LCS-39231</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>39231</b>	RunNo:	<b>52744</b>					
Prep Date:	<b>7/16/2018</b>	Analysis Date:	<b>7/17/2018</b>	SeqNo:	<b>1732346</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	96.2	70	130			
Surr: DNOP	4.4		5.000		88.1	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807753

30-Jul-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Truman Yard Spill

Sample ID	<b>MB-39222</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015D: Gasoline Range</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>39222</b>	RunNo:	<b>52767</b>					
Prep Date:	<b>7/16/2018</b>	Analysis Date:	<b>7/17/2018</b>	SeqNo:	<b>1733195</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	880		1000		88.1	15	316			

Sample ID	<b>LCS-39222</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015D: Gasoline Range</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>39222</b>	RunNo:	<b>52767</b>					
Prep Date:	<b>7/16/2018</b>	Analysis Date:	<b>7/17/2018</b>	SeqNo:	<b>1733196</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	102	75.9	131			
Surr: BFB	970		1000		96.6	15	316			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807753

30-Jul-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Truman Yard Spill

Sample ID	mb-39222	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	PBS	Batch ID:	39222	RunNo:	52771					
Prep Date:	7/16/2018	Analysis Date:	7/17/2018	SeqNo:	1733355	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Page 19 of 29

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807753

30-Jul-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Truman Yard Spill

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	mb-39222		SampType: MBLK	TestCode: EPA Method 8260B: Volatiles						
Client ID:	PBS		Batch ID: 39222	RunNo: 52771						
Prep Date:	7/16/2018		Analysis Date: 7/17/2018	SeqNo: 1733355		Units: mg/Kg				
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.54		0.5000		108	70	130			
Surr: 1,2-Dichloroethane-d4	0.54		0.5000		107	70	130			
Surr: Toluene-d8	0.53		0.5000		105	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		97.3	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	ics-39222		SampType: LCS	TestCode: EPA Method 8260B: Volatiles						
Client ID:	LCSS		Batch ID: 39222	RunNo: 52771						
Prep Date:	7/16/2018		Analysis Date: 7/17/2018	SeqNo: 1733356		Units: mg/Kg				
Benzene	0.93	0.025	1.000	0	93.2	70	130			
Toluene	1.0	0.050	1.000	0	102	70	130			
Chlorobenzene	1.0	0.050	1.000	0	99.8	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807753

30-Jul-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Truman Yard Spill

Sample ID	SampType: LCS		TestCode: EPA Method 8260B: Volatiles							
Client ID:	Batch ID: 39222		RunNo: 52771							
Prep Date: 7/16/2018	Analysis Date: 7/17/2018		SeqNo: 1733356 Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	0.78	0.050	1.000	0	78.4	70	130			
Trichloroethene (TCE)	0.88	0.050	1.000	0	88.5	70	130			
Surr: Dibromofluoromethane	0.49		0.5000		97.1	70	130			
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		99.9	70	130			
Surr: Toluene-d8	0.52		0.5000		103	70	130			
Surr: 4-Bromofluorobenzene	0.53		0.5000		107	70	130			

Sample ID	SampType: MS		TestCode: EPA Method 8260B: Volatiles							
Client ID: Truman Spill 1	Batch ID: 39222		RunNo: 52771							
Prep Date: 7/16/2018	Analysis Date: 7/18/2018		SeqNo: 1733358 Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.12	0.024	0.9569	0	12.4	51.9	158			S
Toluene	0.14	0.048	0.9569	0	14.2	64.6	132			S
Chlorobenzene	0.11	0.048	0.9569	0	11.8	62.8	136			S
1,1-Dichloroethene	0.090	0.048	0.9569	0	9.43	42.4	170			S
Trichloroethene (TCE)	0.11	0.048	0.9569	0	11.3	70	130			S
Surr: Dibromofluoromethane	0.46		0.4785		95.7	70	130			
Surr: 1,2-Dichloroethane-d4	0.47		0.4785		98.9	70	130			
Surr: Toluene-d8	0.56		0.4785		116	70	130			
Surr: 4-Bromofluorobenzene	0.50		0.4785		104	70	130			

Sample ID	SampType: MSD		TestCode: EPA Method 8260B: Volatiles							
Client ID: Truman Spill 1	Batch ID: 39222		RunNo: 52771							
Prep Date: 7/16/2018	Analysis Date: 7/18/2018		SeqNo: 1733359 Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.15	0.023	0.9234	0	15.8	51.9	158	20.4	20	RS
Toluene	0.15	0.046	0.9234	0	16.4	64.6	132	10.6	20	S
Chlorobenzene	0.14	0.046	0.9234	0	15.3	62.8	136	22.5	20	RS
1,1-Dichloroethene	0.10	0.046	0.9234	0	11.2	42.4	170	13.5	20	S
Trichloroethene (TCE)	0.13	0.046	0.9234	0	13.8	70	130	15.8	20	S
Surr: Dibromofluoromethane	0.44		0.4617		94.5	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	0.44		0.4617		95.8	70	130	0	0	
Surr: Toluene-d8	0.50		0.4617		108	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.45		0.4617		97.2	70	130	0	0	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

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**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Truman Yard Spill

Sample ID	<b>mb-39339</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8260B: Volatiles</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>39339</b>	RunNo:	<b>52937</b>					
Prep Date:	<b>7/23/2018</b>	Analysis Date:	<b>7/24/2018</b>	SeqNo:	<b>1740147</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Dibromofluoromethane	0.50		0.5000		99.7	70	130			
Surr: 1,2-Dichloroethane-d4	0.53		0.5000		106	70	130			
Surr: Toluene-d8	0.53		0.5000		106	70	130			
Surr: 4-Bromofluorobenzene	0.52		0.5000		104	70	130			

Sample ID	<b>ics-39339</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8260B: Volatiles</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>39339</b>	RunNo:	<b>52937</b>					
Prep Date:	<b>7/23/2018</b>	Analysis Date:	<b>7/24/2018</b>	SeqNo:	<b>1740148</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Dibromofluoromethane	0.48		0.5000		95.3	70	130			
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		101	70	130			
Surr: Toluene-d8	0.50		0.5000		99.3	70	130			
Surr: 4-Bromofluorobenzene	0.48		0.5000		95.2	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807753

30-Jul-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Truman Yard Spill

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.0	0.20	1.673	0	60.6	23.7	110			
4-Chloro-3-methylphenol	2.5	0.50	3.337	0	74.2	23.5	109			
2-Chlorophenol	1.5	0.20	3.337	0	45.7	15	106			
1,4-Dichlorobenzene	0.63	0.20	1.673	0	37.5	16	98.5			
2,4-Dinitrotoluene	1.1	0.50	1.673	0	65.2	23.3	92.8			
N-Nitrosodi-n-propylamine	0.89	0.20	1.673	0	53.2	17	111			
4-Nitrophenol	2.6	0.25	3.337	0	78.8	30.9	103			
Pentachlorophenol	2.3	0.40	3.337	0	68.5	20.8	92.7			
Phenol	1.6	0.20	3.337	0	48.2	17	107			
Pyrene	1.3	0.20	1.673	0	78.1	27.9	111			
1,2,4-Trichlorobenzene	0.84	0.20	1.673	0	50.2	19.5	118			
Surr: 2-Fluorophenol	1.3		3.337		38.4	41.1	115			S
Surr: Phenol-d5	1.7		3.337		51.9	46.8	124			
Surr: 2,4,6-Tribromophenol	2.5		3.337		74.8	49.3	130			
Surr: Nitrobenzene-d5	0.84		1.673		49.9	44.6	124			
Surr: 2-Fluorobiphenyl	0.82		1.673		48.9	46.1	123			
Surr: 4-Terphenyl-d14	1.3		1.673		78.4	29.8	107			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.90	0.20	1.677	0	53.8	23.7	110	11.8	43.1	
4-Chloro-3-methylphenol	2.2	0.50	3.344	0	64.5	23.5	109	13.8	52.2	
2-Chlorophenol	1.7	0.20	3.344	0	50.5	15	106	10.3	42.5	
1,4-Dichlorobenzene	0.72	0.20	1.677	0	43.1	16	98.5	14.1	50.4	
2,4-Dinitrotoluene	0.96	0.50	1.677	0	57.4	23.3	92.8	12.6	24.2	
N-Nitrosodi-n-propylamine	0.98	0.20	1.677	0	58.3	17	111	9.40	39.7	
4-Nitrophenol	2.4	0.25	3.344	0	70.4	30.9	103	11.0	59.4	
Pentachlorophenol	1.9	0.40	3.344	0	56.0	20.8	92.7	19.8	32.7	
Phenol	1.7	0.20	3.344	0	51.7	17	107	7.37	41.2	
Pyrene	1.2	0.20	1.677	0	69.6	27.9	111	11.3	34	
1,2,4-Trichlorobenzene	0.87	0.20	1.677	0	51.9	19.5	118	3.44	35.8	
Surr: 2-Fluorophenol	1.5		3.344		45.1	41.1	115	0	0	
Surr: Phenol-d5	1.9		3.344		55.8	46.8	124	0	0	
Surr: 2,4,6-Tribromophenol	1.9		3.344		56.7	49.3	130	0	0	
Surr: Nitrobenzene-d5	0.84		1.677		50.0	44.6	124	0	0	
Surr: 2-Fluorobiphenyl	0.86		1.677		51.1	46.1	123	0	0	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807753

30-Jul-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Truman Yard Spill

Sample ID	<b>1807753-001amsd</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA Method 8270C: Semivolatiles</b>					
Client ID:	<b>Truman Spill 1</b>	Batch ID:	<b>39226</b>	RunNo:	<b>52841</b>					
Prep Date:	<b>7/16/2018</b>	Analysis Date:	<b>7/19/2018</b>	SeqNo:	<b>1736215</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Terphenyl-d14	1.1		1.677		63.0	29.8	107	0	0	

Sample ID	<b>Ics-39226</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8270C: Semivolatiles</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>39226</b>	RunNo:	<b>52841</b>					
Prep Date:	<b>7/16/2018</b>	Analysis Date:	<b>7/19/2018</b>	SeqNo:	<b>1736218</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.1	0.20	1.670	0	65.1	39.4	110			
4-Chloro-3-methylphenol	2.3	0.50	3.330	0	70.2	41.6	108			
2-Chlorophenol	1.6	0.20	3.330	0	47.1	35	107			
1,4-Dichlorobenzene	0.63	0.20	1.670	0	37.6	31	105			
2,4-Dinitrotoluene	1.1	0.50	1.670	0	63.6	35.6	101			
N-Nitrosodi-n-propylamine	1.1	0.20	1.670	0	67.7	26	100			
4-Nitrophenol	2.7	0.25	3.330	0	82.5	34.1	106			
Pentachlorophenol	2.2	0.40	3.330	0	66.6	35.3	95.4			
Phenol	1.7	0.20	3.330	0	52.4	39.3	96.5			
Pyrene	1.3	0.20	1.670	0	79.9	47.8	95.7			
1,2,4-Trichlorobenzene	0.86	0.20	1.670	0	51.5	36.6	117			
Surr: 2-Fluorophenol	1.2		3.330		35.2	41.1	115			S
Surr: Phenol-d5	1.7		3.330		52.5	46.8	124			
Surr: 2,4,6-Tribromophenol	2.1		3.330		62.0	49.3	130			
Surr: Nitrobenzene-d5	0.82		1.670		48.8	44.6	124			
Surr: 2-Fluorobiphenyl	0.98		1.670		58.6	46.1	123			
Surr: 4-Terphenyl-d14	1.1		1.670		68.1	29.8	107			

Sample ID	<b>mb-39226</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8270C: Semivolatiles</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>39226</b>	RunNo:	<b>52841</b>					
Prep Date:	<b>7/16/2018</b>	Analysis Date:	<b>7/19/2018</b>	SeqNo:	<b>1736219</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807753

30-Jul-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Truman Yard Spill

Sample ID	mb-39226	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	39226	RunNo:	52841					
Prep Date:	7/16/2018	Analysis Date:	7/19/2018	SeqNo:	1736219	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	ND	0.50								
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	0.60	0.40								
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3'-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807753

30-Jul-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Truman Yard Spill

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.2		3.330		66.5	41.1	115			
Surr: Phenol-d5	2.7		3.330		80.3	46.8	124			
Surr: 2,4,6-Tribromophenol	2.7		3.330		81.0	49.3	130			
Surr: Nitrobenzene-d5	1.4		1.670		84.3	44.6	124			
Surr: 2-Fluorobiphenyl	1.4		1.670		81.3	46.1	123			
Surr: 4-Terphenyl-d14	1.5		1.670		91.4	29.8	107			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807753

30-Jul-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Truman Yard Spill

Sample ID	mb-39389	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	39389	RunNo:	53012					
Prep Date:	7/25/2018	Analysis Date:	7/26/2018	SeqNo:	1742602	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	ND	0.50								
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	ND	0.40								
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3'-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807753

30-Jul-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Truman Yard Spill

Sample ID	mb-39389	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	39389	RunNo:	53012					
Prep Date:	7/25/2018	Analysis Date:	7/26/2018	SeqNo:	1742602	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	2.0		3.330		60.4	41.1	115			
Surr: Phenol-d5	2.2		3.330		66.8	46.8	124			
Surr: 2,4,6-Tribromophenol	2.4		3.330		73.0	49.3	130			
Surr: Nitrobenzene-d5	1.1		1.670		66.2	44.6	124			
Surr: 2-Fluorobiphenyl	1.2		1.670		74.1	46.1	123			
Surr: 4-Terphenyl-d14	1.6		1.670		94.4	29.8	107			

Sample ID	ics-39389	SampType:	LCS	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	LCSS	Batch ID:	39389	RunNo:	53012					
Prep Date:	7/25/2018	Analysis Date:	7/26/2018	SeqNo:	1742603	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.1	0.20	1.670	0	65.2	42	110			
4-Chloro-3-methylphenol	2.4	0.50	3.330	0	72.2	42.3	117			

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1807753

30-Jul-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Truman Yard Spill

Sample ID	Ics-39389		SampType: LCS	TestCode: EPA Method 8270C: Semivolatiles						
Client ID:	LCSS		Batch ID: 39389	RunNo: 53012						
Prep Date:	7/25/2018		Analysis Date: 7/26/2018	SeqNo: 1742603	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Chlorophenol	2.1	0.20	3.330	0	62.1	27.6	117			
1,4-Dichlorobenzene	1.1	0.20	1.670	0	62.9	28.8	105			
2,4-Dinitrotoluene	0.98	0.50	1.670	0	58.5	42	98.7			
N-Nitrosodi-n-propylamine	1.2	0.20	1.670	0	73.4	41.8	112			
4-Nitrophenol	2.4	0.25	3.330	0	71.0	54	113			
Pentachlorophenol	2.2	0.40	3.330	0	65.8	41.5	101			
Phenol	2.1	0.20	3.330	0	63.8	32.2	115			
Pyrene	1.2	0.20	1.670	0	70.2	48.5	121			
1,2,4-Trichlorobenzene	1.1	0.20	1.670	0	66.5	39.9	112			
Surr: 2-Fluorophenol	1.9		3.330		57.7	41.1	115			
Surr: Phenol-d5	2.2		3.330		65.1	46.8	124			
Surr: 2,4,6-Tribromophenol	2.3		3.330		67.9	49.3	130			
Surr: Nitrobenzene-d5	1.0		1.670		61.2	44.6	124			
Surr: 2-Fluorobiphenyl	1.0		1.670		61.5	46.1	123			
Surr: 4-Terphenyl-d14	1.4		1.670		83.1	29.8	107			

Sample ID	Icsd-39389		SampType: LCSD	TestCode: EPA Method 8270C: Semivolatiles						
Client ID:	LCSS02		Batch ID: 39389	RunNo: 53012						
Prep Date:	7/25/2018		Analysis Date: 7/26/2018	SeqNo: 1742604	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.2	0.20	1.670	0	69.3	42	110	6.03	25	
4-Chloro-3-methylphenol	2.2	0.50	3.330	0	67.5	42.3	117	6.78	28.7	
2-Chlorophenol	2.0	0.20	3.330	0	59.6	27.6	117	4.20	21.5	
1,4-Dichlorobenzene	0.93	0.20	1.670	0	55.5	28.8	105	12.4	20	
2,4-Dinitrotoluene	0.93	0.50	1.670	0	55.9	42	98.7	4.53	32.6	
N-Nitrosodi-n-propylamine	1.2	0.20	1.670	0	72.6	41.8	112	1.04	23.6	
4-Nitrophenol	2.6	0.25	3.330	0	76.8	54	113	7.90	24	
Pentachlorophenol	2.2	0.40	3.330	0	64.8	41.5	101	1.59	22.3	
Phenol	2.1	0.20	3.330	0	62.0	32.2	115	2.88	20	
Pyrene	1.1	0.20	1.670	0	68.4	48.5	121	2.59	25.2	
1,2,4-Trichlorobenzene	1.1	0.20	1.670	0	66.9	39.9	112	0.539	20.4	
Surr: 2-Fluorophenol	1.8		3.330		53.6	41.1	115	0	0	
Surr: Phenol-d5	2.1		3.330		61.7	46.8	124	0	0	
Surr: 2,4,6-Tribromophenol	2.2		3.330		65.1	49.3	130	0	0	
Surr: Nitrobenzene-d5	1.0		1.670		60.6	44.6	124	0	0	
Surr: 2-Fluorobiphenyl	1.1		1.670		67.0	46.1	123	0	0	
Surr: 4-Terphenyl-d14	1.4		1.670		84.3	29.8	107	0	0	

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

# Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1807753

RcptNo: 1

Received By: Ashley Gallegos 7/13/2018 10:20:00 AM

*AG*

Completed By: Anne Thorne 7/13/2018 2:59:50 PM

*Anne Thorne*

Reviewed By: ENM 7/13/18

Labeled by: JAB 07/13/18

**Chain of Custody**

- 1. Is Chain of Custody complete? Yes  No  Not Present
- 2. How was the sample delivered? Client

**Log In**

- 3. Was an attempt made to cool the samples? Yes  No  NA
- 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA
- 5. Sample(s) in proper container(s)? Yes  No  Samples were collected the same day and chilled.
- 6. Sufficient sample volume for indicated test(s)? Yes  No
- 7. Are samples (except VOA and ONG) properly preserved? Yes  No
- 8. Was preservative added to bottles? Yes  No  NA
- 9. VOA vials have zero headspace? Yes  No  No VOA Vials
- 10. Were any sample containers received broken? Yes  No
- 11. Does paperwork match bottle labels? Yes  No   
(Note discrepancies on chain of custody)
- 12. Are matrices correctly identified on Chain of Custody? Yes  No
- 13. Is it clear what analyses were requested? Yes  No
- 14. Were all holding times able to be met? Yes  No   
(If no, notify customer for authorization.)

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: JAB 07/13/18

**Special Handling (if applicable)**

- 15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:		Date:	
By Whom:		Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:			
Client Instructions:			

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
4	8.9	Good	Not Present			

# Chain-of-Custody Record

Client: SA Engineering  
320 Gold St SE #1300  
 Mailing Address: Albuquerque, NM 87102  
 Phone #: 505-238-4410  
 email or Fax#: emas@deqest.com  
 QA/QC Package:  Standard  Level 4 (Full Validation)  
 Accreditation:  NELAP  Other  
 EDD (Type)

Turn-Around Time: 7 -Day TAT  
 Standard  Rush  
 Project Name: Kirtland BFF  
Truman Yard Spill  
 Project #: 62599001.007.3  
PO # 15182  
 Project Manager: Devon Seranovic

Sampler:  On Ice  Yes  No  
 Sample Temperature: 9.9-11.0 (CP-89)

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
7/13/18	0849	SOIL	Truman Spill 1	(2) 803ors	ICE	201
7/13/18	0856	SOIL	Truman Spill 2	"	"	202
7/13/18	0901	SOIL	Truman Spill 3	"	"	203
7/13/18	0906	SOIL	Truman Spill 4	"	"	204

Date: 7/13/18 Time: 1020  
 Relinquished by: [Signature]  
 Date: 07/13/18 Time: 1020  
 Relinquished by: [Signature]



**HALL ENVIRONMENTAL ANALYSIS LABORATORY**  
 www.hallenvironmental.com  
 4901 Hawkins NE - Albuquerque, NM 87109  
 Tel. 505-345-3975 Fax 505-345-4107

**Analysis Request**

BTEX + MTBE + TMB's (8021)	
BTEX + MTBE + TPH (Gas only)	
TPH 8015B (GRO, DRO, MRO)	X
TPH (Method 418.1)	
EDB (Method 504.1)	
PAH's (8310 or 8270 SIMS)	
RCRA 8 Metals	
Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	
8081 Pesticides / 8082 PCBs	
8260B (VOA)	X
8270 (Semi-VOA)	X
Air Bubbles (Y or N)	

Remarks: PO # 15182

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



**DEPARTMENT OF THE AIR FORCE**  
377TH AIR BASE WING (AFGSC)

14 August 2018

MEMORANDUM FOR: AFCEC/CZO

FROM: 377 MSG/CEIE (Solid Waste Program Manager)

SUBJECT: Landfill Disposal

Reference: EA Engineering, Science, & Technology, Inc, letter dated: 2 August 2018  
USACE Contract No. W912DR-12-D-0006-DM01

Disposal of non-hazardous soil cuttings from groundwater monitoring well KAFB-106244

1. Authorization is granted to EA to dispose of soil generated from installation of groundwater monitoring well KAFB-106244, in support of the Bulk Fuels Facility project, at the Kirtland AFB Construction & Demolition Landfill. The soil will be delivered to the landfill by Advanced Chemical Transport Environmental Services, Inc (ACT), and will be in one 20-cubic-yard roll-off container labeled 104052. The roll-off will be transported using one of two 2015 Western Star Roll Off Trucks depending on ACT's vehicle availability: either NM license plate WD121651, or NM license plate WD124756. Lab results are on file in the Solid Waste Management office. EA shall be issued a Kirtland AFB landfill pass for this disposal action. A copy of this letter will accompany the roll-off and will be left with the gate keeper at the landfill.
2. Please direct questions to me at 853-2486.

WHEELOCK.KAT RINA.E.1402749 586  
Digitally signed by  
WHEELOCK.KATRINA.E.140  
2749586  
Date: 2018.08.14 09:38:58  
-06'00'  
KATRINA E. WHEELOCK  
Solid Waste Program Manager  
Environmental Management



**DEPARTMENT OF THE AIR FORCE**  
377TH AIR BASE WING (AFGSC)

14 August 2018

MEMORANDUM FOR: AFCEC/CZO

FROM: 377 MSG/CEIE (Solid Waste Program Manager)

SUBJECT: Landfill Disposal

Reference: EA Engineering, Science, & Technology, Inc, letters (3) dated: 26 July 2018  
USACE Contract No. W912DR-12-D-0006-DM01

Disposal of non-hazardous soil cuttings from groundwater monitoring well KAFB-106244

1. Authorization is granted to EA to dispose of soil generated from installation of groundwater monitoring well KAFB-106244, in support of the Bulk Fuels Facility project, at the Kirtland AFB Construction & Demolition Landfill. The soil will be delivered to the landfill by Advanced Chemical Transport Environmental Services, Inc (ACT), and will be in a total of three roll-off containers: one 15 cubic yard container labeled HTB-3, and two 20 cubic yard containers labeled 4536 and 104051. All roll-offs will be transported using one of two 2015 Western Star Roll Off Trucks depending on ACT's vehicle availability: either NM license plate WD121651, or NM license plate WD124756. Lab results are on file in the Solid Waste Management office. EA shall be issued a Kirtland AFB landfill pass for this disposal action. A copy of this letter will accompany the roll-off and will be left with the gate keeper at the landfill.

2. Please direct questions to me at 853-2486.

WHEELOCK.K  
ATRINA.E.140  
2749586  
KATRINA E. WHEELOCK  
Solid Waste Program Manager  
Environmental Management

Digitally signed by  
WHEELOCK.KATRINA.E.  
1402749586  
Date: 2018.08.14  
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**DEPARTMENT OF THE AIR FORCE**  
**377TH AIR BASE WING (AFGSC)**

14 August 2018

MEMORANDUM FOR: AFCEC/CZO

FROM: 377 MSG/CEIE (Solid Waste Program Manager)

SUBJECT: Landfill Disposal

Reference: EA Engineering, Science, & Technology, Inc, letter dated: 2 August 2018  
USACE Contract No. W912DR-12-D-0006-DM01

Disposal of non-hazardous soil cuttings from groundwater monitoring well KAFB-106244

1. Authorization is granted to EA to dispose of soil generated from installation of groundwater monitoring well KAFB-106244, in support of the Bulk Fuels Facility project, at the Kirtland AFB Construction & Demolition Landfill. The soil will be delivered to the landfill by Advanced Chemical Transport Environmental Services, Inc (ACT), and will be in one 20-cubic-yard roll-off container labeled 104052. The roll-off will be transported using one of two 2015 Western Star Roll Off Trucks depending on ACT's vehicle availability: either NM license plate WD121651, or NM license plate WD124756. Lab results are on file in the Solid Waste Management office. EA shall be issued a Kirtland AFB landfill pass for this disposal action. A copy of this letter will accompany the roll-off and will be left with the gate keeper at the landfill.
2. Please direct questions to me at 853-2486.

**KATRINA E. WHEELock**  
Solid Waste Program Manager  
Environmental Management



EA Engineering, Science, & Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, New Mexico 87102  
Phone: (505) 224-9013

August 28, 2018

Ms. Katrina Wheelock  
Solid Waste Program Manager  
Environmental Management  
377 MSG/CEIE  
Kirtland AFB, New Mexico 87117

Subject: Request to dispose non-hazardous soil cuttings at Kirtland C&D Landfill  
Roll-off Identification: KAFB-106241-1 (Bin ID #HTB-4)  
USACE Contract No. W912DR-12-D-0006-DM01

Dear Ms. Wheelock,

EA Engineering, Science, and Technology, Inc., PBC (EA) is requesting permission to dispose of non-hazardous soil drill cuttings and plastic liners from one roll-off container to the Kirtland Air Force Base (AFB) Construction and Demolition (C&D) debris landfill. Roll-off bins included in this request are:

- EA identification of KAFB-106241-1 (Bin ID #HTB-4) contains approximately 10 cubic yards of soil in a 15-yard, hard-top roll off.

Between July and August 2018 EA installed a groundwater monitoring well, KAFB-106241, associated with the Kirtland Bulk Fuels Facility environmental restoration project. Well KAFB-106241 is located on City of Albuquerque property at Florida and Eastern Street SE. Drill cuttings were containerized in a plastic-lined, steel, roll-off pending laboratory analysis for waste characterization. Any excess moisture in the bin was stabilized using Hydrosorb®, a superabsorbent polymer. All roll-off bins are currently residing in the EA investigation derived waste yard near 1601 Perimeter Circle SE, on Kirtland AFB.

One five-point composite waste characterization sample was collected from each roll-off bin and delivered to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis. The sample was analyzed for all the required parameters per the Kirtland AFB Landfill Acceptance Memorandum (January 2009). The attached analytical results (Report 1808794) for each composite sample confirms the drill cuttings meet waste acceptance requirements for disposal at the Kirtland C&D landfill.

All of the roll-off containers are owned and/or leased by Advanced Chemical Transport Environmental Services Inc. (ACT) with roll-off identification number, when present, marked clearly on the roll off. ACT will utilize one of the following vehicles for waste transport:



W912DR-12-D-0006-DM01  
 Kirtland Air Force Base Bulk Fuels Facility Expansion  
 of the Dissolved Plume Groundwater Treatment System Design  
 2 May 2017  
 Page 2 of 2

- 2015 Western Star Roll Off Truck, License #: WD121651, registered in New Mexico
- 2015 Western Star Roll Off Truck, License #: WD124756, registered in New Mexico

Ms. Jeanne Dye-Porto (AFCEC/CZO) has reviewed this package and authorized EA to forward it for your review. EA respectfully requests your review of the attached summary table and analytical data for determination if disposal can be authorized at the Kirtland AFB C&D landfill. Upon receiving notification of Kirtland AFB's acceptance of the waste, EA will coordinate transport and disposal of the roll-off contents with ACT.

EA's Kirtland AFB Point of Contact is Mr. Scott Clark; 505-846-9017.

If you have any questions, please do not hesitate to contact me at 505-266-2225, or via e-mail at [landress@eaest.com](mailto:landress@eaest.com).

Sincerely,

Lane Address, PG

Attachments: Summary Analytical Table  
 Hall Environmental Analysis Laboratory Order No: Report 1808794

cc: Jeanne Dye-Porto, [jeanne.dye-porto@us.af.mil](mailto:jeanne.dye-porto@us.af.mil)  
 Scott Clark, [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)  
 Sheen Kottkamp, [sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)  
 Melissa Clark, [melissa.clark.8@us.af.mil](mailto:melissa.clark.8@us.af.mil)  
 Ben Moayyad, [Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)  
 Devon Jercinovic, [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
 Bernie Bockisch, [bbockisch@eaest.com](mailto:bbockisch@eaest.com)  
 Earl Morse, [emorse@eaest.com](mailto:emorse@eaest.com)

		LOCATION CODE					
		FIELD SAMPLE ID		KAFB-106241-1-IDW			
		SAMPLE DATE		13-Aug-18			
		SAMPLE PURPOSE		Waste Characterization			
		ROLL-OFF NO.		KAFB-106241-1			
Parameter	Method	Analyte	Units	TCLP Regulatory Level <sup>a</sup> or KAFB Limits <sup>b</sup>	Result	QUAL	PQL
RCRA Characteristics	SW1010A Mod	IGNITABILITY	*F	See footnote <sup>c</sup>	> 170	--	--
	SW9012B	REACTIVE CYANIDE (as total)	mg/kg	NE	ND	--	0.25
	SW9034	REACTIVE SULFIDE (as total)	mg/kg	NE	ND	--	25
	SW9045D	CORROSIVITY (pH)	S. U.	≥2 or ≤12.5	8.67	J	--
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.002
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.002
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0
		BARIUM	mg/L	100	ND	--	100
		CADMIUM	mg/L	1	ND	--	1.0
		CHROMIUM	mg/L	5	ND	--	5.0
		LEAD	mg/L	5	ND	--	5.0
		SELENIUM	mg/L	1	ND	--	1.0
	SILVER	mg/L	5	ND	--	5.0	
SW1311/7470A	MERCURY	mg/L	0.02	ND	--	0.020	
TCLP PESTICIDES	SW1311/8081	CHLORDANE	mg/L	0.03	ND	--	0.030
		ENDRIN	mg/L	0.02	ND	--	0.020
		GAMMA-BHC (LINDANE)	mg/L	0.4	ND	--	0.40
		HEPTACHLOR	mg/L	0.008	ND	--	0.0080
		HEPTACHLOR EPOXIDE	mg/L	0.008	ND	--	0.0080
		METHOXYCHLOR	mg/L	10	ND	--	10
		TOXAPHENE	mg/L	0.5	ND	--	0.50
TCLP SVOCs	SW1311/8270C	2,4,5-TRICHLOROPHENOL	mg/L	400	ND	--	400
		2,4,6-TRICHLOROPHENOL	mg/L	2	ND	--	2.0
		2,4-DINITROTOLUENE	mg/L	0.13	ND	--	0.13
		2-METHYLPHENOL (o-Cresol)	mg/L	200	ND	--	200
		3- and 4-METHYLPHENOL (m- and o-Cresol)	mg/L	200	ND	--	200
		HEXACHLOROENZENE	mg/L	0.13	ND	--	0.13
		HEXACHLOROBTADIENE	mg/L	0.5	ND	--	0.50
		HEXACHLOROETHANE	mg/L	3	ND	--	3.0
		NITROBENZENE	mg/L	2	ND	--	2.0
		PENTACHLOROPHENOL	mg/L	100	ND	--	100
		PYRIDINE	mg/L	5	ND	--	5.0
CRESOLS, TOTAL	mg/L	200	ND	--	200		
TCLP VOCs	SW1311/8260B	1,1-DICHLOROETHANE	mg/L	0.7	ND	--	0.70
		1,2-DICHLOROETHANE	mg/L	0.5	ND	--	0.50
		1,4-DICHLOROETHANE	mg/L	7.5	ND	--	7.5
		2-BUTANONE (MEK)	mg/L	200	ND	--	200
		BENZENE	mg/L	0.5	ND	--	0.50
		CARBON TETRACHLORIDE	mg/L	0.5	ND	--	0.50
		CHLOROETHANE	mg/L	100	ND	--	100
		CHLOROFORM	mg/L	6.0	ND	--	6.0
		TETRACHLOROETHENE	mg/L	0.7	ND	--	0.70
		TRICHLOROETHENE	mg/L	0.5	ND	--	0.50
		VINYL CHLORIDE	mg/L	0.2	ND	--	0.20
TPH	SW8015M/D	DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	9.5
		MOTOR OIL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	48
		GASOLINE RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	4.8
VOLATILES (BTEX)	SW8260B	BENZENE	mg/kg	10	ND	--	0.024
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.048
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.048
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.096

Notes:

<sup>a</sup>TCLP Regulatory Level - Resource Conservation Recovery Act (RCRA) hazardous waste characteristic limits per 40CFR Part 261 Subpart C, Section 261.20 - 261.24.

<sup>b</sup>KAFB Limits - Kirtland AFB landfill requirements per the Department of Air Force Technical Memorandum for Kirtland AFB/Department of Energy/Sandia National Laboratories Restoration Agencies and Their Commercial Contractors (2009).

<sup>c</sup>Ignitability characteristic for solids from 40 CFR Part 261.21: "It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of moisture, or spontaneous chemical change, and when ignited burns so vigorously and persistently that it creates a hazard."

<sup>d</sup>KAFB limit for TPH measured as the sum of gasoline, diesel and motor oil range organics.

<sup>e</sup>KAFB limit for BTEX measured as the sum of benzene, toluene, ethylbenzene, and total xylenes.

> - greater than

BTEX - benzene, toluene, ethylbenzene, total xylenes

\*F - degrees fahrenheit

J - estimated value

mg/L - milligram per liter

mg/kg - milligram per kilogram

NE - not established

ND - not detected above the PQL

PQL - practical quantitation limit

QUAL - laboratory data qualifier

Shade - analyte detected above the detection limit

Shade and Bold - analyte detected above KAFB Landfill acceptance limit or TCLP Regulatory Level.

SVOCs - semivolatile organic compounds

S.U. - Standard units

TCLP - Toxicity Characteristic Leaching Procedure

TPH - total petroleum hydrocarbons

VOCs - volatile organic compounds

106241-1



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

August 23, 2018

Earl Morse

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland AFB BFF

OrderNo.: 1808794

Dear Earl Morse:

Hall Environmental Analysis Laboratory received 1 sample(s) on 8/13/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a white background.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1808794

Date Reported: 8/23/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106241-1-IDW

Project: Kirtland AFB BFF

Collection Date: 8/13/2018 12:42:00 PM

Lab ID: 1808794-001

Matrix: SOIL

Received Date: 8/13/2018 1:30:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8081: PESTICIDES TCLP</b>						Analyst: TOM
Chlordane	ND	0.030		mg/L	1	8/21/2018 12:32:03 PM
Endrin	ND	0.020		mg/L	1	8/21/2018 12:32:03 PM
gamma-BHC (Lindane)	ND	0.40		mg/L	1	8/21/2018 12:32:03 PM
Heptachlor	ND	0.0080		mg/L	1	8/21/2018 12:32:03 PM
Heptachlor epoxide	ND	0.0080		mg/L	1	8/21/2018 12:32:03 PM
Methoxychlor	ND	10		mg/L	1	8/21/2018 12:32:03 PM
Toxaphene	ND	0.50		mg/L	1	8/21/2018 12:32:03 PM
Surr: Decachlorobiphenyl	71.0	58.3-109		%Rec	1	8/21/2018 12:32:03 PM
Surr: Tetrachloro-m-xylene	65.1	40.1-101		%Rec	1	8/21/2018 12:32:03 PM
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: Irm
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	8/20/2018 7:14:45 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/20/2018 7:14:45 PM
Surr: DNOP	95.1	50.6-138		%Rec	1	8/20/2018 7:14:45 PM
<b>MERCURY, TCLP</b>						Analyst: rde
Mercury	ND	0.020		mg/L	1	8/21/2018 5:54:21 PM
<b>EPA METHOD 6010B: TCLP METALS</b>						Analyst: ELS
Arsenic	ND	5.0		mg/L	1	8/22/2018 9:10:02 AM
Barium	ND	100		mg/L	1	8/22/2018 9:10:02 AM
Cadmium	ND	1.0		mg/L	1	8/22/2018 9:10:02 AM
Chromium	ND	5.0		mg/L	1	8/22/2018 9:10:02 AM
Lead	ND	5.0		mg/L	1	8/22/2018 9:10:02 AM
Selenium	ND	1.0		mg/L	1	8/22/2018 12:54:11 PM
Silver	ND	5.0		mg/L	1	8/22/2018 9:10:02 AM
<b>EPA METHOD 8270C TCLP</b>						Analyst: JDC
2-Methylphenol	ND	200		mg/L	1	8/17/2018 5:56:54 PM
3+4-Methylphenol	ND	200		mg/L	1	8/17/2018 5:56:54 PM
2,4-Dinitrotoluene	ND	0.13		mg/L	1	8/17/2018 5:56:54 PM
Hexachlorobenzene	ND	0.13		mg/L	1	8/17/2018 5:56:54 PM
Hexachlorobutadiene	ND	0.50		mg/L	1	8/17/2018 5:56:54 PM
Hexachloroethane	ND	3.0		mg/L	1	8/17/2018 5:56:54 PM
Nitrobenzene	ND	2.0		mg/L	1	8/17/2018 5:56:54 PM
Pentachlorophenol	ND	100		mg/L	1	8/17/2018 5:56:54 PM
Pyridine	ND	5.0		mg/L	1	8/17/2018 5:56:54 PM
2,4,5-Trichlorophenol	ND	400		mg/L	1	8/17/2018 5:56:54 PM
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	8/17/2018 5:56:54 PM
Cresols, Total	ND	200		mg/L	1	8/17/2018 5:56:54 PM
Surr: 2-Fluorophenol	53.7	15-102		%Rec	1	8/17/2018 5:56:54 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 1 of 11

## Analytical Report

Lab Order 1808794

Date Reported: 8/23/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106241-1-IDW

Project: Kirtland AFB BFF

Collection Date: 8/13/2018 12:42:00 PM

Lab ID: 1808794-001

Matrix: SOIL

Received Date: 8/13/2018 1:30:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8270C TCLP</b>						Analyst: JDC
Surr: Phenol-d5	44.3	15-87.7	%Rec	1	1	8/17/2018 5:56:54 PM
Surr: 2,4,6-Tribromophenol	77.2	39.9-111	%Rec	1	1	8/17/2018 5:56:54 PM
Surr: Nitrobenzene-d5	70.3	35.1-107	%Rec	1	1	8/17/2018 5:56:54 PM
Surr: 2-Fluorobiphenyl	70.4	36.7-100	%Rec	1	1	8/17/2018 5:56:54 PM
Surr: 4-Terphenyl-d14	76.2	42.6-129	%Rec	1	1	8/17/2018 5:56:54 PM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: AG
Benzene	ND	0.024	mg/Kg	1	1	8/17/2018 1:14:46 AM
Toluene	ND	0.048	mg/Kg	1	1	8/17/2018 1:14:46 AM
Ethylbenzene	ND	0.048	mg/Kg	1	1	8/17/2018 1:14:46 AM
Xylenes, Total	ND	0.096	mg/Kg	1	1	8/17/2018 1:14:46 AM
Surr: 4-Bromofluorobenzene	126	70-130	%Rec	1	1	8/17/2018 1:14:46 AM
Surr: Toluene-d8	95.6	70-130	%Rec	1	1	8/17/2018 1:14:46 AM
<b>VOLATILES BY 8260B/1311</b>						Analyst: RAA
Benzene	ND	0.50	mg/L	1	1	8/16/2018 2:44:00 PM
2-Butanone	ND	200	mg/L	1	1	8/16/2018 2:44:00 PM
Carbon Tetrachloride	ND	0.50	mg/L	1	1	8/16/2018 2:44:00 PM
Chlorobenzene	ND	100	mg/L	1	1	8/16/2018 2:44:00 PM
Chloroform	ND	6.0	mg/L	1	1	8/16/2018 2:44:00 PM
1,4-Dichlorobenzene	ND	7.5	mg/L	1	1	8/16/2018 2:44:00 PM
1,2-Dichloroethane (EDC)	ND	0.50	mg/L	1	1	8/16/2018 2:44:00 PM
1,1-Dichloroethane	ND	0.70	mg/L	1	1	8/16/2018 2:44:00 PM
Tetrachloroethene (PCE)	ND	0.70	mg/L	1	1	8/16/2018 2:44:00 PM
Trichloroethene (TCE)	ND	0.50	mg/L	1	1	8/16/2018 2:44:00 PM
Vinyl chloride	ND	0.20	mg/L	1	1	8/16/2018 2:44:00 PM
Surr: 1,2-Dichloroethane-d4	104	70-130	%Rec	1	1	8/16/2018 2:44:00 PM
Surr: 4-Bromofluorobenzene	102	57.3-148	%Rec	1	1	8/16/2018 2:44:00 PM
Surr: Dibromofluoromethane	109	70-130	%Rec	1	1	8/16/2018 2:44:00 PM
Surr: Toluene-d8	90.7	70-130	%Rec	1	1	8/16/2018 2:44:00 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: AG
Gasoline Range Organics (GRO)	ND	4.8	mg/Kg	1	1	8/17/2018 1:14:46 AM
Surr: BFB	112	70-130	%Rec	1	1	8/17/2018 1:14:46 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

1808794-001B KAFB-106241-1-IDW

SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE

Collected date/time: 08/13/18 12:42

L1017927

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction			8/9/2018 3:00:56 AM	WG1154419
Fluid	1		8/9/2018 3:00:56 AM	WG1154419
Initial pH	8.17		8/9/2018 3:00:56 AM	WG1154419
Final pH	5.03		8/9/2018 3:00:56 AM	WG1154419

Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.250	1	08/16/2018 13:42	WG1153026

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		25.0	1	08/21/2018 00:00	WG1154553

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	8.67	TR	1	08/17/2018 10:00	WG1153095

Sample Narrative:

L1017927-01 WG1153099; 8.67 at 19.1C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DN1 at 170		1	08/06/2018 14:09	WG1153026

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
2,4,5-TP (Silvex)	ND		0.00200	1	1	08/22/2018 01:58	WG1154664
2,4-D	ND		0.00200	10	1	08/22/2018 01:58	WG1154664
(S)-2,4-Dichlorophenoxy Acetic Acid	77.8		M.U-158			08/22/2018 01:58	WG1154664

ACCOUNT  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:

L1017927

DATE/TIME:

08/23/18 07:22

**WG1153029**

Wet Chemistry by Method 9012 B

Method Blank (MB)

(MB) R3334236-1 08/16/18 13:12

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB PDL mg/kg
Reactive Cyanide	U		0.0390	0.250

**L1017927-01 Original Sample (OS) • Duplicate (DUP)**

(OS) L1017927-01 08/16/18 13:26 • (DUP) R3334236-6 08/16/18 13:27

Analyte	Original Result mg/kg	DUP Result mg/kg	DUP Qualifier %	DUP RPD Limits %
Reactive Cyanide	ND	0.0536	1	0.000 20

**L1017927-01 Original Sample (OS) • Duplicate (DUP)**

(OS) L1017927-01 08/16/18 13:42 • (DUP) R3334236-9 08/16/18 13:43

Analyte	Original Result mg/kg	DUP Result mg/kg	DUP RPD Limits %	
Reactive Cyanide	ND	0.000	1	0.000 20

**Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)**

(LCS) R3334236-2 08/16/18 13:13 • (LCS-D) R3334236-3 08/16/18 13:14

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	Rec. Limits %	LCS Rec. %	LCSD Rec. %	LCS Qualifier %	LCSD Qualifier %	RPD Limits %
Reactive Cyanide	2.50	2.61	2.54	101	105	101	101	101	3.05 20

**L1017000-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)**

(OS) L1017000-02 08/16/18 13:15 • (MS) R3334236-4 08/16/18 13:20 • (MSD) R3334236-5 08/16/18 13:21

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier %	MSD Qualifier %	RPD Limits %
Reactive Cyanide	1.67	0.257	1.83	1.76	94.5	90.3	1	75.0-125	101	101	3.04 20

**L1017257-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)**

(OS) L1017257-01 08/16/18 13:31 • (MS) R3334236-7 08/16/18 13:32 • (MSD) R3334236-8 08/16/18 13:33

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier %	MSD Qualifier %	RPD Limits %
Reactive Cyanide	1.67	ND	1.05	1.49	63.2	89.2	1	75.0-125	101	101	34.0 20

ACCOUNT:

Hill Environmental Analysis Laboratory

PROJECT:

L1017927

DATE/TIME:

08/23/18 07:22

ONE LAB. NATIONWIDE

QUALITY CONTROL SUMMARY

L1017927-01

WG1154553

Wet Chemistry by Method 9034-9030H

Method Blank (MB)

(MB) R3335/63-1 08/21/18 00:00

Analyte	Reactive Sulfide	U	MB Result mg/kg	MB Qualifier	7.63	MB MDL mg/kg	25.0	MB RD. mg/kg	25.0
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L1018882-01 Original Sample (OS) - Duplicate (DUP)

(OS) L1018882-01 08/21/18 00:00 • (DUP) R3335/63-4 08/21/18 00:00

Analyte	Reactive Sulfide	ND	Original Result mg/kg	DUP Result mg/kg	ND	DUP RPP %	0.000	DUP RPD Limit %	20
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Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)

(LCS) R3335/63-2 08/21/18 00:00 • (LCSD) R3335/63-3 08/21/18 00:00

Analyte	Reactive Sulfide	100	Spike Amount mg/kg	LCS Result mg/kg	78.9	LCS Rec. %	78.9	LCSD Rec. %	78.9	Rec. Limits %	70.0-130	LCSD Qualifier	RPD	%	0.000	RPD Limits %	20
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Cu  
 Tc  
 Ss  
 Cr  
 Sr  
 Re  
 GI  
 AI  
 Sc

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDS:  
L1017927

DATE/TIME:  
08/23/18 07:22

**WG1153099**  
 Quality Control Summary

L1017927-01

Wet Chemistry by Method 9045.D

L1017927-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1017927-01 08/17/18 10:00 • (DUP) R3334528-4 08/17/18 10:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Conductivity by pH	8.67	8.69	1	0.230		

Sample Narrative:

OS: 8.67 at 18.1C  
 DUP: 8.69 at 19.4C

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3334528-1 08/17/18 10:00 • (LCS-D) R3334528-2 08/17/18 10:00

Analyte	Spike Amount	LCS Result	LCS Rec.	LCSD Result	LCSD Rec.	Rec. Limits	LCS Qualifier	LCS-D Qualifier	RPD	RPD Limits
Conductivity by pH	10.2	9.68	99.8	9.99	99.9	99.0-101			0.700	

Sample Narrative:

LCS: 9.98 at 18.5C  
 LCS-D: 9.99 at 18.6C

Navigation icons: Home, Back, Forward, Print, Refresh, and other controls.

DATE/TIME: 08/23/18 07:22

SDS: L1017927

PROJECT:

ACCOUNT: Hill Environmental Analysis Laboratory

**WG1153026**

Wet Chemistry by Method D93/1010A

**QUALITY CONTROL SUMMARY**

DHE LAB. NATIONWIDE

L1017927-01

L1017483-02 Original Sample (OS) - Duplicate (DUP)

(OS) L1017483-02 08/16/18 14:09 - (DUP) R3334252-3 08/16/18 14:09

Original Result	DUP Result	DUP RPD	DUP RPD Limits
Deg. F	Deg. F	%	%
DN at 170	DN at 170	0.000	10

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)

(LCS) R3334252-1 08/16/18 14:09 - (LCSD) R3334252-2 08/16/18 14:09

Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Deg. F	Deg. F	Deg. F	%	%	%	%	%	%	%
82.0	82.6	82.0	101	101	95.0-104			0.000	10



ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L107527

DATE/TIME:  
08/23/18 07:22

**WG1154664**

Chlorinated Acids Herbicides (GC) by Method 8151A

**QUALITY CONTROL SUMMARY**

L1017887-01

ONE LAB. NATIONWIDE

Method Blank (MB)

(MS) R3335793-1 08/21/18 20:47

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
2,4-D	U	0.000667	0.00200	0.00200
2,4,5-TP (Silvex)	U	0.000667	0.00200	0.00200
(S)-2,4-Dichlorophenoxy Acetic Acid	75.6			

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3335793-2 08/21/18 21:00 - (LCS-D) R3335793-3 08/21/18 21:14

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
2,4-D	0.00500	0.00456	0.00461	91.2	92.2	55.0-120		1.09	1.09	20
2,4,5-TP (Silvex)	0.00500	0.00506	0.00502	119	120	55.0-120		1.00	1.00	20
(S)-2,4-Dichlorophenoxy Acetic Acid				70.0	71.5	34.0-158				

L1017887-01 Original Sample (OS) - Matrix Spike (MS) - Matrix Spike Duplicate (MSD)

(OS) L1017887-01 08/21/18 21:28 - (MS) R3335793-4 08/21/18 21:41 - (MSD) R3335793-5 08/21/18 21:55

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
2,4-D	0.0520	ND	0.0438	0.0453	87.6	1	55.0-120		3.37	3.37	20
2,4,5-TP (Silvex)	0.0500	ND	0.0556	0.0581	111	1	55.0-120		4.40	4.40	20
(S)-2,4-Dichlorophenoxy Acetic Acid					70.6		14.0-158				

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SPIS:  
L1017927

DATE/TIME:  
08/23/18 07:22

GLOSSARY OF TERMS

ONE LAB, NATIONWIDE

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received pas/too close to holding time expiration.



ACCOUNT: Hall Environmental Analysis Laboratory      PROJECT: UC17927      SDG: UC17927      DATE/TIME: 08/23/16 07:22

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808794

23-Aug-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Sample ID	<b>LCS-39855</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>39855</b>	RunNo:	<b>53552</b>					
Prep Date:	<b>8/17/2018</b>	Analysis Date:	<b>8/20/2018</b>	SeqNo:	<b>1766421</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	88.2	70	130			
Surr: DNOP	4.5		5.000		90.3	50.6	138			

Sample ID	<b>MB-39855</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>39855</b>	RunNo:	<b>53552</b>					
Prep Date:	<b>8/17/2018</b>	Analysis Date:	<b>8/20/2018</b>	SeqNo:	<b>1766422</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.3		10.00		93.0	50.6	138			

Sample ID	<b>MB-39889</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>39889</b>	RunNo:	<b>53591</b>					
Prep Date:	<b>8/20/2018</b>	Analysis Date:	<b>8/21/2018</b>	SeqNo:	<b>1768073</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	10		10.00		102	50.6	138			

Sample ID	<b>LCS-39889</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>39889</b>	RunNo:	<b>53591</b>					
Prep Date:	<b>8/20/2018</b>	Analysis Date:	<b>8/21/2018</b>	SeqNo:	<b>1768074</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.6		5.000		91.5	50.6	138			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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## QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1808794

23-Aug-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	MB-39883	SampType: MBLK		TestCode: EPA Method 8081: Pesticides TCLP						
Client ID:	PBW	Batch ID: 39883		RunNo: 53592						
Prep Date:	8/20/2018	Analysis Date: 8/21/2018		SeqNo: 1767064		Units: mg/L				
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0017		0.002500		66.1	58.3	109			
Surr: Tetrachloro-m-xylene	0.0017		0.002500		67.8	40.1	101			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	LCS-39883	SampType: LCS		TestCode: EPA Method 8081: Pesticides TCLP						
Client ID:	LCSW	Batch ID: 39883		RunNo: 53592						
Prep Date:	8/20/2018	Analysis Date: 8/21/2018		SeqNo: 1767065		Units: mg/L				
Endrin	0.00046	0.00010	0.0005000	0	91.5	49.5	127			
gamma-BHC (Lindane)	0.00040	0.00010	0.0005000	0	79.9	49.9	124			
Heptachlor	0.00035	0.00010	0.0005000	0	69.4	41	122			
Heptachlor epoxide	0.00044	0.00010	0.0005000	0	87.6	52.2	121			
Methoxychlor	0.00043	0.00010	0.0005000	0	85.3	40.2	134			
Surr: Decachlorobiphenyl	0.0018		0.002500		70.5	58.3	109			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		64.2	40.1	101			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	LCSD-39883	SampType: LCSD		TestCode: EPA Method 8081: Pesticides TCLP						
Client ID:	LCSS02	Batch ID: 39883		RunNo: 53592						
Prep Date:	8/20/2018	Analysis Date: 8/21/2018		SeqNo: 1767066		Units: mg/L				
Endrin	0.00039	0.00010	0.0005000	0	77.1	49.5	127	17.1	20	
gamma-BHC (Lindane)	0.00035	0.00010	0.0005000	0	69.6	49.9	124	13.8	20	
Heptachlor	0.00033	0.00010	0.0005000	0	65.0	41	122	6.44	20	
Heptachlor epoxide	0.00038	0.00010	0.0005000	0	75.3	52.2	121	15.1	20	
Methoxychlor	0.00038	0.00010	0.0005000	0	75.2	40.2	134	12.6	20	
Surr: Decachlorobiphenyl	0.0016		0.002500		64.2	58.3	109	0	0	
Surr: Tetrachloro-m-xylene	0.0015		0.002500		61.0	40.1	101	0	0	

## Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808794

23-Aug-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	ics-39776	SampType:	LCS4	TestCode:	EPA Method 8260B: Volatiles Short List					
Client ID:	BatchQC	Batch ID:	39776	RunNo:	53492					
Prep Date:	8/14/2018	Analysis Date:	8/16/2018	SeqNo:	1762857	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.90	0.025	1.000	0	89.6	80	120			
Toluene	0.97	0.050	1.000	0	97.5	80	120			
Ethylbenzene	1.0	0.050	1.000	0	101	80	120			
Xylenes, Total	3.0	0.10	3.000	0	101	80	120			
Surr: 4-Bromofluorobenzene	0.61		0.5000		121	70	130			
Surr: Toluene-d8	0.46		0.5000		91.8	70	130			

Sample ID	ics-39796	SampType:	LCS4	TestCode:	EPA Method 8260B: Volatiles Short List					
Client ID:	BatchQC	Batch ID:	39796	RunNo:	53492					
Prep Date:	8/15/2018	Analysis Date:	8/16/2018	SeqNo:	1762858	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.58		0.5000		117	70	130			
Surr: Toluene-d8	0.46		0.5000		91.2	70	130			

Sample ID	mb-39776	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles Short List					
Client ID:	PBS	Batch ID:	39776	RunNo:	53492					
Prep Date:	8/14/2018	Analysis Date:	8/16/2018	SeqNo:	1762859	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.65		0.5000		130	70	130			S
Surr: Toluene-d8	0.47		0.5000		94.8	70	130			

Sample ID	mb-39796	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles Short List					
Client ID:	PBS	Batch ID:	39796	RunNo:	53492					
Prep Date:	8/15/2018	Analysis Date:	8/16/2018	SeqNo:	1762860	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.64		0.5000		129	70	130			
Surr: Toluene-d8	0.46		0.5000		92.9	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1808794

23-Aug-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	Ics-39779	SampType:	LCS	TestCode:	Volatiles by 8260B/1311						
Client ID:	LCSS	Batch ID:	39779	RunNo:	53514						
Prep Date:	8/14/2018	Analysis Date:	8/16/2018	SeqNo:	1764104	Units:	mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	0.45	0.10	0.4000	0	111	70	130				
Chlorobenzene	0.39	0.10	0.4000	0	98.0	70	130				
1,1-Dichloroethene	0.45	0.10	0.4000	0	113	70	130				
Trichloroethene (TCE)	0.42	0.10	0.4000	0	106	70	130				
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		99.4	70	130				
Surr: 4-Bromofluorobenzene	0.21		0.2000		105	57.3	148				
Surr: Dibromofluoromethane	0.21		0.2000		103	70	130				
Surr: Toluene-d8	0.18		0.2000		91.7	70	130				

Sample ID	mb-39779	SampType:	MBLK	TestCode:	Volatiles by 8260B/1311						
Client ID:	PBS	Batch ID:	39779	RunNo:	53514						
Prep Date:	8/14/2018	Analysis Date:	8/16/2018	SeqNo:	1764105	Units:	mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	ND	0.50									
2-Butanone	ND	200									
Carbon Tetrachloride	ND	0.50									
Chlorobenzene	ND	100									
Chloroform	ND	6.0									
1,4-Dichlorobenzene	ND	7.5									
1,2-Dichloroethane (EDC)	ND	0.50									
1,1-Dichloroethene	ND	0.70									
Tetrachloroethene (PCE)	ND	0.70									
Trichloroethene (TCE)	ND	0.50									
Vinyl chloride	ND	0.20									
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		105	70	130				
Surr: 4-Bromofluorobenzene	0.20		0.2000		102	57.3	148				
Surr: Dibromofluoromethane	0.22		0.2000		108	70	130				
Surr: Toluene-d8	0.18		0.2000		91.7	70	130				

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808794

23-Aug-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	mb-39842		SampType: MBLK	TestCode: EPA Method 8270C TCLP						
Client ID:	PBS		Batch ID: 39842	RunNo: 53534						
Prep Date:	8/16/2018	Analysis Date:	8/17/2018	SeqNo: 1764409	Units: mg/L					
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.10		0.2000		50.0	15	102			
Surr: Phenol-d5	0.085		0.2000		42.3	15	87.7			
Surr: 2,4,6-Tribromophenol	0.17		0.2000		83.6	39.9	111			
Surr: Nitrobenzene-d5	0.066		0.1000		66.4	35.1	107			
Surr: 2-Fluorobiphenyl	0.068		0.1000		67.7	36.7	100			
Surr: 4-Terphenyl-d14	0.094		0.1000		94.5	42.6	129			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	Ics-39842		SampType: LCS	TestCode: EPA Method 8270C TCLP						
Client ID:	LCSS		Batch ID: 39842	RunNo: 53534						
Prep Date:	8/16/2018	Analysis Date:	8/17/2018	SeqNo: 1764410	Units: mg/L					
2-Methylphenol	0.088	0.010	0.1000	0	88.0	47.8	99.2			
3+4-Methylphenol	0.17	0.010	0.2000	0	86.2	41.5	118			
2,4-Dinitrotoluene	0.071	0.010	0.1000	0	70.7	44.4	81			
Hexachlorobenzene	0.091	0.010	0.1000	0	91.1	49.5	91.6			
Hexachlorobutadiene	0.065	0.010	0.1000	0	64.6	38.6	93			
Hexachloroethane	0.067	0.010	0.1000	0	66.6	39.4	79.9			
Nitrobenzene	0.082	0.010	0.1000	0	82.2	47.4	96.2			
Pentachlorophenol	0.090	0.010	0.1000	0	89.7	39.4	79.9			S
Pyridine	0.045	0.010	0.1000	0	44.8	15	79.9			
2,4,5-Trichlorophenol	0.088	0.010	0.1000	0	87.7	47.4	118			
2,4,6-Trichlorophenol	0.095	0.010	0.1000	0	95.1	47.4	101			
Cresols, Total	0.26	0.010	0.3000	0	86.8	44.1	111			
Surr: 2-Fluorophenol	0.13		0.2000		65.8	15	102			
Surr: Phenol-d5	0.11		0.2000		53.4	15	87.7			
Surr: 2,4,6-Tribromophenol	0.18		0.2000		90.5	39.9	111			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808794

23-Aug-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	MB-39908	SampType:	MBLK	TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	39908	RunNo:	53597					
Prep Date:	8/21/2018	Analysis Date:	8/21/2018	SeqNo:	1767222	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	LCS-39908	SampType:	LCS	TestCode:	MERCURY, TCLP					
Client ID:	LCSW	Batch ID:	39908	RunNo:	53597					
Prep Date:	8/21/2018	Analysis Date:	8/21/2018	SeqNo:	1767223	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	98.9	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808794  
 23-Aug-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	MB-39899	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	39899	RunNo:	53611					
Prep Date:	8/21/2018	Analysis Date:	8/22/2018	SeqNo:	1768017	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Silver	ND	5.0								

Sample ID	LCS-39899	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	LCSW	Batch ID:	39899	RunNo:	53611					
Prep Date:	8/21/2018	Analysis Date:	8/22/2018	SeqNo:	1768018	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	101	80	120			
Barium	ND	100	0.5000	0	98.3	80	120			
Cadmium	ND	1.0	0.5000	0	102	80	120			
Chromium	ND	5.0	0.5000	0	97.7	80	120			
Lead	ND	5.0	0.5000	0	90.9	80	120			
Silver	ND	5.0	0.1000	0	110	80	120			

Sample ID	MB-39899	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	39899	RunNo:	53620					
Prep Date:	8/21/2018	Analysis Date:	8/22/2018	SeqNo:	1768580	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	LCS-39899	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	LCSW	Batch ID:	39899	RunNo:	53620					
Prep Date:	8/21/2018	Analysis Date:	8/22/2018	SeqNo:	1768582	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	102	80	120			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not in Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808794

23-Aug-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Sample ID	Ics-39776		SampType: LCS	TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID:	LCSS		Batch ID: 39776	RunNo: 53492						
Prep Date:	8/14/2018		Analysis Date: 8/16/2018	SeqNo: 1762846	Units: mg/Kg					Qual
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	106	70	130			
Surr: BFB	530		500.0		106	70	130			

Sample ID	Ics-39796		SampType: LCS	TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID:	LCSS		Batch ID: 39796	RunNo: 53492						
Prep Date:	8/15/2018		Analysis Date: 8/16/2018	SeqNo: 1762847	Units: %Rec					Qual
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	530		500.0		106	70	130			

Sample ID	mb-39776		SampType: MBLK	TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID:	PBS		Batch ID: 39776	RunNo: 53492						
Prep Date:	8/14/2018		Analysis Date: 8/16/2018	SeqNo: 1762848	Units: mg/Kg					Qual
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	580		500.0		116	70	130			

Sample ID	mb-39796		SampType: MBLK	TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID:	PBS		Batch ID: 39796	RunNo: 53492						
Prep Date:	8/15/2018		Analysis Date: 8/16/2018	SeqNo: 1762849	Units: %Rec					Qual
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	580		500.0		115	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 11 of 11



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EA Engineering Alb      Work Order Number: 1808794      RcptNo: 1

Received By: Mandy Woods      8/13/2018 1:30:00 PM      *Mandy Woods*  
 Completed By: Anne Thome      8/14/2018 9:04:05 AM      *Anne Thome*  
 Reviewed By: *JB*      *8/14/18*  
*Labeled by: AT 08/14/18*

**Chain of Custody**

1. Is Chain of Custody complete?      Yes       No       Not Present   
 2. How was the sample delivered?      Client

**Log In**

3. Was an attempt made to cool the samples?      Yes       No       NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C      Yes       No       NA   
Samples were collected the same day and chilled.  
 5. Sample(s) in proper container(s)?      Yes       No   
 6. Sufficient sample volume for indicated test(s)?      Yes       No   
 7. Are samples (except VOA and ONG) properly preserved?      Yes       No   
 8. Was preservative added to bottles?      Yes       No       NA   
 9. VOA vials have zero headspace?      Yes       No       No VOA Vials   
 10. Were any sample containers received broken?      Yes       No   
 11. Does paperwork match bottle labels?      Yes       No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody?      Yes       No   
 13. Is it clear what analyses were requested?      Yes       No   
 14. Were all holding times able to be met?      Yes       No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: \_\_\_\_\_

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order?      Yes       No       NA

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	26.1	Good	Not Present			





EA Engineering, Science, & Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, New Mexico 87102  
Phone: (505) 224-9013

August 28, 2018

Ms. Katrina Wheelock  
Solid Waste Program Manager  
Environmental Management  
377 MSG/CEIE  
Kirtland AFB, New Mexico 87117

Subject: Request to dispose non-hazardous soil cuttings at Kirtland C&D Landfill  
Roll-off Identification: KAFB-106241-2 (Bin ID #9926.20)  
USACE Contract No. W912DR-12-D-0006-DM01

Dear Ms. Wheelock,

EA Engineering, Science, and Technology, Inc., PBC (EA) is requesting permission to dispose of non-hazardous soil drill cuttings and plastic liners from one roll-off container to the Kirtland Air Force Base (AFB) Construction and Demolition (C&D) debris landfill. Roll-off bins included in this request are:

- EA identification of KAFB-106241-2 (Bin ID #9926.20) contains approximately 14 cubic yards of soil in a 20-yard, open top roll off.

Between July and August 2018 EA installed a groundwater monitoring well, KAFB-106241, associated with the Kirtland Bulk Fuels Facility environmental restoration project. Well KAFB-106241 is located on City of Albuquerque property at the intersection of Florida and Eastern Street SE. Drill cuttings were containerized in a plastic-lined, steel, roll-off pending laboratory analysis for waste characterization. Any excess moisture in the bin was stabilized using Hydrosorb®, a superabsorbent polymer. All roll-off bins are currently residing in the EA investigation derived waste yard near 1601 Perimeter Circle SE, on Kirtland AFB.

One five-point composite waste characterization sample was collected from the roll-off bin and delivered to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis. The sample was analyzed for all the required parameters per the Kirtland AFB Landfill Acceptance Memorandum (January 2009). The attached analytical results (Report 1808723) for each composite sample confirms the drill cuttings meet waste acceptance requirements for disposal at the Kirtland C&D landfill.

All of the roll-off containers are owned and/or leased by Advanced Chemical Transport Environmental Services Inc. (ACT) with roll-off identification number, when present, marked clearly on the roll off. ACT will utilize one of the following vehicles for waste transport:



W912DR-12-D-0006-DM01  
 Kirtland Air Force Base Bulk Fuels Facility Expansion  
 of the Dissolved Plume Groundwater Treatment System Design  
 2 May 2017  
 Page 2 of 2

- 2015 Western Star Roll Off Truck, License #: WD121651, registered in New Mexico
- 2015 Western Star Roll Off Truck, License #: WD124756, registered in New Mexico

Ms. Jeanne Dye-Porto (AFCEC/CZO) has reviewed this package and authorized EA to forward it for your review. EA respectfully requests your review of the attached summary table and analytical data for determination if disposal can be authorized at the Kirtland AFB C&D landfill. Upon receiving notification of Kirtland AFB's acceptance of the waste, EA will coordinate transport and disposal of the roll-off contents with ACT.

EA's Kirtland AFB Point of Contact is Mr. Scott Clark; 505-846-9017.

If you have any questions, please do not hesitate to contact me at 505-266-2225, or via e-mail at [landress@eaest.com](mailto:landress@eaest.com).

Sincerely,

Lane Address, PG

Attachments: Summary Analytical Table  
 Hall Environmental Analysis Laboratory Order No: Report 1808723

cc: Jeanne Dye-Porto, [jeanne.dye-porto@us.af.mil](mailto:jeanne.dye-porto@us.af.mil)  
 Scott Clark, [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)  
 Sheen Kottkamp, [sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)  
 Melissa Clark, [melissa.clark.8@us.af.mil](mailto:melissa.clark.8@us.af.mil)  
 Ben Moayyad, [Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)  
 Devon Jercinovic, [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
 Bernie Bockisch, [bbockisch@eaest.com](mailto:bbockisch@eaest.com)  
 Earl Morse, [emorse@eaest.com](mailto:emorse@eaest.com)

		LOCATION CODE					
		FIELD SAMPLE ID		KAFB-106241-2-IDW			
		SAMPLE DATE		10-Aug-18			
		SAMPLE PURPOSE		Waste Characterization			
		ROLL-OFF NO		KAFB-106241-2			
Parameter	Method	Analyte	Units	TCLP Regulatory Level <sup>a</sup> or KAFB Limits <sup>b</sup>	Result	QUAL	PQL
RCRA Characteristics	SW1010A Mod	IGNITABILITY	°F	See footnote <sup>c</sup>	> 170	--	--
	SW9012B	REACTIVE CYANIDE (as total)	mg/kg	NE	ND	--	0.25
	SW9034	REACTIVE SULFIDE (as total)	mg/kg	NE	42.2	--	25
	SW9045D	CORROSIVITY (pH)	S.U.	≥2 or ≤12.5	8.73	J	--
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.002
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.002
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0
		BARIIUM	mg/L	100	ND	--	100
		CADMIUM	mg/L	1	ND	--	1.0
		CHROMIUM	mg/L	5	ND	--	5.0
		LEAD	mg/L	5	ND	--	5.0
		SELENIUM	mg/L	1	ND	--	1.0
	SILVER	mg/L	5	ND	--	5.0	
SW1311/7470A	MERCURY	mg/L	0.02	ND	--	0.020	
TCLP PESTICIDES	SW1311/8081	CHLORDANE	mg/L	0.03	ND	--	0.030
		ENDRIN	mg/L	0.02	ND	--	0.020
		GAMMA-BHC (LINDANE)	mg/L	0.4	ND	--	0.40
		HEPTACHLOR	mg/L	0.008	ND	--	0.0080
		HEPTACHLOR EPOXIDE	mg/L	0.008	ND	--	0.0080
		METHOXYCHLOR	mg/L	10	ND	--	10
		TOXAPHENE	mg/L	0.5	ND	--	0.50
TCLP SVOCs	SW1311/8270C	2,4,5-TRICHLOROPHENOL	mg/L	400	ND	--	400
		2,4,6-TRICHLOROPHENOL	mg/L	2	ND	--	2.0
		2,4-DINITROTOLUENE	mg/L	0.13	ND	--	0.13
		2-METHYLPHENOL (o-Cresol)	mg/L	200	ND	--	200
		3- and 4-METHYLPHENOL (m- and o-Cresol)	mg/L	200	ND	--	200
		HEXACHLORO BENZENE	mg/L	0.13	ND	--	0.13
		HEXACHLOROBUTADIENE	mg/L	0.5	ND	--	0.50
		HEXACHLOROETHANE	mg/L	3	ND	--	3.0
		NITROBENZENE	mg/L	2	ND	--	2.0
		PENTACHLOROPHENOL	mg/L	100	ND	--	100
PYRIDINE	mg/L	5	ND	--	5.0		
CRESOLS, TOTAL	mg/L	200	ND	--	200		
TCLP VOCs	SW1311/8260B	1,1-DICHLOROETHENE	mg/L	0.7	ND	--	0.70
		1,2-DICHLOROETHANE	mg/L	0.5	ND	--	0.50
		1,4-DICHLOROETHENE	mg/L	7.5	ND	--	7.5
		2-BUTANONE (MEK)	mg/L	200	ND	--	200
		BENZENE	mg/L	0.5	ND	--	0.50
		CARBON TETRACHLORIDE	mg/L	0.5	ND	--	0.50
		CHLOROETHENE	mg/L	100	ND	--	100
		CHLOROFORM	mg/L	6.0	ND	--	6.0
		TETRACHLOROETHENE	mg/L	0.7	ND	--	0.70
		TRICHLOROETHENE	mg/L	0.5	ND	--	0.50
VINYL CHLORIDE	mg/L	0.2	ND	--	0.20		
TPH	SW8015M/D	DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	9.9
		MOTOR OIL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	50
		GASOLINE RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	4.7
VOLATILES (BTEX)	SW8260B	BENZENE	mg/kg	10	ND	--	0.024
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.047
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.047
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.094

Notes:

<sup>a</sup>TCLP Regulatory Level - Resource Conservation Recovery Act (RCRA) hazardous waste characteristic limits per 40CFR Part 261 Subpart C, Section 261.20 - 261.24.

<sup>b</sup>KAFB Limits - Kirtland AFB landfill requirements per the Department of Air Force Technical Memorandum for Kirtland AFB/Department of Energy/Sandia National Laboratories Restoration Agencies and Their Commercial Contractors (2009).

<sup>c</sup>Ignitability characteristic for solids from 40 CFR Part 261.21: "It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of

<sup>d</sup>KAFB limit for TPH measured as the sum of gasoline, diesel and motor oil range organics.

<sup>e</sup>KAFB limit for BTEX measured as the sum of benzene, toluene, ethylbenzene, and total xylenes.

> - greater than

BTEX - benzene, toluene, ethylbenzene, total xylenes

°F - degrees fahrenheit

J - estimated value

mg/L - milligram per liter

mg/kg - milligram per kilogram

NE - not established

ND - not detected above the PQL

PQL - practical quantitation limit

QUAL - laboratory data qualifier

Shade - analyte detected above the detection limit

Shade and Bold - analyte detected above KAFB Landfill acceptance limit or TCLP Regulatory Level.

SVOCs - semivolatile organic compounds

S.U. - Standard units

TCLP - Toxicity Characteristic Leaching Procedure

TPH - total petroleum hydrocarbons

VOCs - volatile organic compounds

106241-2



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

August 23, 2018

Earl Morse

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland AFB BFF

OrderNo.: 1808723

Dear Earl Morse:

Hall Environmental Analysis Laboratory received 1 sample(s) on 8/10/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1808723

Date Reported: 8/23/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106241-2-IDW

Project: Kirtland AFB BFF

Collection Date: 8/10/2018 7:40:00 AM

Lab ID: 1808723-001

Matrix: SOIL

Received Date: 8/10/2018 9:06:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8081: PESTICIDES TCLP</b>						Analyst: TOM
Chlordane	ND	0.030		mg/L	1	8/21/2018 12:18:56 PM
Endrin	ND	0.020		mg/L	1	8/21/2018 12:18:56 PM
gamma-BHC (Lindane)	ND	0.40		mg/L	1	8/21/2018 12:18:56 PM
Heptachlor	ND	0.0080		mg/L	1	8/21/2018 12:18:56 PM
Heptachlor epoxide	ND	0.0080		mg/L	1	8/21/2018 12:18:56 PM
Methoxychlor	ND	10		mg/L	1	8/21/2018 12:18:56 PM
Toxaphene	ND	0.50		mg/L	1	8/21/2018 12:18:56 PM
Surr: Decachlorobiphenyl	65.1	58.3-109		%Rec	1	8/21/2018 12:18:56 PM
Surr: Tetrachloro-m-xylene	72.7	40.1-101		%Rec	1	8/21/2018 12:18:56 PM
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: Irm
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	8/20/2018 6:00:41 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/20/2018 6:00:41 PM
Surr: DNOP	104	50.6-138		%Rec	1	8/20/2018 6:00:41 PM
<b>MERCURY, TCLP</b>						Analyst: rde
Mercury	ND	0.020		mg/L	1	8/21/2018 5:46:45 PM
<b>EPA METHOD 6010B: TCLP METALS</b>						Analyst: ELS
Arsenic	ND	5.0		mg/L	1	8/22/2018 9:08:30 AM
Barium	ND	100		mg/L	1	8/22/2018 9:08:30 AM
Cadmium	ND	1.0		mg/L	1	8/22/2018 9:08:30 AM
Chromium	ND	5.0		mg/L	1	8/22/2018 9:08:30 AM
Lead	ND	5.0		mg/L	1	8/22/2018 9:08:30 AM
Selenium	ND	1.0		mg/L	1	8/22/2018 12:52:41 PM
Silver	ND	5.0		mg/L	1	8/22/2018 9:08:30 AM
<b>EPA METHOD 8270C TCLP</b>						Analyst: JDC
2-Methylphenol	ND	200		mg/L	1	8/17/2018 3:58:40 PM
3+4-Methylphenol	ND	200		mg/L	1	8/17/2018 3:58:40 PM
2,4-Dinitrotoluene	ND	0.13		mg/L	1	8/17/2018 3:58:40 PM
Hexachlorobenzene	ND	0.13		mg/L	1	8/17/2018 3:58:40 PM
Hexachlorobutadiene	ND	0.50		mg/L	1	8/17/2018 3:58:40 PM
Hexachloroethane	ND	3.0		mg/L	1	8/17/2018 3:58:40 PM
Nitrobenzene	ND	2.0		mg/L	1	8/17/2018 3:58:40 PM
Pentachlorophenol	ND	100		mg/L	1	8/17/2018 3:58:40 PM
Pyridine	ND	5.0		mg/L	1	8/17/2018 3:58:40 PM
2,4,5-Trichlorophenol	ND	400		mg/L	1	8/17/2018 3:58:40 PM
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	8/17/2018 3:58:40 PM
Cresols, Total	ND	200		mg/L	1	8/17/2018 3:58:40 PM
Surr: 2-Fluorophenol	56.9	15-102		%Rec	1	8/17/2018 3:58:40 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 1 of 14

## Analytical Report

Lab Order 1808723

Date Reported: 8/23/2018

**Hall Environmental Analysis Laboratory, Inc.**

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106241-2-IDW

Project: Kirtland AFB BFF

Collection Date: 8/10/2018 7:40:00 AM

Lab ID: 1808723-001

Matrix: SOIL

Received Date: 8/10/2018 9:06:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8270C TCLP</b>						Analyst: JDC
Surr: Phenol-d5	45.6	15-87.7	%Rec	1		8/17/2018 3:58:40 PM
Surr: 2,4,6-Tribromophenol	75.1	39.9-111	%Rec	1		8/17/2018 3:58:40 PM
Surr: Nitrobenzene-d5	77.3	35.1-107	%Rec	1		8/17/2018 3:58:40 PM
Surr: 2-Fluorobiphenyl	74.6	36.7-100	%Rec	1		8/17/2018 3:58:40 PM
Surr: 4-Terphenyl-d14	84.1	42.6-129	%Rec	1		8/17/2018 3:58:40 PM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: AG
Benzene	ND	0.024	mg/Kg	1		8/17/2018 12:05:31 AM
Toluene	ND	0.047	mg/Kg	1		8/17/2018 12:05:31 AM
Ethylbenzene	ND	0.047	mg/Kg	1		8/17/2018 12:05:31 AM
Xylenes, Total	ND	0.094	mg/Kg	1		8/17/2018 12:05:31 AM
Surr: 4-Bromofluorobenzene	130	70-130	%Rec	1		8/17/2018 12:05:31 AM
Surr: Toluene-d8	95.5	70-130	%Rec	1		8/17/2018 12:05:31 AM
<b>VOLATILES BY 8260B/1311</b>						Analyst: RAA
Benzene	ND	0.50	mg/L	1		8/16/2018 12:41:00 PM
2-Butanone	ND	200	mg/L	1		8/16/2018 12:41:00 PM
Carbon Tetrachloride	ND	0.50	mg/L	1		8/16/2018 12:41:00 PM
Chlorobenzene	ND	100	mg/L	1		8/16/2018 12:41:00 PM
Chloroform	ND	6.0	mg/L	1		8/16/2018 12:41:00 PM
1,4-Dichlorobenzene	ND	7.5	mg/L	1		8/16/2018 12:41:00 PM
1,2-Dichloroethane (EDC)	ND	0.50	mg/L	1		8/16/2018 12:41:00 PM
1,1-Dichloroethane	ND	0.70	mg/L	1		8/16/2018 12:41:00 PM
Tetrachloroethene (PCE)	ND	0.70	mg/L	1		8/16/2018 12:41:00 PM
Trichloroethene (TCE)	ND	0.50	mg/L	1		8/16/2018 12:41:00 PM
Vinyl chloride	ND	0.20	mg/L	1		8/16/2018 12:41:00 PM
Surr: 1,2-Dichloroethane-d4	103	70-130	%Rec	1		8/16/2018 12:41:00 PM
Surr: 4-Bromofluorobenzene	104	57.3-148	%Rec	1		8/16/2018 12:41:00 PM
Surr: Dibromofluoromethane	107	70-130	%Rec	1		8/16/2018 12:41:00 PM
Surr: Toluene-d8	90.0	70-130	%Rec	1		8/16/2018 12:41:00 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: AG
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1		8/17/2018 12:05:31 AM
Surr: BFB	115	70-130	%Rec	1		8/17/2018 12:05:31 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not in Range
	PQL Practical Quantitative Limit	RL Reporting Detection Limit
	S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 2 of 14

1808723-0018 KAFB-106241-2-IDW

SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE

Collected date/time: 08/10/18 07:40

L1017216

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		8/6/2018 1:12:24 PM	WG1153295
Fluid	1		8/6/2018 1:12:24 PM	WG1153295
Initial pH	8.93		8/6/2018 1:12:24 PM	WG1153295
Final pH	5.07		8/6/2018 1:12:24 PM	WG1153295

Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RCL	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.250	1	08/16/2018 13:25	WG1153025

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RCL	Dilution	Analysis date / time	Batch
Reactive Sulfide	42.2		25.0	1	08/15/2018 13:39	WG1153471

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	8.73		1	08/14/2018 15:26	WG1152006

Sample Narrative:

L1017216-01 WG1152006: 8.73 at 20.8C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DN1 at 170		1	08/14/2018 14:53	WG1151758

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result	Qualifier	RCL	Limit	Dilution	Analysis date / time	Batch
2,4,5-TP (Silver)	ND		0.00200	1	1	08/22/2018 01:31	WG1154664
2,4-D	ND		0.00200	10	1	08/22/2018 01:31	WG1154664
(S) 2,4-Dichlorophenyl Acetic Acid	76.4		M.O.-158			08/22/2018 01:31	WG1154664

ACCOUNT  
Hall Environmental Analysis Laboratory

PROJECT:

SDG

L1017216

DATE/TIME:

08/23/18 07:22

QUALITY CONTROL SUMMARY

WG1153029

Wet Chemistry by Method 5012 B

Method Blank (MB)

(MS) R3334236-1 08/16/18 13:12

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Reactive Cyanide	U	0.0390	0.0390	0.250

L1017216-01 Original Sample (OS) • Duplicate (DUP)

(OS) L107216-01 08/16/18 13:26 • (DUP) R3334236-6 08/16/18 13:27

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Reactive Cyanide	ND	0.0530	1	0.000	%	20

L1017927-01 Original Sample (OS) • Duplicate (DUP)

(OS) L107927-01 08/16/18 13:42 • (DUP) R3334236-9 08/16/18 13:43

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Reactive Cyanide	ND	0.000	1	0.000	%	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3334236-2 08/16/18 13:19 • (LCS-D) R3334236-3 08/16/18 13:14

Analyte	Spike Amount	LCS Result	LCS Rec	LCSD Rec	Rec. Limits	LCSD Qualifier	RPD	RPD Limits
Reactive Cyanide	2.50	2.61	105	101	50.0-150	3.05	%	20

L1017000-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L107000-02 08/16/18 13:19 • (MS) R3334236-4 08/16/18 13:20 • (MSD) R3334236-5 08/16/18 13:21

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec	MSD Rec	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Reactive Cyanide	1.67	0.257	1.83	1.75	94.5	90.3	1	75.0-125	3.94	3.94	%	20

L1017257-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L107257-01 08/16/18 13:31 • (MS) R3334236-7 08/16/18 13:32 • (MSD) R3334236-8 08/16/18 13:33

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec	MSD Rec	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Reactive Cyanide	1.67	ND	1.05	1.69	63.2	89.2	1	75.0-125	34.0	34.0	%	20

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT: L107216  
SDG: L107216  
DATE/TIME: 08/23/18 07:22

**WG1152471**

Wet Chemistry by Method 5034-5030B

Method Blank (MB)

**QUALITY CONTROL SUMMARY**

L1017216-01

ONE LAB. NATIONWIDE

(MB) R3333873-1 08/15/18 13:39

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RD. mg/kg
Reactive Sulfide	U		7.63	25.0

L1017216-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1017216-01 08/15/18 13:39 • (DUP) R3333873-4 08/15/18 13:39

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Sulfide	42.2	42.2	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3333873-2 08/15/18 13:39 • (LCS-D) R3333873-3 08/15/18 13:39

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Reactive Sulfide	100	84.4	90.5	84.4	90.5	70.0-130			6.90	20

ACCOUNT:  
Hill Environmental Analysis Laboratory

PROJECT:

SDG:  
L107216

DATE/TIME:  
08/23/18 07:22

QUALITY CONTROL SUMMARY

WG1152006  
Wet Chemistry by Method 8045D

L1017223-02 Original Sample (OS) - Duplicate (DUP)

(OS) L1017223-02 08/14/18 15:25 • (DUP) R3333559-4 08/14/18 15:26

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Corrosivity by pH	SU 7.79	SU 7.75	1	% 0.386	%	% 1

Sample Narrative:

OS: 7.79 at 20.4C  
DUP: 7.75 at 20.6C

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3333599-1 08/14/18 15:26 • (LCS-D) R3333599-2 08/14/18 15:26

Analyte	Spike Amount	LCS Result	LCS-D Result	LCS Rec.	LCS-D Rec.	Rec. Limits	LCS-D Qualifier	RPD	RPD Limits
Corrosivity by pH	SU 9.98	SU 9.98	SU 9.98	% 99.8	% 100	% 99.0-101	%	% 0.200	% 1

Sample Narrative:

LCS: 9.98 at 19.5C  
LCS-D: 9.98 at 19C

H  
 Tc  
 SS  
 Cn  
 Sr  
 Oc  
 GI  
 Al  
 Sc

ACCOUNT: Hall Environmental Analysis Laboratory  
PROJECT: L-017218  
SDG: L-017218  
DATE/TIME: 08/23/18 07:22

**WG1151768**

Wet Chemistry by Method 083/1010A

**QUALITY CONTROL SUMMARY**

L1017216-01

ONE LAB. NATIONWIDE

L1017216-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1017216-01 08/14/18 14:53 • (DUP) R3333306-3 08/14/18 14:53

Original Result	DUP Result	DUP RPD	DUP Qualifier	DUP RPD Limits
Deg. F DNI at 170	Deg. F DNI at 170	% 0.000	% 10	% 10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3333306-1 08/14/18 14:53 • (LCS-D) R3333306-2 08/14/18 14:53

Spike Amount	LCS Result	LCS Rec.	LCSD Result	LCSD Rec.	LCSD RPD	LCSD Qualifier	RPD Limits
Deg. F 82.0	Deg. F 82.7	% 101	Deg. F 82.7	% 101	% 101	% 101	% 10

LCSD RPD	LCSD Qualifier	RPD	RPD Limits
% 101	% 101	% 0.000	% 10

VP  
 Tc  
 Ss  
 Cu  
 Sr  
 Pb  
 Cd  
 Ni  
 Al  
 Se

ACCOUNT:  
Hill Environmental Analysis Laboratory

PROJECT:

SDG:  
L1017216

DATE/TIME:  
08/23/18 07:22

QUALITY CONTROL SUMMARY

WG1154664  
Chlorinated Acid Herbicides (SC) by Method 8151A

Method Blank (MB)

L1017215-01

ONE LAB. NATIONWIDE

- 4 Sc
- 7 Tc
- 3 Ss
- 1 Cn
- 5 Sr
- 6 Qc
- 8 Gf
- 9 Ai
- 5 Sc

MB Result	MB Qualifier	MB MDL	MB RDL
mg/l	mg/l	mg/l	mg/l
2,4-D	J	0.00667	0.00200
2,4,5-TP (Sivex)	J	0.00667	0.00200
(S) 2,4-Dichlorophenoxy Acetic Acid			14.0.158

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCS-D)

LCS		LCS-D		Rec. Limits		LCS Qualifier		LCS-D Qualifier		RPD Limits	
Spike Amount	LCS Result	LCS-D Result	MSD Result	mg/l	%	mg/l	%	mg/l	%	mg/l	%
0.00500	0.00456	0.00461	0.00453	91.2	92.2	56.0-120	1.09	56.0-120	1.09	20	20
0.00500	0.00596	0.00602	0.00581	119	120	55.0-120	1.00	55.0-120	1.00	20	20
(S) 2,4-Dichlorophenoxy Acetic Acid				70.0	71.6	14.0.158					

L1017887-01 Original Sample (OS) - Matrix Spike (MS) - Matrix Spike Duplicate (MSD)

OS		MS		MSD		MS Qualifier		MSD Qualifier		RPD Limits	
Spike Amount	Original Result	MS Result	MSD Result	mg/l	%	mg/l	%	mg/l	%	mg/l	%
0.0500	ND	0.0438	0.0453	87.6	90.6	56.0-120	3.37	56.0-120	3.37	20	20
0.0500	ND	0.0555	0.0581	111	118	55.0-120	4.40	55.0-120	4.40	20	20
(S) 2,4-Dichlorophenoxy Acetic Acid				70.6	72.8	14.0.158					

ACCOUNT: Hal Environmental Analysis Laboratory  
PROJECT: L1017215  
SOCL: L1017215  
DATE/TIME: 08/23/18 07:22

GLOSSARY OF TERMS

ONELAB, NATIONWIDE



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

- Tc
- Ss
- Cn
- Sr
- Qc
- GI
- AI
- Sc

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT:

SDG: LI01/216

DATE/TIME: 08/23/18 07:22

**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808723  
 23-Aug-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	1808723-001AMS	SampType:	MS	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	KAFB-106241-2-IDW	Batch ID:	39855	RunNo:	53552					
Prep Date:	8/17/2018	Analysis Date:	8/20/2018	SeqNo:	1766409	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	49.85	0	89.8	53.5	126			
Surr: DNOP	4.7		4.985		95.2	50.6	138			

Sample ID	1808723-001AMSD	SampType:	MSD	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	KAFB-106241-2-IDW	Batch ID:	39855	RunNo:	53552					
Prep Date:	8/17/2018	Analysis Date:	8/20/2018	SeqNo:	1766410	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	9.9	49.41	0	91.3	53.5	126	0.692	21.7	
Surr: DNOP	4.9		4.941		99.7	50.6	138	0	0	

Sample ID	LCS-39855	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS	Batch ID:	39855	RunNo:	53552					
Prep Date:	8/17/2018	Analysis Date:	8/20/2018	SeqNo:	1766421	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	88.2	70	130			
Surr: DNOP	4.5		5.000		90.3	50.6	138			

Sample ID	MB-39855	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID:	39855	RunNo:	53552					
Prep Date:	8/17/2018	Analysis Date:	8/20/2018	SeqNo:	1766422	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.3		10.00		93.0	50.6	138			

Sample ID	MB-39889	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	PBS	Batch ID:	39889	RunNo:	53591					
Prep Date:	8/20/2018	Analysis Date:	8/21/2018	SeqNo:	1768073	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	10		10.00		102	50.6	138			

Sample ID	LCS-39889	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS	Batch ID:	39889	RunNo:	53591					
Prep Date:	8/20/2018	Analysis Date:	8/21/2018	SeqNo:	1768074	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808723  
 23-Aug-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	LCS-39889	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS	Batch ID:	39889	RunNo:	53591					
Prep Date:	8/20/2018	Analysis Date:	8/21/2018	SeqNo:	1768074	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.6		5.000		91.5	50.6	138			

Sample ID	LCS-39889	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS	Batch ID:	39889	RunNo:	53591					
Prep Date:	8/20/2018	Analysis Date:	8/21/2018	SeqNo:	1768074	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.6		5.000		91.5	50.6	138			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808723  
 23-Aug-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	MB-39883		SampType:	MBLK		TestCode:	EPA Method 8081: Pesticides TCLP			
Client ID:	PBW		Batch ID:	39883		RunNo:	53592			
Prep Date:	8/20/2018		Analysis Date:	8/21/2018		SeqNo:	1767064		Units: mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0017		0.002500		66.1	58.3	109			
Surr: Tetrachloro-m-xylene	0.0017		0.002500		67.8	40.1	101			

Sample ID	LCS-39883		SampType:	LCS		TestCode:	EPA Method 8081: Pesticides TCLP			
Client ID:	LCSW		Batch ID:	39883		RunNo:	53592			
Prep Date:	8/20/2018		Analysis Date:	8/21/2018		SeqNo:	1767065		Units: mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00046	0.00010	0.0005000	0	91.5	49.5	127			
gamma-BHC (Lindane)	0.00040	0.00010	0.0005000	0	79.9	49.9	124			
Heptachlor	0.00035	0.00010	0.0005000	0	69.4	41	122			
Heptachlor epoxide	0.00044	0.00010	0.0005000	0	87.6	52.2	121			
Methoxychlor	0.00043	0.00010	0.0005000	0	85.3	40.2	134			
Surr: Decachlorobiphenyl	0.0018		0.002500		70.5	58.3	109			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		64.2	40.1	101			

Sample ID	LCS-39883		SampType:	LCS		TestCode:	EPA Method 8081: Pesticides TCLP			
Client ID:	LCSW		Batch ID:	39883		RunNo:	53592			
Prep Date:	8/20/2018		Analysis Date:	8/21/2018		SeqNo:	1767066		Units: mg/L	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00039	0.00010	0.0005000	0	77.1	49.5	127	17.1	20	
gamma-BHC (Lindane)	0.00035	0.00010	0.0005000	0	69.6	49.9	124	13.8	20	
Heptachlor	0.00033	0.00010	0.0005000	0	65.0	41	122	6.44	20	
Heptachlor epoxide	0.00038	0.00010	0.0005000	0	75.3	52.2	121	15.1	20	
Methoxychlor	0.00038	0.00010	0.0005000	0	75.2	40.2	134	12.6	20	
Surr: Decachlorobiphenyl	0.0016		0.002500		64.2	58.3	109	0	0	
Surr: Tetrachloro-m-xylene	0.0015		0.002500		61.0	40.1	101	0	0	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1808723

23-Aug-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Sample ID	Ics-39776		SampType: LCS4	TestCode: EPA Method 8260B: Volatiles Short List						
Client ID:	BatchQC		Batch ID: 39776	RunNo: 53492						
Prep Date:	8/14/2018		Analysis Date: 8/16/2018	SeqNo: 1762857		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.90	0.025	1.000	0	89.6	80	120			
Toluene	0.97	0.050	1.000	0	97.5	80	120			
Ethylbenzene	1.0	0.050	1.000	0	101	80	120			
Xylenes, Total	3.0	0.10	3.000	0	101	80	120			
Surr: 4-Bromofluorobenzene	0.61		0.5000		121	70	130			
Surr: Toluene-d8	0.46		0.5000		91.8	70	130			

Sample ID	Ics-39796		SampType: LCS4	TestCode: EPA Method 8260B: Volatiles Short List						
Client ID:	BatchQC		Batch ID: 39796	RunNo: 53492						
Prep Date:	8/15/2018		Analysis Date: 8/16/2018	SeqNo: 1762858		Units: %Rec				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.58		0.5000		117	70	130			
Surr: Toluene-d8	0.46		0.5000		91.2	70	130			

Sample ID	mb-39776		SampType: MBLK	TestCode: EPA Method 8260B: Volatiles Short List						
Client ID:	PBS		Batch ID: 39776	RunNo: 53492						
Prep Date:	8/14/2018		Analysis Date: 8/16/2018	SeqNo: 1762859		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.65		0.5000		130	70	130			S
Surr: Toluene-d8	0.47		0.5000		94.8	70	130			

Sample ID	mb-39796		SampType: MBLK	TestCode: EPA Method 8260B: Volatiles Short List						
Client ID:	PBS		Batch ID: 39796	RunNo: 53492						
Prep Date:	8/15/2018		Analysis Date: 8/16/2018	SeqNo: 1762860		Units: %Rec				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.64		0.5000		129	70	130			
Surr: Toluene-d8	0.46		0.5000		92.9	70	130			

Sample ID	1808723-001ams		SampType: MS4	TestCode: EPA Method 8260B: Volatiles Short List						
Client ID:	KAFB-106241-2-IDW		Batch ID: 39776	RunNo: 53492						
Prep Date:	8/14/2018		Analysis Date: 8/17/2018	SeqNo: 1763317		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

## Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808723

23-Aug-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID 1808723-001ams SampType: MS4 TestCode: EPA Method 8260B: Volatiles Short List										
Client ID: KAFB-106241-2-IDW Batch ID: 39776 RunNo: 53492										
Prep Date: 8/14/2018 Analysis Date: 8/17/2018 SeqNo: 1763317 Units: mg/Kg										
Benzene	0.81	0.023	0.9217	0	88.3	80	120			
Toluene	0.92	0.046	0.9217	0	99.4	80	120			
Ethylbenzene	0.93	0.046	0.9217	0	101	82	121			
Xylenes, Total	2.8	0.092	2.765	0.01956	100	80.2	120			
Surr: 4-Bromofluorobenzene	0.54		0.4608		118	70	130			
Surr: Toluene-d8	0.43		0.4608		92.3	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID 1808723-001amsd SampType: MSD4 TestCode: EPA Method 8260B: Volatiles Short List										
Client ID: KAFB-106241-2-IDW Batch ID: 39776 RunNo: 53492										
Prep Date: 8/14/2018 Analysis Date: 8/17/2018 SeqNo: 1763318 Units: mg/Kg										
Benzene	0.75	0.024	0.9479	0	79.2	80	120	8.16	20	S
Toluene	0.82	0.047	0.9479	0	86.9	80	120	10.7	20	
Ethylbenzene	0.84	0.047	0.9479	0	89.0	82	121	9.51	20	
Xylenes, Total	2.6	0.095	2.844	0.01956	89.3	80.2	120	8.61	20	
Surr: 4-Bromofluorobenzene	0.55		0.4739		116	70	130	0	0	
Surr: Toluene-d8	0.45		0.4739		94.6	70	130	0	0	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808723  
 23-Aug-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	Ics-39779		SampType: LCS	TestCode: Volatiles by 8260B/1311						
Client ID:	LCSS		Batch ID: 39779	RunNo: 53514						
Prep Date:	8/14/2018		Analysis Date: 8/16/2018	SeqNo: 1764104	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.45	0.10	0.4000	0	111	70	130			
Chlorobenzene	0.39	0.10	0.4000	0	98.0	70	130			
1,1-Dichloroethene	0.45	0.10	0.4000	0	113	70	130			
Trichloroethene (TCE)	0.42	0.10	0.4000	0	106	70	130			
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		99.4	70	130			
Surr: 4-Bromofluorobenzene	0.21		0.2000		105	57.3	148			
Surr: Dibromofluoromethane	0.21		0.2000		103	70	130			
Surr: Toluene-d8	0.18		0.2000		91.7	70	130			

Sample ID	mb-39779		SampType: MBLK	TestCode: Volatiles by 8260B/1311						
Client ID:	PBS		Batch ID: 39779	RunNo: 53514						
Prep Date:	8/14/2018		Analysis Date: 8/16/2018	SeqNo: 1764105	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		105	70	130			
Surr: 4-Bromofluorobenzene	0.20		0.2000		102	57.3	148			
Surr: Dibromofluoromethane	0.22		0.2000		108	70	130			
Surr: Toluene-d8	0.18		0.2000		91.7	70	130			

Sample ID	1808723-001AMS		SampType: MS	TestCode: Volatiles by 8260B/1311						
Client ID:	KAFB-106241-2-IDW		Batch ID: 39779	RunNo: 53514						
Prep Date:	8/14/2018		Analysis Date: 8/16/2018	SeqNo: 1764107	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.47	0.10	0.4000	0	117	44.5	152			
Chlorobenzene	0.40	0.10	0.4000	0	99.9	70	130			
1,1-Dichloroethene	0.46	0.10	0.4000	0	115	79.1	132			
Trichloroethene (TCE)	0.44	0.10	0.4000	0	111	70	130			
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		107	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

## QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1808723

23-Aug-18

Client: EA Engineering Science &amp; Technology

Project: Kirtland AFB BFF

Sample ID	1808723-001AMS	SampType:	MS	TestCode:	Volatiles by 8260B/1311					
Client ID:	KAFB-106241-2-IDW	Batch ID:	39779	RunNo:	53514					
Prep Date:	8/14/2018	Analysis Date:	8/16/2018	SeqNo:	1764107	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.21		0.2000		103	57.3	148			
Surr: Dibromofluoromethane	0.22		0.2000		110	70	130			
Surr: Toluene-d8	0.18		0.2000		89.2	70	130			

Sample ID	1808723-001AMSD	SampType:	MSD	TestCode:	Volatiles by 8260B/1311					
Client ID:	KAFB-106241-2-IDW	Batch ID:	39779	RunNo:	53514					
Prep Date:	8/14/2018	Analysis Date:	8/16/2018	SeqNo:	1764108	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.45	0.10	0.4000	0	113	44.5	152	2.94	20	
Chlorobenzene	0.38	0.10	0.4000	0	94.6	70	130	5.46	20	
1,1-Dichloroethene	0.45	0.10	0.4000	0	113	79.1	132	1.66	20	
Trichloroethene (TCE)	0.42	0.10	0.4000	0	106	70	130	4.65	20	
Surr: 1,2-Dichloroethane-d4	0.21		0.2000		106	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.20		0.2000		99.4	57.3	148	0	0	
Surr: Dibromofluoromethane	0.22		0.2000		109	70	130	0	0	
Surr: Toluene-d8	0.18		0.2000		89.4	70	130	0	0	

## Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808723  
 23-Aug-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	mb-39842	SampType:	MBLK	TestCode:	EPA Method 8270C TCLP					
Client ID:	PBS	Batch ID:	39842	RunNo:	53534					
Prep Date:	8/16/2018	Analysis Date:	8/17/2018	SeqNo:	1764409	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.10		0.2000		50.0	15	102			
Surr: Phenol-d5	0.085		0.2000		42.3	15	87.7			
Surr: 2,4,6-Tribromophenol	0.17		0.2000		83.6	39.9	111			
Surr: Nitrobenzene-d5	0.066		0.1000		66.4	35.1	107			
Surr: 2-Fluorobiphenyl	0.068		0.1000		67.7	36.7	100			
Surr: 4-Terphenyl-d14	0.094		0.1000		94.5	42.6	129			

Sample ID	ics-39842	SampType:	LCS	TestCode:	EPA Method 8270C TCLP					
Client ID:	LCSS	Batch ID:	39842	RunNo:	53534					
Prep Date:	8/16/2018	Analysis Date:	8/17/2018	SeqNo:	1764410	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.088	0.010	0.1000	0	88.0	47.8	99.2			
3+4-Methylphenol	0.17	0.010	0.2000	0	86.2	41.5	118			
2,4-Dinitrotoluene	0.071	0.010	0.1000	0	70.7	44.4	81			
Hexachlorobenzene	0.091	0.010	0.1000	0	91.1	49.5	91.6			
Hexachlorobutadiene	0.065	0.010	0.1000	0	64.6	38.6	93			
Hexachloroethane	0.067	0.010	0.1000	0	66.6	39.4	79.9			
Nitrobenzene	0.082	0.010	0.1000	0	82.2	47.4	96.2			
Pentachlorophenol	0.090	0.010	0.1000	0	89.7	39.4	79.9			S
Pyridine	0.045	0.010	0.1000	0	44.8	15	79.9			
2,4,5-Trichlorophenol	0.088	0.010	0.1000	0	87.7	47.4	118			
2,4,6-Trichlorophenol	0.095	0.010	0.1000	0	95.1	47.4	101			
Cresols, Total	0.26	0.010	0.3000	0	86.8	44.1	111			
Surr: 2-Fluorophenol	0.13		0.2000		65.8	15	102			
Surr: Phenol-d5	0.11		0.2000		53.4	15	87.7			
Surr: 2,4,6-Tribromophenol	0.18		0.2000		90.5	39.9	111			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808723

23-Aug-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland AFB BFF

Sample ID: <b>lcs-39842</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8270C TCLP</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>39842</b>	RunNo: <b>53534</b>								
Prep Date: <b>8/16/2018</b>	Analysis Date: <b>8/17/2018</b>	SeqNo: <b>1764410</b>			Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.088		0.1000		87.7	35.1	107			
Surr: 2-Fluorobiphenyl	0.084		0.1000		84.3	36.7	100			
Surr: 4-Terphenyl-d14	0.097		0.1000		97.4	42.6	129			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808723

23-Aug-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland AFB BFF

Sample ID	MB-39908	SampType:	MBLK	TestCode:	MERCURY, TCLP					
Client ID:	PBW	Batch ID:	39908	RunNo:	53597					
Prep Date:	8/21/2018	Analysis Date:	8/21/2018	SeqNo:	1767222	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	LCS-39908	SampType:	LCS	TestCode:	MERCURY, TCLP					
Client ID:	LCSW	Batch ID:	39908	RunNo:	53597					
Prep Date:	8/21/2018	Analysis Date:	8/21/2018	SeqNo:	1767223	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	98.9	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not in Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808723

23-Aug-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	MB-39899	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	39899	RunNo:	53611					
Prep Date:	8/21/2018	Analysis Date:	8/22/2018	SeqNo:	1768017	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Silver	ND	5.0								

Sample ID	LCS-39899	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	LCSW	Batch ID:	39899	RunNo:	53611					
Prep Date:	8/21/2018	Analysis Date:	8/22/2018	SeqNo:	1768018	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	101	80	120			
Barium	ND	100	0.5000	0	98.3	80	120			
Cadmium	ND	1.0	0.5000	0	102	80	120			
Chromium	ND	5.0	0.5000	0	97.7	80	120			
Lead	ND	5.0	0.5000	0	90.9	80	120			
Silver	ND	5.0	0.1000	0	110	80	120			

Sample ID	MB-39899	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	PBW	Batch ID:	39899	RunNo:	53620					
Prep Date:	8/21/2018	Analysis Date:	8/22/2018	SeqNo:	1768580	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	LCS-39899	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals					
Client ID:	LCSW	Batch ID:	39899	RunNo:	53620					
Prep Date:	8/21/2018	Analysis Date:	8/22/2018	SeqNo:	1768582	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	102	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT**  
**Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808723  
 23-Aug-18

**Client:** EA Engineering Science & Technology  
**Project:** Kirtland AFB BFF

Sample ID	Ics-39776		SampType: LCS	TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID:	LCSS		Batch ID: 39776	RunNo: 53492						
Prep Date:	8/14/2018		Analysis Date: 8/16/2018	SeqNo: 1762846	Units: mg/Kg					Qual
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	106	70	130			
Surr: BFB	530		500.0		106	70	130			

Sample ID	Ics-39796		SampType: LCS	TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID:	LCSS		Batch ID: 39796	RunNo: 53492						
Prep Date:	8/15/2018		Analysis Date: 8/16/2018	SeqNo: 1762847	Units: %Rec					Qual
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	530		500.0		106	70	130			

Sample ID	mb-39776		SampType: MBLK	TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID:	PBS		Batch ID: 39776	RunNo: 53492						
Prep Date:	8/14/2018		Analysis Date: 8/16/2018	SeqNo: 1762848	Units: mg/Kg					Qual
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	580		500.0		116	70	130			

Sample ID	mb-39796		SampType: MBLK	TestCode: EPA Method 8015D Mod: Gasoline Range						
Client ID:	PBS		Batch ID: 39796	RunNo: 53492						
Prep Date:	8/15/2018		Analysis Date: 8/16/2018	SeqNo: 1762849	Units: %Rec					Qual
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	580		500.0		115	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
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- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

**Sample Log-In Check List**

Client Name: EA Engineering Alb

Work Order Number: 1808723

RcptNo: 1

Received By: Erin Melendrez 8/10/2018 9:06:00 AM

*Erin Melendrez*

Completed By: Anne Thorne 8/13/2018 9:22:17 AM

*Anne Thorne*

Reviewed By: *my 08/13/18*

*Labeled by: AS 08/13/18*

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present

2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA

4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA

5. Sample(s) in proper container(s)? Yes  No

6. Sufficient sample volume for indicated test(s)? Yes  No

7. Are samples (except VOA and ONG) properly preserved? Yes  No

8. Was preservative added to bottles? Yes  No  NA

9. VOA vials have zero headspace? Yes  No  No VOA Vials

10. Were any sample containers received broken? Yes  No

11. Does paperwork match bottle labels? Yes  No

(Note discrepancies on chain of custody)

12. Are matrices correctly identified on Chain of Custody? Yes  No

13. Is it clear what analyses were requested? Yes  No

14. Were all holding times able to be met? Yes  No

(If no, notify customer for authorization.)

# of preserved bottles checked for pH: _____
(<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

16. Additional remarks:

**17. Cooler Information**

Cooler No.	Temp.°C	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	3.4	Good	Not Present			



# NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

<b>NON-HAZARDOUS WASTE MANIFEST</b>		1. Generator's US EPA ID No. NM9570024423		Manifest Document No. <b>D215122</b>	2. Page 1 of 1
3. Generator's Name and Mailing Address <b>KIRTLAND AIR FORCE BASE 2050 WYOMING BLVD SE BLDG 20685, ENVIRONMENTAL KIRTLAND AIR FORCE BASE, NM 87117</b>					
4. Generator's Phone <b>505-846-9017</b>					
5. Transporter 1 Company Name <b>Advanced Chemical Transport Inc./DBA ACTENVIRO</b>		6. US EPA ID Number <b>CAR000070540</b>		A. State Transporter's ID	
7. Transporter 2 Company Name		8. US EPA ID Number		B. Transporter 1 Phone	
9. Transporter 2 Address <b>TWIN ENVIRO SERVICES 2500 FREMONT COUNTY ROAD 67 PENROSE, CO 81240 719-372-6671</b>		10. US EPA ID Number <b>COR000208454</b>		C. State Transporter's ID	
				D. Transporter 2 Phone	
				E. State Facility's ID	
				F. Facility's Phone	
11. WASTE DESCRIPTION					
Non-RCRA/Non-DOT Regulated Material Solid Sludges (DRILL CUTTINGS)			Containers No. <b>01</b> Type <b>CM</b>	13. Total Quantity <b>2</b>	14. Unit WL/Vol. <b>TON</b>
b.					
c.					
d.					
G. Additional Descriptions for Materials Listed Above <b>Project Number 179538 Document #: D215122</b> <b>P-20170421-D KIT-(1) 15 CM</b> <b>Bin ACT 2054</b>			H. Handling Codes for Wastes Listed Above		
15. Special Handling Instructions and Additional Information <b>24 HOUR EMERGENCY CONTACT: SCOTT CLARK 505 385 3679</b>					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
Printed/Typed Name <b>Holly O'Grady</b>				Signature <i>Holly O'Grady</i>	
				Date <b>10/11/18</b>	
17. Transporter 1 Acknowledgement of Receipt of Materials				Date	
Printed/Typed Name <b>Martin Aranda</b>				Signature <i>Martin Aranda</i>	
				Date <b>10/11/18</b>	
18. Transporter 2 Acknowledgement of Receipt of Materials				Date	
Printed/Typed Name				Signature	
				Date Month Day Year	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.					
Printed/Typed Name <b>Joyce Pretzer</b>				Signature <i>Joyce Pretzer</i>	
				Date <b>11/14/18</b>	

NON-HAZARDOUS WASTE





Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 26, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: KAFB BFF Data Gaps

OrderNo.: 1809A61

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/18/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

## Case Narrative

WO#: 1809A61  
Date: 9/26/2018

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**CLIENT:** EA Engineering Science & Technology  
**Project:** KAFB BFF Data Gaps

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Analytical Notes Regarding EPA Method 8270:  
Surrogates not recoverable due to sample dilution.

## Analytical Report

Lab Order 1809A61

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106241-3-IDW-S

Project: KAFB BFF Data Gaps

Collection Date: 9/18/2018 2:12:00 PM

Lab ID: 1809A61-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: <b>rde</b>
Mercury	ND	0.020		mg/L	1	9/24/2018 3:36:47 PM	40525
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: <b>pmf</b>
Arsenic	ND	5.0		mg/L	1	9/24/2018 12:20:21 PM	40518
Barium	ND	100		mg/L	1	9/24/2018 12:20:21 PM	40518
Cadmium	ND	1.0		mg/L	1	9/24/2018 12:20:21 PM	40518
Chromium	ND	5.0		mg/L	1	9/24/2018 12:20:21 PM	40518
Lead	ND	5.0		mg/L	1	9/24/2018 12:20:21 PM	40518
Selenium	ND	1.0		mg/L	1	9/24/2018 12:20:21 PM	40518
Silver	ND	5.0		mg/L	1	9/24/2018 12:20:21 PM	40518
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>AG</b>
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	9/20/2018 5:50:55 PM	40456
Surr: BFB	98.9	70-130		%Rec	1	9/20/2018 5:50:55 PM	40456
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	9/21/2018 1:58:39 PM	40460
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/21/2018 1:58:39 PM	40460
Surr: DNOP	119	50.6-138		%Rec	1	9/21/2018 1:58:39 PM	40460
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
Acenaphthene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Acenaphthylene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Aniline	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Anthracene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Azobenzene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Benz(a)anthracene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Benzo(a)pyrene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Benzo(b)fluoranthene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Benzo(g,h,i)perylene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Benzo(k)fluoranthene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Benzoic acid	ND	4.8		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Benzyl alcohol	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Bis(2-chloroethoxy)methane	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Bis(2-chloroethyl)ether	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Bis(2-chloroisopropyl)ether	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Bis(2-ethylhexyl)phthalate	ND	4.8		mg/Kg	1	9/21/2018 8:54:57 PM	40469
4-Bromophenyl phenyl ether	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Butyl benzyl phthalate	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Carbazole	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
4-Chloro-3-methylphenol	ND	4.8		mg/Kg	1	9/21/2018 8:54:57 PM	40469

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A61

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106241-3-IDW-S

Project: KAFB BFF Data Gaps

Collection Date: 9/18/2018 2:12:00 PM

Lab ID: 1809A61-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
4-Chloroaniline	ND	4.8		mg/Kg	1	9/21/2018 8:54:57 PM	40469
2-Chloronaphthalene	ND	2.4		mg/Kg	1	9/21/2018 8:54:57 PM	40469
2-Chlorophenol	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
4-Chlorophenyl phenyl ether	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Chrysene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Di-n-butyl phthalate	ND	3.8		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Di-n-octyl phthalate	ND	3.8		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Dibenz(a,h)anthracene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Dibenzofuran	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
1,2-Dichlorobenzene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
1,3-Dichlorobenzene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
1,4-Dichlorobenzene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
3,3'-Dichlorobenzidine	ND	2.4		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Diethyl phthalate	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Dimethyl phthalate	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
2,4-Dichlorophenol	ND	3.8		mg/Kg	1	9/21/2018 8:54:57 PM	40469
2,4-Dimethylphenol	ND	2.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
4,6-Dinitro-2-methylphenol	ND	3.8		mg/Kg	1	9/21/2018 8:54:57 PM	40469
2,4-Dinitrophenol	ND	4.8		mg/Kg	1	9/21/2018 8:54:57 PM	40469
2,4-Dinitrotoluene	ND	4.8		mg/Kg	1	9/21/2018 8:54:57 PM	40469
2,6-Dinitrotoluene	ND	4.8		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Fluoranthene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Fluorene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Hexachlorobenzene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Hexachlorobutadiene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Hexachlorocyclopentadiene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Hexachloroethane	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Indeno(1,2,3-cd)pyrene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Isophorone	ND	3.8		mg/Kg	1	9/21/2018 8:54:57 PM	40469
1-Methylnaphthalene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
2-Methylnaphthalene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
2-Methylphenol	ND	3.8		mg/Kg	1	9/21/2018 8:54:57 PM	40469
3+4-Methylphenol	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
N-Nitrosodi-n-propylamine	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
N-Nitrosodiphenylamine	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Naphthalene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
2-Nitroaniline	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
3-Nitroaniline	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
4-Nitroaniline	ND	3.8		mg/Kg	1	9/21/2018 8:54:57 PM	40469

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A61

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106241-3-IDW-S

Project: KAFB BFF Data Gaps

Collection Date: 9/18/2018 2:12:00 PM

Lab ID: 1809A61-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
Nitrobenzene	ND	3.8		mg/Kg	1	9/21/2018 8:54:57 PM	40469
2-Nitrophenol	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
4-Nitrophenol	ND	2.4		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Pentachlorophenol	ND	3.8		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Phenanthrene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Phenol	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Pyrene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Pyridine	ND	3.8		mg/Kg	1	9/21/2018 8:54:57 PM	40469
1,2,4-Trichlorobenzene	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
2,4,5-Trichlorophenol	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
2,4,6-Trichlorophenol	ND	1.9		mg/Kg	1	9/21/2018 8:54:57 PM	40469
Surr: 2-Fluorophenol	0	21.7-87.9	S	%Rec	1	9/21/2018 8:54:57 PM	40469
Surr: Phenol-d5	0	30.2-92.2	S	%Rec	1	9/21/2018 8:54:57 PM	40469
Surr: 2,4,6-Tribromophenol	0	47.1-103	S	%Rec	1	9/21/2018 8:54:57 PM	40469
Surr: Nitrobenzene-d5	0	23.9-102	S	%Rec	1	9/21/2018 8:54:57 PM	40469
Surr: 2-Fluorobiphenyl	0	32.6-101	S	%Rec	1	9/21/2018 8:54:57 PM	40469
Surr: 4-Terphenyl-d14	0	37.2-117	S	%Rec	1	9/21/2018 8:54:57 PM	40469
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: <b>DJF</b>
Benzene	ND	0.023		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Toluene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Ethylbenzene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Methyl tert-butyl ether (MTBE)	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,2,4-Trimethylbenzene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,3,5-Trimethylbenzene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,2-Dichloroethane (EDC)	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,2-Dibromoethane (EDB)	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Naphthalene	ND	0.092		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1-Methylnaphthalene	ND	0.18		mg/Kg	1	9/21/2018 1:45:05 PM	40456
2-Methylnaphthalene	ND	0.18		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Acetone	ND	0.69		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Bromobenzene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Bromodichloromethane	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Bromoform	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Bromomethane	ND	0.14		mg/Kg	1	9/21/2018 1:45:05 PM	40456
2-Butanone	ND	0.46		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Carbon disulfide	ND	0.46		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Carbon tetrachloride	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Chlorobenzene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Chloroethane	ND	0.092		mg/Kg	1	9/21/2018 1:45:05 PM	40456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A61

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106241-3-IDW-S

Project: KAFB BFF Data Gaps

Collection Date: 9/18/2018 2:12:00 PM

Lab ID: 1809A61-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
Chloroform	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Chloromethane	ND	0.14		mg/Kg	1	9/21/2018 1:45:05 PM	40456
2-Chlorotoluene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
4-Chlorotoluene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
cis-1,2-DCE	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
cis-1,3-Dichloropropene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,2-Dibromo-3-chloropropane	ND	0.092		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Dibromochloromethane	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Dibromomethane	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,2-Dichlorobenzene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,3-Dichlorobenzene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,4-Dichlorobenzene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Dichlorodifluoromethane	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,1-Dichloroethane	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,1-Dichloroethene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,2-Dichloropropane	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,3-Dichloropropane	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
2,2-Dichloropropane	ND	0.092		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,1-Dichloropropene	ND	0.092		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Hexachlorobutadiene	ND	0.092		mg/Kg	1	9/21/2018 1:45:05 PM	40456
2-Hexanone	ND	0.46		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Isopropylbenzene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
4-Isopropyltoluene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
4-Methyl-2-pentanone	ND	0.46		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Methylene chloride	ND	0.14		mg/Kg	1	9/21/2018 1:45:05 PM	40456
n-Butylbenzene	ND	0.14		mg/Kg	1	9/21/2018 1:45:05 PM	40456
n-Propylbenzene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
sec-Butylbenzene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Styrene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
tert-Butylbenzene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,1,1,2-Tetrachloroethane	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,1,1,2-Tetrachloroethane	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Tetrachloroethene (PCE)	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
trans-1,2-DCE	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
trans-1,3-Dichloropropene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,2,3-Trichlorobenzene	ND	0.092		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,2,4-Trichlorobenzene	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,1,1-Trichloroethane	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,1,2-Trichloroethane	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A61

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106241-3-IDW-S

Project: KAFB BFF Data Gaps

Collection Date: 9/18/2018 2:12:00 PM

Lab ID: 1809A61-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
Trichloroethene (TCE)	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Trichlorofluoromethane	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
1,2,3-Trichloropropane	ND	0.092		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Vinyl chloride	ND	0.046		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Xylenes, Total	ND	0.092		mg/Kg	1	9/21/2018 1:45:05 PM	40456
Surr: Dibromofluoromethane	94.8	70-130		%Rec	1	9/21/2018 1:45:05 PM	40456
Surr: 1,2-Dichloroethane-d4	92.3	70-130		%Rec	1	9/21/2018 1:45:05 PM	40456
Surr: Toluene-d8	94.2	70-130		%Rec	1	9/21/2018 1:45:05 PM	40456
Surr: 4-Bromofluorobenzene	93.4	70-130		%Rec	1	9/21/2018 1:45:05 PM	40456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified



Collected date/time: 09/18/18 14:12

L1027464

Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.250	1	09/24/2018 09:23	WG1169232

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		25.0	1	09/23/2018 17:49	WG1168577

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	8.48	T5	1	09/21/2018 13:15	WG1169412

Sample Narrative:

L1027464-01 WG1169412: 8.48 at 23C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DNI at 170		1	09/20/2018 20:01	WG1169226

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 GI

8 AI

9 Sc

ACCOUNT:  
Half Environmental Analysis Laboratory

PROJECT:

SDG:  
L1027464

DATE/TIME:  
09/25/18 08:29

**WG1169232**

Wet Chemistry by Method 90.12 B

Method Blank (MIB)

(MB) R3344432-1 09/24/18 09:14

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RID mg/kg
Reactive Cyanide	U		0.0390	0.250

L1027473-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1027473-01 09/24/18 09:29 • (DUP) R3344432-4 09/24/18 09:30

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	0.000	1	0.000		20

L1027473-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1027473-07 09/24/18 10:06 • (DUP) R3344432-9 09/24/18 10:09

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	3.63	4.60	5	23.5		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3344432-2 09/24/18 09:15 • (LCS-D) R3344432-3 09/24/18 09:16

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier	LCS-D Qualifier	RPD %	RPD Limits %
Reactive Cyanide	2.50	2.74	110	50.0-150			0.937	20

L1027473-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MS-D)

(OS) L1027473-02 09/24/18 09:31 • (MS) R3344432-5 09/24/18 09:32 • (MS-D) R3344432-6 09/24/18 09:33

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	MSD Result mg/kg	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	1.67	ND	1.26	75.8	1.30	77.9	1	75.0-125			2.66	20

L1027473-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MS-D)

(OS) L1027473-10 09/24/18 09:44 • (MS) R3344432-7 09/24/18 09:45 • (MS-D) R3344432-8 09/24/18 09:46

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	MSD Result mg/kg	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	1.67	ND	1.56	86.4	1.62	90.1	1	75.0-125			3.89	20

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT:

SDG: L1027464

DATE/TIME: 09/25/18 08:29

**QUALITY CONTROL SUMMARY**

L1027464-01

ONE LAB, NATIONWIDE



ONE LAB. NATIONWIDE.

# QUALITY CONTROL SUMMARY

10.27464-01

**WG1168677**

Wet Chemistry by Method 9034-9030B

Method Blank (MB)

(MB) R3344333-1 09/23/18 17:49

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Sulfide	U	7.63	7.63	25.0

L1027468-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1027468-01 09/23/18 17:49 • (DUP) R3344333-5 09/23/18 17:49

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Sulfide	54.8	54.8	-	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS[D])

(LCS) R3344333-2 09/23/18 17:49 • (LCS[D]) R3344333-3 09/23/18 17:49

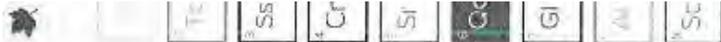
Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Reactive Sulfide	100	73.1	73.1	73.1	73.1	70.0-150			0.000	20

ACCOUNT: Hill Environmental Analysis Laboratory

PROJECT:

SDG: L1027464

DATE/TIME: 09/25/18 08:29



ONE LAB. NATIONWIDE.

# QUALITY CONTROL SUMMARY

LIC2748+01

**WG1169412**

West Chemistry by Method 9045D

L102/473-09 Original Sample (DS) - Duplicate (DUP)

(CS) LIC27473-09 09/27/18 13:15 - (DUP) R3343953-4 09/27/18 13:15

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Conductivity by dH	3.22	7.21	1	0.139		1

**Sample Narrative:**

CS: 7.22 at 22.3C  
DUP: 7.21 at 22.1C

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3343953-1 09/27/18 13:15 - (LCS-D) R3343953-2 09/27/18 13:15

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Conductivity by pH	10.0	9.99	9.99	100	99.9	99.0-101			0.000	1

**Sample Narrative:**

LCS: 10 at 21.3C  
LCS-D: 9.99 at 21.3C

ACCOUNT: Hall Environmental Analytical Laboratory

PROJECT:

SDS: -027464

DATE/TIME: 09/25/18 08:29

WG1169226

Wet Chemistry by Method D93/1010A

QUALITY CONTROL SUMMARY

L1027464-01

ONE LAB NATIONWIDE

L1027405-01 Original Sample (OS) - Duplicate (DUP)

(OS) L1027405-01 09/20/18 20:01 • (DUP) R3343731-3 09/20/18 20:01

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ignitability	Deg. F DNI at 70	Deg. F DNI at 170	% 1	% 0.000	% 10	% 10

L1027473-10 Original Sample (OS) - Duplicate (DUP)

(OS) L1027473-10 09/20/18 20:01 • (DUP) R3343731-4 09/20/18 20:01

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ignitability	Deg. F DNI at 170	Deg. F DNI at 170	% 1	% 0.000	% 10	% 10

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)

(LCS) R3343731-1 09/20/18 20:01 • (LCSD) R3343731-2 09/20/18 20:01

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCSD Qualifier	LCS Qualifier	RPD	RPD Limits
Ignitability	Deg. F 82.0	Deg. F 82.7	Deg. F 82.7	% 101	% 101	% 96.0-104	% 101	% 100	% 0.000	% 10

ACCOUNT  
501 Environmental Analysis Laboratory

PROJECT:

SDG:  
L1027464

DATE/TIME:  
09/25/18 08:29

# GLOSSARY OF TERMS



## Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

### Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable)
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not Detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (QC)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.
Qualifier	Description
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.



ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1027464

DATE/TIME:  
09/25/18 08:29

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A61

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gaps

Sample ID	<b>LCS-40460</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40460</b>	RunNo:	<b>54275</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797655</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.00	0	101	70	130			
Surr: DNOP	4.4		5.000		87.3	50.6	138			

Sample ID	<b>MB-40460</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40460</b>	RunNo:	<b>54275</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797656</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		101	50.6	138			

Sample ID	<b>LCS-40485</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40485</b>	RunNo:	<b>54322</b>					
Prep Date:	<b>9/20/2018</b>	Analysis Date:	<b>9/21/2018</b>	SeqNo:	<b>1798291</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.0		5.000		100	50.6	138			

Sample ID	<b>MB-40485</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40485</b>	RunNo:	<b>54322</b>					
Prep Date:	<b>9/20/2018</b>	Analysis Date:	<b>9/21/2018</b>	SeqNo:	<b>1798292</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		108	50.6	138			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 7 of 16

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A61

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gaps

Sample ID	mb-40456	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	PBS	Batch ID:	40456	RunNo:	54347					
Prep Date:	9/19/2018	Analysis Date:	9/21/2018	SeqNo:	1799119	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Page 8 of 16

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A61

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gaps

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	<b>mb-40456</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8260B: Volatiles</b>						
Client ID:	<b>PBS</b>	Batch ID: <b>40456</b>		RunNo: <b>54347</b>						
Prep Date:	<b>9/19/2018</b>	Analysis Date: <b>9/21/2018</b>		SeqNo: <b>1799119</b>		Units: <b>mg/Kg</b>				
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.47		0.5000		94.2	70	130			
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		94.4	70	130			
Surr: Toluene-d8	0.45		0.5000		90.2	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		91.8	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	<b>ics-40456</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8260B: Volatiles</b>						
Client ID:	<b>LCSS</b>	Batch ID: <b>40456</b>		RunNo: <b>54347</b>						
Prep Date:	<b>9/19/2018</b>	Analysis Date: <b>9/21/2018</b>		SeqNo: <b>1799121</b>		Units: <b>mg/Kg</b>				
Benzene	1.2	0.025	1.000	0	119	70	130			
Toluene	1.0	0.050	1.000	0	102	70	130			
Chlorobenzene	1.1	0.050	1.000	0	112	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A61**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gaps

Sample ID	<b>Ics-40456</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8260B: Volatiles</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54347</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/21/2018</b>	SeqNo:	<b>1799121</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	1.3	0.050	1.000	0	126	70	130			
Trichloroethene (TCE)	1.1	0.050	1.000	0	112	70	130			
Surr: Dibromofluoromethane	0.52		0.5000		103	70	130			
Surr: 1,2-Dichloroethane-d4	0.49		0.5000		98.8	70	130			
Surr: Toluene-d8	0.45		0.5000		89.4	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		98.4	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A61

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gaps

Sample ID	Ics-40469		SampType: LCS	TestCode: EPA Method 8270C: Semivolatiles						
Client ID:	LCSS		Batch ID: 40469	RunNo: 54318						
Prep Date:	9/20/2018		Analysis Date: 9/21/2018	SeqNo: 1798894	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.1	0.20	1.670	0	66.6	42	110			
4-Chloro-3-methylphenol	2.3	0.50	3.330	0	69.6	42.3	117			
2-Chlorophenol	1.8	0.20	3.330	0	52.9	27.6	117			
1,4-Dichlorobenzene	0.81	0.20	1.670	0	48.7	28.8	105			
2,4-Dinitrotoluene	1.2	0.50	1.670	0	70.5	42	98.7			
N-Nitrosodi-n-propylamine	1.2	0.20	1.670	0	69.4	41.8	112			
4-Nitrophenol	3.2	0.25	3.330	0	95.2	54	113			
Pentachlorophenol	2.6	0.40	3.330	0	78.0	41.5	101			
Phenol	1.8	0.20	3.330	0	53.8	32.2	115			
Pyrene	1.5	0.20	1.670	0	91.5	48.5	121			
1,2,4-Trichlorobenzene	1.0	0.20	1.670	0	60.6	39.9	112			
Surr: 2-Fluorophenol	1.5		3.330		45.1	21.7	87.9			
Surr: Phenol-d5	2.0		3.330		59.2	30.2	92.2			
Surr: 2,4,6-Tribromophenol	2.8		3.330		83.4	47.1	103			
Surr: Nitrobenzene-d5	0.96		1.670		57.3	23.9	102			
Surr: 2-Fluorobiphenyl	1.1		1.670		63.0	32.6	101			
Surr: 4-Terphenyl-d14	1.7		1.670		99.5	37.2	117			

Sample ID	mb-40469		SampType: MBLK	TestCode: EPA Method 8270C: Semivolatiles						
Client ID:	PBS		Batch ID: 40469	RunNo: 54318						
Prep Date:	9/20/2018		Analysis Date: 9/21/2018	SeqNo: 1798895	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	ND	0.50								

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A61

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gaps

Sample ID	mb-40469	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	40469	RunNo:	54318					
Prep Date:	9/20/2018	Analysis Date:	9/21/2018	SeqNo:	1798895	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	ND	0.40								
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3'-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A61

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gaps

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	<b>mb-40469</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8270C: Semivolatiles</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40469</b>	RunNo:	<b>54318</b>					
Prep Date:	<b>9/20/2018</b>	Analysis Date:	<b>9/21/2018</b>	SeqNo:	<b>1798895</b>	Units:	<b>mg/Kg</b>			
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	1.8		3.330		52.8	21.7	87.9			
Surr: Phenol-d5	2.2		3.330		64.6	30.2	92.2			
Surr: 2,4,6-Tribromophenol	2.6		3.330		78.3	47.1	103			
Surr: Nitrobenzene-d5	1.0		1.670		62.3	23.9	102			
Surr: 2-Fluorobiphenyl	1.1		1.670		65.2	32.6	101			
Surr: 4-Terphenyl-d14	1.6		1.670		95.3	37.2	117			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1809A61

26-Sep-18

Client: EA Engineering Science &amp; Technology

Project: KAFB BFF Data Gaps

Sample ID	<b>MB-40525</b>	SampType:	<b>MBLK</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40525</b>	RunNo:	<b>54370</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1799878</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	<b>LCS-40525</b>	SampType:	<b>LCS</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40525</b>	RunNo:	<b>54370</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1799879</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.0	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A61**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gaps

Sample ID	<b>MB-40518</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40518</b>	RunNo:	<b>54358</b>					
Prep Date:	<b>9/21/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1800649</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	<b>LCS-40518</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40518</b>	RunNo:	<b>54358</b>					
Prep Date:	<b>9/21/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1800651</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	97.7	80	120			
Barium	ND	100	0.5000	0	98.8	80	120			
Cadmium	ND	1.0	0.5000	0	102	80	120			
Chromium	ND	5.0	0.5000	0	98.0	80	120			
Lead	ND	5.0	0.5000	0	98.1	80	120			
Selenium	ND	1.0	0.5000	0	106	80	120			
Silver	ND	5.0	0.1000	0	111	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A61

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gaps

Sample ID	<b>Ics-40456</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015D Mod: Gasoline Range</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54305</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797289</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	91.6	70	130			
Surr: BFB	470		500.0		93.2	70	130			

Sample ID	<b>mb-40456</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015D Mod: Gasoline Range</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54305</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797290</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	500		500.0		99.4	70	130			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87110  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1809A61

RcptNo: 1

Received By: Jazzmine Burkhead 9/18/2018 3:48:00 PM

Completed By: Ashley Gallegos 9/18/2018 5:23:44 PM

Reviewed By: ENM 9/18/18

labeled by: JAB 09/19/18

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes  No   
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes  No

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: JAB 09/19/18

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.8	Good	Not Present			





**DEPARTMENT OF THE AIR FORCE**  
377TH AIR BASE WING (AFGSC)

30 August 2018

MEMORANDUM FOR: AFCEC/CZO

FROM: 377 MSG/CEIE (Solid Waste Program Manager)

SUBJECT: Landfill Disposal

Reference: EA Engineering, Science, & Technology, Inc, letters (2) dated: 28 August 2018  
USACE Contract No. W912DR-12-D-0006-DM01

Disposal of non-hazardous soil cuttings from groundwater monitoring well KAFB-106241

1. Authorization is granted to EA to dispose of soil generated from installation of groundwater monitoring well KAFB-106241, in support of the Bulk Fuels Facility project, at the Kirtland AFB Construction & Demolition Landfill. The soil will be delivered to the landfill by Advanced Chemical Transport Environmental Services, Inc (ACT), and will be in one 20-cubic-yard open top roll-off container labeled 9926.20, and one 15-cubic-yard hard top roll-off container labeled HTB-4. The roll-offs will be transported using one of two 2015 Western Star roll-off trucks depending on ACT's vehicle availability: either NM license plate WD121651, or NM license plate WD124756. Lab results are on file in the Solid Waste Management office. EA shall be issued a Kirtland AFB landfill pass for this disposal action. A copy of this letter will accompany each roll-off and will be left with the gate keeper at the landfill.

2. Please direct questions to me at 853-2486.

**WHEELOCK** Digitally signed by  
**KATRINA.E.1** WHEELOCK.KATRI  
**402749586** NA.E.1402749586  
 Date: 2018.08.30  
 15:41:51 -06'00'

**KATRINA E. WHEELOCK**  
 Solid Waste Program Manager  
 Environmental Management



EA Engineering, Science, & Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, New Mexico 87102  
Phone: (505) 224-9013

September 13, 2018

**DRAFT**

Ms. Katrina Wheelock  
Solid Waste Program Manager  
Environmental Management  
377 MSG/CEIE  
Kirtland AFB, New Mexico 87117

Subject: Request to dispose non-hazardous soil cuttings at Kirtland C&D Landfill  
Roll-off Identification: KAFB-106242-1 (Bin ID #104052)  
USACE Contract No. W912DR-12-D-0006-DM01

Dear Ms. Wheelock,

EA Engineering, Science, and Technology, Inc., PBC (EA) is requesting permission to dispose of non-hazardous soil drill cuttings and plastic liner from one roll-off container to the Kirtland Air Force Base (AFB) Construction and Demolition (C&D) debris landfill. The roll-off bin included in this request is:

- EA identification of KAFB-106242-1 (Bin ID #104052) contains approximately 13 cubic yards of soil in a 20-yard, open top, roll off.

In August 2018 EA installed a groundwater monitoring well, KAFB-106242, associated with the Kirtland Bulk Fuels Facility environmental restoration project. Well KAFB-106242 is located on City of Albuquerque property on San Pedro Drive SE. Drill cuttings were containerized in a plastic-lined, steel, roll-off pending laboratory analysis for waste characterization. Any excess moisture in the bin was stabilized using Hydrosorb®, a superabsorbent polymer. The roll-off bin is currently residing in the EA investigation derived waste yard near 1601 Perimeter Circle SE, on Kirtland AFB.

One five-point composite waste characterization sample was collected from the roll-off bin and delivered to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis. The sample was analyzed for all the required parameters per the Kirtland AFB Landfill Acceptance Memorandum (January 2009). The attached analytical results (Report 1808C17) for the composite sample confirms the drill cuttings meet waste acceptance requirements for disposal at the Kirtland C&D landfill.

The roll-off container is owned and/or leased by Advanced Chemical Transport Environmental Services Inc. (ACT) with the roll-off identification numbers marked clearly on the roll off. ACT will utilize one of the following vehicles for waste transport:



W912DR-12-D-0006-DM01  
 Kirtland Air Force Base Bulk Fuels Facility Expansion  
 of the Dissolved Plume Groundwater Treatment System Design  
 13 September 2018  
 Page 2 of 2

- 2015 Western Star Roll Off Truck, License #: WD121651, registered in New Mexico
- 2015 Western Star Roll Off Truck, License #: WD124756, registered in New Mexico

Ms. Jeanne Dye-Porto (AFCEC/CZO) has reviewed this package and authorized EA to forward it for your review. EA respectfully requests your review of the attached summary table and analytical data for determination if disposal can be authorized at the Kirtland AFB C&D landfill. Upon receiving notification of Kirtland AFB's acceptance of the waste, EA will coordinate transport and disposal of the roll-off contents with ACT.

EA's Kirtland AFB Point of Contact is Mr. Scott Clark; 505-846-9017.

If you have any questions, please do not hesitate to contact me at 505-266-2225, or via e-mail at [landress@eaest.com](mailto:landress@eaest.com).

Sincerely,

Lane Address, PG

Attachments: Summary Analytical Table  
 Hall Environmental Analysis Laboratory Order No: Report 1808C17

cc: Jeanne Dye-Porto, [jeanne.dye-porto@us.af.mil](mailto:jeanne.dye-porto@us.af.mil)  
 Scott Clark, [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)  
 Sheen Kottkamp, [sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)  
 Melissa Clark, [melissa.clark.8@us.af.mil](mailto:melissa.clark.8@us.af.mil)  
 Ben Moayyad, [Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)  
 Devon Jercinovic, [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
 Bernie Bockisch, [bbockisch@eaest.com](mailto:bbockisch@eaest.com)  
 Earl Morse, [emorse@eaest.com](mailto:emorse@eaest.com)

		LOCATION CODE					
		FIELD SAMPLE ID	KAFB-106242-1-IDW				
		SAMPLE DATE	20-Aug-18				
		SAMPLE PURPOSE	Waste Characterization				
		ROLL-OFF NO.	KAFB-106242-1				
Parameter	Method	Analyte	Units	TCLP Regulatory Level <sup>a</sup> or KAFB Limits <sup>b</sup>	Result	QUAL	PQL
RCRA Characteristics	SW1030	IGNITABILITY	°F	See footnote <sup>c</sup>	Neg	--	--
	SW846 Chapter 7	REACTIVE CYANIDE	mg/kg	NE	ND	--	0.23
	SW846 Chapter 7	REACTIVE SULFIDE (as total)	mg/kg	NE	ND	--	23.8
	SW9045	CORROSIVITY (pH)	S.U.	≥2 or ≤12.5	8.79	J	--
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.1
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.1
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0
		BARIUM	mg/L	100	ND	--	100
		CADMIUM	mg/L	1	ND	--	1.0
		CHROMIUM	mg/L	5	ND	--	5.0
		LEAD	mg/L	5	ND	--	5.0
		SELENIUM	mg/L	1	ND	--	1.0
		SILVER	mg/L	5	ND	--	5.0
	SW1311/7470A	MERCURY	mg/L	0.02	ND	--	0.020
TCLP PESTICIDES	SW1311/8081	CHLORDANE	mg/L	0.03	ND	--	0.030
		ENDRIN	mg/L	0.02	ND	--	0.020
		GAMMA-BHC (LINDANE)	mg/L	0.4	ND	--	0.40
		HEPTACHLOR	mg/L	0.008	ND	--	0.0080
		HEPTACHLOR EPOXIDE	mg/L	0.008	ND	--	0.0080
		METHOXYCHLOR	mg/L	10	ND	--	10
		TOXAPHENE	mg/L	0.5	ND	--	0.50
TCLP SVOCs	SW1311/8270C	2,4,5-TRICHLOROPHENOL	mg/L	400	ND	--	400
		2,4,6-TRICHLOROPHENOL	mg/L	2	ND	--	2.0
		2,4-DINITROTOLUENE	mg/L	0.13	ND	--	0.13
		2-METHYLPHENOL (o-Cresol)	mg/L	200	ND	--	200
		3- and 4-METHYLPHENOL (m- and o-Cresol)	mg/L	200	ND	--	200
		HEXACHLOROENZENE	mg/L	0.13	ND	--	0.13
		HEXACHLOROBUTADIENE	mg/L	0.5	ND	--	0.50
		HEXACHLOROETHANE	mg/L	3	ND	--	3.0
		NITROBENZENE	mg/L	2	ND	--	2.0
		PENTACHLOROPHENOL	mg/L	100	ND	--	100
		PYRIDINE	mg/L	5	ND	--	5.0
CRESOLS, TOTAL	mg/L	200	ND	--	200		
TCLP VOCS	SW1311/8260B	1,1-DICHLOROETHENE	mg/L	0.7	ND	--	0.70
		1,2-DICHLOROETHANE	mg/L	0.5	ND	--	0.50
		1,4-DICHLOROETHANE	mg/L	7.5	ND	--	7.5
		2-BUTANONE (MEK)	mg/L	200	ND	--	200
		BENZENE	mg/L	0.5	ND	--	0.50
		CARBON TETRACHLORIDE	mg/L	0.5	ND	--	0.50
		CHLOROETHENE	mg/L	100	ND	--	100
		CHLOROFORM	mg/L	6.0	ND	--	6.0
		TETRACHLOROETHENE	mg/L	0.7	ND	--	0.70
		TRICHLOROETHENE	mg/L	0.5	ND	--	0.50
		VINYL CHLORIDE	mg/L	0.2	ND	--	0.20
TPH	SW8015M/D	DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	9.8
		MOTOR OIL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	49
		GASOLINE RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	4.7
VOLATILES (BTEX)	SW8260B	BENZENE	mg/kg	10	ND	--	0.024
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.047
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.047
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.094

## Notes:

<sup>a</sup>TCLP Regulatory Level - Resource Conservation Recovery Act (RCRA) hazardous waste characteristic limits per 40CFR Part 261 Subpart C, Section 261.20 - 261.24.

<sup>b</sup>KAFB Limits - Kirtland AFB landfill requirements per the Department of Air Force Technical Memorandum for Kirtland AFB/Department of Energy/Sandia National Laboratories Restoration Agencies and Their Commercial Contractors (2009).

<sup>c</sup>Ignitability characteristic for solids from 40 CFR Part 261.21: "It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of moisture, or spontaneous chemical change, and when ignited burns so vigorously and persistently that it creates a hazard."

<sup>d</sup>KAFB limit for TPH measured as the sum of gasoline, diesel and motor oil range organics.

<sup>e</sup>KAFB limit for BTEX measured as the sum of benzene, toluene, ethylbenzene, and total xylenes.

> - greater than

BTEX - benzene, toluene, ethylbenzene, total xylenes

°F - degrees fahrenheit

J - Analyte detected below quantitation limit or estimated value

mg/L - milligram per liter

mg/kg - milligram per kilogram

ND - not detected above the PQL

NE - not established

Neg - negative

PQL - practical quantitation limit

QUAL - laboratory data qualifier

Shade- analyte detected above the detection limit

**Shade and Bold**- analyte detected above KAFB Landfill acceptance limit or TCLP Regulatory Level.

SVOCs - semivolatle organic compounds

S.U. - Standard units

TCLP - Toxicity Characteristic Leaching Procedure

TPH - total petroleum hydrocarbons

VOCs - volatile organic compounds



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 10, 2018

Amanda Smith  
EA Engineering  
320 Gold Ave SW Suite 1210  
Albuquerque, NM 87102  
TEL: (505) 224-9013  
FAX

RE: Kirtland AFB BFF

OrderNo.: 1808C17

Dear Amanda Smith:

Hall Environmental Analysis Laboratory received 1 sample(s) on 8/20/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order 1808C17

Date Reported: 9/10/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: KAFB-106242-1-IDW Roll off

Project: Kirtland AFB BFF

Collection Date: 8/20/2018 1:55:00 PM

Lab ID: 1808C17-001

Matrix: SOIL

Received Date: 8/20/2018 3:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: <b>rde</b>
Mercury	ND	0.020		mg/L	1	8/30/2018 3:15:26 PM	40069
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: <b>JLF</b>
Arsenic	ND	5.0		mg/L	1	8/29/2018 10:33:20 AM	39960
Barium	ND	100		mg/L	1	8/29/2018 10:33:20 AM	39960
Cadmium	ND	1.0		mg/L	1	8/29/2018 10:33:20 AM	39960
Chromium	ND	5.0		mg/L	1	8/29/2018 10:33:20 AM	39960
Lead	ND	5.0		mg/L	1	8/29/2018 11:37:45 AM	39960
Selenium	ND	1.0		mg/L	1	8/29/2018 10:33:20 AM	39960
Silver	ND	5.0		mg/L	1	8/29/2018 10:33:20 AM	39960
<b>EPA METHOD 8081: PESTICIDES TCLP</b>							Analyst: <b>TOM</b>
Chlordane	ND	0.030		mg/L	1	8/30/2018 11:37:36 AM	39988
Endrin	ND	0.020		mg/L	1	8/30/2018 11:37:36 AM	39988
gamma-BHC (Lindane)	ND	0.40		mg/L	1	8/30/2018 11:37:36 AM	39988
Heptachlor	ND	0.0080		mg/L	1	8/30/2018 11:37:36 AM	39988
Heptachlor epoxide	ND	0.0080		mg/L	1	8/30/2018 11:37:36 AM	39988
Methoxychlor	ND	10		mg/L	1	8/30/2018 11:37:36 AM	39988
Toxaphene	ND	0.50		mg/L	1	8/30/2018 11:37:36 AM	39988
Surr: Decachlorobiphenyl	78.1	58.3-109		%Rec	1	8/30/2018 11:37:36 AM	39988
Surr: Tetrachloro-m-xylene	72.9	40.1-101		%Rec	1	8/30/2018 11:37:36 AM	39988
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>lrm</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/25/2018 4:00:30 PM	39939
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/25/2018 4:00:30 PM	39939
Surr: DNOP	110	50.6-138		%Rec	1	8/25/2018 4:00:30 PM	39939
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/22/2018 10:03:19 PM	39915
Surr: BFB	86.9	15-316		%Rec	1	8/22/2018 10:03:19 PM	39915
<b>EPA METHOD 8270C TCLP</b>							Analyst: <b>DAM</b>
2-Methylphenol	ND	200		mg/L	1	8/31/2018 2:40:46 PM	39990
3+4-Methylphenol	ND	200		mg/L	1	8/31/2018 2:40:46 PM	39990
2,4-Dinitrotoluene	ND	0.13		mg/L	1	8/31/2018 2:40:46 PM	39990
Hexachlorobenzene	ND	0.13		mg/L	1	8/31/2018 2:40:46 PM	39990
Hexachlorobutadiene	ND	0.50		mg/L	1	8/31/2018 2:40:46 PM	39990
Hexachloroethane	ND	3.0		mg/L	1	8/31/2018 2:40:46 PM	39990
Nitrobenzene	ND	2.0		mg/L	1	8/31/2018 2:40:46 PM	39990
Pentachlorophenol	ND	100		mg/L	1	8/31/2018 2:40:46 PM	39990
Pyridine	ND	5.0		mg/L	1	8/31/2018 2:40:46 PM	39990
2,4,5-Trichlorophenol	ND	400		mg/L	1	8/31/2018 2:40:46 PM	39990

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1808C17

Date Reported: 9/10/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: KAFB-106242-1-IDW Roll off

Project: Kirtland AFB BFF

Collection Date: 8/20/2018 1:55:00 PM

Lab ID: 1808C17-001

Matrix: SOIL

Received Date: 8/20/2018 3:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C TCLP</b>							Analyst: <b>DAM</b>
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	8/31/2018 2:40:46 PM	39990
Cresols, Total	ND	200		mg/L	1	8/31/2018 2:40:46 PM	39990
Surr: 2-Fluorophenol	36.4	15-102		%Rec	1	8/31/2018 2:40:46 PM	39990
Surr: Phenol-d5	28.0	15-87.7		%Rec	1	8/31/2018 2:40:46 PM	39990
Surr: 2,4,6-Tribromophenol	54.5	39.9-111		%Rec	1	8/31/2018 2:40:46 PM	39990
Surr: Nitrobenzene-d5	50.9	35.1-107		%Rec	1	8/31/2018 2:40:46 PM	39990
Surr: 2-Fluorobiphenyl	48.9	36.7-100		%Rec	1	8/31/2018 2:40:46 PM	39990
Surr: 4-Terphenyl-d14	75.6	42.6-129		%Rec	1	8/31/2018 2:40:46 PM	39990
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>RAA</b>
Benzene	ND	0.024		mg/Kg	1	8/24/2018 3:23:26 PM	39915
Toluene	ND	0.047		mg/Kg	1	8/24/2018 3:23:26 PM	39915
Ethylbenzene	ND	0.047		mg/Kg	1	8/24/2018 3:23:26 PM	39915
Xylenes, Total	ND	0.094		mg/Kg	1	8/24/2018 3:23:26 PM	39915
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	8/24/2018 3:23:26 PM	39915
Surr: Toluene-d8	98.0	70-130		%Rec	1	8/24/2018 3:23:26 PM	39915
<b>VOLATILES BY 8260B/1311</b>							Analyst: <b>RAA</b>
Benzene	ND	0.50		mg/L	1	8/28/2018 1:40:00 PM	39997
2-Butanone	ND	200		mg/L	1	8/28/2018 1:40:00 PM	39997
Carbon Tetrachloride	ND	0.50		mg/L	1	8/28/2018 1:40:00 PM	39997
Chlorobenzene	ND	100		mg/L	1	8/28/2018 1:40:00 PM	39997
Chloroform	ND	6.0		mg/L	1	8/28/2018 1:40:00 PM	39997
1,4-Dichlorobenzene	ND	7.5		mg/L	1	8/28/2018 1:40:00 PM	39997
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	8/28/2018 1:40:00 PM	39997
1,1-Dichloroethene	ND	0.70		mg/L	1	8/28/2018 1:40:00 PM	39997
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	8/28/2018 1:40:00 PM	39997
Trichloroethene (TCE)	ND	0.50		mg/L	1	8/28/2018 1:40:00 PM	39997
Vinyl chloride	ND	0.20		mg/L	1	8/28/2018 1:40:00 PM	39997
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	1	8/28/2018 1:40:00 PM	39997
Surr: 4-Bromofluorobenzene	102	57.3-148		%Rec	1	8/28/2018 1:40:00 PM	39997
Surr: Dibromofluoromethane	112	70-130		%Rec	1	8/28/2018 1:40:00 PM	39997
Surr: Toluene-d8	95.5	70-130		%Rec	1	8/28/2018 1:40:00 PM	39997

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

# Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com  
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

**Client:** HALL ENVIRONMENTAL ANALYSIS LAB **Batch #:** 180822065  
**Address:** 4901 HAWKINS NE SUITE D **Project Name:** 1808C17  
ALBUQUERQUE, NM 87109  
**Attn:** ANDY FREEMAN

## Analytical Results Report

**Sample Number** 180822065-001 **Sampling Date** 8/20/2018 **Date/Time Received** 8/22/2018 11:05 AM  
**Client Sample ID** 1808C17-001B / KAFB-106242- **Sampling Time** 1:55 PM  
1-IDW ROLL OFF BIN 1  
**Matrix** Soil  
**Comments**

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide (reactive)	ND	mg/Kg	0.23	8/28/2018 11:45:00 AM	RPU	SW846 CH7	
Ignitability	Negative			8/30/2018 10:00:00 AM	GPB	EPA 1030	
pH	8.79	ph Units		8/23/2018 3:15:00 PM	RPU	EPA 9045	
Reactive sulfide	ND	mg/kg	23.8	8/30/2018 2:30:00 PM	ETL	SW846 CH7	
TCLP 2,4,5-TP (Silvex)	ND	ppm	0.1	8/30/2018 11:33:00 AM	MAH	EPA 8151A	
TCLP 2,4-D	ND	ppm	0.1	8/30/2018 11:33:00 AM	MAH	EPA 8151A	
TCLP Pentachlorophenol	ND	ppm	0.1	8/30/2018 11:33:00 AM	MAH	EPA 8151A	

Authorized Signature

  
Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level  
ND Not Detected  
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.  
The results reported relate only to the samples indicated.  
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT-CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595  
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Thursday, August 30, 2018

Page 1 of 1

# Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

**Client:** HALL ENVIRONMENTAL ANALYSIS LAB      **Batch #:** 180822065  
**Address:** 4901 HAWKINS NE SUITE D      **Project Name:** 1808C17  
ALBUQUERQUE, NM 87109  
**Attn:** ANDY FREEMAN

## Analytical Results Report Quality Control Data

### Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
TCLP Pentachlorophenol	0.00877	ppm	0.01	87.7	50-150	8/30/2018	8/30/2018
TCLP 2,4-D	0.0887	ppm	0.1	88.7	50-150	8/30/2018	8/30/2018
TCLP 2,4,5-TP (Silvex)	0.0238	ppm	0.025	95.2	50-150	8/30/2018	8/30/2018
Reactive sulfide	0.160	mg/kg	0.2	80.0	80-120	8/30/2018	8/30/2018
Cyanide (reactive)	0.496	mg/kg	0.5	99.2	70-130	8/27/2018	8/28/2018

### Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
180822065-001	TCLP Pentachlorophenol	ND	0.00914	ppm	0.01	91.4	50-150	8/30/2018	8/30/2018
180822065-001	TCLP 2,4-D	ND	0.0903	ppm	0.1	90.3	50-150	8/30/2018	8/30/2018
180822065-001	TCLP 2,4,5-TP (Silvex)	ND	0.0243	ppm	0.025	97.2	50-150	8/30/2018	8/30/2018
180822065-001	Reactive sulfide	ND	19.0	mg/kg	23.8	79.8	70-130	8/30/2018	8/30/2018
180822065-001	Cyanide (reactive)	ND	11.8	mg/kg	11.5	102.6	60-140	8/27/2018	8/28/2018

### Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
TCLP Pentachlorophenol	0.00924	ppm	0.01	92.4	1.1	0-50	8/30/2018	8/30/2018
TCLP 2,4-D	0.0916	ppm	0.1	91.6	1.4	0-50	8/30/2018	8/30/2018
TCLP 2,4,5-TP (Silvex)	0.0245	ppm	0.025	98.0	0.8	0-50	8/30/2018	8/30/2018
Cyanide (reactive)	11.8	mg/kg	11.5	102.6	0.0	0-25	8/27/2018	8/28/2018

### Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Cyanide (reactive)	ND	mg/Kg	1	8/27/2018	8/28/2018
Reactive sulfide	ND	mg/kg	0.1	8/30/2018	8/30/2018
TCLP 2,4,5-TP (Silvex)	ND	ppm	0.1	8/30/2018	8/30/2018
TCLP 2,4-D	ND	ppm	0.1	8/30/2018	8/30/2018
TCLP Pentachlorophenol	ND	ppm	0.1	8/30/2018	8/30/2018

### Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C585  
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Thursday, August 30, 2018

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# Anatek Labs, Inc.

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<b>Client:</b>	HALL ENVIRONMENTAL ANALYSIS LAB	<b>Batch #:</b>	180822065
<b>Address:</b>	4901 HAWKINS NE SUITE D ALBUQUERQUE, NM 87109	<b>Project Name:</b>	1808C17
<b>Attn:</b>	ANDY FREEMAN		

## Analytical Results Report Quality Control Data

AR Acceptable Range  
 ND Not Detected  
 PQL Practical Quantitation Limit  
 RPD Relative Percentage Difference

### Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:CS95  
 Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:CS85; MT:Cert0095; FL(NELAP): E871099

Thursday, August 30, 2018

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808C17**

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID <b>LCS-39939</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>39939</b>		RunNo: <b>53657</b>							
Prep Date: <b>8/22/2018</b>	Analysis Date: <b>8/23/2018</b>		SeqNo: <b>1770197</b>				Units: <b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	50.00	0	91.0	70	130			
Surr: DNOP	4.9		5.000		98.5	50.6	138			

Sample ID <b>MB-39939</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>PBS</b>	Batch ID: <b>39939</b>		RunNo: <b>53657</b>							
Prep Date: <b>8/22/2018</b>	Analysis Date: <b>8/23/2018</b>		SeqNo: <b>1770198</b>				Units: <b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.8		10.00		97.5	50.6	138			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808C17**

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID <b>MB-39915</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>39915</b>	RunNo: <b>53636</b>								
Prep Date: <b>8/21/2018</b>	Analysis Date: <b>8/22/2018</b>	SeqNo: <b>1768784</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	910		1000		90.8	15	316			

Sample ID <b>LCS-39915</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>39915</b>	RunNo: <b>53636</b>								
Prep Date: <b>8/21/2018</b>	Analysis Date: <b>8/22/2018</b>	SeqNo: <b>1768785</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	90.4	75.9	131			
Surr: BFB	1000		1000		102	15	316			

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D Sample Diluted Due to Matrix	E Value above quantitation range
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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808C17**

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	MB-39988	SampType:	MBLK	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	PBW	Batch ID:	39988	RunNo:	53824					
Prep Date:	8/27/2018	Analysis Date:	8/30/2018	SeqNo:	1776155	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0016		0.002500		65.5	58.3	109			
Surr: Tetrachloro-m-xylene	0.0015		0.002500		59.9	40.1	101			

Sample ID	LCS-39988	SampType:	LCS	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	LCSW	Batch ID:	39988	RunNo:	53824					
Prep Date:	8/27/2018	Analysis Date:	8/30/2018	SeqNo:	1776156	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00016	0.00010	0.0005000	0	31.4	49.5	127			S
gamma-BHC (Lindane)	0.00015	0.00010	0.0005000	0	31.0	49.9	124			S
Heptachlor	0.00014	0.00010	0.0005000	0	27.2	41	122			S
Heptachlor epoxide	0.00017	0.00010	0.0005000	0	33.1	52.2	121			S
Methoxychlor	0.00016	0.00010	0.0005000	0	31.8	40.2	134			S
Surr: Decachlorobiphenyl	0.00077		0.002500		30.6	58.3	109			S
Surr: Tetrachloro-m-xylene	0.00040		0.002500		15.8	40.1	101			S

Sample ID	MB-40115	SampType:	MBLK	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	PBW	Batch ID:	40115	RunNo:	53992					
Prep Date:	9/4/2018	Analysis Date:	9/7/2018	SeqNo:	1783244	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0017		0.002500		67.2	58.3	109			
Surr: Tetrachloro-m-xylene	0.0018		0.002500		72.9	40.1	101			

Sample ID	LCS-40115	SampType:	LCS	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	LCSW	Batch ID:	40115	RunNo:	53992					
Prep Date:	9/4/2018	Analysis Date:	9/7/2018	SeqNo:	1783245	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0016		0.002500		63.3	58.3	109			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		62.6	40.1	101			

**Qualifiers:**

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D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808C17

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>LCSD-40115</b>	SampType:	<b>LCSD</b>	TestCode:	<b>EPA Method 8081: Pesticides TCLP</b>					
Client ID:	<b>LCSS02</b>	Batch ID:	<b>40115</b>	RunNo:	<b>53992</b>					
Prep Date:	<b>9/4/2018</b>	Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>1783246</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0017		0.002500		67.7	58.3	109	0	0	
Surr: Tetrachloro-m-xylene	0.0015		0.002500		59.7	40.1	101	0	0	

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808C17**

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>mb-39915</b> SampType: <b>MBLK</b> TestCode: <b>EPA Method 8260B: Volatiles Short List</b>										
Client ID: <b>PBS</b> Batch ID: <b>39915</b> RunNo: <b>53638</b>										
Prep Date: <b>8/21/2018</b> Analysis Date: <b>8/22/2018</b> SeqNo: <b>1771074</b> Units: <b>mg/Kg</b>										
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		93.5	70	130			
Surr: 4-Bromofluorobenzene	0.52		0.5000		105	70	130			
Surr: Dibromofluoromethane	0.45		0.5000		90.9	70	130			
Surr: Toluene-d8	0.49		0.5000		98.6	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>lcs-39915</b> SampType: <b>LCS</b> TestCode: <b>EPA Method 8260B: Volatiles Short List</b>										
Client ID: <b>LCSS</b> Batch ID: <b>39915</b> RunNo: <b>53638</b>										
Prep Date: <b>8/21/2018</b> Analysis Date: <b>8/22/2018</b> SeqNo: <b>1771075</b> Units: <b>mg/Kg</b>										
Benzene	1.0	0.025	1.000	0	100	70	130			
Toluene	1.0	0.050	1.000	0	101	70	130			
Surr: 1,2-Dichloroethane-d4	0.48		0.5000		96.4	70	130			
Surr: 4-Bromofluorobenzene	0.55		0.5000		109	70	130			
Surr: Dibromofluoromethane	0.48		0.5000		96.5	70	130			
Surr: Toluene-d8	0.48		0.5000		95.2	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808C17

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	Ics-39997		SampType: LCS	TestCode: Volatiles by 8260B/1311						
Client ID:	LCSS		Batch ID: 39997	RunNo: 53749						
Prep Date:	8/27/2018		Analysis Date: 8/28/2018	SeqNo: 1773361	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.44	0.10	0.4000	0	110	70	130			
Chlorobenzene	0.40	0.10	0.4000	0	99.4	70	130			
1,1-Dichloroethene	0.47	0.10	0.4000	0	116	70	130			
Trichloroethene (TCE)	0.41	0.10	0.4000	0	103	70	130			
Surr: 1,2-Dichloroethane-d4	0.22		0.2000		111	70	130			
Surr: 4-Bromofluorobenzene	0.20		0.2000		102	57.3	148			
Surr: Dibromofluoromethane	0.22		0.2000		112	70	130			
Surr: Toluene-d8	0.20		0.2000		97.7	70	130			

Sample ID	mb-39997		SampType: MBLK	TestCode: Volatiles by 8260B/1311						
Client ID:	PBS		Batch ID: 39997	RunNo: 53749						
Prep Date:	8/27/2018		Analysis Date: 8/28/2018	SeqNo: 1773362	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.22		0.2000		109	70	130			
Surr: 4-Bromofluorobenzene	0.20		0.2000		100	57.3	148			
Surr: Dibromofluoromethane	0.22		0.2000		111	70	130			
Surr: Toluene-d8	0.19		0.2000		96.4	70	130			

Sample ID	1808c17-001ams		SampType: MS	TestCode: Volatiles by 8260B/1311						
Client ID:	KAFB-106242-1-IDW		Batch ID: 39997	RunNo: 53749						
Prep Date:	8/27/2018		Analysis Date: 8/28/2018	SeqNo: 1774021	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.45	0.10	0.4000	0	111	44.5	152			
Chlorobenzene	0.39	0.10	0.4000	0	97.0	70	130			
1,1-Dichloroethene	0.47	0.10	0.4000	0	116	79.1	132			
Trichloroethene (TCE)	0.42	0.10	0.4000	0	104	70	130			
Surr: 1,2-Dichloroethane-d4	0.23		0.2000		113	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
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H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
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S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Kirtland AFB BFF  
 Completion Report for Data Gap Monitoring Wells  
 SWMUs ST-106/SS-111

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June 2020

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808C17**

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.20		0.2000		102	57.3	148			
Surr: Dibromofluoromethane	0.22		0.2000		112	70	130			
Surr: Toluene-d8	0.19		0.2000		94.9	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.41	0.10	0.4000	0	103	44.5	152	7.57	20	
Chlorobenzene	0.37	0.10	0.4000	0	93.7	70	130	3.44	20	
1,1-Dichloroethene	0.43	0.10	0.4000	0	107	79.1	132	8.09	20	
Trichloroethene (TCE)	0.39	0.10	0.4000	0	97.5	70	130	6.84	20	
Surr: 1,2-Dichloroethane-d4	0.22		0.2000		112	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.21		0.2000		103	57.3	148	0	0	
Surr: Dibromofluoromethane	0.21		0.2000		107	70	130	0	0	
Surr: Toluene-d8	0.19		0.2000		96.2	70	130	0	0	

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808C17

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	Ics-39990		SampType: LCS	TestCode: EPA Method 8270C TCLP						
Client ID:	LCSS		Batch ID: 39990	RunNo: 53867						
Prep Date:	8/27/2018		Analysis Date: 8/31/2018	SeqNo: 1777459	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.068	0.0010	0.1000	0	68.4	47.8	99.2			
3+4-Methylphenol	0.14	0.0010	0.2000	0	69.9	41.5	118			
2,4-Dinitrotoluene	0.059	0.0010	0.1000	0	59.5	44.4	81			
Hexachlorobenzene	0.062	0.0010	0.1000	0	62.2	49.5	91.6			
Hexachlorobutadiene	0.069	0.0010	0.1000	0	68.9	38.6	93			
Hexachloroethane	0.064	0.0010	0.1000	0	64.1	39.4	79.9			
Nitrobenzene	0.065	0.0010	0.1000	0	65.3	47.4	96.2			
Pentachlorophenol	0.063	0.0010	0.1000	0	62.5	39.4	79.9			
Pyridine	0.056	0.0010	0.1000	0	56.5	15	79.9			
2,4,5-Trichlorophenol	0.068	0.0010	0.1000	0	67.8	47.4	118			
2,4,6-Trichlorophenol	0.071	0.0010	0.1000	0	71.4	47.4	101			
Cresols, Total	0.21	0.0010	0.3000	0	69.4	44.1	111			
Surr: 2-Fluorophenol	0.12		0.2000		60.7	15	102			
Surr: Phenol-d5	0.12		0.2000		60.7	15	87.7			
Surr: 2,4,6-Tribromophenol	0.12		0.2000		59.3	39.9	111			
Surr: Nitrobenzene-d5	0.070		0.1000		69.8	35.1	107			
Surr: 2-Fluorobiphenyl	0.068		0.1000		67.7	36.7	100			
Surr: 4-Terphenyl-d14	0.076		0.1000		76.1	42.6	129			

Sample ID	mb-39990		SampType: MBLK	TestCode: EPA Method 8270C TCLP						
Client ID:	PBS		Batch ID: 39990	RunNo: 53867						
Prep Date:	8/27/2018		Analysis Date: 8/31/2018	SeqNo: 1777460	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.11		0.2000		56.7	15	102			
Surr: Phenol-d5	0.10		0.2000		51.9	15	87.7			
Surr: 2,4,6-Tribromophenol	0.12		0.2000		60.3	39.9	111			

**Qualifiers:**

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D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Kirtland AFB BFF  
 Completion Report for Data Gap Monitoring Wells  
 SWMUs ST-106/SS-111

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June 2020

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808C17**

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>mb-39990</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8270C TCLP</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>39990</b>	RunNo:	<b>53867</b>					
Prep Date:	<b>8/27/2018</b>	Analysis Date:	<b>8/31/2018</b>	SeqNo:	<b>1777460</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.061		0.1000		60.6	35.1	107			
Surr: 2-Fluorobiphenyl	0.062		0.1000		61.5	36.7	100			
Surr: 4-Terphenyl-d14	0.070		0.1000		70.0	42.6	129			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808C17**

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>MB-40069</b>	SampType:	<b>MBLK</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40069</b>	RunNo:	<b>53832</b>					
Prep Date:	<b>8/30/2018</b>	Analysis Date:	<b>8/30/2018</b>	SeqNo:	<b>1776251</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	<b>LCS-40069</b>	SampType:	<b>LCS</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40069</b>	RunNo:	<b>53832</b>					
Prep Date:	<b>8/30/2018</b>	Analysis Date:	<b>8/30/2018</b>	SeqNo:	<b>1776252</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

Page 12 of 13

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808C17**

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>MB-39960</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39960</b>	RunNo:	<b>53778</b>					
Prep Date:	<b>8/23/2018</b>	Analysis Date:	<b>8/29/2018</b>	SeqNo:	<b>1774633</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	<b>LCS-39960</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39960</b>	RunNo:	<b>53778</b>					
Prep Date:	<b>8/23/2018</b>	Analysis Date:	<b>8/29/2018</b>	SeqNo:	<b>1774635</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	111	80	120			
Barium	ND	100	0.5000	0	102	80	120			
Cadmium	ND	1.0	0.5000	0	102	80	120			
Chromium	ND	5.0	0.5000	0	99.1	80	120			
Selenium	ND	1.0	0.5000	0	101	80	120			
Silver	ND	5.0	0.1000	0	112	80	120			

Sample ID	<b>MB-39960</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39960</b>	RunNo:	<b>53778</b>					
Prep Date:	<b>8/23/2018</b>	Analysis Date:	<b>8/29/2018</b>	SeqNo:	<b>1774804</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0								

Sample ID	<b>LCS-39960</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39960</b>	RunNo:	<b>53778</b>					
Prep Date:	<b>8/23/2018</b>	Analysis Date:	<b>8/29/2018</b>	SeqNo:	<b>1774806</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0	0.5000	0	94.0	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**Sample Log-In Check List**

Client Name: EA Engineering Alb

Work Order Number: 1808C17

RcptNo: 1

Received By: **Isaiah Ortiz** 8/20/2018 3:50:00 PM *IO*

Completed By: **Ashley Gallegos** 8/20/2018 5:01:10 PM *AG*

Reviewed By: *JAB 08/21/18*

Labeled by: ENN 8/21/18

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
Samples were collected the same day and chilled.  
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: \_\_\_\_\_  
 (2 or 42 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: \_\_\_\_\_  
*ENN 8/21/18*

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

16. Additional remarks:

**Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	8.4	Good	Not Present			





EA Engineering, Science, & Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, New Mexico 87102  
Phone: (505) 224-9013

September 13, 2018

**DRAFT**

Ms. Katrina Wheelock  
Solid Waste Program Manager  
Environmental Management  
377 MSG/CEIE  
Kirtland AFB, New Mexico 87117

Subject: Request to dispose non-hazardous soil cuttings at Kirtland C&D Landfill  
Roll-off Identification: KAFB-106242-2 (Bin ID #22023)  
USACE Contract No. W912DR-12-D-0006-DM01

Dear Ms. Wheelock,

EA Engineering, Science, and Technology, Inc., PBC (EA) is requesting permission to dispose of non-hazardous soil drill cuttings and plastic liner from one roll-off container to the Kirtland Air Force Base (AFB) Construction and Demolition (C&D) debris landfill. The roll-off bin included in this request is:

- EA identification of KAFB-106242-2 (Bin ID #22023) contains approximately 15 cubic yards of soil in a 20-yard, open top, roll off.

In August 2018 EA installed a groundwater monitoring well, KAFB-106242, associated with the Kirtland Bulk Fuels Facility environmental restoration project. Well KAFB-106242 is located on City of Albuquerque property on San Pedro Drive SE. Drill cuttings were containerized in a plastic-lined, steel, roll-off pending laboratory analysis for waste characterization. Any excess moisture in the bin was stabilized using Hydrosorb®, a superabsorbent polymer. The roll-off bin is currently residing in the EA investigation derived waste yard near 1601 Perimeter Circle SE, on Kirtland AFB.

One five-point composite waste characterization sample was collected from the roll-off bin and delivered to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis. The sample was analyzed for all the required parameters per the Kirtland AFB Landfill Acceptance Memorandum (January 2009). The attached analytical results (Report 1808C18) for the composite sample confirms the drill cuttings meet waste acceptance requirements for disposal at the Kirtland C&D landfill.

The roll-off container is owned and/or leased by Advanced Chemical Transport Environmental Services Inc. (ACT) with roll-off identification numbers marked clearly on the roll off. ACT will utilize one of the following vehicles for waste transport:



W912DR-12-D-0006-DM01  
 Kirtland Air Force Base Bulk Fuels Facility Expansion  
 of the Dissolved Plume Groundwater Treatment System Design  
 13 September 2018  
 Page 2 of 2

- 2015 Western Star Roll Off Truck, License #: WD121651, registered in New Mexico
- 2015 Western Star Roll Off Truck, License #: WD124756, registered in New Mexico

Ms. Jeanne Dye-Porto (AFCEC/CZO) has reviewed this package and authorized EA to forward it for your review. EA respectfully requests your review of the attached summary table and analytical data for determination if disposal can be authorized at the Kirtland AFB C&D landfill. Upon receiving notification of Kirtland AFB's acceptance of the waste, EA will coordinate transport and disposal of the roll-off contents with ACT.

EA's Kirtland AFB Point of Contact is Mr. Scott Clark; 505-846-9017.

If you have any questions, please do not hesitate to contact me at 505-266-2225, or via e-mail at [landress@eaest.com](mailto:landress@eaest.com).

Sincerely,

Lane Address, PG

Attachments: Summary Analytical Table  
 Hall Environmental Analysis Laboratory Order No: Report 1808C18

cc: Jeanne Dye-Porto, [jeanne.dye-porto@us.af.mil](mailto:jeanne.dye-porto@us.af.mil)  
 Scott Clark, [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)  
 Sheen Kottkamp, [sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)  
 Melissa Clark, [melissa.clark.8@us.af.mil](mailto:melissa.clark.8@us.af.mil)  
 Ben Moayyad, [Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)  
 Devon Jercinovic, [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
 Bernie Bockisch, [bbockisch@eaest.com](mailto:bbockisch@eaest.com)  
 Earl Morse, [emorse@eaest.com](mailto:emorse@eaest.com)

			LOCATION CODE				
			FIELD SAMPLE ID		KAFB-106242-2-IDW		
			SAMPLE DATE		20-Aug-18		
			SAMPLE PURPOSE		Waste Characterization		
			ROLL-OFF NO.		KAFB-106242-2		
Parameter	Method	Analyte	Units	TCLP Regulatory Level <sup>a</sup> or KAFB Limits <sup>b</sup>	Result	QUAL	PQL
RCRA Characteristics	SW1030	IGNITABILITY	°F	See footnote <sup>c</sup>	Neg	--	--
	SW846 Chapter 7	REACTIVE CYANIDE (as total)	mg/kg	NE	ND	--	0.234
	SW846 Chapter 7	REACTIVE SULFIDE (as total)	mg/kg	NE	ND	--	23.4
	SW9045	CORROSIVITY (pH)	S.U.	≥2 or ≤12.5	8.67	J	--
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.1
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.1
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0
		BARIUM	mg/L	100	ND	--	100
		CADMIUM	mg/L	1	ND	--	1.0
		CHROMIUM	mg/L	5	ND	--	5.0
		LEAD	mg/L	5	ND	--	5.0
		SELENIUM	mg/L	1	ND	--	1.0
	SILVER	mg/L	5	ND	--	5.0	
	SW1311/7470A	MERCURY	mg/L	0.02	ND	--	0.020
TCLP PESTICIDES	SW1311/8081	CHLORDANE	mg/L	0.03	ND	--	0.030
		ENDRIN	mg/L	0.02	ND	--	0.020
		GAMMA-BHC (LINDANE)	mg/L	0.4	ND	--	0.40
		HEPTACHLOR	mg/L	0.008	ND	--	0.0080
		HEPTACHLOR EPOXIDE	mg/L	0.008	ND	--	0.0080
		METHOXYCHLOR	mg/L	10	ND	--	10
TCLP SVOCs	SW1311/8270C	2,4,5-TRICHLOROPHENOL	mg/L	400	ND	--	400
		2,4,6-TRICHLOROPHENOL	mg/L	2	ND	--	2.0
		2,4-DINITROTOLUENE	mg/L	0.13	ND	--	0.13
		2-METHYLPHENOL (o-Cresol)	mg/L	200	ND	--	200
		3- and 4-METHYLPHENOL (m- and o-Cresol)	mg/L	200	ND	--	200
		HEXACHLOROBENZENE	mg/L	0.13	ND	--	0.13
		HEXACHLOROBUTADIENE	mg/L	0.5	ND	--	0.50
		HEXACHLOROETHANE	mg/L	3	ND	--	3.0
		NITROBENZENE	mg/L	2	ND	--	2.0
		PENTACHLOROPHENOL	mg/L	100	ND	--	100
		PYRIDINE	mg/L	5	ND	--	5.0
		CRESOLS, TOTAL	mg/L	200	ND	--	200
		TCLP VOCs	SW1311/8260B	1,1-DICHLOROETHENE	mg/L	0.7	ND
1,2-DICHLOROETHANE	mg/L			0.5	ND	--	0.50
1,4-DICHLOROETHANE	mg/L			7.5	ND	--	7.5
2-BUTANONE (MEK)	mg/L			200	ND	--	200
BENZENE	mg/L			0.5	ND	--	0.50
CARBON TETRACHLORIDE	mg/L			0.5	ND	--	0.50
CHLOROBENZENE	mg/L			100	ND	--	100
CHLOROFORM	mg/L			6.0	ND	--	6.0
TETRACHLOROETHENE	mg/L			0.7	ND	--	0.70
TRICHLOROETHENE	mg/L			0.5	ND	--	0.50
VINYL CHLORIDE	mg/L	0.2	ND	--	0.20		
TPH	SW8015M/D	DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	9.6
		MOTOR OIL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	48
		GASOLINE RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	4.9
VOLATILES (BTEX)	SW8260B	BENZENE	mg/kg	10	ND	--	0.025
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.049
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.049
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.099

## Notes:

<sup>a</sup>TCLP Regulatory Level - Resource Conservation Recovery Act (RCRA) hazardous waste characteristic limits per 40CFR Part 261 Subpart C, Section 261.20 - 261.24.

<sup>b</sup>KAFB Limits - Kirtland AFB landfill requirements per the Department of Air Force Technical Memorandum for Kirtland AFB/Department of Energy/Sandia National Laboratories Restoration Agencies and Their Commercial Contractors (2009).

<sup>c</sup>Ignitability characteristic for solids from 40 CFR Part 261.21: "It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of

<sup>d</sup>KAFB limit for TPH measured as the sum of gasoline, diesel and motor oil range organics.

<sup>e</sup>KAFB limit for BTEX measured as the sum of benzene, toluene, ethylbenzene, and total xylenes.

> - greater than

BTEX - benzene, toluene, ethylbenzene, total xylenes

°F - degrees fahrenheit

J - Analyte detected below quantitation limit or estimated value

mg/L - milligram per liter

mg/kg - milligram per kilogram

ND - not detected above the PQL

NE - not established

Neg - negative

PQL - practical quantitation limit

QUAL - laboratory data qualifier

Shade- analyte detected above the detection limit

**Shade and Bold-** analyte detected above KAFB Landfill acceptance limit or TCLP Regulatory Level.

SVOCs - semivolatile organic compounds

S.U. - Standard units

TCLP - Toxicity Characteristic Leaching Procedure

TPH - total petroleum hydrocarbons

VOCs - volatile organic compounds



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 10, 2018

Amanda Smith  
EA Engineering  
320 Gold Ave SW Suite 1210  
Albuquerque, NM 87102  
TEL: (505) 224-9013  
FAX

RE: Kirtland AFB BFF

OrderNo.: 1808C18

Dear Amanda Smith:

Hall Environmental Analysis Laboratory received 1 sample(s) on 8/20/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order 1808C18

Date Reported: 9/10/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: KAFB-106242-2-IDW Roll off

Project: Kirtland AFB BFF

Collection Date: 8/20/2018 2:35:00 PM

Lab ID: 1808C18-001

Matrix: SOIL

Received Date: 8/20/2018 3:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: <b>rde</b>
Mercury	ND	0.020		mg/L	1	8/30/2018 3:17:18 PM	40069
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: <b>JLF</b>
Arsenic	ND	5.0		mg/L	1	8/29/2018 10:34:46 AM	39960
Barium	ND	100		mg/L	1	8/29/2018 10:34:46 AM	39960
Cadmium	ND	1.0		mg/L	1	8/29/2018 10:34:46 AM	39960
Chromium	ND	5.0		mg/L	1	8/29/2018 10:34:46 AM	39960
Lead	ND	5.0		mg/L	1	8/29/2018 11:39:16 AM	39960
Selenium	ND	1.0		mg/L	1	8/29/2018 10:34:46 AM	39960
Silver	ND	5.0		mg/L	1	8/29/2018 10:34:46 AM	39960
<b>EPA METHOD 8081: PESTICIDES TCLP</b>							Analyst: <b>TOM</b>
Chlordane	ND	0.030		mg/L	1	8/30/2018 11:50:41 AM	39988
Endrin	ND	0.020		mg/L	1	8/30/2018 11:50:41 AM	39988
gamma-BHC (Lindane)	ND	0.40		mg/L	1	8/30/2018 11:50:41 AM	39988
Heptachlor	ND	0.0080		mg/L	1	8/30/2018 11:50:41 AM	39988
Heptachlor epoxide	ND	0.0080		mg/L	1	8/30/2018 11:50:41 AM	39988
Methoxychlor	ND	10		mg/L	1	8/30/2018 11:50:41 AM	39988
Toxaphene	ND	0.50		mg/L	1	8/30/2018 11:50:41 AM	39988
Surr: Decachlorobiphenyl	51.5	58.3-109	S	%Rec	1	8/30/2018 11:50:41 AM	39988
Surr: Tetrachloro-m-xylene	33.8	40.1-101	S	%Rec	1	8/30/2018 11:50:41 AM	39988
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>lrm</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	8/25/2018 4:22:34 PM	39939
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/25/2018 4:22:34 PM	39939
Surr: DNOP	120	50.6-138		%Rec	1	8/25/2018 4:22:34 PM	39939
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/22/2018 10:26:33 PM	39915
Surr: BFB	86.3	15-316		%Rec	1	8/22/2018 10:26:33 PM	39915
<b>EPA METHOD 8270C TCLP</b>							Analyst: <b>DAM</b>
2-Methylphenol	ND	200		mg/L	1	8/31/2018 3:10:15 PM	39990
3+4-Methylphenol	ND	200		mg/L	1	8/31/2018 3:10:15 PM	39990
2,4-Dinitrotoluene	ND	0.13		mg/L	1	8/31/2018 3:10:15 PM	39990
Hexachlorobenzene	ND	0.13		mg/L	1	8/31/2018 3:10:15 PM	39990
Hexachlorobutadiene	ND	0.50		mg/L	1	8/31/2018 3:10:15 PM	39990
Hexachloroethane	ND	3.0		mg/L	1	8/31/2018 3:10:15 PM	39990
Nitrobenzene	ND	2.0		mg/L	1	8/31/2018 3:10:15 PM	39990
Pentachlorophenol	ND	100		mg/L	1	8/31/2018 3:10:15 PM	39990
Pyridine	ND	5.0		mg/L	1	8/31/2018 3:10:15 PM	39990
2,4,5-Trichlorophenol	ND	400		mg/L	1	8/31/2018 3:10:15 PM	39990

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1808C18

Date Reported: 9/10/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: KAFB-106242-2-IDW Roll off

Project: Kirtland AFB BFF

Collection Date: 8/20/2018 2:35:00 PM

Lab ID: 1808C18-001

Matrix: SOIL

Received Date: 8/20/2018 3:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C TCLP</b>							Analyst: <b>DAM</b>
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	8/31/2018 3:10:15 PM	39990
Cresols, Total	ND	200		mg/L	1	8/31/2018 3:10:15 PM	39990
Surr: 2-Fluorophenol	38.4	15-102		%Rec	1	8/31/2018 3:10:15 PM	39990
Surr: Phenol-d5	30.9	15-87.7		%Rec	1	8/31/2018 3:10:15 PM	39990
Surr: 2,4,6-Tribromophenol	56.9	39.9-111		%Rec	1	8/31/2018 3:10:15 PM	39990
Surr: Nitrobenzene-d5	55.0	35.1-107		%Rec	1	8/31/2018 3:10:15 PM	39990
Surr: 2-Fluorobiphenyl	53.1	36.7-100		%Rec	1	8/31/2018 3:10:15 PM	39990
Surr: 4-Terphenyl-d14	73.9	42.6-129		%Rec	1	8/31/2018 3:10:15 PM	39990
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>RAA</b>
Benzene	ND	0.025		mg/Kg	1	8/24/2018 3:52:48 PM	39915
Toluene	ND	0.049		mg/Kg	1	8/24/2018 3:52:48 PM	39915
Ethylbenzene	ND	0.049		mg/Kg	1	8/24/2018 3:52:48 PM	39915
Xylenes, Total	ND	0.099		mg/Kg	1	8/24/2018 3:52:48 PM	39915
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	8/24/2018 3:52:48 PM	39915
Surr: Toluene-d8	102	70-130		%Rec	1	8/24/2018 3:52:48 PM	39915
<b>VOLATILES BY 8260B/1311</b>							Analyst: <b>RAA</b>
Benzene	ND	0.50		mg/L	1	8/28/2018 2:53:00 PM	39997
2-Butanone	ND	200		mg/L	1	8/28/2018 2:53:00 PM	39997
Carbon Tetrachloride	ND	0.50		mg/L	1	8/28/2018 2:53:00 PM	39997
Chlorobenzene	ND	100		mg/L	1	8/28/2018 2:53:00 PM	39997
Chloroform	ND	6.0		mg/L	1	8/28/2018 2:53:00 PM	39997
1,4-Dichlorobenzene	ND	7.5		mg/L	1	8/28/2018 2:53:00 PM	39997
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	8/28/2018 2:53:00 PM	39997
1,1-Dichloroethene	ND	0.70		mg/L	1	8/28/2018 2:53:00 PM	39997
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	8/28/2018 2:53:00 PM	39997
Trichloroethene (TCE)	ND	0.50		mg/L	1	8/28/2018 2:53:00 PM	39997
Vinyl chloride	ND	0.20		mg/L	1	8/28/2018 2:53:00 PM	39997
Surr: 1,2-Dichloroethane-d4	113	70-130		%Rec	1	8/28/2018 2:53:00 PM	39997
Surr: 4-Bromofluorobenzene	100	57.3-148		%Rec	1	8/28/2018 2:53:00 PM	39997
Surr: Dibromofluoromethane	112	70-130		%Rec	1	8/28/2018 2:53:00 PM	39997
Surr: Toluene-d8	95.2	70-130		%Rec	1	8/28/2018 2:53:00 PM	39997

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

# Anatek Labs, Inc.

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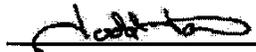
**Client:** HALL ENVIRONMENTAL ANALYSIS LAB      **Batch #:** 180822067  
**Address:** 4901 HAWKINS NE SUITE D      **Project Name:** 1808C18  
 ALBUQUERQUE, NM 87109  
**Attn:** ANDY FREEMAN

## Analytical Results Report

**Sample Number** 180822067-001      **Sampling Date** 8/20/2018      **Date/Time Received** 8/22/2018 11:05 AM  
**Client Sample ID** 1808C18-001B / KAFB-106242-      **Sampling Time** 2:35 PM  
 2-IDW ROLL OFF BIN 2  
**Matrix** Soil  
**Comments**

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide (reactive)	ND	mg/Kg	0.234	8/28/2018 11:45:00 AM	RPU	SW846 CH7	
Ignitability	Negative			8/30/2018 10:05:00 AM	GPB	EPA 1030	
pH	8.67	ph Units		8/23/2018 3:15:00 PM	RPU	EPA 9045	
Reactive sulfide	ND	mg/kg	23.4	8/30/2018 2:30:00 PM	ETL	SW846 CH7	
TCLP 2,4,5-TP (Silvex)	ND	ppm	0.1	8/30/2018 12:06:00 PM	MAH	EPA 8151A	
TCLP 2,4-D	ND	ppm	0.1	8/30/2018 12:06:00 PM	MAH	EPA 8151A	
TCLP Pentachlorophenol	ND	ppm	0.1	8/30/2018 12:06:00 PM	MAH	EPA 8151A	

Authorized Signature



Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level  
 ND Not Detected  
 PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.  
 The results reported relate only to the samples indicated.  
 Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT: CERT0028; NM: ID00013; NV: ID00013; OR: ID200001-002; WA: C595  
 Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA: C585; MT: CerI0085; FL(NELAP): E871099

Thursday, August 30, 2018

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# Anatek Labs, Inc.

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**Client:** HALL ENVIRONMENTAL ANALYSIS LAB      **Batch #:** 180822067  
**Address:** 4901 HAWKINS NE SUITE D      **Project Name:** 1808C18  
ALBUQUERQUE, NM 87109  
**Attn:** ANDY FREEMAN

## Analytical Results Report Quality Control Data

### Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
TCLP Pentachlorophenol	0.00877	ppm	0.01	87.7	50-150	8/30/2018	8/30/2018
TCLP 2,4-D	0.0887	ppm	0.1	88.7	50-150	8/30/2018	8/30/2018
TCLP 2,4,5-TP (Silvex)	0.0238	ppm	0.025	95.2	50-150	8/30/2018	8/30/2018
Reactive sulfide	0.160	mg/kg	0.2	80.0	80-120	8/30/2018	8/30/2018
Cyanide (reactive)	0.496	mg/kg	0.5	99.2	70-130	8/27/2018	8/28/2018

### Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
180822065-001	TCLP Pentachlorophenol	ND	0.00914	ppm	0.01	91.4	50-150	8/30/2018	8/30/2018
180822065-001	TCLP 2,4-D	ND	0.0903	ppm	0.1	90.3	50-150	8/30/2018	8/30/2018
180822065-001	TCLP 2,4,5-TP (Silvex)	ND	0.0243	ppm	0.025	97.2	50-150	8/30/2018	8/30/2018
180822065-001	Reactive sulfide	ND	19.0	mg/kg	23.8	79.8	70-130	8/30/2018	8/30/2018
180822065-001	Cyanide (reactive)	ND	11.8	mg/kg	11.5	102.6	60-140	8/27/2018	8/28/2018

### Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
TCLP Pentachlorophenol	0.00924	ppm	0.01	92.4	1.1	0-50	8/30/2018	8/30/2018
TCLP 2,4-D	0.0916	ppm	0.1	91.6	1.4	0-50	8/30/2018	8/30/2018
TCLP 2,4,5-TP (Silvex)	0.0245	ppm	0.025	98.0	0.8	0-50	8/30/2018	8/30/2018
Cyanide (reactive)	11.8	mg/kg	11.5	102.6	0.0	0-25	8/27/2018	8/28/2018

### Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Cyanide (reactive)	ND	mg/Kg	1	8/27/2018	8/28/2018
Reactive sulfide	ND	mg/kg	0.1	8/30/2018	8/30/2018
TCLP 2,4,5-TP (Silvex)	ND	ppm	0.1	8/30/2018	8/30/2018
TCLP 2,4-D	ND	ppm	0.1	8/30/2018	8/30/2018
TCLP Pentachlorophenol	ND	ppm	0.1	8/30/2018	8/30/2018

### Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595  
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT:Cert0095; FL(NELAP): E871099

Thursday, August 30, 2018

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**Client:** HALL ENVIRONMENTAL ANALYSIS LAB      **Batch #:** 180822067  
**Address:** 4901 HAWKINS NE SUITE D      **Project Name:** 1808C18  
ALBUQUERQUE, NM 87109  
**Attn:** ANDY FREEMAN

## Analytical Results Report Quality Control Data

AR      Acceptable Range  
ND      Not Detected  
PQL      Practical Quantitation Limit  
RPD      Relative Percentage Difference

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**Comments:**

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT: CERT0028; NM: ID00013; NV:ID00013; OR:ID200001-002; WA:C595  
Certifications held by Anatek Labs WA: EPA:WA00169; ID:WA00169; WA:C585; MT: Cert0095; FL(NELAP): E871099

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Thursday, August 30, 2018

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808C18**

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>LCS-39939</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>39939</b>	RunNo:	<b>53657</b>					
Prep Date:	<b>8/22/2018</b>	Analysis Date:	<b>8/23/2018</b>	SeqNo:	<b>1770197</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	50.00	0	91.0	70	130			
Surr: DNOP	4.9		5.000		98.5	50.6	138			

Sample ID	<b>MB-39939</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>39939</b>	RunNo:	<b>53657</b>					
Prep Date:	<b>8/22/2018</b>	Analysis Date:	<b>8/23/2018</b>	SeqNo:	<b>1770198</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.8		10.00		97.5	50.6	138			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808C18**

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>MB-39915</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015D: Gasoline Range</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>39915</b>	RunNo:	<b>53636</b>					
Prep Date:	<b>8/21/2018</b>	Analysis Date:	<b>8/22/2018</b>	SeqNo:	<b>1768784</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	910		1000		90.8	15	316			

Sample ID	<b>LCS-39915</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015D: Gasoline Range</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>39915</b>	RunNo:	<b>53636</b>					
Prep Date:	<b>8/21/2018</b>	Analysis Date:	<b>8/22/2018</b>	SeqNo:	<b>1768785</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	90.4	75.9	131			
Surr: BFB	1000		1000		102	15	316			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808C18**

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	MB-39988	SampType:	MBLK	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	PBW	Batch ID:	39988	RunNo:	53824					
Prep Date:	8/27/2018	Analysis Date:	8/30/2018	SeqNo:	1776155	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0016		0.002500		65.5	58.3	109			
Surr: Tetrachloro-m-xylene	0.0015		0.002500		59.9	40.1	101			

Sample ID	LCS-39988	SampType:	LCS	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	LCSW	Batch ID:	39988	RunNo:	53824					
Prep Date:	8/27/2018	Analysis Date:	8/30/2018	SeqNo:	1776156	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00016	0.00010	0.0005000	0	31.4	49.5	127			S
gamma-BHC (Lindane)	0.00015	0.00010	0.0005000	0	31.0	49.9	124			S
Heptachlor	0.00014	0.00010	0.0005000	0	27.2	41	122			S
Heptachlor epoxide	0.00017	0.00010	0.0005000	0	33.1	52.2	121			S
Methoxychlor	0.00016	0.00010	0.0005000	0	31.8	40.2	134			S
Surr: Decachlorobiphenyl	0.00077		0.002500		30.6	58.3	109			S
Surr: Tetrachloro-m-xylene	0.00040		0.002500		15.8	40.1	101			S

Sample ID	MB-40115	SampType:	MBLK	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	PBW	Batch ID:	40115	RunNo:	53992					
Prep Date:	9/4/2018	Analysis Date:	9/7/2018	SeqNo:	1783244	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0017		0.002500		67.2	58.3	109			
Surr: Tetrachloro-m-xylene	0.0018		0.002500		72.9	40.1	101			

Sample ID	LCS-40115	SampType:	LCS	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	LCSW	Batch ID:	40115	RunNo:	53992					
Prep Date:	9/4/2018	Analysis Date:	9/7/2018	SeqNo:	1783245	Units:	%Rec			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0016		0.002500		63.3	58.3	109			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		62.6	40.1	101			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808C18**

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>LCSD-40115</b>	SampType:	<b>LCSD</b>	TestCode:	<b>EPA Method 8081: Pesticides TCLP</b>					
Client ID:	<b>LCSS02</b>	Batch ID:	<b>40115</b>	RunNo:	<b>53992</b>					
Prep Date:	<b>9/4/2018</b>	Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>1783246</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	0.0017		0.002500		67.7	58.3	109	0	0	
Surr: Tetrachloro-m-xylene	0.0015		0.002500		59.7	40.1	101	0	0	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Kirtland AFB BFF  
 Completion Report for Data Gap Monitoring Wells  
 SWMUs ST-106/SS-111

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June 2020

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808C18**

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>mb-39915</b> SampType: <b>MBLK</b> TestCode: <b>EPA Method 8260B: Volatiles Short List</b>										
Client ID: <b>PBS</b> Batch ID: <b>39915</b> RunNo: <b>53638</b>										
Prep Date: <b>8/21/2018</b> Analysis Date: <b>8/22/2018</b> SeqNo: <b>1771074</b> Units: <b>mg/Kg</b>										
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		93.5	70	130			
Surr: 4-Bromofluorobenzene	0.52		0.5000		105	70	130			
Surr: Dibromofluoromethane	0.45		0.5000		90.9	70	130			
Surr: Toluene-d8	0.49		0.5000		98.6	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>lcs-39915</b> SampType: <b>LCS</b> TestCode: <b>EPA Method 8260B: Volatiles Short List</b>										
Client ID: <b>LCSS</b> Batch ID: <b>39915</b> RunNo: <b>53638</b>										
Prep Date: <b>8/21/2018</b> Analysis Date: <b>8/22/2018</b> SeqNo: <b>1771075</b> Units: <b>mg/Kg</b>										
Benzene	1.0	0.025	1.000	0	100	70	130			
Toluene	1.0	0.050	1.000	0	101	70	130			
Surr: 1,2-Dichloroethane-d4	0.48		0.5000		96.4	70	130			
Surr: 4-Bromofluorobenzene	0.55		0.5000		109	70	130			
Surr: Dibromofluoromethane	0.48		0.5000		96.5	70	130			
Surr: Toluene-d8	0.48		0.5000		95.2	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808C18**

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	ics-39997	SampType:	LCS	TestCode:	Volatiles by 8260B/1311					
Client ID:	LCSS	Batch ID:	39997	RunNo:	53749					
Prep Date:	8/27/2018	Analysis Date:	8/28/2018	SeqNo:	1773361	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.44	0.10	0.4000	0	110	70	130			
Chlorobenzene	0.40	0.10	0.4000	0	99.4	70	130			
1,1-Dichloroethene	0.47	0.10	0.4000	0	116	70	130			
Trichloroethene (TCE)	0.41	0.10	0.4000	0	103	70	130			
Surr: 1,2-Dichloroethane-d4	0.22		0.2000		111	70	130			
Surr: 4-Bromofluorobenzene	0.20		0.2000		102	57.3	148			
Surr: Dibromofluoromethane	0.22		0.2000		112	70	130			
Surr: Toluene-d8	0.20		0.2000		97.7	70	130			

Sample ID	mb-39997	SampType:	MBLK	TestCode:	Volatiles by 8260B/1311					
Client ID:	PBS	Batch ID:	39997	RunNo:	53749					
Prep Date:	8/27/2018	Analysis Date:	8/28/2018	SeqNo:	1773362	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.22		0.2000		109	70	130			
Surr: 4-Bromofluorobenzene	0.20		0.2000		100	57.3	148			
Surr: Dibromofluoromethane	0.22		0.2000		111	70	130			
Surr: Toluene-d8	0.19		0.2000		96.4	70	130			

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808C18

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	Ics-39990		SampType: LCS	TestCode: EPA Method 8270C TCLP						
Client ID:	LCSS		Batch ID: 39990	RunNo: 53867						
Prep Date:	8/27/2018		Analysis Date: 8/31/2018	SeqNo: 1777459	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.068	0.0010	0.1000	0	68.4	47.8	99.2			
3+4-Methylphenol	0.14	0.0010	0.2000	0	69.9	41.5	118			
2,4-Dinitrotoluene	0.059	0.0010	0.1000	0	59.5	44.4	81			
Hexachlorobenzene	0.062	0.0010	0.1000	0	62.2	49.5	91.6			
Hexachlorobutadiene	0.069	0.0010	0.1000	0	68.9	38.6	93			
Hexachloroethane	0.064	0.0010	0.1000	0	64.1	39.4	79.9			
Nitrobenzene	0.065	0.0010	0.1000	0	65.3	47.4	96.2			
Pentachlorophenol	0.063	0.0010	0.1000	0	62.5	39.4	79.9			
Pyridine	0.056	0.0010	0.1000	0	56.5	15	79.9			
2,4,5-Trichlorophenol	0.068	0.0010	0.1000	0	67.8	47.4	118			
2,4,6-Trichlorophenol	0.071	0.0010	0.1000	0	71.4	47.4	101			
Cresols, Total	0.21	0.0010	0.3000	0	69.4	44.1	111			
Surr: 2-Fluorophenol	0.12		0.2000		60.7	15	102			
Surr: Phenol-d5	0.12		0.2000		60.7	15	87.7			
Surr: 2,4,6-Tribromophenol	0.12		0.2000		59.3	39.9	111			
Surr: Nitrobenzene-d5	0.070		0.1000		69.8	35.1	107			
Surr: 2-Fluorobiphenyl	0.068		0.1000		67.7	36.7	100			
Surr: 4-Terphenyl-d14	0.076		0.1000		76.1	42.6	129			

Sample ID	mb-39990		SampType: MBLK	TestCode: EPA Method 8270C TCLP						
Client ID:	PBS		Batch ID: 39990	RunNo: 53867						
Prep Date:	8/27/2018		Analysis Date: 8/31/2018	SeqNo: 1777460	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.11		0.2000		56.7	15	102			
Surr: Phenol-d5	0.10		0.2000		51.9	15	87.7			
Surr: 2,4,6-Tribromophenol	0.12		0.2000		60.3	39.9	111			

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Kirtland AFB BFF  
 Completion Report for Data Gap Monitoring Wells  
 SWMUs ST-106/SS-111

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June 2020

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808C18**

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>mb-39990</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8270C TCLP</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>39990</b>	RunNo:	<b>53867</b>					
Prep Date:	<b>8/27/2018</b>	Analysis Date:	<b>8/31/2018</b>	SeqNo:	<b>1777460</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.061		0.1000		60.6	35.1	107			
Surr: 2-Fluorobiphenyl	0.062		0.1000		61.5	36.7	100			
Surr: 4-Terphenyl-d14	0.070		0.1000		70.0	42.6	129			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808C18**

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>MB-40069</b>	SampType:	<b>MBLK</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40069</b>	RunNo:	<b>53832</b>					
Prep Date:	<b>8/30/2018</b>	Analysis Date:	<b>8/30/2018</b>	SeqNo:	<b>1776251</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	<b>LCS-40069</b>	SampType:	<b>LCS</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40069</b>	RunNo:	<b>53832</b>					
Prep Date:	<b>8/30/2018</b>	Analysis Date:	<b>8/30/2018</b>	SeqNo:	<b>1776252</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808C18**

10-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>MB-39960</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39960</b>	RunNo:	<b>53778</b>					
Prep Date:	<b>8/23/2018</b>	Analysis Date:	<b>8/29/2018</b>	SeqNo:	<b>1774633</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	<b>LCS-39960</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39960</b>	RunNo:	<b>53778</b>					
Prep Date:	<b>8/23/2018</b>	Analysis Date:	<b>8/29/2018</b>	SeqNo:	<b>1774635</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	111	80	120			
Barium	ND	100	0.5000	0	102	80	120			
Cadmium	ND	1.0	0.5000	0	102	80	120			
Chromium	ND	5.0	0.5000	0	99.1	80	120			
Selenium	ND	1.0	0.5000	0	101	80	120			
Silver	ND	5.0	0.1000	0	112	80	120			

Sample ID	<b>MB-39960</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39960</b>	RunNo:	<b>53778</b>					
Prep Date:	<b>8/23/2018</b>	Analysis Date:	<b>8/29/2018</b>	SeqNo:	<b>1774804</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0								

Sample ID	<b>LCS-39960</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39960</b>	RunNo:	<b>53778</b>					
Prep Date:	<b>8/23/2018</b>	Analysis Date:	<b>8/29/2018</b>	SeqNo:	<b>1774806</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0	0.5000	0	94.0	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1808C18

RcptNo: 1

Received By: **Isaiah Ortiz** 8/20/2018 3:50:00 PM *IO*

Completed By: **Ashley Gallegos** 8/20/2018 5:19:44 PM *Ag*

Reviewed By: *SAB 8/21/18*

Labeled by: *ENM 8/21/18*

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

Samples were collected the same day and chilled.

# of preserved bottles checked for pH: 20 (20 > 12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: \_\_\_\_\_  
*ENM 8/21/18*

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	10.1	Good	Not Present			

# CHAIN-OF-CUSTODY RECORD

225 Sisking Circle Suite 400, Hunt Valley MD 21071 Tel No: (410) 584-7000 Fax No: (410) 771-6225		COC NUMBER: <b>COC-MAFB-106242-2-14</b>															
PROJECT NUMBER: <b>62599DM01.1017.3</b>		FAX AND MAIL REPORTS/EDD TO: <b>Amanda Smith/asmith@east.com</b>															
PROJECT PHASE/SITE/TASK: <b>FF</b>		LAB NAME AND CONTACT: <b>Hall Environmental</b>															
DO NUMBER: <b>15182</b>		FAX AND MAIL REPORTS/EDD TO: <b>Pam Moss/pmoss@east.com</b>															
PROJECT CONTACT: <b>E. Morse</b>		FAX AND MAIL REPORTS/EDD TO: <b>[RECIPIENT 3 (Name and Company)]</b>															
PROJECT TEL NO AND FAX NO: <b>505-224-9013</b>		FAX AND MAIL REPORTS/EDD TO: <b>[RECIPIENT 2 (Name and Company)]</b>															
PROJECT DESCRIPTION/LOCATION: <b>1808018 MAFB-106242-2-14, Soil 6866, 2</b>		FAX AND MAIL REPORTS/EDD TO: <b>[RECIPIENT 1 (Name and Company)]</b>															
ANALYSES REQUIRED (Include Method Numbers)		ANALYSES REQUIRED (Include Method Numbers)															
ITEM	SAMPLE IDENTIFIER	DESCRIPTION/LOCATION	MATRIX	DATE COLLECTED	TIME COLLECTED	DATA PRG LEVEL (see codes on SOP)	LAB TAT (business days)	Number of Bottles	TCAP VOC, SVOC, Pesticide, Herb, Metals (1311/8260B/8270C/808/1815A/6010B/7470A)	BTEX (8260B)	TPH GRO, DRO, RRO (8015D)	Reactive Cyanide/Sulfide (9012B/9034)	Cortisovity - PH (9045D)	Ignitability (1010A)	SAMPLE TYPE (see codes on SOP)	COMMENTS/SCREENING READINGS	LAB II (for Lab II)
1	MAFB-106242-2-14	Soil 6866, 2	Soil	8-20-18	1435	IV	7	3	X	X	X	X	X	X	Composite		
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
SAMPLERS AND COMPANY: (please print)		COURIER AND SHIPPING NUMBER:		FedEx Number: <b>NA - Hand delivered to Hall lab</b>		RECEIVED BY:		DATE:		TIME:		DATE:		TIME:		DATE:	
Field Sampler/EA Engineering		Signature: <i>Pam Moss</i>		DATE: <b>8-20-18</b>		TIME: <b>1330</b>		Signature: <i>[Signature]</i>		DATE: <b>08/20/18</b>		TIME: <b>1555</b>		Signature: <i>[Signature]</i>		DATE:	
Signature: <i>[Signature]</i>		Signature: <i>[Signature]</i>		Signature: <i>[Signature]</i>		Signature: <i>[Signature]</i>		Signature: <i>[Signature]</i>		Signature: <i>[Signature]</i>		Signature: <i>[Signature]</i>		Signature: <i>[Signature]</i>		Signature: <i>[Signature]</i>	



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 26, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: KAFB BFF Data Gap Wells

OrderNo.: 1809A60

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/18/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1809A60

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106242-3-IDW-S

Project: KAFB BFF Data Gap Wells

Collection Date: 9/18/2018 10:50:00 AM

Lab ID: 1809A60-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: <b>rde</b>
Mercury	ND	0.020		mg/L	1	9/24/2018 3:34:55 PM	40525
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: <b>pmf</b>
Arsenic	ND	5.0		mg/L	1	9/24/2018 12:18:52 PM	40518
Barium	ND	100		mg/L	1	9/24/2018 12:18:52 PM	40518
Cadmium	ND	1.0		mg/L	1	9/24/2018 12:18:52 PM	40518
Chromium	ND	5.0		mg/L	1	9/24/2018 12:18:52 PM	40518
Lead	ND	5.0		mg/L	1	9/24/2018 12:18:52 PM	40518
Selenium	ND	1.0		mg/L	1	9/24/2018 12:18:52 PM	40518
Silver	ND	5.0		mg/L	1	9/24/2018 12:18:52 PM	40518
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>AG</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	9/20/2018 5:27:53 PM	40456
Surr: BFB	106	70-130		%Rec	1	9/20/2018 5:27:53 PM	40456
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	9/20/2018 3:47:32 PM	40460
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/20/2018 3:47:32 PM	40460
Surr: DNOP	95.7	50.6-138		%Rec	1	9/20/2018 3:47:32 PM	40460
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
Acenaphthene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Acenaphthylene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Aniline	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Anthracene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Azobenzene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Benz(a)anthracene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Benzo(a)pyrene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Benzo(b)fluoranthene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Benzo(g,h,i)perylene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Benzo(k)fluoranthene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Benzoic acid	ND	0.49		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Benzyl alcohol	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Bis(2-chloroethoxy)methane	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Bis(2-chloroethyl)ether	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Bis(2-chloroisopropyl)ether	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Bis(2-ethylhexyl)phthalate	ND	0.49		mg/Kg	1	9/21/2018 8:25:34 PM	40469
4-Bromophenyl phenyl ether	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Butyl benzyl phthalate	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Carbazole	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
4-Chloro-3-methylphenol	ND	0.49		mg/Kg	1	9/21/2018 8:25:34 PM	40469

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A60

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106242-3-IDW-S

Project: KAFB BFF Data Gap Wells

Collection Date: 9/18/2018 10:50:00 AM

Lab ID: 1809A60-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
4-Chloroaniline	ND	0.49		mg/Kg	1	9/21/2018 8:25:34 PM	40469
2-Chloronaphthalene	ND	0.25		mg/Kg	1	9/21/2018 8:25:34 PM	40469
2-Chlorophenol	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
4-Chlorophenyl phenyl ether	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Chrysene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Di-n-butyl phthalate	ND	0.39		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Di-n-octyl phthalate	ND	0.39		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Dibenz(a,h)anthracene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Dibenzofuran	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
1,2-Dichlorobenzene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
1,3-Dichlorobenzene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
1,4-Dichlorobenzene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
3,3'-Dichlorobenzidine	ND	0.25		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Diethyl phthalate	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Dimethyl phthalate	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
2,4-Dichlorophenol	ND	0.39		mg/Kg	1	9/21/2018 8:25:34 PM	40469
2,4-Dimethylphenol	ND	0.30		mg/Kg	1	9/21/2018 8:25:34 PM	40469
4,6-Dinitro-2-methylphenol	ND	0.39		mg/Kg	1	9/21/2018 8:25:34 PM	40469
2,4-Dinitrophenol	ND	0.49		mg/Kg	1	9/21/2018 8:25:34 PM	40469
2,4-Dinitrotoluene	ND	0.49		mg/Kg	1	9/21/2018 8:25:34 PM	40469
2,6-Dinitrotoluene	ND	0.49		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Fluoranthene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Fluorene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Hexachlorobenzene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Hexachlorobutadiene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Hexachlorocyclopentadiene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Hexachloroethane	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Indeno(1,2,3-cd)pyrene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Isophorone	ND	0.39		mg/Kg	1	9/21/2018 8:25:34 PM	40469
1-Methylnaphthalene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
2-Methylnaphthalene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
2-Methylphenol	ND	0.39		mg/Kg	1	9/21/2018 8:25:34 PM	40469
3+4-Methylphenol	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
N-Nitrosodi-n-propylamine	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
N-Nitrosodiphenylamine	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Naphthalene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
2-Nitroaniline	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
3-Nitroaniline	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
4-Nitroaniline	ND	0.39		mg/Kg	1	9/21/2018 8:25:34 PM	40469

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

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	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A60

Date Reported: 9/26/2018

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Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
Nitrobenzene	ND	0.39		mg/Kg	1	9/21/2018 8:25:34 PM	40469
2-Nitrophenol	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
4-Nitrophenol	ND	0.25		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Pentachlorophenol	ND	0.39		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Phenanthrene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Phenol	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Pyrene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Pyridine	ND	0.39		mg/Kg	1	9/21/2018 8:25:34 PM	40469
1,2,4-Trichlorobenzene	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
2,4,5-Trichlorophenol	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
2,4,6-Trichlorophenol	ND	0.20		mg/Kg	1	9/21/2018 8:25:34 PM	40469
Surr: 2-Fluorophenol	67.8	21.7-87.9		%Rec	1	9/21/2018 8:25:34 PM	40469
Surr: Phenol-d5	74.3	30.2-92.2		%Rec	1	9/21/2018 8:25:34 PM	40469
Surr: 2,4,6-Tribromophenol	67.8	47.1-103		%Rec	1	9/21/2018 8:25:34 PM	40469
Surr: Nitrobenzene-d5	71.2	23.9-102		%Rec	1	9/21/2018 8:25:34 PM	40469
Surr: 2-Fluorobiphenyl	70.0	32.6-101		%Rec	1	9/21/2018 8:25:34 PM	40469
Surr: 4-Terphenyl-d14	58.8	37.2-117		%Rec	1	9/21/2018 8:25:34 PM	40469
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: <b>DJF</b>
Benzene	ND	0.023		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Toluene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Ethylbenzene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Methyl tert-butyl ether (MTBE)	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,2,4-Trimethylbenzene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,3,5-Trimethylbenzene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,2-Dichloroethane (EDC)	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,2-Dibromoethane (EDB)	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Naphthalene	ND	0.094		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1-Methylnaphthalene	ND	0.19		mg/Kg	1	9/21/2018 1:15:53 PM	40456
2-Methylnaphthalene	ND	0.19		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Acetone	ND	0.70		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Bromobenzene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Bromodichloromethane	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Bromoform	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Bromomethane	ND	0.14		mg/Kg	1	9/21/2018 1:15:53 PM	40456
2-Butanone	ND	0.47		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Carbon disulfide	ND	0.47		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Carbon tetrachloride	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Chlorobenzene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Chloroethane	ND	0.094		mg/Kg	1	9/21/2018 1:15:53 PM	40456

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	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A60

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Lab ID: 1809A60-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
Chloroform	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Chloromethane	ND	0.14		mg/Kg	1	9/21/2018 1:15:53 PM	40456
2-Chlorotoluene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
4-Chlorotoluene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
cis-1,2-DCE	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
cis-1,3-Dichloropropene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,2-Dibromo-3-chloropropane	ND	0.094		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Dibromochloromethane	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Dibromomethane	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,2-Dichlorobenzene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,3-Dichlorobenzene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,4-Dichlorobenzene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Dichlorodifluoromethane	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,1-Dichloroethane	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,1-Dichloroethene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,2-Dichloropropane	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,3-Dichloropropane	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
2,2-Dichloropropane	ND	0.094		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,1-Dichloropropene	ND	0.094		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Hexachlorobutadiene	ND	0.094		mg/Kg	1	9/21/2018 1:15:53 PM	40456
2-Hexanone	ND	0.47		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Isopropylbenzene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
4-Isopropyltoluene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
4-Methyl-2-pentanone	ND	0.47		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Methylene chloride	ND	0.14		mg/Kg	1	9/21/2018 1:15:53 PM	40456
n-Butylbenzene	ND	0.14		mg/Kg	1	9/21/2018 1:15:53 PM	40456
n-Propylbenzene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
sec-Butylbenzene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Styrene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
tert-Butylbenzene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,1,1,2-Tetrachloroethane	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,1,1,2-Tetrachloroethane	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Tetrachloroethene (PCE)	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
trans-1,2-DCE	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
trans-1,3-Dichloropropene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,2,3-Trichlorobenzene	ND	0.094		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,2,4-Trichlorobenzene	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,1,1-Trichloroethane	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,1,2-Trichloroethane	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456

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## Analytical Report

Lab Order 1809A60

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Project: KAFB BFF Data Gap Wells

Collection Date: 9/18/2018 10:50:00 AM

Lab ID: 1809A60-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
Trichloroethene (TCE)	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Trichlorofluoromethane	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
1,2,3-Trichloropropane	ND	0.094		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Vinyl chloride	ND	0.047		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Xylenes, Total	ND	0.094		mg/Kg	1	9/21/2018 1:15:53 PM	40456
Surr: Dibromofluoromethane	100	70-130		%Rec	1	9/21/2018 1:15:53 PM	40456
Surr: 1,2-Dichloroethane-d4	99.6	70-130		%Rec	1	9/21/2018 1:15:53 PM	40456
Surr: Toluene-d8	92.5	70-130		%Rec	1	9/21/2018 1:15:53 PM	40456
Surr: 4-Bromofluorobenzene	96.6	70-130		%Rec	1	9/21/2018 1:15:53 PM	40456

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	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
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Collected date/time: 09/18/18 10:50

L1027465

Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Reactive Cyanide	ND		0.250	1	09/24/2018 09:26	WG1169232

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Reactive Sulfide	36.6		25.0	1	09/23/2018 17:49	WG1168677

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	su			date / time	
Corrosivity by pH	9.15	T&E	1	09/21/2018 13:15	WG1169412

Sample Narrative:

L1027465-01 WG1169412: 9.15 at 23.1C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	Deg. F			date / time	
Ignitability	DNI at 170		1	09/20/2018 20:01	WG1169226

2 Tc

3 Ss

4 Cn

5 Sl

6 Qc

7 GI

8 Al

9 Sc

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1027465

DATE/TIME:  
09/25/18 08:30

**WG1169232**  
 Wet Chemistry by Method 9012 B  
 Metrolab Blank (MB)  
**QUALITY CONTROL SUMMARY**  
 L1027465-01  
 ONE LAB. NATIONWIDE

Analyte	MB Result	MB MDL	MB RDL
Reactive Cyanide	U	0.0390	0.250

L1027473-01 Original Sample (OS) • Duplicate (DUP)			
OS	L1027473-01	09/24/18 09:29	(DUP) R3344432-4 09/24/18 09:30
Analyte	Original Result	DUP Result	DUP RPD
Reactive Cyanide	ND	0.000	%
			DUP RPD Limits
			%
			20

L1027473-07 Original Sample (OS) • Duplicate (DUP)			
OS	L1027473-07	09/24/18 10:08	(DUP) R3344432-9 09/24/18 10:09
Analyte	Original Result	DUP Result	DUP RPD
Reactive Cyanide	3.63	4.50	%
			DUP RPD Limits
			%
			20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)

LCS) R3344432-2 09/24/18 09:15 • (LCS-D) R3344432-3 09/24/18 09:16			
Analyte	Spike Amount	LCS Result	LCS Rec
Reactive Cyanide	2.50	2.74	%
			Rec. Limits
			%
			50.0-150

L1027473-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MS-D)			
OS	L1027473-02	09/24/18 09:31	(MS) R3344432-5 09/24/18 09:32 • (MS-D) R3344432-6 09/24/18 09:33
Analyte	Spike Amount	Original Result	MS Result
Reactive Cyanide	1.67	ND	mg/kg
			Dilution
			1
			Rec. Limits
			%
			75.0-125

L1027473-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MS-D)			
OS	L1027473-10	09/24/18 05:44	(MS) R3344432-7 09/24/18 09:45 • (MS-D) R3344432-8 09/24/18 09:46
Analyte	Spike Amount	Original Result	MS Result
Reactive Cyanide	1.67	ND	mg/kg
			Dilution
			1
			Rec. Limits
			%
			75.0-125

ACCOUNT: Hill Environmental Analysis Laboratory			
			PROJECT: L1027465
			DATE/TIME: 09/25/18 09:30

**WG1168677**

Wet Chemistry by Method 9034-9030B

**QUALITY CONTROL SUMMARY**

L1027465-01

ONE LAB. NATIONWIDE.

Method Blank (MB)

(MB) R3344333-1 09/23/18 17:49

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Sulfide	U		7.63	25.0

L1027468-01 Original Sample (OS) + Duplicate (DUP)

(OS) L1027468-01 09/23/18 17:49 • (DUP) R3344333-5 09/23/18 17:49

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Sulfide	54.8	54.8	1	0.000		20

Laboratory Control Sample (LCS) + Laboratory Control Sample Duplicate (LCSD)

(LCS) R3344333-2 09/23/18 17:49 • (LCSD) R3344333-3 09/23/18 17:49

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits %
Reactive Sulfide	100	73.1	73.1	73.1	73.1	70.0-130			3.000	20

ACCOUNT: Hill, Erwin/Smith/Brewster Laboratory

PROJECT:

SDG: L1027465

DATE/TIME: 09/26/18 08:30



ONE LAB, NATIONWIDE.

# QUALITY CONTROL SUMMARY

L1027465-01

**WG1169412**

Wet Chemistry by Method 9045D

L1027473-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1027473-09 09/21/18 13:15 • (DUP) R3343953-4 09/21/18 13:15

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Corrosivity by pH	7.22	7.21	1	0.139		1

**Sample Narrative:**

OS: 7.22 at 22.3C  
DUP: 7.21 at 22.1C

**Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)**

(LCS) R3343953-1 09/21/18 13:15 • (LCSD) R3343953-2 09/21/18 13:15

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCSD Qualifier	LCS Qualifier	RPD	RPD Limits
Corrosivity by pH	10.0	9.0	9.99	100	99.9	99.0-101			0.100	1

**Sample Narrative:**

LCS: 10 pH 21.3C  
LCSD: 9.99 pH 21.3C

ACCOUNT: (14) Environmental Analysis Laboratory

PROJECT:

SDG: L1027465

DATE/TIME: 09/25/18 08:30

QUALITY CONTROL SUMMARY										
WG1169226										
Wet Chemistry by Method D93/1010A										
L1027405-01 (Original Sample (OS) - Duplicate (DUP))										
L1027405-01 09/20/18 20:01 - (DUP) R3343731-3 09/20/18 20:01										
Analyte	Original Result	DUP Result	DUP RPD	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits			
Ignitability	Deg. F DNI at 170	Deg. F DNI at 170	% 0.000	1	% 0.000		10			
L1027478-10 (Original Sample (OS) - Duplicate (DUP))										
L1027478-10 09/20/18 20:01 - (DUP) R3343731-4 09/20/18 20:01										
Analyte	Original Result	DUP Result	DUP RPD	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits			
Ignitability	Deg. F DNI at 170	Deg. F DNI at 170	% 0.000	1	% 0.000		30			
Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCS-D)										
LCS) R3343731-1 09/20/18 20:01 - (LCS-D) R3343731-2 09/20/18 20:01										
Analyte	Spike Amount	LCS Result	LCS Rec.	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD Limits
Ignitability	Deg. F 82.0	Deg. F 82.7	% 101	Deg. F 82.7	% 101	% 101	95.0-104		% 1000	% 10

ONE LAB. NATIONWIDE.

L1027405-01

ACCOUNT: H&B Environmental Analysis Laboratory. PROJECT: SDG: L1027465. DATE/TIME: 09/25/18 08:30

# GLOSSARY OF TERMS



## Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

### Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.
Qualifier	Description
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.



ACCOUNT:  
Hell Environmental Analysis Laboratory

PROJECT:

SDG:  
L1027465

DATE/TIME:  
09/25/18 08:30

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A60

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	<b>LCS-40460</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40460</b>	RunNo:	<b>54275</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797655</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.00	0	101	70	130			
Surr: DNOP	4.4		5.000		87.3	50.6	138			

Sample ID	<b>MB-40460</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40460</b>	RunNo:	<b>54275</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797656</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		101	50.6	138			

Sample ID	<b>LCS-40485</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40485</b>	RunNo:	<b>54322</b>					
Prep Date:	<b>9/20/2018</b>	Analysis Date:	<b>9/21/2018</b>	SeqNo:	<b>1798291</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.0		5.000		100	50.6	138			

Sample ID	<b>MB-40485</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40485</b>	RunNo:	<b>54322</b>					
Prep Date:	<b>9/20/2018</b>	Analysis Date:	<b>9/21/2018</b>	SeqNo:	<b>1798292</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		108	50.6	138			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A60

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	mb-40456	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	PBS	Batch ID:	40456	RunNo:	54347					
Prep Date:	9/19/2018	Analysis Date:	9/21/2018	SeqNo:	1799119	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A60

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	<b>mb-40456</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8260B: Volatiles</b>						
Client ID:	<b>PBS</b>	Batch ID: <b>40456</b>		RunNo: <b>54347</b>						
Prep Date:	<b>9/19/2018</b>	Analysis Date: <b>9/21/2018</b>		SeqNo: <b>1799119</b>		Units: <b>mg/Kg</b>				
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.47		0.5000		94.2	70	130			
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		94.4	70	130			
Surr: Toluene-d8	0.45		0.5000		90.2	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		91.8	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	<b>ics-40456</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8260B: Volatiles</b>						
Client ID:	<b>LCSS</b>	Batch ID: <b>40456</b>		RunNo: <b>54347</b>						
Prep Date:	<b>9/19/2018</b>	Analysis Date: <b>9/21/2018</b>		SeqNo: <b>1799121</b>		Units: <b>mg/Kg</b>				
Benzene	1.2	0.025	1.000	0	119	70	130			
Toluene	1.0	0.050	1.000	0	102	70	130			
Chlorobenzene	1.1	0.050	1.000	0	112	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A60**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	SampType: LCS		TestCode: EPA Method 8260B: Volatiles							
Client ID:	Batch ID: 40456		RunNo: 54347							
Prep Date: 9/19/2018	Analysis Date: 9/21/2018		SeqNo: 1799121		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	1.3	0.050	1.000	0	126	70	130			
Trichloroethene (TCE)	1.1	0.050	1.000	0	112	70	130			
Surr: Dibromofluoromethane	0.52		0.5000		103	70	130			
Surr: 1,2-Dichloroethane-d4	0.49		0.5000		98.8	70	130			
Surr: Toluene-d8	0.45		0.5000		89.4	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		98.4	70	130			

Sample ID	SampType: MS		TestCode: EPA Method 8260B: Volatiles							
Client ID: KAFB-106242-3-IDW	Batch ID: 40456		RunNo: 54347							
Prep Date: 9/19/2018	Analysis Date: 9/21/2018		SeqNo: 1799124		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.023	0.9294	0	111	51.9	158			
Toluene	0.83	0.046	0.9294	0	89.7	64.6	132			
Chlorobenzene	0.94	0.046	0.9294	0	101	62.8	136			
1,1-Dichloroethene	1.1	0.046	0.9294	0	118	42.4	170			
Trichloroethene (TCE)	0.95	0.046	0.9294	0	102	70	130			
Surr: Dibromofluoromethane	0.47		0.4647		101	70	130			
Surr: 1,2-Dichloroethane-d4	0.45		0.4647		96.3	70	130			
Surr: Toluene-d8	0.40		0.4647		86.4	70	130			
Surr: 4-Bromofluorobenzene	0.41		0.4647		87.3	70	130			

Sample ID	SampType: MSD		TestCode: EPA Method 8260B: Volatiles							
Client ID: KAFB-106242-3-IDW	Batch ID: 40456		RunNo: 54347							
Prep Date: 9/19/2018	Analysis Date: 9/21/2018		SeqNo: 1799125		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.024	0.9681	0	106	51.9	158	0.726	20	
Toluene	0.86	0.048	0.9681	0	88.5	64.6	132	2.75	20	
Chlorobenzene	0.93	0.048	0.9681	0	96.3	62.8	136	1.06	20	
1,1-Dichloroethene	1.1	0.048	0.9681	0	114	42.4	170	0.495	20	
Trichloroethene (TCE)	0.92	0.048	0.9681	0	95.0	70	130	3.26	20	
Surr: Dibromofluoromethane	0.46		0.4840		95.5	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	0.45		0.4840		92.7	70	130	0	0	
Surr: Toluene-d8	0.44		0.4840		90.1	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.44		0.4840		91.1	70	130	0	0	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A60

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	Ics-40469		SampType: LCS		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	LCSS		Batch ID: 40469		RunNo: 54318					
Prep Date:	9/20/2018		Analysis Date: 9/21/2018		SeqNo: 1798894		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.1	0.20	1.670	0	66.6	42	110			
4-Chloro-3-methylphenol	2.3	0.50	3.330	0	69.6	42.3	117			
2-Chlorophenol	1.8	0.20	3.330	0	52.9	27.6	117			
1,4-Dichlorobenzene	0.81	0.20	1.670	0	48.7	28.8	105			
2,4-Dinitrotoluene	1.2	0.50	1.670	0	70.5	42	98.7			
N-Nitrosodi-n-propylamine	1.2	0.20	1.670	0	69.4	41.8	112			
4-Nitrophenol	3.2	0.25	3.330	0	95.2	54	113			
Pentachlorophenol	2.6	0.40	3.330	0	78.0	41.5	101			
Phenol	1.8	0.20	3.330	0	53.8	32.2	115			
Pyrene	1.5	0.20	1.670	0	91.5	48.5	121			
1,2,4-Trichlorobenzene	1.0	0.20	1.670	0	60.6	39.9	112			
Surr: 2-Fluorophenol	1.5		3.330		45.1	21.7	87.9			
Surr: Phenol-d5	2.0		3.330		59.2	30.2	92.2			
Surr: 2,4,6-Tribromophenol	2.8		3.330		83.4	47.1	103			
Surr: Nitrobenzene-d5	0.96		1.670		57.3	23.9	102			
Surr: 2-Fluorobiphenyl	1.1		1.670		63.0	32.6	101			
Surr: 4-Terphenyl-d14	1.7		1.670		99.5	37.2	117			

Sample ID	mb-40469		SampType: MBLK		TestCode: EPA Method 8270C: Semivolatiles					
Client ID:	PBS		Batch ID: 40469		RunNo: 54318					
Prep Date:	9/20/2018		Analysis Date: 9/21/2018		SeqNo: 1798895		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	ND	0.50								

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A60

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	mb-40469	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	40469	RunNo:	54318					
Prep Date:	9/20/2018	Analysis Date:	9/21/2018	SeqNo:	1798895	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	ND	0.40								
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3'-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A60**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	<b>mb-40469</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8270C: Semivolatiles</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40469</b>	RunNo:	<b>54318</b>					
Prep Date:	<b>9/20/2018</b>	Analysis Date:	<b>9/21/2018</b>	SeqNo:	<b>1798895</b>	Units:	<b>mg/Kg</b>			
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	1.8		3.330		52.8	21.7	87.9			
Surr: Phenol-d5	2.2		3.330		64.6	30.2	92.2			
Surr: 2,4,6-Tribromophenol	2.6		3.330		78.3	47.1	103			
Surr: Nitrobenzene-d5	1.0		1.670		62.3	23.9	102			
Surr: 2-Fluorobiphenyl	1.1		1.670		65.2	32.6	101			
Surr: 4-Terphenyl-d14	1.6		1.670		95.3	37.2	117			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A60**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	<b>MB-40525</b>	SampType:	<b>MBLK</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40525</b>	RunNo:	<b>54370</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1799878</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	<b>LCS-40525</b>	SampType:	<b>LCS</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40525</b>	RunNo:	<b>54370</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1799879</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.0	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A60**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	<b>MB-40518</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40518</b>	RunNo:	<b>54358</b>					
Prep Date:	<b>9/21/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1800649</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	<b>LCS-40518</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40518</b>	RunNo:	<b>54358</b>					
Prep Date:	<b>9/21/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1800651</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	97.7	80	120			
Barium	ND	100	0.5000	0	98.8	80	120			
Cadmium	ND	1.0	0.5000	0	102	80	120			
Chromium	ND	5.0	0.5000	0	98.0	80	120			
Lead	ND	5.0	0.5000	0	98.1	80	120			
Selenium	ND	1.0	0.5000	0	106	80	120			
Silver	ND	5.0	0.1000	0	111	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A60**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	<b>Ics-40456</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015D Mod: Gasoline Range</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54305</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797289</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	91.6	70	130			
Surr: BFB	470		500.0		93.2	70	130			

Sample ID	<b>mb-40456</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015D Mod: Gasoline Range</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54305</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797290</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	500		500.0		99.4	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87105  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1809A60

RcptNo: 1

Received By: Jazzmine Burkhead 9/18/2018 3:48:00 PM

Completed By: Ashley Gallegos 9/18/2018 5:17:19 PM

Reviewed By: ENM 9/18/18 Labeled by: JAB 09/19/18

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes  No   
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes  No

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: JAB 09/19/18

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.8	Good	Not Present			

### Chain-of-Custody Record

Client: EXT Engineering  
 320 Gold Ave SW Ste 1300  
 Mailing Address: ABQ, NM 87102  
 Phone #: 505-224-9013  
 email or Fax#: pmoss@east.com  
 QA/QC Package: EMOSE@east.com  
 Standard  Level 4 (Full Validation)

Accreditation:  Az Compliance  
 NELAC  Other  
 EDD (Type)

Turn-Around Time:  Standard  Rush 5 Day  
 Project Name: KAFB BFF Data Gap Wells  
 Project #: 62599DMol-1017.3  
 Project Manager: Devon Jernovic  
 Sampler: L. Address / S. Messenger  
 On Ice:  Yes  No  
 # of Coolers: \_\_\_\_\_  
 Cooler Temp (including CP): 5.4-10(C) = 4.9  
 Container Type and #: 2-8023 1-402-501 ice  
 Preservative Type: \_\_\_\_\_  
 HEAL No.: 1809A00  
 Date: 9/18/18 1050 Matrix: Soil Sample Name: KAFB-106242-3-116 5-10W-5

Date: 9-18-18 1548 Relinquished by: Josha Messenger  
 Date: \_\_\_\_\_ Relinquished by: \_\_\_\_\_  
 Received by: Josha Messenger Date: 09/18/18 15:48  
 Received by: Josha Messenger Date: \_\_\_\_\_

Remarks: Client



**HALL ENVIRONMENTAL ANALYSIS LABORATORY**  
 www.hallenvironmental.com  
 4901 Hawkins NE - Albuquerque, NM 87109  
 Tel. 505-345-3975 Fax 505-345-4107

Analysis Request	
BTEX / MTBE / TMB's (8021)	<input checked="" type="checkbox"/>
TPH:80150(GRO / DRO / MRO)	<input checked="" type="checkbox"/>
8081 Pesticides/8082 PCBs	<input type="checkbox"/>
EDB (Method 504.1)	<input type="checkbox"/>
PAHs by 8310 or 8270SIMS	<input checked="" type="checkbox"/>
RCRA 8 Metals <u>TCLP</u>	<input checked="" type="checkbox"/>
Cl, F, Br, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub>	<input checked="" type="checkbox"/>
8260 (VOA)	<input checked="" type="checkbox"/>
8270 (Semi-VOA)	<input checked="" type="checkbox"/>
Total Coliform (Present/Absent)	<input checked="" type="checkbox"/> <u>RCI</u>

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



**DEPARTMENT OF THE AIR FORCE**  
377TH AIR BASE WING (AFGSC)

18 September 2018

MEMORANDUM FOR: AFCEC/CZO

FROM: 377 MSG/CEIE (Solid Waste Program Manager)

SUBJECT: Landfill Disposal

Reference: EA Engineering, Science, & Technology, Inc, letters (2) dated: 13 September 2018  
USACE Contract No. W912DR-12-D-0006-DM01

Disposal of non-hazardous soil cuttings from groundwater monitoring well KAFB-106242

1. Authorization is granted to EA to dispose of soil generated from installation of groundwater monitoring well KAFB-106242, in support of the Bulk Fuels Facility project, at the Kirtland AFB Construction & Demolition Landfill. The soil will be delivered to the landfill by Advanced Chemical Transport Environmental Services, Inc (ACT), and will be in two 20-cubic-yard open top roll-off containers labeled 104052 and 22023. The roll-offs will be transported using one of two 2015 Western Star roll-off trucks depending on ACT's vehicle availability: either NM license plate WD121651, or NM license plate WD124756. Lab results are on file in the Solid Waste Management office. EA shall be issued a Kirtland AFB landfill pass for this disposal action. A copy of this letter will accompany each roll-off and will be left with the gate keeper at the landfill.

2. Please direct questions to me at 853-2486.

**WHEELOCK.** Digitally signed by  
**KATRINA.E.1** WHEELOCK.KATRIN  
**402749586** A.E.1402749586  
Date: 2018.09.18  
13:48:00 -06'00'  
**KATRINA E. WHEELOCK**  
Solid Waste Program Manager  
Environmental Management



EA Engineering, Science, & Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, New Mexico 87102  
Phone: (505) 224-9013

September 20, 2018

Ms. Katrina Wheelock  
Solid Waste Program Manager  
Environmental Management  
377 MSG/CEIE  
Kirtland AFB, New Mexico 87117

Subject: Request to dispose non-hazardous soil cuttings at Kirtland C&D Landfill  
Roll-off Identification: KAFB-106245-1 (Bin ID #0543-20)  
USACE Contract No. W912DR-12-D-0006-DM01

Dear Ms. Wheelock,

EA Engineering, Science, and Technology, Inc., PBC (EA) is requesting permission to dispose of non-hazardous soil drill cuttings and plastic liner from one roll-off container to the Kirtland Air Force Base (AFB) Construction and Demolition (C&D) debris landfill. The roll-off bin included in this request is:

- EA identification of KAFB-106245-1 (Bin ID #0543-20) contains approximately 16 cubic yards of soil in a 20-yard, open top, roll off.

In September 2018 EA installed a groundwater monitoring well, KAFB-106245, associated with the Kirtland Bulk Fuels Facility environmental restoration project. Well KAFB-106245 is located on Kirtland Air Force Base on the North side of Randolph Rd across from the New Mexico Air National Guard building. Drill cuttings were containerized in a plastic-lined, steel, roll-off pending laboratory analysis for waste characterization. Any excess moisture in the bin was stabilized using Hydrosorb®, a superabsorbent polymer. The roll-off bin is currently residing in the EA investigation derived waste yard near 1601 Perimeter Circle SE, on Kirtland AFB.

One five-point composite waste characterization sample was collected from the roll-off bin and delivered to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis. The sample was analyzed for all the required parameters per the Kirtland AFB Landfill Acceptance Memorandum (January 2009). The attached analytical results (Report 1809219) for the composite sample confirms the drill cuttings meet waste acceptance requirements for disposal at the Kirtland C&D landfill.

The roll-off container is owned and/or leased by Advanced Chemical Transport Environmental Services Inc. (ACT) with the roll-off identification numbers marked clearly on the roll off. ACT will utilize one of the following vehicles for waste transport:



W912DR-12-D-0006-DM01  
 Kirtland Air Force Base Bulk Fuels Facility Expansion  
 of the Dissolved Plume Groundwater Treatment System Design  
 20 September 2018  
 Page 2 of 2

- 2015 Western Star Roll Off Truck, License #: WD121651, registered in New Mexico
- 2015 Western Star Roll Off Truck, License #: WD124756, registered in New Mexico

Ms. Jeanne Dye-Porto (AFCEC/CZO) has reviewed this package and authorized EA to forward it for your review. EA respectfully requests your review of the attached summary table and analytical data for determination if disposal can be authorized at the Kirtland AFB C&D landfill. Upon receiving notification of Kirtland AFB's acceptance of the waste, EA will coordinate transport and disposal of the roll-off contents with ACT.

EA's Kirtland AFB Point of Contact is Mr. Scott Clark; 505-846-9017.

If you have any questions, please do not hesitate to contact me at 505-266-2225, or via e-mail at [landress@eaest.com](mailto:landress@eaest.com).

Sincerely,

Lane Andress, PG

Attachments: Summary Analytical Table  
 Hall Environmental Analysis Laboratory Order No: Report 1809219

cc: Jeanne Dye-Porto, [jeanne.dye-porto@us.af.mil](mailto:jeanne.dye-porto@us.af.mil)  
 Scott Clark, [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)  
 Sheen Kottkamp, [sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)  
 Melissa Clark, [melissa.clark.8@us.af.mil](mailto:melissa.clark.8@us.af.mil)  
 Ben Moayyad, [Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)  
 Devon Jercinovic, [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
 Bernie Bockisch, [bbockisch@eaest.com](mailto:bbockisch@eaest.com)  
 Earl Morse, [emorse@eaest.com](mailto:emorse@eaest.com)

		LOCATION CODE					
		FIELD SAMPLE ID	KAFB-106245-1-IDW				
		SAMPLE DATE	4-Sep-18				
		SAMPLE PURPOSE	Waste Characterization				
		ROLL-OFF NO.	KAFB-106245-1				
Parameter	Method	Analyte	Units	TCLP Regulatory Level <sup>a</sup> or KAFB Limits <sup>b</sup>	Result	QUAL	PQL
RCRA Characteristics	SW1030	IGNITABILITY	°F	See footnote <sup>c</sup>	Neg	--	--
	SW846 Chapter 7	REACTIVE CYANIDE	mg/kg	NE	ND	--	25.3
	SW846 Chapter 7	REACTIVE SULFIDE (as total)	mg/kg	NE	ND	--	25.3
	SW9045	CORROSIVITY (pH)	S.U.	≥2 or ≤12.5	8.74	J	--
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.1
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.1
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0
		BARIUM	mg/L	100	ND	--	100
		CADMIUM	mg/L	1	ND	--	1.0
		CHROMIUM	mg/L	5	ND	--	5.0
		LEAD	mg/L	5	ND	--	5.0
		SELENIUM	mg/L	1	ND	--	1.0
	SW1311/7470A	MERCURY	mg/L	0.02	ND	--	0.020
TCLP PESTICIDES	SW1311/8081	CHLORDANE	mg/L	0.03	ND	--	0.030
		ENDRIN	mg/L	0.02	ND	--	0.020
		GAMMA-BHC (LINDANE)	mg/L	0.4	ND	--	0.40
		HEPTACHLOR	mg/L	0.008	ND	--	0.0080
		HEPTACHLOR EPOXIDE	mg/L	0.008	ND	--	0.0080
		METHOXYCHLOR	mg/L	10	ND	--	10
TCLP SVOCs	SW1311/8270C	2,4,5-TRICHLOROPHENOL	mg/L	400	ND	--	400
		2,4,6-TRICHLOROPHENOL	mg/L	2	ND	--	2.0
		2,4-DINITROTOLUENE	mg/L	0.13	ND	--	0.13
		2-METHYLPHENOL (o-Cresol)	mg/L	200	ND	--	200
		3- and 4-METHYLPHENOL (m- and o-Cresol)	mg/L	200	ND	--	200
		HEXACHLOROENZENE	mg/L	0.13	ND	--	0.13
		HEXACHLOROBUTADIENE	mg/L	0.5	ND	--	0.50
		HEXACHLOROETHANE	mg/L	3	ND	--	3.0
		NITROBENZENE	mg/L	2	ND	--	2.0
		PENTACHLOROPHENOL	mg/L	100	ND	--	100
TCLP VOCS	SW1311/8260B	PYRIDINE	mg/L	5	ND	--	5.0
		CRESOLS, TOTAL	mg/L	200	ND	--	200
		1,1-DICHLOROETHENE	mg/L	0.7	ND	--	0.70
		1,2-DICHLOROETHANE	mg/L	0.5	ND	--	0.50
		1,4-DICHLOROETHANE	mg/L	7.5	ND	--	7.5
		2-BUTANONE (MEK)	mg/L	200	ND	--	200
		BENZENE	mg/L	0.5	ND	--	0.50
		CARBON TETRACHLORIDE	mg/L	0.5	ND	--	0.50
		CHLOROETHENE	mg/L	100	ND	--	100
		CHLOROFORM	mg/L	6.0	ND	--	6.0
		TETRACHLOROETHENE	mg/L	0.7	ND	--	0.70
TPH	SW8015M/D	TRICHLOROETHENE	mg/L	0.5	ND	--	0.50
		VINYL CHLORIDE	mg/L	0.2	ND	--	0.20
		DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	10
VOLATILES (BTEX)	SW8260B	MOTOR OIL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	50
		GASOLINE RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	4.8
		BENZENE	mg/kg	10	ND	--	0.024
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.048
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.048
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.095

## Notes:

<sup>a</sup>TCLP Regulatory Level - Resource Conservation Recovery Act (RCRA) hazardous waste characteristic limits per 40CFR Part 261 Subpart C, Section 261.20 - 261.24.

<sup>b</sup>KAFB Limits - Kirtland AFB landfill requirements per the Department of Air Force Technical Memorandum for Kirtland AFB/Department of Energy/Sandia National Laboratories Restoration Agencies and Their Commercial Contractors (2009).

<sup>c</sup>Ignitability characteristic for solids from 40 CFR Part 261.21: "It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of moisture, or spontaneous chemical change, and when ignited burns so vigorously and persistently that it creates a hazard."

<sup>d</sup>KAFB limit for TPH measured as the sum of gasoline, diesel and motor oil range organics.

<sup>e</sup>KAFB limit for BTEX measured as the sum of benzene, toluene, ethylbenzene, and total xylenes.

> - greater than

BTEX - benzene, toluene, ethylbenzene, total xylenes

°F - degrees fahrenheit

J - Analyte detected below quantitation limit or estimated value

mg/L - milligram per liter

mg/kg - milligram per kilogram

ND - not detected above the PQL

NE - not established

Neg - negative

PQL - practical quantitation limit

QUAL - laboratory data qualifier

Shade - analyte detected above the detection limit

**Shade and Bold** - analyte detected above KAFB Landfill acceptance limit or TCLP Regulatory Level.

SVOCs - semivolatle organic compounds

S.U. - Standard units

TCLP - Toxicity Characteristic Leaching Procedure

TPH - total petroleum hydrocarbons

VOCs - volatile organic compounds



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 18, 2018

Earl Morse  
EA Engineering  
320 Gold Ave SW Suite 1210  
Albuquerque, NM 87102  
TEL: (505) 224-9013  
FAX

RE: Kirtland AFB BFF

OrderNo.: 1809219

Dear Earl Morse:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/4/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a white background.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order 1809219

Date Reported: 9/18/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: KAFB-106245-1-idw

Project: Kirtland AFB BFF

Collection Date: 9/4/2018 1:10:00 PM

Lab ID: 1809219-001

Matrix: SOIL

Received Date: 9/4/2018 4:54:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: <b>rde</b>
Mercury	ND	0.020		mg/L	1	9/11/2018 4:51:02 PM	40278
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: <b>ELS</b>
Arsenic	ND	5.0		mg/L	1	9/12/2018 6:50:29 AM	40277
Barium	ND	100		mg/L	1	9/12/2018 6:50:29 AM	40277
Cadmium	ND	1.0		mg/L	1	9/12/2018 6:50:29 AM	40277
Chromium	ND	5.0		mg/L	1	9/12/2018 6:50:29 AM	40277
Lead	ND	5.0		mg/L	1	9/12/2018 6:50:29 AM	40277
Selenium	ND	1.0		mg/L	1	9/12/2018 7:36:20 AM	40277
Silver	ND	5.0		mg/L	1	9/12/2018 6:50:29 AM	40277
<b>EPA METHOD 8081: PESTICIDES TCLP</b>							Analyst: <b>JME</b>
Chlordane	ND	0.030		mg/L	1	9/14/2018 12:09:26 PM	40296
Endrin	ND	0.020		mg/L	1	9/14/2018 12:09:26 PM	40296
gamma-BHC (Lindane)	ND	0.40		mg/L	1	9/14/2018 12:09:26 PM	40296
Heptachlor	ND	0.0080		mg/L	1	9/14/2018 12:09:26 PM	40296
Heptachlor epoxide	ND	0.0080		mg/L	1	9/14/2018 12:09:26 PM	40296
Methoxychlor	ND	10		mg/L	1	9/14/2018 12:09:26 PM	40296
Toxaphene	ND	0.50		mg/L	1	9/14/2018 12:09:26 PM	40296
Surr: Decachlorobiphenyl	66.6	58.3-109		%Rec	1	9/14/2018 12:09:26 PM	40296
Surr: Tetrachloro-m-xylene	71.3	40.1-101		%Rec	1	9/14/2018 12:09:26 PM	40296
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	9/11/2018 12:32:50 PM	40214
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	9/11/2018 12:32:50 PM	40214
Surr: DNOP	95.8	50.6-138		%Rec	1	9/11/2018 12:32:50 PM	40214
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/8/2018 2:34:26 PM	40201
Surr: BFB	91.2	15-316		%Rec	1	9/8/2018 2:34:26 PM	40201
<b>EPA METHOD 8270C TCLP</b>							Analyst: <b>DAM</b>
2-Methylphenol	ND	200		mg/L	1	9/14/2018 12:53:55 AM	40293
3+4-Methylphenol	ND	200		mg/L	1	9/14/2018 12:53:55 AM	40293
2,4-Dinitrotoluene	ND	0.13		mg/L	1	9/14/2018 12:53:55 AM	40293
Hexachlorobenzene	ND	0.13		mg/L	1	9/14/2018 12:53:55 AM	40293
Hexachlorobutadiene	ND	0.50		mg/L	1	9/14/2018 12:53:55 AM	40293
Hexachloroethane	ND	3.0		mg/L	1	9/14/2018 12:53:55 AM	40293
Nitrobenzene	ND	2.0		mg/L	1	9/14/2018 12:53:55 AM	40293
Pentachlorophenol	ND	100		mg/L	1	9/14/2018 12:53:55 AM	40293
Pyridine	ND	5.0		mg/L	1	9/14/2018 12:53:55 AM	40293
2,4,5-Trichlorophenol	ND	400		mg/L	1	9/14/2018 12:53:55 AM	40293

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809219

Date Reported: 9/18/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: KAFB-106245-1-idw

Project: Kirtland AFB BFF

Collection Date: 9/4/2018 1:10:00 PM

Lab ID: 1809219-001

Matrix: SOIL

Received Date: 9/4/2018 4:54:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C TCLP</b>							Analyst: <b>DAM</b>
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	9/14/2018 12:53:55 AM	40293
Cresols, Total	ND	200		mg/L	1	9/14/2018 12:53:55 AM	40293
Surr: 2-Fluorophenol	40.2	15-102		%Rec	1	9/14/2018 12:53:55 AM	40293
Surr: Phenol-d5	34.3	15-87.7		%Rec	1	9/14/2018 12:53:55 AM	40293
Surr: 2,4,6-Tribromophenol	66.0	39.9-111		%Rec	1	9/14/2018 12:53:55 AM	40293
Surr: Nitrobenzene-d5	63.4	35.1-107		%Rec	1	9/14/2018 12:53:55 AM	40293
Surr: 2-Fluorobiphenyl	77.0	36.7-100		%Rec	1	9/14/2018 12:53:55 AM	40293
Surr: 4-Terphenyl-d14	90.4	42.6-129		%Rec	1	9/14/2018 12:53:55 AM	40293
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: <b>DJF</b>
Benzene	ND	0.024		mg/Kg	1	9/7/2018 1:41:21 PM	40201
Toluene	ND	0.048		mg/Kg	1	9/7/2018 1:41:21 PM	40201
Ethylbenzene	ND	0.048		mg/Kg	1	9/7/2018 1:41:21 PM	40201
Xylenes, Total	ND	0.095		mg/Kg	1	9/7/2018 1:41:21 PM	40201
Surr: Dibromofluoromethane	105	70-130		%Rec	1	9/7/2018 1:41:21 PM	40201
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	9/7/2018 1:41:21 PM	40201
Surr: Toluene-d8	108	70-130		%Rec	1	9/7/2018 1:41:21 PM	40201
Surr: 4-Bromofluorobenzene	116	70-130		%Rec	1	9/7/2018 1:41:21 PM	40201
<b>VOLATILES BY 8260B/1311</b>							Analyst: <b>DJF</b>
Benzene	ND	0.50		mg/L	1	9/11/2018 5:23:49 PM	40246
2-Butanone	ND	200		mg/L	1	9/11/2018 5:23:49 PM	40246
Carbon Tetrachloride	ND	0.50		mg/L	1	9/11/2018 5:23:49 PM	40246
Chlorobenzene	ND	100		mg/L	1	9/11/2018 5:23:49 PM	40246
Chloroform	ND	6.0		mg/L	1	9/11/2018 5:23:49 PM	40246
1,4-Dichlorobenzene	ND	7.5		mg/L	1	9/11/2018 5:23:49 PM	40246
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	9/11/2018 5:23:49 PM	40246
1,1-Dichloroethene	ND	0.70		mg/L	1	9/11/2018 5:23:49 PM	40246
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	9/11/2018 5:23:49 PM	40246
Trichloroethene (TCE)	ND	0.50		mg/L	1	9/11/2018 5:23:49 PM	40246
Vinyl chloride	ND	0.20		mg/L	1	9/11/2018 5:23:49 PM	40246
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	9/11/2018 5:23:49 PM	40246
Surr: 4-Bromofluorobenzene	98.6	57.3-148		%Rec	1	9/11/2018 5:23:49 PM	40246
Surr: Dibromofluoromethane	98.8	70-130		%Rec	1	9/11/2018 5:23:49 PM	40246
Surr: Toluene-d8	91.5	70-130		%Rec	1	9/11/2018 5:23:49 PM	40246

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Kirtland AFB BFF

Completion Report for Data Gap Monitoring Wells

SWMUs ST-106/SS-111

June 2020

# Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com  
 604 E Springue Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 638-4433 • email spokane@anateklabs.com

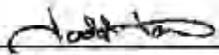
**Client:** HALL ENVIRONMENTAL ANALYSIS LAB      **Batch #:** 180907012  
**Address:** 4901 HAWKINS NE SUITE D      **Project Name:** 1809219  
 ALBUQUERQUE, NM 87109  
**Attn:** ANDY FREEMAN

## Analytical Results Report

**Sample Number:** 180907012-001      **Sampling Date:** 9/4/2018      **Date/Time Received:** 9/7/2018 11:34 AM  
**Client Sample ID:** 1809219-001B / KAFB-108245-1-IDW      **Sampling Time:** 1:10 PM  
**Matrix:** Solid  
**Comments:**

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide (reactive)	ND	mg/Kg	25.3	9/11/2018 10:45:00 AM	BKP	SW846 GH7	
Ignitability	Negative			9/13/2018 12:05:00 PM	GPB	EPA 1030	
pH	8.74	pH Units		9/11/2018 10:45:00 AM	LAC	EPA 9045	
Reactive sulfide	ND	mg/kg	25.3	9/11/2018 1:30:00 PM	ETL	SW846 GH7	
TCLP 2,4,5-TP (Silvex)	ND	mg/L	0.1	9/11/2018 7:03:00 PM	MAH	EPA 8151A	
TCLP 2,4-D	ND	mg/L	0.1	9/11/2018 7:03:00 PM	MAH	EPA 8151A	
TCLP Pentachloropheno	ND	mg/L	0.1	9/11/2018 7:03:00 PM	MAH	EPA 8151A	

Authorized Signature

  
 Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level  
 ND Not Detected  
 PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.  
 The results reported relate only to the samples indicated.  
 Soil/solid results are reported on a dry weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA-IDC0013; AZ-0701 (FLINELAP) 087593; ID (00913); MT-CER10026; NM: (DC0918; NV1000013; OH IDA30001-002; WA:0525  
 Certifications held by Anatek Labs WA: EPA-WA00169; ID-WA0016B; WA-C385; MT-Cer0056; FLINELAP); 0871099.

Friday, September 14, 2018

Page 1 of 1

# Anatek Labs, Inc.

1282 Alluras Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 382-9246 • email moscow@anateklabs.com  
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3889 • Fax (509) 838-4433 • email spokane@anateklabs.com

**Client:** HALL ENVIRONMENTAL ANALYSIS LAB      **Batch #:** 180907012  
**Address:** 4901 HAWKINS NE SUITE D      **Project Name:** 1809219  
ALBUQUERQUE, NM 87109  
**Attn:** ANDY FREEMAN

## Analytical Results Report Quality Control Data

### Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
TCLP Pentachlorophenol	0.0110	mg/L	0.01	110.0	50-150	9/10/2018	9/11/2018
TCLP 2,4-D	0.0898	mg/L	0.1	89.8	50-150	9/10/2018	9/11/2018
TCLP 2,4,5-TP (Silvex)	0.0254	mg/L	0.025	101.6	50-150	9/10/2018	9/11/2018
Reactive sulfide	0.180	mg/kg	0.2	90.0	70-130	9/11/2018	9/11/2018
Cyanide (reactive)	0.521	mg/kg	0.5	104.2	70-130	9/8/2018	9/11/2018

### Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
180907012-001	TCLP Pentachlorophenol	ND	0.0105	mg/L	0.01	105.0	50-150	9/10/2018	9/11/2018
180907012-001	TCLP 2,4-D	ND	0.0899	mg/L	0.1	89.9	50-150	9/10/2018	9/11/2018
180907012-001	TCLP 2,4,5-TP (Silvex)	ND	0.0238	mg/L	0.025	95.2	50-150	9/10/2018	9/11/2018
180907015-001	Reactive sulfide	182	198	mg/kg	46.4	73.7	70-130	9/11/2018	9/11/2018
180907012-001	Cyanide (reactive)	ND	12.9	mg/kg	12.7	101.6	60-140	9/8/2018	9/11/2018

### Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
TCLP Pentachlorophenol	0.0105	mg/L	0.01	105.0	0.0	0-50	9/10/2018	9/11/2018
TCLP 2,4-D	0.0899	mg/L	0.1	89.9	2.4	0-50	9/10/2018	9/11/2018
TCLP 2,4,5-TP (Silvex)	0.0245	mg/L	0.025	98.0	2.9	0-50	9/10/2018	9/11/2018
Cyanide (reactive)	12.6	mg/kg	12.7	99.2	2.4	0-25	9/8/2018	9/11/2018

### Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Cyanide (reactive)	ND	mg/kg	1	9/9/2018	9/11/2018
Reactive sulfide	ND	mg/kg	1	9/11/2018	9/11/2018
TCLP 2,4,5-TP (Silvex)	ND	mg/L	0.1	9/10/2018	9/11/2018
TCLP 2,4-D	ND	mg/L	0.1	9/10/2018	9/11/2018
TCLP Pentachlorophenol	ND	mg/L	0.1	9/10/2018	9/11/2018

AR Acceptable Range  
ND Not Detected  
PQL Practical Quantitation Limit  
RPD Relative Percentage Difference

### Comments:

Certifications held by Anatek Labs ID: EPA3000013; AZ-0701; FL(NE LAP)E87903; ID-008913; MT-CERT0028; NM-000013; NV-000013; OR-ID20300-002; WA-C565  
Certifications held by Anatek Labs WA: EPA-WA60169; ID-WA00160; WA-C555; MT-Cert095; FL(NE LAP); E871039

Friday, September 14, 2018

Page 1 of 1

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809219**

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID <b>LCS-40214</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>40214</b>		RunNo: <b>54034</b>							
Prep Date: <b>9/7/2018</b>	Analysis Date: <b>9/11/2018</b>		SeqNo: <b>1785556</b>				Units: <b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	50.00	0	90.4	70	130			
Surr: DNOP	4.2		5.000		84.3	50.6	138			

Sample ID <b>MB-40214</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>PBS</b>	Batch ID: <b>40214</b>		RunNo: <b>54034</b>							
Prep Date: <b>9/7/2018</b>	Analysis Date: <b>9/11/2018</b>		SeqNo: <b>1785557</b>				Units: <b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.9		10.00		88.8	50.6	138			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 3 of 12

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809219**

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID <b>MB-40201</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>40201</b>	RunNo: <b>54007</b>								
Prep Date: <b>9/6/2018</b>	Analysis Date: <b>9/8/2018</b>	SeqNo: <b>1783978</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	950		1000		94.8	15	316			

Sample ID <b>LCS-40201</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>40201</b>	RunNo: <b>54007</b>								
Prep Date: <b>9/6/2018</b>	Analysis Date: <b>9/8/2018</b>	SeqNo: <b>1783979</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	96.2	75.9	131			
Surr: BFB	1000		1000		103	15	316			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 4 of 12

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809219**

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	MB-40296	SampType:	MBLK	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	PBW	Batch ID:	40296	RunNo:	54176					
Prep Date:	9/12/2018	Analysis Date:	9/14/2018	SeqNo:	1791458	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0015		0.002500		58.4	58.3	109			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		62.6	40.1	101			

Sample ID	LCS-40296	SampType:	LCS	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	LCSW	Batch ID:	40296	RunNo:	54176					
Prep Date:	9/12/2018	Analysis Date:	9/14/2018	SeqNo:	1791459	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00036	0.00010	0.0005000	0	72.4	49.5	127			
gamma-BHC (Lindane)	0.00032	0.00010	0.0005000	0	64.0	49.9	124			
Heptachlor	0.00030	0.00010	0.0005000	0	60.7	41	122			
Heptachlor epoxide	0.00035	0.00010	0.0005000	0	70.6	52.2	121			
Methoxychlor	0.00034	0.00010	0.0005000	0	67.8	40.2	134			
Surr: Decachlorobiphenyl	0.0015		0.002500		60.5	58.3	109			
Surr: Tetrachloro-m-xylene	0.0011		0.002500		45.4	40.1	101			

Sample ID	LCSD-40296	SampType:	LCSD	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	LCSS02	Batch ID:	40296	RunNo:	54176					
Prep Date:	9/12/2018	Analysis Date:	9/14/2018	SeqNo:	1791460	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00044	0.00010	0.0005000	0	88.8	49.5	127	20.4	20	R
gamma-BHC (Lindane)	0.00041	0.00010	0.0005000	0	81.5	49.9	124	24.1	20	R
Heptachlor	0.00036	0.00010	0.0005000	0	72.1	41	122	17.1	20	
Heptachlor epoxide	0.00043	0.00010	0.0005000	0	86.0	52.2	121	19.6	20	
Methoxychlor	0.00042	0.00010	0.0005000	0	84.1	40.2	134	21.4	20	R
Surr: Decachlorobiphenyl	0.0019		0.002500		74.4	58.3	109	0	0	
Surr: Tetrachloro-m-xylene	0.0016		0.002500		62.2	40.1	101	0	0	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809219**

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	mb-40201	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	PBS	Batch ID:	40201	RunNo:	54008					
Prep Date:	9/6/2018	Analysis Date:	9/7/2018	SeqNo:	1784083	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.51		0.5000		102	70	130			
Surr: 1,2-Dichloroethane-d4	0.52		0.5000		105	70	130			
Surr: Toluene-d8	0.55		0.5000		110	70	130			
Surr: 4-Bromofluorobenzene	0.52		0.5000		104	70	130			

Sample ID	ics-40201	SampType:	LCS	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	LCSS	Batch ID:	40201	RunNo:	54008					
Prep Date:	9/6/2018	Analysis Date:	9/7/2018	SeqNo:	1784084	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.88	0.025	1.000	0	87.5	70	130			
Toluene	1.0	0.050	1.000	0	102	70	130			
Surr: Dibromofluoromethane	0.48		0.5000		95.9	70	130			
Surr: 1,2-Dichloroethane-d4	0.48		0.5000		95.9	70	130			
Surr: Toluene-d8	0.56		0.5000		111	70	130			
Surr: 4-Bromofluorobenzene	0.60		0.5000		120	70	130			

Sample ID	1809219-001amsd	SampType:	MSD	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	KAFB-106245-1-idw	Batch ID:	40201	RunNo:	54008					
Prep Date:	9/6/2018	Analysis Date:	9/7/2018	SeqNo:	1784086	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.90	0.024	0.9407	0	95.9	51.9	158	6.19	20	
Toluene	1.1	0.047	0.9407	0	113	64.6	132	16.5	20	
Surr: Dibromofluoromethane	0.49		0.4704		105	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	0.48		0.4704		102	70	130	0	0	
Surr: Toluene-d8	0.52		0.4704		111	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.52		0.4704		112	70	130	0	0	

Sample ID	1809219-001ams	SampType:	MS	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	KAFB-106245-1-idw	Batch ID:	40201	RunNo:	54032					
Prep Date:	9/6/2018	Analysis Date:	9/10/2018	SeqNo:	1785924	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.85	0.025	0.9881	0	85.8	51.9	158			
Toluene	0.90	0.049	0.9881	0	91.3	64.6	132			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809219**

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>1809219-001ams</b>	SampType:	<b>MS</b>	TestCode:	<b>EPA Method 8260B: Volatiles</b>					
Client ID:	<b>KAFB-106245-1-idw</b>	Batch ID:	<b>40201</b>	RunNo:	<b>54032</b>					
Prep Date:	<b>9/6/2018</b>	Analysis Date:	<b>9/10/2018</b>	SeqNo:	<b>1785924</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Dibromofluoromethane	0.48		0.4941		97.4	70	130			
Surr: 1,2-Dichloroethane-d4	0.48		0.4941		96.7	70	130			
Surr: Toluene-d8	0.49		0.4941		100	70	130			
Surr: 4-Bromofluorobenzene	0.45		0.4941		91.7	70	130			

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809219**

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>mb-40246</b> SampType: <b>MBLK</b> TestCode: <b>Volatiles by 8260B/1311</b>										
Client ID: <b>PBS</b> Batch ID: <b>40246</b> RunNo: <b>54084</b>										
Prep Date: <b>9/10/2018</b> Analysis Date: <b>9/11/2018</b> SeqNo: <b>1787253</b> Units: <b>mg/L</b>										
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		102	70	130			
Surr: 4-Bromofluorobenzene	0.20		0.2000		101	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		95.8	70	130			
Surr: Toluene-d8	0.20		0.2000		101	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>ics-40246</b> SampType: <b>LCS</b> TestCode: <b>Volatiles by 8260B/1311</b>										
Client ID: <b>LCSS</b> Batch ID: <b>40246</b> RunNo: <b>54084</b>										
Prep Date: <b>9/10/2018</b> Analysis Date: <b>9/11/2018</b> SeqNo: <b>1787254</b> Units: <b>mg/L</b>										
Benzene	0.39	0.30	0.4000	0	98.4	70	130			
Chlorobenzene	0.42	0.30	0.4000	0	105	70	130			
1,1-Dichloroethene	0.40	0.30	0.4000	0	100	70	130			
Trichloroethene (TCE)	0.36	0.30	0.4000	0	90.2	70	130			
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		99.5	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		97.3	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		93.6	70	130			
Surr: Toluene-d8	0.19		0.2000		93.4	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809219**

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	Ics-40293		SampType: LCS	TestCode: EPA Method 8270C TCLP						
Client ID:	LCSS		Batch ID: 40293	RunNo: 54136						
Prep Date:	9/12/2018		Analysis Date: 9/13/2018	SeqNo: 1790031	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.068	0.0010	0.1000	0	68.0	47.8	99.2			
3+4-Methylphenol	0.13	0.0010	0.2000	0	65.2	41.5	118			
2,4-Dinitrotoluene	0.065	0.0010	0.1000	0	65.4	44.4	81			
Hexachlorobenzene	0.077	0.0010	0.1000	0	76.8	49.5	91.6			
Hexachlorobutadiene	0.063	0.0010	0.1000	0	62.8	38.6	93			
Hexachloroethane	0.060	0.0010	0.1000	0	59.8	39.4	79.9			
Nitrobenzene	0.070	0.0010	0.1000	0	69.6	47.4	96.2			
Pentachlorophenol	0.067	0.0010	0.1000	0	67.4	39.4	79.9			
Pyridine	0.034	0.0010	0.1000	0	34.0	15	79.9			
2,4,5-Trichlorophenol	0.074	0.0010	0.1000	0	74.3	47.4	118			
2,4,6-Trichlorophenol	0.081	0.0010	0.1000	0	80.9	47.4	101			
Cresols, Total	0.20	0.0010	0.3000	0	66.1	44.1	111			
Surr: 2-Fluorophenol	0.084		0.2000		41.8	15	102			
Surr: Phenol-d5	0.063		0.2000		31.3	15	87.7			
Surr: 2,4,6-Tribromophenol	0.13		0.2000		64.0	39.9	111			
Surr: Nitrobenzene-d5	0.061		0.1000		61.2	35.1	107			
Surr: 2-Fluorobiphenyl	0.064		0.1000		64.1	36.7	100			
Surr: 4-Terphenyl-d14	0.080		0.1000		80.3	42.6	129			

Sample ID	mb-40293		SampType: MBLK	TestCode: EPA Method 8270C TCLP						
Client ID:	PBS		Batch ID: 40293	RunNo: 54136						
Prep Date:	9/12/2018		Analysis Date: 9/13/2018	SeqNo: 1790032	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.13		0.2000		65.9	15	102			
Surr: Phenol-d5	0.11		0.2000		52.6	15	87.7			
Surr: 2,4,6-Tribromophenol	0.16		0.2000		80.4	39.9	111			

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Kirtland AFB BFF  
 Completion Report for Data Gap Monitoring Wells  
 SWMUs ST-106/SS-111

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June 2020

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809219**

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>mb-40293</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8270C TCLP</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40293</b>	RunNo:	<b>54136</b>					
Prep Date:	<b>9/12/2018</b>	Analysis Date:	<b>9/13/2018</b>	SeqNo:	<b>1790032</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.089		0.1000		88.6	35.1	107			
Surr: 2-Fluorobiphenyl	0.086		0.1000		86.5	36.7	100			
Surr: 4-Terphenyl-d14	0.098		0.1000		98.4	42.6	129			

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809219**

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>MB-40278</b>	SampType:	<b>MBLK</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40278</b>	RunNo:	<b>54072</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>1786579</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	<b>LCS-40278</b>	SampType:	<b>LCS</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40278</b>	RunNo:	<b>54072</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>1786580</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	103	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809219

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>MB-40277</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40277</b>	RunNo:	<b>54079</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/12/2018</b>	SeqNo:	<b>1787012</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Silver	ND	5.0								

Sample ID	<b>MB-40277</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40277</b>	RunNo:	<b>54079</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/12/2018</b>	SeqNo:	<b>1787014</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0								

Sample ID	<b>LCS-40277</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40277</b>	RunNo:	<b>54079</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/12/2018</b>	SeqNo:	<b>1787015</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	99.2	80	120			
Barium	ND	100	0.5000	0	101	80	120			
Cadmium	ND	1.0	0.5000	0	101	80	120			
Chromium	ND	5.0	0.5000	0	98.7	80	120			
Lead	ND	5.0	0.5000	0	94.9	80	120			
Silver	ND	5.0	0.1000	0	110	80	120			

Sample ID	<b>MB-40277</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40277</b>	RunNo:	<b>54079</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/12/2018</b>	SeqNo:	<b>1787034</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0								

Sample ID	<b>LCS-40277</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40277</b>	RunNo:	<b>54079</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/12/2018</b>	SeqNo:	<b>1787036</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	ND	1.0	0.5000	0	102	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87106  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

### Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1809219

RcptNo: 1

Received By: Erin Melendrez 9/4/2018 4:54:00 PM *EM*

Completed By: Ashley Gallegos 9/6/2018 10:02:47 AM *AG*

Reviewed By: ENM 9/6/18 Labeled by: *M. J. [Signature]*

**Chain of Custody**

- 1. Is Chain of Custody complete? Yes  No  Not Present
- 2. How was the sample delivered? Client

**Log In**

- 3. Was an attempt made to cool the samples? Yes  No  NA
- 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA
- 5. Sample(s) in proper container(s)? Yes  No
- 6. Sufficient sample volume for indicated test(s)? Yes  No
- 7. Are samples (except VOA and ONG) properly preserved? Yes  No
- 8. Was preservative added to bottles? Yes  No  NA
- 9. VOA vials have zero headspace? Yes  No  No VOA Vials
- 10. Were any sample containers received broken? Yes  No
- 11. Does paperwork match bottle labels? Yes  No   
(Note discrepancies on chain of custody)
- 12. Are matrices correctly identified on Chain of Custody? Yes  No
- 13. Is it clear what analyses were requested? Yes  No
- 14. Were all holding times able to be met? Yes  No   
(If no, notify customer for authorization.)

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: \_\_\_\_\_

**Special Handling (if applicable)**

- 15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:		Date:	
By Whom:		Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:			
Client Instructions:			

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.9	Good	Not Present			

## CHAIN-OF-CUSTODY RECORD

**EA**  
225 Schilling Circle Suite 400, Hunt Valley, MD 21081  
Tel No: (410) 684-7000  
Fax No: (410) 771-1529

**1** COC NUMBER:  
4AFB 106245-1-1067

**2** PROJECT NAME:  
Kirtland AFB BFF

**3** PROJECT NUMBER:  
62599DM01.1017.3

**4** LAB NAME AND CONTACT:  
Hall Environmental

**5** LAB PO NUMBER:  
15182

**6** PROJECT TEL NO AND FAX NO:  
505-224-9013

**7** PROJECT CONTACT:  
E. Morse

**8** DO NUMBER:  
15182

**9** LAB TEL NO AND FAX NO:  
ph (505) 345-5925  
fax (505) 345-4107

**10** FAX AND MAIL REPORTS/IBDD TO:  
RECIPIENT 1 (Name and Company)  
Amanda Smith/ asmith@east.com

**11** FAX AND MAIL REPORTS/IBDD TO:  
RECIPIENT 2 (Name and Company)  
Pam Meese/pmeese@east.com

**12** FAX AND MAIL REPORTS/IBDD TO:  
RECIPIENT 3 (Name and Company)  
Earl Morse/earl.morse@east.com

17	ITEM	18 SAMPLE IDENTIFIER	19 SAMPLE DESCRIPTION/LOCATION	20 MATRIX (see codes on SOP)	21 DATE COLLECTED	22 TIME COLLECTED	23 DATA REQ LEVEL (see codes on SOP)	24 LAB TAT (business days)	25 Bottle Type	26 ANALYSES REQUIRED (include Method Numbers)						27 SAMPLE TYPE (see codes on SOP)	28 SCREENING READINGS	29 COMMENTS/ (for lab use)	30 LAB ID (for lab use)
										ICLP VOC, SVOC, Pest, Herb, Metals (1311/8269B/8270C/808/18151A/6010B/7470A)	BTEX (8260B)	TPH GRO, DRO, RRO (8015D)	Reactive Cyanide/Sulfide (9012B/9034)	Corrosivity - PH (9045D)	Ignitability (1010A)				
1		4AFB-106245-1-1067	Roll off soil	soil	9-4-18	1310	IV	7	3	X	X	X	X	X	X	1809219			
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

**31** COURIER AND SHIPPING NUMBER:  
FedEx Number: N/A Hand delivered to lab

**32** RELINQUISHED BY:  
Pete Ferrari

**33** RECEIVED BY:  
Erin Melendez

**34** DATE: 9-4-18

**35** TIME: 1654

**36** DATE: 09/04/18

**37** TIME: 1654



EA Engineering, Science, & Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, New Mexico 87102  
Phone: (505) 224-9013

September 24, 2018

Ms. Katrina Wheelock  
Solid Waste Program Manager  
Environmental Management  
377 MSG/CEIE  
Kirtland AFB, New Mexico 87117

Subject: Request to dispose non-hazardous soil cuttings at Kirtland C&D Landfill  
Roll-off Identification: KAFB-106245-2 (Bin ID #0123.20)  
USACE Contract No. W912DR-12-D-0006-DM01

Dear Ms. Wheelock,

EA Engineering, Science, and Technology, Inc., PBC (EA) is requesting permission to dispose of non-hazardous soil drill cuttings and plastic liner from one roll-off container to the Kirtland Air Force Base (AFB) Construction and Demolition (C&D) debris landfill. The roll-off bin included in this request is:

- EA identification of KAFB-106245-2 (Bin ID #0123.20) contains approximately 13 cubic yards of soil in a 20-yard, open top, roll off.

In September 2018 EA installed a groundwater monitoring well, KAFB-106245, associated with the Kirtland Bulk Fuels Facility environmental restoration project. Well KAFB-106245 is located on Kirtland Air Force Base on the North side of Randolph Rd across from the New Mexico Air National Guard building. Drill cuttings were containerized in a plastic-lined, steel, roll-off pending laboratory analysis for waste characterization. Any excess moisture in the bin was stabilized using Hydrosorb®, a superabsorbent polymer. The roll-off bin is currently residing in the EA investigation derived waste yard near 1601 Perimeter Circle SE, on Kirtland AFB.

One five-point composite waste characterization sample was collected from the roll-off bin and delivered to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis. The sample was analyzed for all the required parameters per the Kirtland AFB Landfill Acceptance Memorandum (January 2009). The attached analytical results (Report 1809443) for the composite sample confirms the drill cuttings meet waste acceptance requirements for disposal at the Kirtland C&D landfill.

The roll-off container is owned and/or leased by Advanced Chemical Transport Environmental Services Inc. (ACT) with the roll-off identification numbers marked clearly on the roll off. ACT will utilize one of the following vehicles for waste transport:



W912DR-12-D-0006-DM01  
 Kirtland Air Force Base Bulk Fuels Facility Expansion  
 of the Dissolved Plume Groundwater Treatment System Design  
 24 September 2018  
 Page 2 of 2

- 2015 Western Star Roll Off Truck, License #: WD121651, registered in New Mexico
- 2015 Western Star Roll Off Truck, License #: WD124756, registered in New Mexico

Ms. Jeanne Dye-Porto (AFCEC/CZO) has reviewed this package and authorized EA to forward it for your review. EA respectfully requests your review of the attached summary table and analytical data for determination if disposal can be authorized at the Kirtland AFB C&D landfill. Upon receiving notification of Kirtland AFB's acceptance of the waste, EA will coordinate transport and disposal of the roll-off contents with ACT.

EA's Kirtland AFB Point of Contact is Mr. Scott Clark; 505-846-9017.

If you have any questions, please do not hesitate to contact me at 505-266-2225, or via e-mail at [landress@eaest.com](mailto:landress@eaest.com).

Sincerely,

Lane Andress, PG

Attachments: Summary Analytical Table  
 Hall Environmental Analysis Laboratory Order No: Report 1809443

cc: Jeanne Dye-Porto, [jeanne.dye-porto@us.af.mil](mailto:jeanne.dye-porto@us.af.mil)  
 Scott Clark, [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)  
 Sheen Kottkamp, [sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)  
 Melissa Clark, [melissa.clark.8@us.af.mil](mailto:melissa.clark.8@us.af.mil)  
 Ben Moayyad, [Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)  
 Devon Jercinovic, [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
 Bernie Bockisch, [bbockisch@eaest.com](mailto:bbockisch@eaest.com)  
 Earl Morse, [emorse@eaest.com](mailto:emorse@eaest.com)

		LOCATION CODE					
		FIELD SAMPLE ID		KAFB-106245-2-IDW			
		SAMPLE DATE		7-Sep-18			
		SAMPLE PURPOSE		Waste Characterization			
		ROLL-OFF NO.		KAFB-106245-2-IDW			
Parameter	Method	Analyte	Units	TCLP Regulatory Level <sup>a</sup> or KAFB Limits <sup>b</sup>	Result	QUAL	PQL
RCRA Characteristics	SW1030	IGNITABILITY	°F	See footnote <sup>c</sup>	Neg	--	--
	SW846 Chapter 7	REACTIVE CYANIDE	mg/kg	NE	ND	--	25
	SW846 Chapter 7	REACTIVE SULFIDE (as total)	mg/kg	NE	ND	--	25
	SW9045	CORROSIVITY (pH)	S.U.	≥2 or ≤12.5	9.39	J	--
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.002
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.002
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0
		BARIUM	mg/L	100	ND	--	100
		CADMIUM	mg/L	1	ND	--	1.0
		CHROMIUM	mg/L	5	ND	--	5.0
		LEAD	mg/L	5	ND	--	5.0
		SELENIUM	mg/L	1	ND	--	1.0
		SILVER	mg/L	5	ND	--	5.0
	SW1311/7470A	MERCURY	mg/L	0.02	ND	--	0.020
TCLP PESTICIDES	SW1311/8081	CHLORDANE	mg/L	0.03	ND	--	0.030
		ENDRIN	mg/L	0.02	ND	--	0.020
		GAMMA-BHC (LINDANE)	mg/L	0.4	ND	--	0.40
		HEPTACHLOR	mg/L	0.008	ND	--	0.0080
		HEPTACHLOR EPOXIDE	mg/L	0.008	ND	--	0.0080
		METHOXYCHLOR	mg/L	10	ND	--	10
		TOXAPHENE	mg/L	0.5	ND	--	0.50
TCLP SVOCs	SW1311/8270C	2,4,5-TRICHLOROPHENOL	mg/L	400	ND	--	400
		2,4,6-TRICHLOROPHENOL	mg/L	2	ND	--	2.0
		2,4-DINITROTOLUENE	mg/L	0.13	ND	--	0.13
		2-METHYLPHENOL (o-Cresol)	mg/L	200	ND	--	200
		3- and 4-METHYLPHENOL (m- and o-Cresol)	mg/L	200	ND	--	200
		HEXACHLOROBENZENE	mg/L	0.13	ND	--	0.13
		HEXACHLOROBUTADIENE	mg/L	0.5	ND	--	0.50
		HEXACHLOROETHANE	mg/L	3	ND	--	3.0
		NITROBENZENE	mg/L	2	ND	--	2.0
		PENTACHLOROPHENOL	mg/L	100	ND	--	100
		PYRIDINE	mg/L	5	ND	--	5.0
		CRESOLS, TOTAL	mg/L	200	ND	--	200
		TCLP VOCS	SW1311/8260B	1,1-DICHLOROETHENE	mg/L	0.7	ND
1,2-DICHLOROETHANE	mg/L			0.5	ND	--	0.50
1,4-DICHLOROETHANE	mg/L			7.5	ND	--	7.5
2-BUTANONE (MEK)	mg/L			200	ND	--	200
BENZENE	mg/L			0.5	ND	--	0.50
CARBON TETRACHLORIDE	mg/L			0.5	ND	--	0.50
CHLOROBENZENE	mg/L			100	ND	--	100
CHLOROFORM	mg/L			6.0	ND	--	6.0
TETRACHLOROETHENE	mg/L			0.7	ND	--	0.70
TRICHLOROETHENE	mg/L			0.5	ND	--	0.50
VINYL CHLORIDE	mg/L			0.2	ND	--	0.20
TPH	SW8015M/D			DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND
		MOTOR OIL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	49
		GASOLINE RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	4.8
VOLATILES (BTEX)	SW8260B	BENZENE	mg/kg	10	ND	--	0.024
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.048
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.048
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.097

## Notes:

<sup>a</sup>TCLP Regulatory Level - Resource Conservation Recovery Act (RCRA) hazardous waste characteristic limits per 40CFR Part 261 Subpart C, Section 261.20 - 261.24.

<sup>b</sup>KAFB Limits - Kirtland AFB landfill requirements per the Department of Air Force Technical Memorandum for Kirtland AFB/Department of Energy/Sandia National Laboratories Restoration Agencies and Their Commercial Contractors (2009).

<sup>c</sup>Ignitability characteristic for solids from 40 CFR Part 261.21: "It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of moisture, or spontaneous chemical change, and when ignited burns so vigorously and persistently that it creates a hazard."

<sup>d</sup>KAFB limit for TPH measured as the sum of gasoline, diesel and motor oil range organics.

<sup>e</sup>KAFB limit for BTEX measured as the sum of benzene, toluene, ethylbenzene, and total xylenes.

> - greater than

BTEX - benzene, toluene, ethylbenzene, total xylenes

°F - degrees fahrenheit

J - Analyte detected below quantitation limit or estimated value

mg/L - milligram per liter

mg/kg - milligram per kilogram

ND - not detected above the PQL

NE - not established

Neg - negative

PQL - practical quantitation limit

QUAL - laboratory data qualifier

Shade- analyte detected above the detection limit

**Shade and Bold**- analyte detected above KAFB Landfill acceptance limit or TCLP Regulatory Level.

SVOCs - semivolatile organic compounds

S.U. - Standard units

TCLP - Toxicity Characteristic Leaching Procedure

TPH - total petroleum hydrocarbons

VOCs - volatile organic compounds



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 21, 2018

Earl Morse  
EA Engineering  
320 Gold Ave SW Suite 1210  
Albuquerque, NM 87102  
TEL: (505) 224-9013  
FAX

RE: Kirtland AFB BFF

OrderNo.: 1809443

Dear Earl Morse:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/7/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order 1809443

Date Reported: 9/21/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: KAFB-10645-2-idw

Project: Kirtland AFB BFF

Collection Date: 9/7/2018 2:00:00 PM

Lab ID: 1809443-001

Matrix: SOIL

Received Date: 9/7/2018 3:52:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: <b>JLF</b>
Mercury	ND	0.020		mg/L	1	9/19/2018 10:40:53 AM	40415
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: <b>ELS</b>
Arsenic	ND	5.0		mg/L	1	9/14/2018 7:57:52 AM	40316
Barium	ND	100		mg/L	1	9/14/2018 7:57:52 AM	40316
Cadmium	ND	1.0		mg/L	1	9/14/2018 7:57:52 AM	40316
Chromium	ND	5.0		mg/L	1	9/14/2018 7:57:52 AM	40316
Lead	ND	5.0		mg/L	1	9/14/2018 9:22:48 AM	40316
Selenium	ND	1.0		mg/L	1	9/14/2018 7:57:52 AM	40316
Silver	ND	5.0		mg/L	1	9/14/2018 7:57:52 AM	40316
<b>EPA METHOD 8081: PESTICIDES TCLP</b>							Analyst: <b>JME</b>
Chlordane	ND	0.030		mg/L	1	9/18/2018 1:59:47 PM	40371
Endrin	ND	0.020		mg/L	1	9/18/2018 1:59:47 PM	40371
gamma-BHC (Lindane)	ND	0.40		mg/L	1	9/18/2018 1:59:47 PM	40371
Heptachlor	ND	0.0080		mg/L	1	9/18/2018 1:59:47 PM	40371
Heptachlor epoxide	ND	0.0080		mg/L	1	9/18/2018 1:59:47 PM	40371
Methoxychlor	ND	10		mg/L	1	9/18/2018 1:59:47 PM	40371
Toxaphene	ND	0.50		mg/L	1	9/18/2018 1:59:47 PM	40371
Surr: Decachlorobiphenyl	103	58.3-109		%Rec	1	9/18/2018 1:59:47 PM	40371
Surr: Tetrachloro-m-xylene	86.7	40.1-101		%Rec	1	9/18/2018 1:59:47 PM	40371
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>Irm</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	9/14/2018 4:41:03 AM	40299
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/14/2018 4:41:03 AM	40299
Surr: DNOP	91.3	50.6-138		%Rec	1	9/14/2018 4:41:03 AM	40299
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/12/2018 4:16:47 PM	40280
Surr: BFB	96.1	15-316		%Rec	1	9/12/2018 4:16:47 PM	40280
<b>EPA METHOD 8270C TCLP</b>							Analyst: <b>DAM</b>
2-Methylphenol	ND	200		mg/L	1	9/20/2018 2:25:29 PM	40404
3+4-Methylphenol	ND	200		mg/L	1	9/20/2018 2:25:29 PM	40404
2,4-Dinitrotoluene	ND	0.13		mg/L	1	9/20/2018 2:25:29 PM	40404
Hexachlorobenzene	ND	0.13		mg/L	1	9/20/2018 2:25:29 PM	40404
Hexachlorobutadiene	ND	0.50		mg/L	1	9/20/2018 2:25:29 PM	40404
Hexachloroethane	ND	3.0		mg/L	1	9/20/2018 2:25:29 PM	40404
Nitrobenzene	ND	2.0		mg/L	1	9/20/2018 2:25:29 PM	40404
Pentachlorophenol	ND	100		mg/L	1	9/20/2018 2:25:29 PM	40404
Pyridine	ND	5.0		mg/L	1	9/20/2018 2:25:29 PM	40404
2,4,5-Trichlorophenol	ND	400		mg/L	1	9/20/2018 2:25:29 PM	40404

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809443

Date Reported: 9/21/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: KAFB-10645-2-idw

Project: Kirtland AFB BFF

Collection Date: 9/7/2018 2:00:00 PM

Lab ID: 1809443-001

Matrix: SOIL

Received Date: 9/7/2018 3:52:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C TCLP</b>							Analyst: <b>DAM</b>
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	9/20/2018 2:25:29 PM	40404
Cresols, Total	ND	200		mg/L	1	9/20/2018 2:25:29 PM	40404
Surr: 2-Fluorophenol	46.0	15-102		%Rec	1	9/20/2018 2:25:29 PM	40404
Surr: Phenol-d5	36.2	15-87.7		%Rec	1	9/20/2018 2:25:29 PM	40404
Surr: 2,4,6-Tribromophenol	80.3	39.9-111		%Rec	1	9/20/2018 2:25:29 PM	40404
Surr: Nitrobenzene-d5	70.0	35.1-107		%Rec	1	9/20/2018 2:25:29 PM	40404
Surr: 2-Fluorobiphenyl	65.7	36.7-100		%Rec	1	9/20/2018 2:25:29 PM	40404
Surr: 4-Terphenyl-d14	80.9	42.6-129		%Rec	1	9/20/2018 2:25:29 PM	40404
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: <b>DJF</b>
Benzene	ND	0.024		mg/Kg	1	9/12/2018 11:18:07 AM	40280
Toluene	ND	0.048		mg/Kg	1	9/12/2018 11:18:07 AM	40280
Ethylbenzene	ND	0.048		mg/Kg	1	9/12/2018 11:18:07 AM	40280
Xylenes, Total	ND	0.097		mg/Kg	1	9/12/2018 11:18:07 AM	40280
Surr: Dibromofluoromethane	96.9	70-130		%Rec	1	9/12/2018 11:18:07 AM	40280
Surr: 1,2-Dichloroethane-d4	97.5	70-130		%Rec	1	9/12/2018 11:18:07 AM	40280
Surr: Toluene-d8	89.8	70-130		%Rec	1	9/12/2018 11:18:07 AM	40280
Surr: 4-Bromofluorobenzene	96.8	70-130		%Rec	1	9/12/2018 11:18:07 AM	40280
<b>VOLATILES BY 8260B/1311</b>							Analyst: <b>RAA</b>
Benzene	ND	0.50		mg/L	1	9/12/2018 8:11:00 PM	40279
2-Butanone	ND	200		mg/L	1	9/12/2018 8:11:00 PM	40279
Carbon Tetrachloride	ND	0.50		mg/L	1	9/12/2018 8:11:00 PM	40279
Chlorobenzene	ND	100		mg/L	1	9/12/2018 8:11:00 PM	40279
Chloroform	ND	6.0		mg/L	1	9/12/2018 8:11:00 PM	40279
1,4-Dichlorobenzene	ND	7.5		mg/L	1	9/12/2018 8:11:00 PM	40279
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	9/12/2018 8:11:00 PM	40279
1,1-Dichloroethene	ND	0.70		mg/L	1	9/12/2018 8:11:00 PM	40279
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	9/12/2018 8:11:00 PM	40279
Trichloroethene (TCE)	ND	0.50		mg/L	1	9/12/2018 8:11:00 PM	40279
Vinyl chloride	ND	0.20		mg/L	1	9/12/2018 8:11:00 PM	40279
Surr: 1,2-Dichloroethane-d4	96.5	70-130		%Rec	1	9/12/2018 8:11:00 PM	40279
Surr: 4-Bromofluorobenzene	95.5	57.3-148		%Rec	1	9/12/2018 8:11:00 PM	40279
Surr: Dibromofluoromethane	102	70-130		%Rec	1	9/12/2018 8:11:00 PM	40279
Surr: Toluene-d8	93.4	70-130		%Rec	1	9/12/2018 8:11:00 PM	40279

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		9/14/2018 10:31:15 AM	WG1166190
Fluid	1		9/14/2018 10:31:15 AM	WG1166190
Initial pH	8.71		9/14/2018 10:31:15 AM	WG1166190
Final pH	4.96		9/14/2018 10:31:15 AM	WG1166190

Wet Chemistry by Method 9012 B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.250	1	09/17/2018 08:59	WG1166206

Wet Chemistry by Method 9034-9030B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		25.0	1	09/19/2018 03:30	WG1167475

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	9.99	30	1	09/14/2018 11:30	WG1166066

Sample Narrative:  
 L1025179-01 WG1166089: 9:39 aJ 21.9C

Wet Chemistry by Method D93/1010A

Analyte	Result Deg. I	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DN1 at 170		1	09/14/2018 02:30	WG1164709

Chlorinated Acid Herbicides (GC) by Method 8151A

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
2,4,5-TP (Slyex)	ND		0.00200	1	1	09/18/2018 06:55	WG1167063
2,4-D	ND		0.00200	10	1	09/18/2018 06:55	WG1167062
(S) 2,4-Dichlorophenyl Acetic Acid	80.6		14.0-758			09/18/2018 06:55	WG1167065



**WG1166390**

Wet Chemistry by Method 5012 B

**QUALITY CONTROL SUMMARY**

L1025179-01

ONE LAB. NATIONWIDE

Method Blank (MB)

(MB) R3342393-1 09/17/18 08:46

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Cyanide	U		0.0390	0.250

L1025730-01 Original Sample (OS) - Duplicate (DUP)

(OS) L1025730-01 09/17/18 09:01 • (DUP) R3342393-4 09/17/18 09:02

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP RPD Limits
Reactive Cyanide	ND	0.0458	1	0.000	20

L1025655-01 Original Sample (OS) - Duplicate (DUP)

(OS) L1025655-01 09/17/18 09:12 • (DUP) R3342393-9 09/17/18 09:13

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP RPD Limits
Reactive Cyanide	ND	0.002	1	0.000	20

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3342393-2 09/17/18 08:47 • (LCS-D) R3342393-3 09/17/18 08:48

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS-D Result mg/kg	LCS Rec. %	LCS-D Rec. %	Rec. Limits	LCS Qualifier	LCS-D Qualifier	RPD %	RPD Limits
Reactive Cyanide	2.50	2.43	2.57	97.3	103	50.0-150		5.33	20	20

L10258216-01 Original Sample (OS) - Matrix Spike (MS) - Matrix Spike Duplicate (MS-D)

(OS) L10258216-01 09/17/18 09:03 • (MS) R3342393-5 09/17/18 09:04 • (MS-D) R3342393-6 09/17/18 09:05

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	MSD Result mg/kg	MSD Rec. %	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD %	RPD Limits
Reactive Cyanide	1.61	ND	2.25	134	2.45	134	1	75.0-125		1.5	8.31	20

L1025841-01 Original Sample (OS) - Matrix Spike (MS) - Matrix Spike Duplicate (MS-D)

(OS) L1025841-01 09/17/18 09:06 • (MS) R3342393-7 09/17/18 09:07 • (MS-D) R3342393-8 09/17/18 09:11

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	MSD Result mg/kg	MSD Rec. %	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD %	RPD Limits
Reactive Cyanide	1.67	ND	3.15	189	3.19	191	1	75.0-125		1.5	1.22	20

ACCOUNT:

Half Environmental Analysis Laboratory

PROJECT:

SDG:  
L1025179

DATE/TIME:  
09/18/18 13:58

WG1167475

Wet Chemistry by Method 9034-9030B

Method Blank (MB)

(MB) R3343003-1 09/19/18 03:30

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Sulfide	U		7.63	25.0

L1026110-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1026110-02 09/19/18 03:30 • (DUP) R3343003-4 09/19/18 03:30

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP RPD Limits %
Reactive Sulfide	ND	ND	1	0.000	20

L1026272-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1026272-04 09/19/18 03:30 • (DUP) R3343003-5 09/19/18 03:30

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP RPD Limits %
Reactive Sulfide	ND	ND	1	0.000	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS)

(LCS) R3343003-2 09/19/18 03:30 • (LCS) R3343003-3 09/19/18 03:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Result %	LCS Rec %	Rec. Limits %	LCS Duplicate	LCS Duplicate %	RPD	RPD Limits %
Reactive Sulfide	100	73.1	73.1	73.1	70.0-130			0.000	20

# QUALITY CONTROL SUMMARY

L1026179-01

ONE LAB. NATIONWIDE

7	GI
6	AI
5	SC
4	SP
3	CN
2	SS
1	TC

QUALITY CONTROL SUMMARY														
WG1166089 Wet Chemistry by Method 9045D 1.025179-01														
ONE LAB, NATIONWIDE														
L1024769-02 Original Sample (OS) • Duplicate (DUP)														
(OS) L1024769-02 09/14/18 11:30 • (DUP) R3342002-3 09/14/18 11:30														
Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits	LCS Amount	LCS Result	LCS Rec.	LCSD Result	LCSD Rec.	LCSD Qualifier	RPD	RPD Limits
Corrosivity by pH	su	su	%	%	%	%	su	su	%	su	%	%	%	%
Corrosivity by pH	8.09	8.07	1	0.248										
<b>Sample Narrative:</b> OS: 8.09 at 22.2C DUP: 8.07 at 22.1C														
<b>Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)</b> (LCS) R3342002-1 09/14/18 11:30 • (LCS-D) R3342002-2 09/14/18 11:30														
Analyte	Spike Amount	LCS Result	LCS Rec.	LCSD Result	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits				
Corrosivity by pH	su	su	%	su	%	%	%	%	%	%				
Corrosivity by pH	10.0	9.98	99.8	9.99	99.9	99.0-101			0.100	1				
<b>Sample Narrative:</b> LCS: 9.98 at 20.4C (LCS-D): 9.99 at 20.4C														

QUALITY CONTROL SUMMARY										
ONE LAB, NATIONWIDE										
WG1164709 Met Chemistry by Method D93/1010A										
L1023760-04 Original Sample (OS) • Duplicate (DUP)										
L1023760-04 09/14/18 02:30 • (DUP) R3341871-3 09/14/18 02:30										
Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits				
Ignitability	Deg. F	Deg. F	%	%		%				
	80.5	83.6	1	0.000		10				
L1024262-01 Original Sample (OS) • Duplicate (DUP)										
L1024262-01 09/14/18 02:30 • (DUP) R3341871-4 09/14/18 02:30										
Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits				
Ignitability	Deg. F	Deg. F	%	%		%				
	141	139	1	1.43		10				
L1024263-02 Original Sample (OS) • Duplicate (DUP)										
L1024263-02 09/14/18 02:30 • (DUP) R3341871-5 09/14/18 02:30										
Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits				
Ignitability	Deg. F	Deg. F	%	%		%				
	70.5	70.6	1	0.000		10				
Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)										
LCS) R3341871-1 09/14/18 02:30 • (LCS-D) R3341871-2 09/14/18 02:30										
Analyte	Spike Amount	LCS Result	LCS Result	LCS Rec	LCSD Rec	Rec. Limits	LCSD Qualifier	RPD	RPD Limits	
Ignitability	Deg. F	Deg. F	Deg. F	%	%	%	%	%	%	
	82.0	83.8	83.6	102	102	96.0-104		0.239	10	

L1025179-01

ACCOUNT: Hall Environmental Analysis Laboratory  
 PROJECT:   
 SDG: L025779  
 DATE/TIME: 09/19/18 11:58



ONE LAB. NATIONWIDE

# QUALITY CONTROL SUMMARY

L3025179-01

**WG1167053**

Chlorinated Acid Herbicides (SC) by Method 8151A

Method Blank (MB)

(MB) R3342877-1 09/18/18 04:40

Analyte	MB Result (mg/l)	MB MDL (mg/l)	MB RDL (mg/l)
2,4-D	U	0.000667	0.00200
2,4,5-TP (Sislex)	U	0.000667	0.00200
(S) 2,4-Dichlorophenoxy Acetic Acid	85.7		14.0-156

## Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)

(LCS) R3342877-2 09/18/18 04:53 • (LCSD) R3342877-3 09/18/18 05:07

Analyte	Spike Amount (mg/l)	LCS Result (mg/l)	LCSD Result (%)	LCS Rec. (%)	LCSD Rec. (%)	Rec. Limits (%)	LCS Qualifier	LCSD Qualifier	RPD (%)	RPC Limits (%)
2,4-D	0.00500	0.00357	0.00371	71.4	74.2	50.0-120			3.85	20
2,4,5-TP (Sislex)	0.00500	0.00390	0.00404	78.0	80.8	50.0-125			3.53	20
(S) 2,4-Dichlorophenoxy Acetic Acid			97.4	106	106	19.0-158				

## L3025179-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1025179-01 09/18/18 06:55 • (MS) R3342877-4 09/18/18 07:08 • (MSD) R3342877-5 09/18/18 07:22

Analyte	Spike Amount (mg/l)	Original Result (mg/l)	MS Result (mg/l)	MSD Result (mg/l)	Dilution	Rec. Limits (%)	MS Qualifier	MSD Qualifier	RPD (%)	RPD Limits (%)
2,4-D	0.0500	ND	0.0378	0.0357	1	50.0-120			2.95	20
2,4,5-TP (Sislex)	0.0500	ND	0.0416	0.0423	1	50.0-125			3.17	20
(S) 2,4-Dichlorophenoxy Acetic Acid			79.4	76.0		14.0-155				

ACCOUNT: Hel Environmental Analysis Laboratory

PROJECT

SDG: L3025179

DATE/TIME: 09/18/18 13:58

# GLOSSARY OF TERMS



## Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

### Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.
Qualifier	Description
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
T8	Sample(s) received past/too close to holding time expiration.

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> GI

AI

<sup>8</sup> Sc

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1025179

DATE/TIME:  
09/19/18 13:58

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809443**

21-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID <b>MB-40299</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>40299</b>	RunNo: <b>54091</b>								
Prep Date: <b>9/12/2018</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>1790276</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.1		10.00		91.3	50.6	138			

Sample ID <b>LCS-40299</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>40299</b>	RunNo: <b>54091</b>								
Prep Date: <b>9/12/2018</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>1790277</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	96.6	70	130			
Surr: DNOP	3.8		5.000		75.0	50.6	138			

Sample ID <b>1809443-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>KAFB-10645-2-idw</b>	Batch ID: <b>40299</b>	RunNo: <b>54091</b>								
Prep Date: <b>9/12/2018</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>1790303</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	49.85	0	95.5	53.5	126			
Surr: DNOP	4.3		4.985		86.8	50.6	138			

Sample ID <b>1809443-001AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>KAFB-10645-2-idw</b>	Batch ID: <b>40299</b>	RunNo: <b>54091</b>								
Prep Date: <b>9/12/2018</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>1790304</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	9.9	49.70	0	100	53.5	126	4.56	21.7	
Surr: DNOP	4.5		4.970		90.1	50.6	138	0	0	

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809443**

21-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID <b>MB-40280</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>40280</b>	RunNo: <b>54096</b>								
Prep Date: <b>9/11/2018</b>	Analysis Date: <b>9/12/2018</b>	SeqNo: <b>1788284</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	970		1000		96.9	15	316			

Sample ID <b>LCS-40280</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>40280</b>	RunNo: <b>54096</b>								
Prep Date: <b>9/11/2018</b>	Analysis Date: <b>9/12/2018</b>	SeqNo: <b>1788285</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	105	75.9	131			
Surr: BFB	1000		1000		105	15	316			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809443**

21-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0022		0.002500		89.9	58.3	109			
Surr: Tetrachloro-m-xylene	0.0020		0.002500		80.3	40.1	101			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00042	0.00010	0.0005000	0	84.4	49.5	127			
gamma-BHC (Lindane)	0.00037	0.00010	0.0005000	0	74.0	49.9	124			
Heptachlor	0.00030	0.00010	0.0005000	0	59.9	41	122			
Heptachlor epoxide	0.00040	0.00010	0.0005000	0	79.8	52.2	121			
Methoxychlor	0.00042	0.00010	0.0005000	0	84.5	40.2	134			
Surr: Decachlorobiphenyl	0.0020		0.002500		78.3	58.3	109			
Surr: Tetrachloro-m-xylene	0.00091		0.002500		36.5	40.1	101			S

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809443

21-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	mb-40280	SampType:	MBLK	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	PBS	Batch ID:	40280	RunNo:	54111					
Prep Date:	9/11/2018	Analysis Date:	9/12/2018	SeqNo:	1788462	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.51		0.5000		101	70	130			
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		101	70	130			
Surr: Toluene-d8	0.48		0.5000		96.7	70	130			
Surr: 4-Bromofluorobenzene	0.47		0.5000		94.4	70	130			

Sample ID	Ics-40280	SampType:	LCS	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	LCSS	Batch ID:	40280	RunNo:	54111					
Prep Date:	9/11/2018	Analysis Date:	9/12/2018	SeqNo:	1788463	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.025	1.000	0	97.9	70	130			
Toluene	0.91	0.050	1.000	0	90.9	70	130			
Surr: Dibromofluoromethane	0.48		0.5000		95.3	70	130			
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		94.6	70	130			
Surr: Toluene-d8	0.47		0.5000		94.9	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		91.5	70	130			

Sample ID	1809443-001ams	SampType:	MS	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	KAFB-10645-2-idw	Batch ID:	40280	RunNo:	54111					
Prep Date:	9/11/2018	Analysis Date:	9/12/2018	SeqNo:	1788465	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.024	0.9597	0	111	51.9	158			
Toluene	1.0	0.048	0.9597	0	107	64.6	132			
Surr: Dibromofluoromethane	0.45		0.4798		93.4	70	130			
Surr: 1,2-Dichloroethane-d4	0.47		0.4798		98.6	70	130			
Surr: Toluene-d8	0.47		0.4798		97.4	70	130			
Surr: 4-Bromofluorobenzene	0.47		0.4798		97.3	70	130			

Sample ID	1809443-001amsd	SampType:	MSD	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	KAFB-10645-2-idw	Batch ID:	40280	RunNo:	54111					
Prep Date:	9/11/2018	Analysis Date:	9/12/2018	SeqNo:	1788466	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.024	0.9488	0	105	51.9	158	6.25	20	
Toluene	0.92	0.047	0.9488	0	96.6	64.6	132	11.4	20	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Kirtland AFB BFF  
 Completion Report for Data Gap Monitoring Wells  
 SWMUs ST-106/SS-111

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June 2020

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809443**

21-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>1809443-001amsd</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA Method 8260B: Volatiles</b>					
Client ID:	<b>KAFB-10645-2-idw</b>	Batch ID:	<b>40280</b>	RunNo:	<b>54111</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/12/2018</b>	SeqNo:	<b>1788466</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Dibromofluoromethane	0.43		0.4744		89.6	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	0.43		0.4744		91.0	70	130	0	0	
Surr: Toluene-d8	0.43		0.4744		91.1	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.44		0.4744		93.1	70	130	0	0	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809443

21-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	ics-40279	SampType:	LCS	TestCode:	Volatiles by 8260B/1311					
Client ID:	LCSS	Batch ID:	40279	RunNo:	54097					
Prep Date:	9/11/2018	Analysis Date:	9/12/2018	SeqNo:	1789072	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.41	0.10	0.4000	0	102	70	130			
Chlorobenzene	0.38	0.10	0.4000	0	95.0	70	130			
1,1-Dichloroethene	0.41	0.10	0.4000	0	104	70	130			
Trichloroethene (TCE)	0.38	0.10	0.4000	0	95.8	70	130			
Surr: 1,2-Dichloroethane-d4	0.19		0.2000		97.1	70	130			
Surr: 4-Bromofluorobenzene	0.20		0.2000		101	57.3	148			
Surr: Dibromofluoromethane	0.21		0.2000		103	70	130			
Surr: Toluene-d8	0.18		0.2000		92.0	70	130			

Sample ID	mb-40279	SampType:	MBLK	TestCode:	Volatiles by 8260B/1311					
Client ID:	PBS	Batch ID:	40279	RunNo:	54097					
Prep Date:	9/11/2018	Analysis Date:	9/12/2018	SeqNo:	1789073	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		98.4	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		95.8	57.3	148			
Surr: Dibromofluoromethane	0.20		0.2000		101	70	130			
Surr: Toluene-d8	0.18		0.2000		91.7	70	130			

Sample ID	1809443-001ams	SampType:	MS	TestCode:	Volatiles by 8260B/1311					
Client ID:	KAFB-10645-2-idw	Batch ID:	40279	RunNo:	54097					
Prep Date:	9/11/2018	Analysis Date:	9/12/2018	SeqNo:	1789075	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.43	0.10	0.3997	0	108	44.5	152			
Chlorobenzene	0.39	0.10	0.3997	0	98.6	70	130			
1,1-Dichloroethene	0.44	0.10	0.3997	0	109	79.1	132			
Trichloroethene (TCE)	0.41	0.10	0.3997	0	102	70	130			
Surr: 1,2-Dichloroethane-d4	0.19		0.1998		96.7	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809443**

21-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>1809443-001ams</b>	SampType:	<b>MS</b>	TestCode:	<b>Volatiles by 8260B/1311</b>					
Client ID:	<b>KAFB-10645-2-idw</b>	Batch ID:	<b>40279</b>	RunNo:	<b>54097</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/12/2018</b>	SeqNo:	<b>1789075</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.20		0.1998		98.1	57.3	148			
Surr: Dibromofluoromethane	0.21		0.1998		103	70	130			
Surr: Toluene-d8	0.18		0.1998		91.5	70	130			

Sample ID	<b>1809443-001amsd</b>	SampType:	<b>MSD</b>	TestCode:	<b>Volatiles by 8260B/1311</b>					
Client ID:	<b>KAFB-10645-2-idw</b>	Batch ID:	<b>40279</b>	RunNo:	<b>54097</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/12/2018</b>	SeqNo:	<b>1789076</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.41	0.10	0.3997	0	102	44.5	152	5.68	20	
Chlorobenzene	0.37	0.10	0.3997	0	92.1	70	130	6.74	20	
1,1-Dichloroethene	0.41	0.10	0.3997	0	103	79.1	132	6.01	20	
Trichloroethene (TCE)	0.38	0.10	0.3997	0	96.2	70	130	5.64	20	
Surr: 1,2-Dichloroethane-d4	0.20		0.1998		99.0	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.20		0.1998		98.3	57.3	148	0	0	
Surr: Dibromofluoromethane	0.20		0.1998		99.5	70	130	0	0	
Surr: Toluene-d8	0.18		0.1998		90.0	70	130	0	0	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809443

21-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	Ics-40404		SampType: LCS	TestCode: EPA Method 8270C TCLP						
Client ID:	LCSS		Batch ID: 40404	RunNo: 54296						
Prep Date:	9/18/2018		Analysis Date: 9/20/2018	SeqNo: 1797024	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.068	0.0010	0.1000	0	68.1	47.8	99.2			
3+4-Methylphenol	0.14	0.0010	0.2000	0	69.4	41.5	118			
2,4-Dinitrotoluene	0.055	0.0010	0.1000	0	54.8	44.4	81			
Hexachlorobenzene	0.074	0.0010	0.1000	0	74.3	49.5	91.6			
Hexachlorobutadiene	0.063	0.0010	0.1000	0	62.7	38.6	93			
Hexachloroethane	0.064	0.0010	0.1000	0	64.1	39.4	79.9			
Nitrobenzene	0.066	0.0010	0.1000	0	65.6	47.4	96.2			
Pentachlorophenol	0.072	0.0010	0.1000	0	72.2	39.4	79.9			
Pyridine	0.038	0.0010	0.1000	0	37.6	15	79.9			
2,4,5-Trichlorophenol	0.063	0.0010	0.1000	0	63.1	47.4	118			
2,4,6-Trichlorophenol	0.065	0.0010	0.1000	0	64.8	47.4	101			
Cresols, Total	0.21	0.0010	0.3000	0	69.0	44.1	111			
Surr: 2-Fluorophenol	0.12		0.2000		59.8	15	102			
Surr: Phenol-d5	0.11		0.2000		55.8	15	87.7			
Surr: 2,4,6-Tribromophenol	0.13		0.2000		65.8	39.9	111			
Surr: Nitrobenzene-d5	0.068		0.1000		68.1	35.1	107			
Surr: 2-Fluorobiphenyl	0.064		0.1000		63.8	36.7	100			
Surr: 4-Terphenyl-d14	0.083		0.1000		83.0	42.6	129			

Sample ID	LCSD-40404		SampType: LCSD	TestCode: EPA Method 8270C TCLP						
Client ID:	LCSS02		Batch ID: 40404	RunNo: 54296						
Prep Date:	9/18/2018		Analysis Date: 9/20/2018	SeqNo: 1797025	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.080	0.0010	0.1000	0	79.7	47.8	99.2	15.8	20	
3+4-Methylphenol	0.16	0.0010	0.2000	0	77.6	41.5	118	11.1	20	
2,4-Dinitrotoluene	0.067	0.0010	0.1000	0	67.1	44.4	81	20.1	20	R
Hexachlorobenzene	0.083	0.0010	0.1000	0	83.3	49.5	91.6	11.4	20	
Hexachlorobutadiene	0.070	0.0010	0.1000	0	69.8	38.6	93	10.7	20	
Hexachloroethane	0.071	0.0010	0.1000	0	70.9	39.4	79.9	10.1	20	
Nitrobenzene	0.080	0.0010	0.1000	0	80.4	47.4	96.2	20.3	20	R
Pentachlorophenol	0.072	0.0010	0.1000	0	71.5	39.4	79.9	0.919	20	
Pyridine	0.032	0.0010	0.1000	0	31.9	15	79.9	16.4	20	
2,4,5-Trichlorophenol	0.080	0.0010	0.1000	0	79.9	47.4	118	23.5	20	R
2,4,6-Trichlorophenol	0.081	0.0010	0.1000	0	80.8	47.4	101	22.0	20	R
Cresols, Total	0.23	0.0010	0.3000	0	78.3	44.1	111	12.6	20	
Surr: 2-Fluorophenol	0.090		0.2000		45.2	15	102	0	20	
Surr: Phenol-d5	0.075		0.2000		37.3	15	87.7	0	20	
Surr: 2,4,6-Tribromophenol	0.12		0.2000		61.6	39.9	111	0	20	

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809443

21-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>LCSD-40404</b>	SampType:	<b>LCSD</b>	TestCode:	<b>EPA Method 8270C TCLP</b>					
Client ID:	<b>LCSS02</b>	Batch ID:	<b>40404</b>	RunNo:	<b>54296</b>					
Prep Date:	<b>9/18/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797025</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.063		0.1000		62.7	35.1	107	0	20	
Surr: 2-Fluorobiphenyl	0.061		0.1000		60.6	36.7	100	0	20	
Surr: 4-Terphenyl-d14	0.064		0.1000		64.1	42.6	129	0	20	

Sample ID	<b>mb-40404</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8270C TCLP</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40404</b>	RunNo:	<b>54296</b>					
Prep Date:	<b>9/18/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797026</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.086		0.2000		42.8	15	102			
Surr: Phenol-d5	0.11		0.2000		53.1	15	87.7			
Surr: 2,4,6-Tribromophenol	0.10		0.2000		51.0	39.9	111			
Surr: Nitrobenzene-d5	0.071		0.1000		70.7	35.1	107			
Surr: 2-Fluorobiphenyl	0.073		0.1000		72.9	36.7	100			
Surr: 4-Terphenyl-d14	0.079		0.1000		79.2	42.6	129			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809443**

21-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID <b>MB-40415</b>	SampType: <b>MBLK</b>	TestCode: <b>MERCURY, TCLP</b>								
Client ID: <b>PBW</b>	Batch ID: <b>40415</b>	RunNo: <b>54249</b>								
Prep Date: <b>9/18/2018</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>1794914</b>	Units: <b>mg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID <b>LCS-40415</b>	SampType: <b>LCS</b>	TestCode: <b>MERCURY, TCLP</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>40415</b>	RunNo: <b>54249</b>								
Prep Date: <b>9/18/2018</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>1794915</b>	Units: <b>mg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809443

21-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID <b>MB-40316</b>		SampType: <b>MBLK</b>		TestCode: <b>EPA Method 6010B: TCLP Metals</b>						
Client ID: <b>PBW</b>		Batch ID: <b>40316</b>		RunNo: <b>54140</b>						
Prep Date: <b>9/12/2018</b>		Analysis Date: <b>9/14/2018</b>		SeqNo: <b>1790131</b>		Units: <b>mg/L</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID <b>LCS-40316</b>		SampType: <b>LCS</b>		TestCode: <b>EPA Method 6010B: TCLP Metals</b>						
Client ID: <b>LCSW</b>		Batch ID: <b>40316</b>		RunNo: <b>54140</b>						
Prep Date: <b>9/12/2018</b>		Analysis Date: <b>9/14/2018</b>		SeqNo: <b>1790133</b>		Units: <b>mg/L</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	102	80	120			
Barium	ND	100	0.5000	0	99.0	80	120			
Cadmium	ND	1.0	0.5000	0	100	80	120			
Chromium	ND	5.0	0.5000	0	97.9	80	120			
Selenium	ND	1.0	0.5000	0	101	80	120			
Silver	ND	5.0	0.1000	0	110	80	120			

Sample ID <b>MB-40316</b>		SampType: <b>MBLK</b>		TestCode: <b>EPA Method 6010B: TCLP Metals</b>						
Client ID: <b>PBW</b>		Batch ID: <b>40316</b>		RunNo: <b>54140</b>						
Prep Date: <b>9/12/2018</b>		Analysis Date: <b>9/14/2018</b>		SeqNo: <b>1790169</b>		Units: <b>mg/L</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0								

Sample ID <b>LCS-40316</b>		SampType: <b>LCS</b>		TestCode: <b>EPA Method 6010B: TCLP Metals</b>						
Client ID: <b>LCSW</b>		Batch ID: <b>40316</b>		RunNo: <b>54140</b>						
Prep Date: <b>9/12/2018</b>		Analysis Date: <b>9/14/2018</b>		SeqNo: <b>1790171</b>		Units: <b>mg/L</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	5.0	0.5000	0	96.8	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87105  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

**Sample Log-In Check List**

Client Name: EA Engineering Alb

Work Order Number: 1809443

RcptNo: 1

Received By: Jazzmine Burkhead

9/7/2018 3:52:00 PM

*Jazzmine Burkhead*

Completed By: Ashley Gallegos

9/10/2018 11:07:18 AM

*AG*

Reviewed By: ENM

9/10/18 Labeled by: JAB 09/10/18

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: 2  
 Adjusted? JAB 09/10/18  
 Checked by: \_\_\_\_\_

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.0	Good	Not Present			

## CHAIN-OF-CUSTODY RECORD

**EA**  
225 Sanding Circle Suite 400, Hunt Valley MD 21081  
Tel No: (410) 684-7000  
Fax No: (410) 771-6655

**PROJECT NUMBER:**  
62599DM01.1017.3

**LAB NAME AND CONTACT:**  
Hill Environmental

**LAB NO NUMBER:**  
15182

**PROJECT TEL NO AND FAX NO:**  
Tel 505-345-3732  
Fax 505-345-4107

**CO NUMBER:**  
KAFB-106245-2-10W

**FAX AND MAIL REPORTS/EDD TO:**  
RECIPIENT 1 (Name and Contact):  
Amanda Smith/asmith@east.com

**FAX AND MAIL REPORTS/EDD TO:**  
RECIPIENT 2 (Name and Contact):  
Pam Moss/pmoss@east.com

**FAX AND MAIL REPORTS/EDD TO:**  
RECIPIENT 3 (Name and Contact):  
Earl Morse/lemorse@east.com

#	ITEM	# SAMPLE IDENTIFIER	# SAMPLE DESCRIPTION/LOCATION	# MATRIX (see codes on SOP)	# DATE COLLECTED	# TIME COLLECTED	# DATA PKG LEVEL	# (see codes on SOP)	Lab TAT (business days)	Bottle Type	# ANALYSES REQUIRED (Include Method Numbers)						# SAMPLE TYPE (see codes on SOP)	# COMMENTS/SCREENING READINGS	# LAB ID (see USA 100)
											TPH GRO, DRO, RRO (8015D)	BTEX (8260B)	TPH GRO, DRO, RRO (8015D)	Resistive Cyanide/ Sulfide (9012B/9034)	Corrosivity - PH (9045D)	Leachability (1010A)			
1	KAFB 106245-2-10W		Roll off bin 2 soil		9-7-18	1400	IV	7	3		X	X	X	X	X	X	1809443		
2	KAFB-106245-2-10W																		
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

# SAMPLER(S) AND COMPANY: (please print)  
Field Sampler/EA Engineering  
Date: 9-7-18 1552

# RELINQUISHED BY: [Signature]  
# RECEIVED BY: [Signature]

# COURIER AND SHIPPING NUMBER:  
FedEx Number: N/A Hand delivered to Lab

# DATE: 09/07/18 15:52

# TIME: [Blank]

Printed Name and Signature: [Signature]  
Printed Name and Signature: [Signature]  
Printed Name and Signature: [Signature]

Temp: 50

Distribution: | 1 Original - Laboratory (To be retained with Analytical Report); | 1 Copy 1 - Project File

# NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

<b>NON-HAZARDOUS WASTE MANIFEST</b>		1. Generator's US EPA ID No. <b>NM9570024423</b>	Manifest Document No. <b>D215119</b>	2. Page 1 of 1
3. Generator's Name and Mailing Address <b>KIRTLAND AIR FORCE BASE 2050 WYOMING BLVD SE BLDG 20685, ENVIRONMENTAL KIRTLAND AIR FORCE BASE, NM 87117</b>				
4. Generator's Phone <b>505-846-9017</b>				
5. Transporter 1 Company Name <b>Advanced Chemical Transport Inc./DBA ACTENVIRO</b>	6. US EPA ID Number <b>CAR000070540</b>	A. State Transporter's ID		
7. Transporter 2 Company Name		B. Transporter 1 Phone		
8. US EPA ID Number		C. State Transporter's ID		
9. Designated Facility Name and Site Address <b>ANTHONY LANDFILL 2500 FREMONT COUNTY ROAD 67 PENROSE, CO 81240 719-372-6671</b>		10. US EPA ID Number <b>COR000208454</b>		
		D. Transporter 2 Phone		
		E. State Facility's ID		
		F. Facility's Phone		
11. WASTE DESCRIPTION		Containers No.	13. Total Quantity	14. Unit Wt./Vol.
Non-RCRA/Non-DOT Regulated Material Solid Sludges (DRILL CUTTINGS)		02 CM	5	TON
b.				
c.				
d.				
G. Additional Descriptions for Materials Listed Above <b>Project Number 179513 Document #: D215119 P-20170421-D KIT-1215 CM</b>		H. Handling Codes for Wastes Listed Above		
15. Special Handling Instructions and Additional Information <b>24 HOUR EMERGENCY CONTACT: SCOTT CLARK 505 385 3679 HTB-2 / HTB-4</b>				
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.				
Printed/Typed Name <b>Holly O Grady</b>		Signature <i>Holly O Grady</i>		Date Month Day Year <b>10 10 18</b>
17. Transporter 1 Acknowledgement of Receipt of Materials		Date		
Printed/Typed Name <b>Martin Arcude</b>		Signature <i>Martin Arcude</i>		Month Day Year <b>10 10 18</b>
18. Transporter 2 Acknowledgement of Receipt of Materials		Date		
Printed/Typed Name		Signature		Month Day Year
19. Discrepancy Indication Space				
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.				
Printed/Typed Name <b>RP Sullivan</b>		Signature <i>RP Sullivan</i>		Date Month Day Year <b>10 11 18</b>

NON-HAZARDOUS WASTE





Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 26, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: KAFB BFF Data Gap

OrderNo.: 1809A59

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/18/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1809A59

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106245-3-IDW-S

Project: KAFB BFF Data Gap

Collection Date: 9/18/2018 11:13:00 AM

Lab ID: 1809A59-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: <b>rde</b>
Mercury	ND	0.020		mg/L	1	9/24/2018 3:29:22 PM	40525
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: <b>pmf</b>
Arsenic	ND	5.0		mg/L	1	9/24/2018 12:17:24 PM	40518
Barium	ND	100		mg/L	1	9/24/2018 12:17:24 PM	40518
Cadmium	ND	1.0		mg/L	1	9/24/2018 12:17:24 PM	40518
Chromium	ND	5.0		mg/L	1	9/24/2018 12:17:24 PM	40518
Lead	ND	5.0		mg/L	1	9/24/2018 12:17:24 PM	40518
Selenium	ND	1.0		mg/L	1	9/24/2018 12:17:24 PM	40518
Silver	ND	5.0		mg/L	1	9/24/2018 12:17:24 PM	40518
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>AG</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/20/2018 4:18:39 PM	40456
Surr: BFB	100	70-130		%Rec	1	9/20/2018 4:18:39 PM	40456
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	9/21/2018 1:36:13 PM	40460
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/21/2018 1:36:13 PM	40460
Surr: DNOP	94.6	50.6-138		%Rec	1	9/21/2018 1:36:13 PM	40460
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
Acenaphthene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Acenaphthylene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Aniline	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Anthracene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Azobenzene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Benz(a)anthracene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Benzo(a)pyrene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Benzo(b)fluoranthene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Benzo(g,h,i)perylene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Benzo(k)fluoranthene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Benzoic acid	ND	0.50		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Benzyl alcohol	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Bis(2-chloroethoxy)methane	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Bis(2-chloroethyl)ether	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Bis(2-chloroisopropyl)ether	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Bis(2-ethylhexyl)phthalate	ND	0.50		mg/Kg	1	9/21/2018 7:56:08 PM	40469
4-Bromophenyl phenyl ether	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Butyl benzyl phthalate	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Carbazole	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
4-Chloro-3-methylphenol	ND	0.50		mg/Kg	1	9/21/2018 7:56:08 PM	40469

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A59

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106245-3-IDW-S

Project: KAFB BFF Data Gap

Collection Date: 9/18/2018 11:13:00 AM

Lab ID: 1809A59-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
4-Chloroaniline	ND	0.50		mg/Kg	1	9/21/2018 7:56:08 PM	40469
2-Chloronaphthalene	ND	0.25		mg/Kg	1	9/21/2018 7:56:08 PM	40469
2-Chlorophenol	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
4-Chlorophenyl phenyl ether	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Chrysene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Di-n-butyl phthalate	ND	0.40		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Di-n-octyl phthalate	ND	0.40		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Dibenz(a,h)anthracene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Dibenzofuran	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
1,2-Dichlorobenzene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
1,3-Dichlorobenzene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
1,4-Dichlorobenzene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
3,3'-Dichlorobenzidine	ND	0.25		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Diethyl phthalate	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Dimethyl phthalate	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
2,4-Dichlorophenol	ND	0.40		mg/Kg	1	9/21/2018 7:56:08 PM	40469
2,4-Dimethylphenol	ND	0.30		mg/Kg	1	9/21/2018 7:56:08 PM	40469
4,6-Dinitro-2-methylphenol	ND	0.40		mg/Kg	1	9/21/2018 7:56:08 PM	40469
2,4-Dinitrophenol	ND	0.50		mg/Kg	1	9/21/2018 7:56:08 PM	40469
2,4-Dinitrotoluene	ND	0.50		mg/Kg	1	9/21/2018 7:56:08 PM	40469
2,6-Dinitrotoluene	ND	0.50		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Fluoranthene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Fluorene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Hexachlorobenzene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Hexachlorobutadiene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Hexachlorocyclopentadiene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Hexachloroethane	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Indeno(1,2,3-cd)pyrene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Isophorone	ND	0.40		mg/Kg	1	9/21/2018 7:56:08 PM	40469
1-Methylnaphthalene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
2-Methylnaphthalene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
2-Methylphenol	ND	0.40		mg/Kg	1	9/21/2018 7:56:08 PM	40469
3+4-Methylphenol	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
N-Nitrosodi-n-propylamine	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
N-Nitrosodiphenylamine	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Naphthalene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
2-Nitroaniline	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
3-Nitroaniline	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
4-Nitroaniline	ND	0.40		mg/Kg	1	9/21/2018 7:56:08 PM	40469

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A59

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106245-3-IDW-S

Project: KAFB BFF Data Gap

Collection Date: 9/18/2018 11:13:00 AM

Lab ID: 1809A59-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
Nitrobenzene	ND	0.40		mg/Kg	1	9/21/2018 7:56:08 PM	40469
2-Nitrophenol	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
4-Nitrophenol	ND	0.25		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Pentachlorophenol	ND	0.40		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Phenanthrene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Phenol	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Pyrene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Pyridine	ND	0.40		mg/Kg	1	9/21/2018 7:56:08 PM	40469
1,2,4-Trichlorobenzene	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
2,4,5-Trichlorophenol	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
2,4,6-Trichlorophenol	ND	0.20		mg/Kg	1	9/21/2018 7:56:08 PM	40469
Surr: 2-Fluorophenol	67.9	21.7-87.9		%Rec	1	9/21/2018 7:56:08 PM	40469
Surr: Phenol-d5	77.4	30.2-92.2		%Rec	1	9/21/2018 7:56:08 PM	40469
Surr: 2,4,6-Tribromophenol	97.2	47.1-103		%Rec	1	9/21/2018 7:56:08 PM	40469
Surr: Nitrobenzene-d5	74.6	23.9-102		%Rec	1	9/21/2018 7:56:08 PM	40469
Surr: 2-Fluorobiphenyl	77.7	32.6-101		%Rec	1	9/21/2018 7:56:08 PM	40469
Surr: 4-Terphenyl-d14	94.2	37.2-117		%Rec	1	9/21/2018 7:56:08 PM	40469
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: <b>DJF</b>
Benzene	ND	0.025		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Toluene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Ethylbenzene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Methyl tert-butyl ether (MTBE)	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,2,4-Trimethylbenzene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,3,5-Trimethylbenzene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,2-Dichloroethane (EDC)	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,2-Dibromoethane (EDB)	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Naphthalene	ND	0.098		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1-Methylnaphthalene	ND	0.20		mg/Kg	1	9/21/2018 12:46:43 PM	40456
2-Methylnaphthalene	ND	0.20		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Acetone	ND	0.74		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Bromobenzene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Bromodichloromethane	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Bromoform	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Bromomethane	ND	0.15		mg/Kg	1	9/21/2018 12:46:43 PM	40456
2-Butanone	ND	0.49		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Carbon disulfide	ND	0.49		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Carbon tetrachloride	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Chlorobenzene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Chloroethane	ND	0.098		mg/Kg	1	9/21/2018 12:46:43 PM	40456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Kirtland AFB BFF

Completion Report for Data Gap Monitoring Wells

SWMUs ST-106/SS-111

June 2020

## Analytical Report

Lab Order 1809A59

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106245-3-IDW-S

Project: KAFB BFF Data Gap

Collection Date: 9/18/2018 11:13:00 AM

Lab ID: 1809A59-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
Chloroform	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Chloromethane	ND	0.15		mg/Kg	1	9/21/2018 12:46:43 PM	40456
2-Chlorotoluene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
4-Chlorotoluene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
cis-1,2-DCE	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
cis-1,3-Dichloropropene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,2-Dibromo-3-chloropropane	ND	0.098		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Dibromochloromethane	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Dibromomethane	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,2-Dichlorobenzene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,3-Dichlorobenzene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,4-Dichlorobenzene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Dichlorodifluoromethane	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,1-Dichloroethane	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,1-Dichloroethene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,2-Dichloropropane	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,3-Dichloropropane	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
2,2-Dichloropropane	ND	0.098		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,1-Dichloropropene	ND	0.098		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Hexachlorobutadiene	ND	0.098		mg/Kg	1	9/21/2018 12:46:43 PM	40456
2-Hexanone	ND	0.49		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Isopropylbenzene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
4-Isopropyltoluene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
4-Methyl-2-pentanone	ND	0.49		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Methylene chloride	ND	0.15		mg/Kg	1	9/21/2018 12:46:43 PM	40456
n-Butylbenzene	ND	0.15		mg/Kg	1	9/21/2018 12:46:43 PM	40456
n-Propylbenzene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
sec-Butylbenzene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Styrene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
tert-Butylbenzene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,1,1,2-Tetrachloroethane	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,1,2,2-Tetrachloroethane	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Tetrachloroethene (PCE)	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
trans-1,2-DCE	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
trans-1,3-Dichloropropene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,2,3-Trichlorobenzene	ND	0.098		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,2,4-Trichlorobenzene	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,1,1-Trichloroethane	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,1,2-Trichloroethane	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A59

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106245-3-IDW-S

Project: KAFB BFF Data Gap

Collection Date: 9/18/2018 11:13:00 AM

Lab ID: 1809A59-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
Trichloroethene (TCE)	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Trichlorofluoromethane	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
1,2,3-Trichloropropane	ND	0.098		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Vinyl chloride	ND	0.049		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Xylenes, Total	ND	0.098		mg/Kg	1	9/21/2018 12:46:43 PM	40456
Surr: Dibromofluoromethane	96.8	70-130		%Rec	1	9/21/2018 12:46:43 PM	40456
Surr: 1,2-Dichloroethane-d4	94.1	70-130		%Rec	1	9/21/2018 12:46:43 PM	40456
Surr: Toluene-d8	88.7	70-130		%Rec	1	9/21/2018 12:46:43 PM	40456
Surr: 4-Bromofluorobenzene	91.6	70-130		%Rec	1	9/21/2018 12:46:43 PM	40456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified



1809A59-001B KAFB-106245-3-IDW-5

SAMPLE RESULTS - 01

Collected date/time: 09/18/18 11:13

L1027471

Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.250	1	09/24/2018 09:28	WG1169232

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Sulfide	48.7		25.0	1	09/21/2018 19:15	WG1169524

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	8.26	T9	1	09/21/2018 13:15	WG1169412

Sample Narrative:

L1027471-01 WG1169412: 8.26 at 22.9C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DN1 at 100		1	09/20/2018 20:01	WG1169226



ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1027471

DATE/TIME:  
09/24/18 12:51

**WG1169232**

Wet Chemistry by Method 9012 B

Method Blank (MB)

(MB) R3344432-1 09/24/18 09:14

Analyte	MB Result	MB Qualifier	MB MDL	MB MDL
Reactive Cyanide	U		3.0390	0.250

L1027473-01 Original Sample (OS) - Duplicate (DUP)

(OS) L1027473-01 09/24/18 09:29 • (DUP) R3344432-4 09/24/18 09:30

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RPD	DUP RPD
	mg/kg	mg/kg	%	%	%	%
Reactive Cyanide	ND	0.000	1	0.000		20

L1027473-07 Original Sample (OS) - Duplicate (DUP)

(OS) L1027473-07 09/24/18 10:08 • (DUP) R3344432-9 09/24/18 10:09

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RPD	DUP RPD
	mg/kg	mg/kg	%	%	%	%
Reactive Cyanide	1.63	4.60	5	33.5		20

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3344432-2 09/24/18 09:15 • (LCS-D) R3344432-3 09/24/18 09:16

Analyte	Spike Amount	LCS Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	%	%	%	%	%	%
Reactive Cyanide	2.50	2.74	2.77	100	50.0-150	0.937	0.937	20

L1027473-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1027473-02 09/24/18 09:31 • (MS) R3344432-5 09/24/18 09:32 • (MSD) R3344432-6 09/24/18 09:33

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%	%	%	%	%
Reactive Cyanide	1.67	ND	1.26	1.30	75.8	77.9	1	75.0-125	2.66	2.66	2.66	20

L1027473-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1027473-10 09/24/18 09:44 • (MS) R3344432-7 09/24/18 09:45 • (MSD) R3344432-8 09/24/18 09:46

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%	%	%	%	%
Reactive Cyanide	1.67	ND	1.56	1.62	80.4	90.1	1	75.0-125	3.85	3.85	3.85	20

ACCOUNT:

Hill Environmental Analysis Laboratory

PROJECT:

SDG: L027471

DATE/TIME:

09/24/18 12:51

**QUALITY CONTROL SUMMARY**

L1027471-01

ONE LAB. NATIONWIDE.



**WG1169412**  
Wet Chemistry by Method 9045D

**QUALITY CONTROL SUMMARY**  
L1027471-01

ONE LAB. NATIONWIDE.

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L1027471-01 Original Sample (OS) • Duplicate (DUP)  
(OS) L1027473-08 09/21/18 13:15 • (DUP) R3343953-4 09/21/18 13:15

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Conductivity by pH	5U 7.22	5U 7.21	1	0.139		% 1

**Sample Narrative:**  
OS: 7.22 at 22.3C  
DUP: 7.21 at 22.1C

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Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3343953-1 09/21/18 13:15 • (LCSD) R3343953-2 09/21/18 13:15

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec	LCSD Rec	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Corrosivity by pH	10.0	5U 10.0	5U 9.99	100	99.9	% 99.0-101			0.100	% 1

**Sample Narrative:**  
LCS: 10.0 at 21.3C  
LCSD: 9.99 at 21.3C

QUALITY CONTROL SUMMARY										
L1027471-01										
WG1169226										
Wet Chemistry by Method D93/1010A										
ONE LAB, NATIONWIDE										
L1027405-01 Original Sample (OS) - Duplicate (DUP)										
L1027405-01 09/20/18 20:01 - (DUP) R334373-3 09/20/18 20:01										
Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits				
Ignitability	Deg. F DNI at 70	Deg. F DNI at 170	1	% 0.000		% 10				
L1027473-10 Original Sample (OS) - Duplicate (DUP)										
L1027473-10 09/20/18 20:01 - (DUP) R334373-4 09/20/18 20:01										
Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits				
Ignitability	Deg. F DNI at 70	Deg. F DNI at 170	1	% 0.000		% 10				
Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)										
LCS) R334373-1 - 09/20/18 20:01 - (LCSD) R334373-2 09/20/18 20:01										
Analyte	Spike Amount	LCS Result	LCS Rec.	LCSD Result	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Ignitability	Deg. F 82.0	Deg. F 82.7	% 100	Deg. F 83.7	% 100	% 95.0-104	% 0.000	% 0.000	% 10	% 10

ACCOUNT	PROJECT	SDG	DATE/TIME
(H) Environmental Analysis Laboratory		L1027471	09/26/18 12:51

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.
Qualifier	Description
PT	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
TB	Sample(s) received past/too close to holding time expiration.



ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT:

SDG: L1027471

DATE/TIME: 05/24/18 12:51

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A59

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Sample ID	<b>LCS-40460</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40460</b>	RunNo:	<b>54275</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797655</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.00	0	101	70	130			
Surr: DNOP	4.4		5.000		87.3	50.6	138			

Sample ID	<b>MB-40460</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40460</b>	RunNo:	<b>54275</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797656</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		101	50.6	138			

Sample ID	<b>LCS-40485</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40485</b>	RunNo:	<b>54322</b>					
Prep Date:	<b>9/20/2018</b>	Analysis Date:	<b>9/21/2018</b>	SeqNo:	<b>1798291</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.0		5.000		100	50.6	138			

Sample ID	<b>MB-40485</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40485</b>	RunNo:	<b>54322</b>					
Prep Date:	<b>9/20/2018</b>	Analysis Date:	<b>9/21/2018</b>	SeqNo:	<b>1798292</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		108	50.6	138			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 6 of 16

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A59

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 7 of 16

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A59

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	mb-40456		SampType: MBLK	TestCode: EPA Method 8260B: Volatiles						
Client ID:	PBS		Batch ID: 40456	RunNo: 54347						
Prep Date:	9/19/2018		Analysis Date: 9/21/2018	SeqNo: 1799119		Units: mg/Kg				
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.47		0.5000		94.2	70	130			
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		94.4	70	130			
Surr: Toluene-d8	0.45		0.5000		90.2	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		91.8	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	ics-40456		SampType: LCS	TestCode: EPA Method 8260B: Volatiles						
Client ID:	LCSS		Batch ID: 40456	RunNo: 54347						
Prep Date:	9/19/2018		Analysis Date: 9/21/2018	SeqNo: 1799121		Units: mg/Kg				
Benzene	1.2	0.025	1.000	0	119	70	130			
Toluene	1.0	0.050	1.000	0	102	70	130			
Chlorobenzene	1.1	0.050	1.000	0	112	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 8 of 16

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1809A59

26-Sep-18

Client: EA Engineering Science &amp; Technology

Project: KAFB BFF Data Gap

Sample ID	ics-40456	SampType:	LCS	TestCode:	EPA Method 8260B: Volatiles					
Client ID:	LCSS	Batch ID:	40456	RunNo:	54347					
Prep Date:	9/19/2018	Analysis Date:	9/21/2018	SeqNo:	1799121	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	1.3	0.050	1.000	0	126	70	130			
Trichloroethene (TCE)	1.1	0.050	1.000	0	112	70	130			
Surr: Dibromofluoromethane	0.52		0.5000		103	70	130			
Surr: 1,2-Dichloroethane-d4	0.49		0.5000		98.8	70	130			
Surr: Toluene-d8	0.45		0.5000		89.4	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		98.4	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A59

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Sample ID	Ics-40469		SampType: LCS	TestCode: EPA Method 8270C: Semivolatiles						
Client ID:	LCSS		Batch ID: 40469	RunNo: 54318						
Prep Date:	9/20/2018		Analysis Date: 9/21/2018	SeqNo: 1798894	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.1	0.20	1.670	0	66.6	42	110			
4-Chloro-3-methylphenol	2.3	0.50	3.330	0	69.6	42.3	117			
2-Chlorophenol	1.8	0.20	3.330	0	52.9	27.6	117			
1,4-Dichlorobenzene	0.81	0.20	1.670	0	48.7	28.8	105			
2,4-Dinitrotoluene	1.2	0.50	1.670	0	70.5	42	98.7			
N-Nitrosodi-n-propylamine	1.2	0.20	1.670	0	69.4	41.8	112			
4-Nitrophenol	3.2	0.25	3.330	0	95.2	54	113			
Pentachlorophenol	2.6	0.40	3.330	0	78.0	41.5	101			
Phenol	1.8	0.20	3.330	0	53.8	32.2	115			
Pyrene	1.5	0.20	1.670	0	91.5	48.5	121			
1,2,4-Trichlorobenzene	1.0	0.20	1.670	0	60.6	39.9	112			
Surr: 2-Fluorophenol	1.5		3.330		45.1	21.7	87.9			
Surr: Phenol-d5	2.0		3.330		59.2	30.2	92.2			
Surr: 2,4,6-Tribromophenol	2.8		3.330		83.4	47.1	103			
Surr: Nitrobenzene-d5	0.96		1.670		57.3	23.9	102			
Surr: 2-Fluorobiphenyl	1.1		1.670		63.0	32.6	101			
Surr: 4-Terphenyl-d14	1.7		1.670		99.5	37.2	117			

Sample ID	mb-40469		SampType: MBLK	TestCode: EPA Method 8270C: Semivolatiles						
Client ID:	PBS		Batch ID: 40469	RunNo: 54318						
Prep Date:	9/20/2018		Analysis Date: 9/21/2018	SeqNo: 1798895	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	ND	0.50								

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A59

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Sample ID	mb-40469	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	40469	RunNo:	54318					
Prep Date:	9/20/2018	Analysis Date:	9/21/2018	SeqNo:	1798895	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	ND	0.40								
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3'-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A59

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Sample ID	mb-40469	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	40469	RunNo:	54318					
Prep Date:	9/20/2018	Analysis Date:	9/21/2018	SeqNo:	1798895	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	1.8		3.330		52.8	21.7	87.9			
Surr: Phenol-d5	2.2		3.330		64.6	30.2	92.2			
Surr: 2,4,6-Tribromophenol	2.6		3.330		78.3	47.1	103			
Surr: Nitrobenzene-d5	1.0		1.670		62.3	23.9	102			
Surr: 2-Fluorobiphenyl	1.1		1.670		65.2	32.6	101			
Surr: 4-Terphenyl-d14	1.6		1.670		95.3	37.2	117			

Sample ID	1809a59-001ams	SampType:	MS	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	KAFB-106245-3-IDW	Batch ID:	40469	RunNo:	54377					
Prep Date:	9/20/2018	Analysis Date:	9/24/2018	SeqNo:	1800242	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	0.85	0.20	1.645	0	51.9	23.7	110			
4-Chloro-3-methylphenol	2.2	0.49	3.280	0	67.3	23.5	109			
2-Chlorophenol	1.5	0.20	3.280	0	47.2	15	106			
1,4-Dichlorobenzene	0.51	0.20	1.645	0	30.9	16	98.5			
2,4-Dinitrotoluene	0.95	0.49	1.645	0	57.5	23.3	92.8			
N-Nitrosodi-n-propylamine	0.91	0.20	1.645	0	55.4	17	111			
4-Nitrophenol	2.7	0.25	3.280	0	83.7	30.9	103			
Pentachlorophenol	2.4	0.39	3.280	0	74.1	20.8	92.7			
Phenol	1.7	0.20	3.280	0	50.3	17	107			
Pyrene	1.2	0.20	1.645	0	71.6	27.9	111			
1,2,4-Trichlorobenzene	0.72	0.20	1.645	0	43.7	19.5	118			
Surr: 2-Fluorophenol	1.5		3.280		45.9	21.7	87.9			

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A59

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Sample ID	<b>1809a59-001ams</b>	SampType:	<b>MS</b>	TestCode:	<b>EPA Method 8270C: Semivolatiles</b>					
Client ID:	<b>KAFB-106245-3-IDW</b>	Batch ID:	<b>40469</b>	RunNo:	<b>54377</b>					
Prep Date:	<b>9/20/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1800242</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Phenol-d5	1.7		3.280		51.7	30.2	92.2			
Surr: 2,4,6-Tribromophenol	2.5		3.280		77.6	47.1	103			
Surr: Nitrobenzene-d5	0.77		1.645		46.7	23.9	102			
Surr: 2-Fluorobiphenyl	0.73		1.645		44.6	32.6	101			
Surr: 4-Terphenyl-d14	1.0		1.645		63.7	37.2	117			

Sample ID	<b>1809a59-001amsd</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA Method 8270C: Semivolatiles</b>					
Client ID:	<b>KAFB-106245-3-IDW</b>	Batch ID:	<b>40469</b>	RunNo:	<b>54377</b>					
Prep Date:	<b>9/20/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1800243</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.3	0.19	1.604	0	80.8	23.7	110	41.2	43.1	
4-Chloro-3-methylphenol	3.1	0.48	3.198	0	97.2	23.5	109	33.8	52.2	
2-Chlorophenol	1.9	0.19	3.198	0	57.9	15	106	17.8	42.5	
1,4-Dichlorobenzene	0.61	0.19	1.604	0	38.3	16	98.5	19.1	50.4	
2,4-Dinitrotoluene	1.2	0.48	1.604	0	77.8	23.3	92.8	27.5	24.2	R
N-Nitrosodi-n-propylamine	1.3	0.19	1.604	0	79.5	17	111	33.3	39.7	
4-Nitrophenol	3.4	0.24	3.198	0	108	30.9	103	22.7	59.4	S
Pentachlorophenol	2.9	0.38	3.198	0	89.1	20.8	92.7	15.9	32.7	
Phenol	2.1	0.19	3.198	0	66.0	17	107	24.5	41.2	
Pyrene	1.4	0.19	1.604	0	86.7	27.9	111	16.5	34	
1,2,4-Trichlorobenzene	0.84	0.19	1.604	0	52.4	19.5	118	15.7	35.8	
Surr: 2-Fluorophenol	1.7		3.198		52.7	21.7	87.9	0	0	
Surr: Phenol-d5	2.1		3.198		66.5	30.2	92.2	0	0	
Surr: 2,4,6-Tribromophenol	3.1		3.198		95.6	47.1	103	0	0	
Surr: Nitrobenzene-d5	0.89		1.604		55.7	23.9	102	0	0	
Surr: 2-Fluorobiphenyl	1.1		1.604		71.1	32.6	101	0	0	
Surr: 4-Terphenyl-d14	1.5		1.604		92.8	37.2	117	0	0	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A59**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Sample ID	<b>MB-40525</b>	SampType:	<b>MBLK</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40525</b>	RunNo:	<b>54370</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1799878</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	<b>LCS-40525</b>	SampType:	<b>LCS</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40525</b>	RunNo:	<b>54370</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1799879</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.0	80	120			

Sample ID	<b>1809A59-001AMS</b>	SampType:	<b>MS</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>KAFB-106245-3-IDW</b>	Batch ID:	<b>40525</b>	RunNo:	<b>54370</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1799881</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.5	75	125			

Sample ID	<b>1809A59-001AMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>KAFB-106245-3-IDW</b>	Batch ID:	<b>40525</b>	RunNo:	<b>54370</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1799882</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.0	75	125	0	20	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A59**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Sample ID	<b>MB-40518</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40518</b>	RunNo:	<b>54358</b>					
Prep Date:	<b>9/21/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1800649</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	<b>LCS-40518</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40518</b>	RunNo:	<b>54358</b>					
Prep Date:	<b>9/21/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1800651</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	97.7	80	120			
Barium	ND	100	0.5000	0	98.8	80	120			
Cadmium	ND	1.0	0.5000	0	102	80	120			
Chromium	ND	5.0	0.5000	0	98.0	80	120			
Lead	ND	5.0	0.5000	0	98.1	80	120			
Selenium	ND	1.0	0.5000	0	106	80	120			
Silver	ND	5.0	0.1000	0	111	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A59

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap

Sample ID	<b>1809a59-001ams</b>	SampType:	<b>MS</b>	TestCode:	<b>EPA Method 8015D Mod: Gasoline Range</b>					
Client ID:	<b>KAFB-106245-3-IDW</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54305</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797270</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	4.7	23.41	0	94.7	64.7	142			
Surr: BFB	430		468.2		91.9	70	130			

Sample ID	<b>1809a59-001amsd</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA Method 8015D Mod: Gasoline Range</b>					
Client ID:	<b>KAFB-106245-3-IDW</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54305</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797271</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.6	23.17	0	100	64.7	142	4.76	20	
Surr: BFB	450		463.4		96.3	70	130	0	0	

Sample ID	<b>ics-40456</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015D Mod: Gasoline Range</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54305</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797289</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	91.6	70	130			
Surr: BFB	470		500.0		93.2	70	130			

Sample ID	<b>mb-40456</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015D Mod: Gasoline Range</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54305</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797290</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	500		500.0		99.4	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 16 of 16



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87105  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

**Sample Log-In Check List**

Client Name: EA Engineering Alb

Work Order Number: 1809A59

RcptNo: 1

Received By: Jazzmine Burkhead 9/18/2018 3:48:00 PM

Completed By: Ashley Gallegos 9/18/2018 5:12:27 PM

Reviewed By: ENM

9/18/18 Labeled by: JAB 09/19/18

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: JAB

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.8	Good	Not Present			





Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 26, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: KAFB BFF Data Gap Wells

OrderNo.: 1809A65

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/18/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1809A65

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106245-4-IDW-S

Project: KAFB BFF Data Gap Wells

Collection Date: 9/18/2018 11:39:00 AM

Lab ID: 1809A65-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: <b>rde</b>
Mercury	ND	0.020		mg/L	1	9/24/2018 3:48:15 PM	40525
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: <b>pmf</b>
Arsenic	ND	5.0		mg/L	1	9/24/2018 12:33:41 PM	40518
Barium	ND	100		mg/L	1	9/24/2018 12:33:41 PM	40518
Cadmium	ND	1.0		mg/L	1	9/24/2018 12:33:41 PM	40518
Chromium	ND	5.0		mg/L	1	9/24/2018 12:33:41 PM	40518
Lead	ND	5.0		mg/L	1	9/24/2018 12:33:41 PM	40518
Selenium	ND	1.0		mg/L	1	9/24/2018 12:33:41 PM	40518
Silver	ND	5.0		mg/L	1	9/24/2018 12:33:41 PM	40518
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>AG</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	9/20/2018 7:46:05 PM	40456
Surr: BFB	97.5	70-130		%Rec	1	9/20/2018 7:46:05 PM	40456
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>lrm</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	9/25/2018 1:07:54 PM	40549
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/25/2018 1:07:54 PM	40549
Surr: DNOP	108	50.6-138		%Rec	1	9/25/2018 1:07:54 PM	40549
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
Acenaphthene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Acenaphthylene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Aniline	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Anthracene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Azobenzene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Benz(a)anthracene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Benzo(a)pyrene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Benzo(b)fluoranthene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Benzo(g,h,i)perylene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Benzo(k)fluoranthene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Benzoic acid	ND	0.48		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Benzyl alcohol	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Bis(2-chloroethoxy)methane	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Bis(2-chloroethyl)ether	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Bis(2-chloroisopropyl)ether	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Bis(2-ethylhexyl)phthalate	ND	0.48		mg/Kg	1	9/21/2018 10:53:05 PM	40469
4-Bromophenyl phenyl ether	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Butyl benzyl phthalate	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Carbazole	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
4-Chloro-3-methylphenol	ND	0.48		mg/Kg	1	9/21/2018 10:53:05 PM	40469

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A65

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106245-4-IDW-S

Project: KAFB BFF Data Gap Wells

Collection Date: 9/18/2018 11:39:00 AM

Lab ID: 1809A65-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
4-Chloroaniline	ND	0.48		mg/Kg	1	9/21/2018 10:53:05 PM	40469
2-Chloronaphthalene	ND	0.24		mg/Kg	1	9/21/2018 10:53:05 PM	40469
2-Chlorophenol	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
4-Chlorophenyl phenyl ether	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Chrysene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Di-n-butyl phthalate	ND	0.38		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Di-n-octyl phthalate	ND	0.38		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Dibenz(a,h)anthracene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Dibenzofuran	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
1,2-Dichlorobenzene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
1,3-Dichlorobenzene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
1,4-Dichlorobenzene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
3,3'-Dichlorobenzidine	ND	0.24		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Diethyl phthalate	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Dimethyl phthalate	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
2,4-Dichlorophenol	ND	0.38		mg/Kg	1	9/21/2018 10:53:05 PM	40469
2,4-Dimethylphenol	ND	0.29		mg/Kg	1	9/21/2018 10:53:05 PM	40469
4,6-Dinitro-2-methylphenol	ND	0.38		mg/Kg	1	9/21/2018 10:53:05 PM	40469
2,4-Dinitrophenol	ND	0.48		mg/Kg	1	9/21/2018 10:53:05 PM	40469
2,4-Dinitrotoluene	ND	0.48		mg/Kg	1	9/21/2018 10:53:05 PM	40469
2,6-Dinitrotoluene	ND	0.48		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Fluoranthene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Fluorene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Hexachlorobenzene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Hexachlorobutadiene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Hexachlorocyclopentadiene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Hexachloroethane	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Indeno(1,2,3-cd)pyrene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Isophorone	ND	0.38		mg/Kg	1	9/21/2018 10:53:05 PM	40469
1-Methylnaphthalene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
2-Methylnaphthalene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
2-Methylphenol	ND	0.38		mg/Kg	1	9/21/2018 10:53:05 PM	40469
3+4-Methylphenol	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
N-Nitrosodi-n-propylamine	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
N-Nitrosodiphenylamine	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Naphthalene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
2-Nitroaniline	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
3-Nitroaniline	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
4-Nitroaniline	ND	0.38		mg/Kg	1	9/21/2018 10:53:05 PM	40469

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A65

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106245-4-IDW-S

Project: KAFB BFF Data Gap Wells

Collection Date: 9/18/2018 11:39:00 AM

Lab ID: 1809A65-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
Nitrobenzene	ND	0.38		mg/Kg	1	9/21/2018 10:53:05 PM	40469
2-Nitrophenol	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
4-Nitrophenol	ND	0.24		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Pentachlorophenol	ND	0.38		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Phenanthrene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Phenol	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Pyrene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Pyridine	ND	0.38		mg/Kg	1	9/21/2018 10:53:05 PM	40469
1,2,4-Trichlorobenzene	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
2,4,5-Trichlorophenol	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
2,4,6-Trichlorophenol	ND	0.19		mg/Kg	1	9/21/2018 10:53:05 PM	40469
Surr: 2-Fluorophenol	52.2	21.7-87.9		%Rec	1	9/21/2018 10:53:05 PM	40469
Surr: Phenol-d5	61.5	30.2-92.2		%Rec	1	9/21/2018 10:53:05 PM	40469
Surr: 2,4,6-Tribromophenol	82.0	47.1-103		%Rec	1	9/21/2018 10:53:05 PM	40469
Surr: Nitrobenzene-d5	62.3	23.9-102		%Rec	1	9/21/2018 10:53:05 PM	40469
Surr: 2-Fluorobiphenyl	64.4	32.6-101		%Rec	1	9/21/2018 10:53:05 PM	40469
Surr: 4-Terphenyl-d14	73.7	37.2-117		%Rec	1	9/21/2018 10:53:05 PM	40469
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: <b>DJF</b>
Benzene	ND	0.023		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Toluene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Ethylbenzene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Methyl tert-butyl ether (MTBE)	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,2,4-Trimethylbenzene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,3,5-Trimethylbenzene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,2-Dichloroethane (EDC)	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,2-Dibromoethane (EDB)	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Naphthalene	ND	0.093		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1-Methylnaphthalene	ND	0.19		mg/Kg	1	9/21/2018 2:43:22 PM	40456
2-Methylnaphthalene	ND	0.19		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Acetone	ND	0.70		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Bromobenzene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Bromodichloromethane	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Bromoform	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Bromomethane	ND	0.14		mg/Kg	1	9/21/2018 2:43:22 PM	40456
2-Butanone	ND	0.47		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Carbon disulfide	ND	0.47		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Carbon tetrachloride	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Chlorobenzene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Chloroethane	ND	0.093		mg/Kg	1	9/21/2018 2:43:22 PM	40456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Kirtland AFB BFF

Completion Report for Data Gap Monitoring Wells

SWMUs ST-106/SS-111

June 2020

## Analytical Report

Lab Order 1809A65

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106245-4-IDW-S

Project: KAFB BFF Data Gap Wells

Collection Date: 9/18/2018 11:39:00 AM

Lab ID: 1809A65-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
Chloroform	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Chloromethane	ND	0.14		mg/Kg	1	9/21/2018 2:43:22 PM	40456
2-Chlorotoluene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
4-Chlorotoluene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
cis-1,2-DCE	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
cis-1,3-Dichloropropene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,2-Dibromo-3-chloropropane	ND	0.093		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Dibromochloromethane	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Dibromomethane	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,2-Dichlorobenzene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,3-Dichlorobenzene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,4-Dichlorobenzene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Dichlorodifluoromethane	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,1-Dichloroethane	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,1-Dichloroethene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,2-Dichloropropane	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,3-Dichloropropane	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
2,2-Dichloropropane	ND	0.093		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,1-Dichloropropene	ND	0.093		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Hexachlorobutadiene	ND	0.093		mg/Kg	1	9/21/2018 2:43:22 PM	40456
2-Hexanone	ND	0.47		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Isopropylbenzene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
4-Isopropyltoluene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
4-Methyl-2-pentanone	ND	0.47		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Methylene chloride	ND	0.14		mg/Kg	1	9/21/2018 2:43:22 PM	40456
n-Butylbenzene	ND	0.14		mg/Kg	1	9/21/2018 2:43:22 PM	40456
n-Propylbenzene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
sec-Butylbenzene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Styrene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
tert-Butylbenzene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,1,1,2-Tetrachloroethane	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,1,2,2-Tetrachloroethane	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Tetrachloroethene (PCE)	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
trans-1,2-DCE	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
trans-1,3-Dichloropropene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,2,3-Trichlorobenzene	ND	0.093		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,2,4-Trichlorobenzene	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,1,1-Trichloroethane	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,1,2-Trichloroethane	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A65

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106245-4-IDW-S

Project: KAFB BFF Data Gap Wells

Collection Date: 9/18/2018 11:39:00 AM

Lab ID: 1809A65-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
Trichloroethene (TCE)	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Trichlorofluoromethane	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
1,2,3-Trichloropropane	ND	0.093		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Vinyl chloride	ND	0.047		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Xylenes, Total	ND	0.093		mg/Kg	1	9/21/2018 2:43:22 PM	40456
Surr: Dibromofluoromethane	97.7	70-130		%Rec	1	9/21/2018 2:43:22 PM	40456
Surr: 1,2-Dichloroethane-d4	94.4	70-130		%Rec	1	9/21/2018 2:43:22 PM	40456
Surr: Toluene-d8	93.0	70-130		%Rec	1	9/21/2018 2:43:22 PM	40456
Surr: 4-Bromofluorobenzene	89.5	70-130		%Rec	1	9/21/2018 2:43:22 PM	40456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

1809A65-0018 KAFB-106245-4-IDW-S

SAMPLE RESULTS - 01

ONE LAB, NATIONWIDE



Collected date/time: 09/18/18 11:39

L1027459

Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.250	1	09/24/2018 09:21	WG168872

1 C

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		25.0	1	09/21/2018 19:15	WG168524

2 Ss

3 Cn

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	9.06	S	1	09/21/2018 09:40	WG168872

4 Sl

5 Gc

Sample Narrative:

L1027459-01 WG168872: 9.06 at 20.6C

6 Gf

7 Al

Wet Chemistry by Method D93/D10A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DN1 at 170		1	09/20/2018 20:01	WG168226

8 Sc

ACCOUNT: Hill Environmental Analysis Laboratory

PROJECT:

SDG: L1027459

DATE/TIME: 09/24/18 12:51

**WG1169232**

Met Chemistry by Method 9012 B

**QUALITY CONTROL SUMMARY**

E-1027459-01

ONE LAB. NATIONWIDE

**Method Blank (MB)**

(MB) R3344432-1 09/24/18 09:14

Analyte	MB Result	MB MDL	MB RDL
Reactive Cyanide	U	0.0380	0.250

**L1027473-01 Original Sample (OS) - Duplicate (DUP)**

(OS) L1027473-01 09/24/18 09:29 - (DUP) R3344432-4 09/24/18 09:30

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RPD Limits
Reactive Cyanide	ND	0.000	1	0.000	20

**L1027473-02 Original Sample (OS) - Duplicate (DUP)**

(OS) L1027473-02 09/24/18 10:08 - (DUP) R3344432-9 09/24/18 10:09

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP RPD Limits
Reactive Cyanide	3.62	4.60	5	73.5	20

**Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCS-D)**

(LCS) R3344432-2 09/24/18 09:15 - (LCS-D) R3344432-3 09/24/18 09:16

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCSD Rec.	LCSD Rec. %	RPD	RPD Limits
Reactive Cyanide	2.50	2.74	110	50.0-150	111	77.9	0.937	20

**L1027473-02 Original Sample (OS) - Matrix Spike (MS) - Matrix Spike Duplicate (MSD)**

(OS) L1027473-02 09/24/18 09:31 - (MS) R3344432-5 09/24/18 09:32 - (MSD) R3344432-6 09/24/18 09:33

Analyte	Spike Amount	Original Result	MS Result	MSD Result	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Reactive Cyanide	1.67	ND	1.25	1.30	1	75.0-125	75.8	77.9	2.66	20

**L1027473-10 Original Sample (OS) - Matrix Spike (MS) - Matrix Spike Duplicate (MSD)**

(OS) L1027473-10 09/24/18 09:44 - (MS) R3344432-7 09/24/18 09:45 - (MSD) R3344432-8 09/24/18 09:46

Analyte	Spike Amount	Original Result	MS Result	MSD Result	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Reactive Cyanide	1.57	ND	1.55	1.62	1	75.0-125	86.4	90.1	3.85	20

ACCOUNT:

Hall Environmental Analysts Laboratory

PROJECT:

SDS:

L1027459

DATE/TIME:

09/24/18 12:51

**WG1169524**

West Chemistry by Mettler 9034-9030E

**QUALITY CONTROL SUMMARY**

L1027459-01

ONE LAB. NATIONWIDE

Method Blank (MB)

(MB) R3344060-1 09/21/18 19:15

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Reactive Sulfide	0	7.63	mg/kg	mg/kg 26.0

L1027439-0 Original Sample (OS) • Duplicate (DUP)

(OS) L1027439-01 09/21/18 19:15 • (DUP) R3344060-4 09/21/18 19:15

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Reactive Sulfide	36.6	36.6	1	% 0.000	% 20	% 20

L1027473-0 Original Sample (OS) • Duplicate (DUP)

(OS) L1027473-0 09/21/18 19:15 • (DUP) R3344060-5 09/21/18 19:15

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Reactive Sulfide	ND	ND	1	% 0.000	% 20	% 20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3344060-2 09/21/18 19:15 • (LCS-D) R3344060-3 09/21/18 19:15

Analyte	Spike Amount	LCS Result	LCS-D Result	LCS Rec	LCS-D Rec	Rec. Limits	LCS Qualifier	RPD	RPD Limits
Reactive Sulfide	100	73.1	73.1	% 73.1	% 73.1	% 70.0-130	% 73.1	% 0.000	% 20

ACCOUNT:

Hall Environmental Analysis Laboratory

PROJECT:

SDG:

L1027459

DATE/TIME:

09/24/18 12:51

**WG1168872**  
 Wet Chemistry by Method 9045D  
 ONE LAB. NATIONWIDE.

**QUALITY CONTROL SUMMARY**  
 L1027459-01

L1027459-01 Original Sample (OS) - Duplicate (DUP)  
 (OS) L1027459-01 09/21/18 09:40 • (DUP) R3343835-4 09/21/18 09:40

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Conductivity by pH	9.06	9.03	1	0.332		1

Sample Narrative:  
 OS: 9.06 at 20.5C  
 DUP: 9.03 at 20.2C

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCS-D)  
 (LCS) R3343835-1 09/21/18 09:40 • (LCS-D) R3343835-2 09/21/18 09:40

Analyte	Spike Amount	LCS Result	LCS Rec.	LCSD Result	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Conductivity by pH	10.0	9.98	99.8	9.99	99.9	99.0-101			0.100	1

Sample Narrative:  
 LCS: 9.99 at 19.3C  
 LCS-D: 9.99 at 19.4C

ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT:

SDG: L1027459

DATE/TIME: 09/24/18 12:51

**WG1169226**

Wet Chemistry by Method 093/1010A

**QUALITY CONTROL SUMMARY**

L1027453-01

ONE LAB. NATIONWIDE

L1027405-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1027405-01 09/20/18 20:01 • (DUP) R3343731-3 09/20/18 20:01

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ignitability	Deg. F DNI at 170	Deg. F DNI at 170	1	% 0.0000	% 10	% 10

L1027473-00 Original Sample (OS) • Duplicate (DUP)

(OS) L1027473-00 09/20/18 20:01 • (DUP) R3343731-4 09/20/18 20:01

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ignitability	Deg. F DNI at 170	Deg. F DNI at 170	1	% 0.0000	% 10	% 10

Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3343731-1 09/20/18 20:01 • (LCS-D) R3343731-2 09/20/18 20:01

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Ignitability	Deg. F 82.0	Deg. F 82.7	Deg. F 82.7	% 70	% 100	% 56.0-104	% 100	% 100	% 0.000	% 10



# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

### Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in the field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cr)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.
Qualifier	Description
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.



ACCOUNT: Hall Environmental Analysis Laboratory

PROJECT:

SDG: L1027459

DATE/TIME: 09/24/18 12:51

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1809A65

26-Sep-18

Client: EA Engineering Science &amp; Technology

Project: KAFB BFF Data Gap Wells

Sample ID	<b>MB-40549</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40549</b>	RunNo:	<b>54386</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/25/2018</b>	SeqNo:	<b>1801281</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	13		10.00		126	50.6	138			

Sample ID	<b>LCS-40549</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40549</b>	RunNo:	<b>54386</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/25/2018</b>	SeqNo:	<b>1801282</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.00	0	104	70	130			
Surr: DNOP	5.1		5.000		102	50.6	138			

Sample ID	<b>MB-40571</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40571</b>	RunNo:	<b>54386</b>					
Prep Date:	<b>9/25/2018</b>	Analysis Date:	<b>9/25/2018</b>	SeqNo:	<b>1801284</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		109	50.6	138			

Sample ID	<b>LCS-40571</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40571</b>	RunNo:	<b>54386</b>					
Prep Date:	<b>9/25/2018</b>	Analysis Date:	<b>9/25/2018</b>	SeqNo:	<b>1801285</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.2		5.000		104	50.6	138			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 6 of 15

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A65

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 7 of 15

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A65

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	mb-40456		SampType: MBLK	TestCode: EPA Method 8260B: Volatiles						
Client ID:	PBS		Batch ID: 40456	RunNo: 54347						
Prep Date:	9/19/2018		Analysis Date: 9/21/2018	SeqNo: 1799119		Units: mg/Kg				
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.47		0.5000		94.2	70	130			
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		94.4	70	130			
Surr: Toluene-d8	0.45		0.5000		90.2	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		91.8	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	ics-40456		SampType: LCS	TestCode: EPA Method 8260B: Volatiles						
Client ID:	LCSS		Batch ID: 40456	RunNo: 54347						
Prep Date:	9/19/2018		Analysis Date: 9/21/2018	SeqNo: 1799121		Units: mg/Kg				
Benzene	1.2	0.025	1.000	0	119	70	130			
Toluene	1.0	0.050	1.000	0	102	70	130			
Chlorobenzene	1.1	0.050	1.000	0	112	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 8 of 15

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A65**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	<b>Ics-40456</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8260B: Volatiles</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54347</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/21/2018</b>	SeqNo:	<b>1799121</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	1.3	0.050	1.000	0	126	70	130			
Trichloroethene (TCE)	1.1	0.050	1.000	0	112	70	130			
Surr: Dibromofluoromethane	0.52		0.5000		103	70	130			
Surr: 1,2-Dichloroethane-d4	0.49		0.5000		98.8	70	130			
Surr: Toluene-d8	0.45		0.5000		89.4	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		98.4	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1809A65

26-Sep-18

Client: EA Engineering Science &amp; Technology

Project: KAFB BFF Data Gap Wells

Sample ID	Ics-40469		SampType: LCS	TestCode: EPA Method 8270C: Semivolatiles						
Client ID:	LCSS		Batch ID: 40469	RunNo: 54318						
Prep Date:	9/20/2018		Analysis Date: 9/21/2018	SeqNo: 1798894	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.1	0.20	1.670	0	66.6	42	110			
4-Chloro-3-methylphenol	2.3	0.50	3.330	0	69.6	42.3	117			
2-Chlorophenol	1.8	0.20	3.330	0	52.9	27.6	117			
1,4-Dichlorobenzene	0.81	0.20	1.670	0	48.7	28.8	105			
2,4-Dinitrotoluene	1.2	0.50	1.670	0	70.5	42	98.7			
N-Nitrosodi-n-propylamine	1.2	0.20	1.670	0	69.4	41.8	112			
4-Nitrophenol	3.2	0.25	3.330	0	95.2	54	113			
Pentachlorophenol	2.6	0.40	3.330	0	78.0	41.5	101			
Phenol	1.8	0.20	3.330	0	53.8	32.2	115			
Pyrene	1.5	0.20	1.670	0	91.5	48.5	121			
1,2,4-Trichlorobenzene	1.0	0.20	1.670	0	60.6	39.9	112			
Surr: 2-Fluorophenol	1.5		3.330		45.1	21.7	87.9			
Surr: Phenol-d5	2.0		3.330		59.2	30.2	92.2			
Surr: 2,4,6-Tribromophenol	2.8		3.330		83.4	47.1	103			
Surr: Nitrobenzene-d5	0.96		1.670		57.3	23.9	102			
Surr: 2-Fluorobiphenyl	1.1		1.670		63.0	32.6	101			
Surr: 4-Terphenyl-d14	1.7		1.670		99.5	37.2	117			

Sample ID	mb-40469		SampType: MBLK	TestCode: EPA Method 8270C: Semivolatiles						
Client ID:	PBS		Batch ID: 40469	RunNo: 54318						
Prep Date:	9/20/2018		Analysis Date: 9/21/2018	SeqNo: 1798895	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	ND	0.50								

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A65

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	mb-40469	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	40469	RunNo:	54318					
Prep Date:	9/20/2018	Analysis Date:	9/21/2018	SeqNo:	1798895	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	ND	0.40								
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3'-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A65**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	<b>mb-40469</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8270C: Semivolatiles</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40469</b>	RunNo:	<b>54318</b>					
Prep Date:	<b>9/20/2018</b>	Analysis Date:	<b>9/21/2018</b>	SeqNo:	<b>1798895</b>	Units:	<b>mg/Kg</b>			
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	1.8		3.330		52.8	21.7	87.9			
Surr: Phenol-d5	2.2		3.330		64.6	30.2	92.2			
Surr: 2,4,6-Tribromophenol	2.6		3.330		78.3	47.1	103			
Surr: Nitrobenzene-d5	1.0		1.670		62.3	23.9	102			
Surr: 2-Fluorobiphenyl	1.1		1.670		65.2	32.6	101			
Surr: 4-Terphenyl-d14	1.6		1.670		95.3	37.2	117			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A65**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	<b>MB-40525</b>	SampType:	<b>MBLK</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40525</b>	RunNo:	<b>54370</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1799878</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	<b>LCS-40525</b>	SampType:	<b>LCS</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40525</b>	RunNo:	<b>54370</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1799879</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.0	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A65**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	<b>MB-40518</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40518</b>	RunNo:	<b>54358</b>					
Prep Date:	<b>9/21/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1800649</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	<b>LCS-40518</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40518</b>	RunNo:	<b>54358</b>					
Prep Date:	<b>9/21/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1800651</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	97.7	80	120			
Barium	ND	100	0.5000	0	98.8	80	120			
Cadmium	ND	1.0	0.5000	0	102	80	120			
Chromium	ND	5.0	0.5000	0	98.0	80	120			
Lead	ND	5.0	0.5000	0	98.1	80	120			
Selenium	ND	1.0	0.5000	0	106	80	120			
Silver	ND	5.0	0.1000	0	111	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A65**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	<b>Ics-40456</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015D Mod: Gasoline Range</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54305</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797289</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	91.6	70	130			
Surr: BFB	470		500.0		93.2	70	130			

Sample ID	<b>mb-40456</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015D Mod: Gasoline Range</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54305</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797290</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	500		500.0		99.4	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87105  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EA Engineering Alb Work Order Number: 1809A65 RcptNo: 1

Received By: Jazzmine Burkhead 9/18/2018 3:48:00 PM  
 Completed By: Ashley Gallegos 9/18/2018 5:39:38 PM  
 Reviewed By: ENM 9/18/18

*Jazzmine Burkhead*

*AG*

labeled by: JAB 09/19/18

**Chain of Custody**

- 1. Is Chain of Custody complete? Yes  No  Not Present
- 2. How was the sample delivered? Client

**Log In**

- 3. Was an attempt made to cool the samples? Yes  No  NA
- 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA
- 5. Sample(s) in proper container(s)? Yes  No
- 6. Sufficient sample volume for indicated test(s)? Yes  No
- 7. Are samples (except VOA and ONG) properly preserved? Yes  No
- 8. Was preservative added to bottles? Yes  No  NA
- 9. VOA vials have zero headspace? Yes  No  No VOA Vials
- 10. Were any sample containers received broken? Yes  No
- 11. Does paperwork match bottle labels? Yes  No   
(Note discrepancies on chain of custody)
- 12. Are matrices correctly identified on Chain of Custody? Yes  No
- 13. Is it clear what analyses were requested? Yes  No
- 14. Were all holding times able to be met? Yes  No   
(If no, notify customer for authorization.)

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: JAB 09/19/18

**Special Handling (if applicable)**

- 15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.8	Good	Not Present			





**DEPARTMENT OF THE AIR FORCE**  
377TH AIR BASE WING (AFGSC)

28 September 2018

MEMORANDUM FOR: AFCEC/CZO

FROM: 377 MSG/CEIE (Solid Waste Program Manager)

SUBJECT: Landfill Disposal

Reference: EA Engineering, Science, & Technology, Inc, letter dated: 24 September 2018  
USACE Contract No. W912DR-12-D-0006-DM01

Disposal of non-hazardous soil cuttings from groundwater monitoring well KAFB-106245

1. Authorization is granted to EA to dispose of soil generated from installation of groundwater monitoring well KAFB-106242, in support of the Bulk Fuels Facility project, at the Kirtland AFB Construction & Demolition Landfill. The soil will be delivered to the landfill by Advanced Chemical Transport Environmental Services, Inc (ACT), and will be in one 20-cubic-yard open top roll-off container labeled **0123.20**. The roll-off will be transported using one of two 2015 Western Star roll-off trucks depending on ACT's vehicle availability: either NM license plate WD121651, or NM license plate WD124756. Lab results are on file in the Solid Waste Management office. EA shall be issued a Kirtland AFB landfill pass for this disposal action. A copy of this letter will accompany the roll-off and will be left with the gate keeper at the landfill.
2. Please direct questions to me at 853-2486.

**WHEELLOCK.** Digitally signed by  
WHEELLOCK.KATRI  
**KATRINA.E.1** NA.E.1402749586  
**402749586** Date: 2018.09.28  
16:50:19 -06'00'

**KATRINA E. WHEELLOCK**  
Solid Waste Program Manager  
Environmental Management



**DEPARTMENT OF THE AIR FORCE**  
377TH AIR BASE WING (AFGSC)

02 October 2018

MEMORANDUM FOR: AFCEC/CZO

FROM: 377 MSG/CEIE (Solid Waste Program Manager)

SUBJECT: Landfill Disposal

Reference: EA Engineering, Science, & Technology, Inc, letters (3) dated: 20 September 2018  
USACE Contract No. W912DR-12-D-0006-DM01

Disposal of non-hazardous soil cuttings from groundwater monitoring wells KAFB-106245 and KAFB-106246

1. Authorization is granted to EA to dispose of soil generated from installation of groundwater monitoring wells KAFB-106245 and KAFB-106246, in support of the Bulk Fuels Facility project, at the Kirtland AFB Construction & Demolition Landfill. The soil will be delivered to the landfill by Advanced Chemical Transport Environmental Services, Inc (ACT), and will be in three 20-cubic-yard open top roll-off containers labeled 4536, 0543-20, and 0126.20. The roll-offs will be transported using one of two 2015 Western Star roll-off trucks depending on ACT's vehicle availability: either NM license plate WD121651, or NM license plate WD124756. Lab results are on file in the Solid Waste Management office. EA shall be issued a Kirtland AFB landfill pass for this disposal action. A copy of this letter will accompany each roll-off and will be left with the gate keeper at the landfill.

2. Please direct questions to me at 853-2486.

**WHEELOCK.** Digitally signed  
by  
**KATRINA.E.** WHEELOCK.KATRI  
**140274958** NAE.1402749586  
**6** Date: 2018.10.02  
14:51:13 -06'00'  
**KATRINA E. WHEELOCK**  
Solid Waste Program Manager  
Environmental Management



EA Engineering, Science, & Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, New Mexico 87102  
Phone: (505) 224-9013

September 20, 2018

Ms. Katrina Wheelock  
Solid Waste Program Manager  
Environmental Management  
377 MSG/CEIE  
Kirtland AFB, New Mexico 87117

Subject: Request to dispose non-hazardous soil cuttings at Kirtland C&D Landfill  
Roll-off Identification: KAFB-106246-1 (Bin ID #4536)  
USACE Contract No. W912DR-12-D-0006-DM01

Dear Ms. Wheelock,

EA Engineering, Science, and Technology, Inc., PBC (EA) is requesting permission to dispose of non-hazardous soil drill cuttings and plastic liner from one roll-off container to the Kirtland Air Force Base (AFB) Construction and Demolition (C&D) debris landfill. The roll-off bin included in this request is:

- EA identification of KAFB-106246-1 (Bin ID #4536) contains approximately 12 cubic yards of soil in a 20-yard, open top, roll off.

In September 2018 EA installed a groundwater monitoring well, KAFB-106246, associated with the Kirtland Bulk Fuels Facility environmental restoration project. Well KAFB-106246 is located on Kirtland Air Force Base on VA Hospital property just west of Bullhead Park. Drill cuttings were containerized in a plastic-lined, steel, roll-off pending laboratory analysis for waste characterization. Any excess moisture in the bin was stabilized using Hydrosorb®, a superabsorbent polymer. The roll-off bin is currently residing in the EA investigation derived waste yard near 1601 Perimeter Circle SE, on Kirtland AFB.

One five-point composite waste characterization sample was collected from the roll-off bin and delivered to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis. The sample was analyzed for all the required parameters per the Kirtland AFB Landfill Acceptance Memorandum (January 2009). The attached analytical results (Report 1809220) for the composite sample confirms the drill cuttings meet waste acceptance requirements for disposal at the Kirtland C&D landfill.

The roll-off container is owned and/or leased by Advanced Chemical Transport Environmental Services Inc. (ACT) with the roll-off identification numbers marked clearly on the roll off. ACT will utilize one of the following vehicles for waste transport:



W912DR-12-D-0006-DM01  
 Kirtland Air Force Base Bulk Fuels Facility Expansion  
 of the Dissolved Plume Groundwater Treatment System Design  
 20 September 2018  
 Page 2 of 2

- 2015 Western Star Roll Off Truck, License #: WD121651, registered in New Mexico
- 2015 Western Star Roll Off Truck, License #: WD124756, registered in New Mexico

Ms. Jeanne Dye-Porto (AFCEC/CZO) has reviewed this package and authorized EA to forward it for your review. EA respectfully requests your review of the attached summary table and analytical data for determination if disposal can be authorized at the Kirtland AFB C&D landfill. Upon receiving notification of Kirtland AFB's acceptance of the waste, EA will coordinate transport and disposal of the roll-off contents with ACT.

EA's Kirtland AFB Point of Contact is Mr. Scott Clark; 505-846-9017.

If you have any questions, please do not hesitate to contact me at 505-266-2225, or via e-mail at [landress@eaest.com](mailto:landress@eaest.com).

Sincerely,

Lane Address, PG

Attachments: Summary Analytical Table  
 Hall Environmental Analysis Laboratory Order No: Report 1809220

cc: Jeanne Dye-Porto, [jeanne.dye-porto@us.af.mil](mailto:jeanne.dye-porto@us.af.mil)  
 Scott Clark, [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)  
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 Bernie Bockisch, [bbockisch@eaest.com](mailto:bbockisch@eaest.com)  
 Earl Morse, [emorse@eaest.com](mailto:emorse@eaest.com)

		LOCATION CODE					
		FIELD SAMPLE ID		KAFB-106246-1-IDW			
		SAMPLE DATE		4-Sep-18			
		SAMPLE PURPOSE		Waste Characterization			
		ROLL-OFF NO.		KAFB-106246-1			
Parameter	Method	Analyte	Units	TCLP Regulatory Level <sup>a</sup> or KAFB Limits <sup>b</sup>	Result	QUAL	PQL
RCRA Characteristics	SW1030	IGNITABILITY	°F	See footnote <sup>c</sup>	Neg	--	--
	SW846 Chapter 7	REACTIVE CYANIDE	mg/kg	NE	ND	--	23.7
	SW846 Chapter 7	REACTIVE SULFIDE (as total)	mg/kg	NE	ND	--	23.7
	SW9045	CORROSIVITY (pH)	S.U.	≥2 or ≤12.5	8.91	J	--
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.1
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.1
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0
		BARIUM	mg/L	100	ND	--	100
		CADMIUM	mg/L	1	ND	--	1.0
		CHROMIUM	mg/L	5	ND	--	5.0
		LEAD	mg/L	5	ND	--	5.0
		SELENIUM	mg/L	1	ND	--	1.0
	SW1311/7470A	MERCURY	mg/L	0.02	ND	--	0.020
TCLP PESTICIDES	SW1311/8081	CHLORDANE	mg/L	0.03	ND	--	0.030
		ENDRIN	mg/L	0.02	ND	--	0.020
		GAMMA-BHC (LINDANE)	mg/L	0.4	ND	--	0.40
		HEPTACHLOR	mg/L	0.008	ND	--	0.0080
		HEPTACHLOR EPOXIDE	mg/L	0.008	ND	--	0.0080
		METHOXYCHLOR	mg/L	10	ND	--	10
		TOXAPHENE	mg/L	0.5	ND	--	0.50
TCLP SVOCs	SW1311/8270C	2,4,5-TRICHLOROPHENOL	mg/L	400	ND	--	400
		2,4,6-TRICHLOROPHENOL	mg/L	2	ND	--	2.0
		2,4-DINITROTOLUENE	mg/L	0.13	ND	--	0.13
		2-METHYLPHENOL (o-Cresol)	mg/L	200	ND	--	200
		3- and 4-METHYLPHENOL (m- and o-Cresol)	mg/L	200	ND	--	200
		HEXACHLOROBENZENE	mg/L	0.13	ND	--	0.13
		HEXACHLOROBUTADIENE	mg/L	0.5	ND	--	0.50
		HEXACHLOROETHANE	mg/L	3	ND	--	3.0
		NITROBENZENE	mg/L	2	ND	--	2.0
		PENTACHLOROPHENOL	mg/L	100	ND	--	100
		PYRIDINE	mg/L	5	ND	--	5.0
CRESOLS, TOTAL	mg/L	200	ND	--	200		
TCLP VOCS	SW1311/8260B	1,1-DICHLOROETHENE	mg/L	0.7	ND	--	0.70
		1,2-DICHLOROETHANE	mg/L	0.5	ND	--	0.50
		1,4-DICHLOROETHANE	mg/L	7.5	ND	--	7.5
		2-BUTANONE (MEK)	mg/L	200	ND	--	200
		BENZENE	mg/L	0.5	ND	--	0.50
		CARBON TETRACHLORIDE	mg/L	0.5	ND	--	0.50
		CHLOROETHANE	mg/L	100	ND	--	100
		CHLOROFORM	mg/L	6.0	ND	--	6.0
		TETRACHLOROETHENE	mg/L	0.7	ND	--	0.70
		TRICHLOROETHENE	mg/L	0.5	ND	--	0.50
		VINYL CHLORIDE	mg/L	0.2	ND	--	0.20
TPH	SW8015M/D	DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	9.6
		MOTOR OIL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	48
		GASOLINE RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	4.8
VOLATILES (BTEX)	SW8260B	BENZENE	mg/kg	10	ND	--	0.024
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.048
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.048
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.095

## Notes:

<sup>a</sup>TCLP Regulatory Level - Resource Conservation Recovery Act (RCRA) hazardous waste characteristic limits per 40CFR Part 261 Subpart C, Section 261.20 - 261.24.

<sup>b</sup>KAFB Limits - Kirtland AFB landfill requirements per the Department of Air Force Technical Memorandum for Kirtland AFB/Department of Energy/Sandia National Laboratories Restoration Agencies and Their Commercial Contractors (2009).

<sup>c</sup>Ignitability characteristic for solids from 40 CFR Part 261.21: "It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of moisture, or spontaneous chemical change, and when ignited burns so vigorously and persistently that it creates a hazard."

<sup>d</sup>KAFB limit for TPH measured as the sum of gasoline, diesel and motor oil range organics.

<sup>e</sup>KAFB limit for BTEX measured as the sum of benzene, toluene, ethylbenzene, and total xylenes.

> - greater than

BTEX - benzene, toluene, ethylbenzene, total xylenes

°F - degrees fahrenheit

J - Analyte detected below quantitation limit or estimated value

mg/L - milligram per liter

mg/kg - milligram per kilogram

ND - not detected above the PQL

NE - not established

Neg - negative

PQL - practical quantitation limit

QUAL - laboratory data qualifier

Shade- analyte detected above the detection limit

**Shade and Bold**- analyte detected above KAFB Landfill acceptance limit or TCLP Regulatory Level.

SVOCs - semivolatile organic compounds

S.U. - Standard units

TCLP - Toxicity Characteristic Leaching Procedure

TPH - total petroleum hydrocarbons

VOCs - volatile organic compounds



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 18, 2018

Earl Morse  
EA Engineering  
320 Gold Ave SW Suite 1210  
Albuquerque, NM 87102  
TEL: (505) 224-9013  
FAX

RE: Kirtland AFB BFF

OrderNo.: 1809220

Dear Earl Morse:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/4/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order 1809220

Date Reported: 9/18/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: KAFB-106246-1-idw

Project: Kirtland AFB BFF

Collection Date: 9/4/2018 2:31:00 PM

Lab ID: 1809220-001

Matrix: SOIL

Received Date: 9/4/2018 4:54:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: <b>rde</b>
Mercury	ND	0.020		mg/L	1	9/11/2018 4:56:50 PM	40278
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: <b>ELS</b>
Arsenic	ND	5.0		mg/L	1	9/12/2018 6:52:03 AM	40277
Barium	ND	100		mg/L	1	9/12/2018 6:52:03 AM	40277
Cadmium	ND	1.0		mg/L	1	9/12/2018 6:52:03 AM	40277
Chromium	ND	5.0		mg/L	1	9/12/2018 6:52:03 AM	40277
Lead	ND	5.0		mg/L	1	9/12/2018 6:52:03 AM	40277
Selenium	ND	1.0		mg/L	1	9/12/2018 7:37:50 AM	40277
Silver	ND	5.0		mg/L	1	9/12/2018 6:52:03 AM	40277
<b>EPA METHOD 8081: PESTICIDES TCLP</b>							Analyst: <b>JME</b>
Chlordane	ND	0.030		mg/L	1	9/14/2018 12:22:36 PM	40296
Endrin	ND	0.020		mg/L	1	9/14/2018 12:22:36 PM	40296
gamma-BHC (Lindane)	ND	0.40		mg/L	1	9/14/2018 12:22:36 PM	40296
Heptachlor	ND	0.0080		mg/L	1	9/14/2018 12:22:36 PM	40296
Heptachlor epoxide	ND	0.0080		mg/L	1	9/14/2018 12:22:36 PM	40296
Methoxychlor	ND	10		mg/L	1	9/14/2018 12:22:36 PM	40296
Toxaphene	ND	0.50		mg/L	1	9/14/2018 12:22:36 PM	40296
Surr: Decachlorobiphenyl	67.1	58.3-109		%Rec	1	9/14/2018 12:22:36 PM	40296
Surr: Tetrachloro-m-xylene	67.3	40.1-101		%Rec	1	9/14/2018 12:22:36 PM	40296
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	9/11/2018 12:57:17 PM	40214
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/11/2018 12:57:17 PM	40214
Surr: DNOP	95.5	50.6-138		%Rec	1	9/11/2018 12:57:17 PM	40214
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/8/2018 2:57:43 PM	40201
Surr: BFB	89.7	15-316		%Rec	1	9/8/2018 2:57:43 PM	40201
<b>EPA METHOD 8270C TCLP</b>							Analyst: <b>DAM</b>
2-Methylphenol	ND	200		mg/L	1	9/14/2018 1:23:42 AM	40293
3+4-Methylphenol	ND	200		mg/L	1	9/14/2018 1:23:42 AM	40293
2,4-Dinitrotoluene	ND	0.13		mg/L	1	9/14/2018 1:23:42 AM	40293
Hexachlorobenzene	ND	0.13		mg/L	1	9/14/2018 1:23:42 AM	40293
Hexachlorobutadiene	ND	0.50		mg/L	1	9/14/2018 1:23:42 AM	40293
Hexachloroethane	ND	3.0		mg/L	1	9/14/2018 1:23:42 AM	40293
Nitrobenzene	ND	2.0		mg/L	1	9/14/2018 1:23:42 AM	40293
Pentachlorophenol	ND	100		mg/L	1	9/14/2018 1:23:42 AM	40293
Pyridine	ND	5.0		mg/L	1	9/14/2018 1:23:42 AM	40293
2,4,5-Trichlorophenol	ND	400		mg/L	1	9/14/2018 1:23:42 AM	40293

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Kirtland AFB BFF

Completion Report for Data Gap Monitoring Wells

SWMUs ST-106/SS-111

June 2020

## Analytical Report

Lab Order 1809220

Date Reported: 9/18/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: KAFB-106246-1-idw

Project: Kirtland AFB BFF

Collection Date: 9/4/2018 2:31:00 PM

Lab ID: 1809220-001

Matrix: SOIL

Received Date: 9/4/2018 4:54:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C TCLP</b>							Analyst: <b>DAM</b>
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	9/14/2018 1:23:42 AM	40293
Cresols, Total	ND	200		mg/L	1	9/14/2018 1:23:42 AM	40293
Surr: 2-Fluorophenol	52.0	15-102		%Rec	1	9/14/2018 1:23:42 AM	40293
Surr: Phenol-d5	39.1	15-87.7		%Rec	1	9/14/2018 1:23:42 AM	40293
Surr: 2,4,6-Tribromophenol	72.7	39.9-111		%Rec	1	9/14/2018 1:23:42 AM	40293
Surr: Nitrobenzene-d5	75.1	35.1-107		%Rec	1	9/14/2018 1:23:42 AM	40293
Surr: 2-Fluorobiphenyl	77.3	36.7-100		%Rec	1	9/14/2018 1:23:42 AM	40293
Surr: 4-Terphenyl-d14	97.5	42.6-129		%Rec	1	9/14/2018 1:23:42 AM	40293
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: <b>DJF</b>
Benzene	ND	0.024		mg/Kg	1	9/7/2018 3:09:11 PM	40201
Toluene	ND	0.048		mg/Kg	1	9/7/2018 3:09:11 PM	40201
Ethylbenzene	ND	0.048		mg/Kg	1	9/7/2018 3:09:11 PM	40201
Xylenes, Total	ND	0.095		mg/Kg	1	9/7/2018 3:09:11 PM	40201
Surr: Dibromofluoromethane	106	70-130		%Rec	1	9/7/2018 3:09:11 PM	40201
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	1	9/7/2018 3:09:11 PM	40201
Surr: Toluene-d8	110	70-130		%Rec	1	9/7/2018 3:09:11 PM	40201
Surr: 4-Bromofluorobenzene	108	70-130		%Rec	1	9/7/2018 3:09:11 PM	40201
<b>VOLATILES BY 8260B/1311</b>							Analyst: <b>DJF</b>
Benzene	ND	0.50		mg/L	1	9/11/2018 5:53:14 PM	40246
2-Butanone	ND	200		mg/L	1	9/11/2018 5:53:14 PM	40246
Carbon Tetrachloride	ND	0.50		mg/L	1	9/11/2018 5:53:14 PM	40246
Chlorobenzene	ND	100		mg/L	1	9/11/2018 5:53:14 PM	40246
Chloroform	ND	6.0		mg/L	1	9/11/2018 5:53:14 PM	40246
1,4-Dichlorobenzene	ND	7.5		mg/L	1	9/11/2018 5:53:14 PM	40246
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	9/11/2018 5:53:14 PM	40246
1,1-Dichloroethene	ND	0.70		mg/L	1	9/11/2018 5:53:14 PM	40246
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	9/11/2018 5:53:14 PM	40246
Trichloroethene (TCE)	ND	0.50		mg/L	1	9/11/2018 5:53:14 PM	40246
Vinyl chloride	ND	0.20		mg/L	1	9/11/2018 5:53:14 PM	40246
Surr: 1,2-Dichloroethane-d4	96.4	70-130		%Rec	1	9/11/2018 5:53:14 PM	40246
Surr: 4-Bromofluorobenzene	93.9	57.3-148		%Rec	1	9/11/2018 5:53:14 PM	40246
Surr: Dibromofluoromethane	95.3	70-130		%Rec	1	9/11/2018 5:53:14 PM	40246
Surr: Toluene-d8	95.4	70-130		%Rec	1	9/11/2018 5:53:14 PM	40246

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Kirtland AFB BFF

Completion Report for Data Gap Monitoring Wells

SWMUs ST-106/SS-111

June 2020

# Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

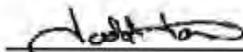
**Client:** HALL ENVIRONMENTAL ANALYSIS LAB      **Batch #:** 180907013  
**Address:** 4901 HAWKINS NE SUITE D      **Project Name:** 1809220  
ALBUQUERQUE, NM 87109  
**Attn:** ANDY FREEMAN

## Analytical Results Report

**Sample Number** 180907013-001      **Sampling Date** 9/4/2018      **Date/Time Received** 9/7/2018 11:34 AM  
**Client Sample ID** 1809220-001B / KAFB-106246-1-IDW      **Sampling Time** 2:31 PM  
**Matrix** Solid  
**Comments**

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide (reactive)	ND	mg/Kg	23.7	9/11/2018 10:45:00 AM	BKP	SW846 CH7	
Ignitability	Negative			9/13/2018 12:08:00 PM	GPB	EPA 1030	
pH	8.91	ph Units		9/11/2018 10:45:00 AM	LAC	EPA 9045	
Reactive sulfide	ND	mg/kg	23.7	9/11/2018 1:30:00 PM	ETL	SW846 CH7	
TCLP 2,4,6-TP (Silvex)	ND	mg/L	0.1	9/11/2018 7:28:00 PM	MAH	EPA 8151A	
TCLP 2,4-D	ND	mg/L	0.1	9/11/2018 7:28:00 PM	MAH	EPA 8151A	
TCLP Pentachlorophenol	ND	mg/L	0.1	9/11/2018 7:28:00 PM	MAH	EPA 8151A	

Authorized Signature



Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level  
ND Not Detected  
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.  
The results reported relate only to the samples indicated.  
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA ID00013; AZ:0701; FL(NELAP):E87893; ID:ID00013; MT:Cert0026; NV:ID00013; NV:ID00013; OR:ID200001-002; WA:C595  
Certifications held by Anatek Labs WA: EPA-WA00169; ID-WA00169; WA:C585; MT:Cert0095; FL(NELAP):E871069

Friday, September 14, 2018

Page 1 of 1

# Anatek Labs, Inc.

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504 E Sprague Ste D • Spokane WA 99202 • (509) 835-3999 • Fax (509) 835-4433 • email spokane@anateklabs.com

**Client:** HALL ENVIRONMENTAL ANALYSIS LAB      **Batch #:** 180907013  
**Address:** 4901 HAWKINS NE SUITE D      **Project Name:** 1809220  
ALBUQUERQUE, NM 87109  
**Attn:** ANDY FREEMAN

## Analytical Results Report Quality Control Data

### Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
TCLP Pentachlorophenol	0.0110	mg/L	0.01	110.0	50-150	9/10/2018	9/11/2018
TCLP 2,4-D	0.0898	mg/L	0.1	89.8	50-150	9/10/2018	9/11/2018
TCLP 2,4,5-TP (Silvex)	0.0254	mg/L	0.025	101.6	50-150	9/10/2018	9/11/2018
Reactive sulfide	0.180	mg/kg	0.2	90.0	70-130	9/11/2018	9/11/2018
Cyanide (reactive)	0.521	mg/kg	0.5	104.2	70-130	9/8/2018	9/11/2018

### Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
180907012-001	TCLP Pentachlorophenol	ND	0.0105	mg/L	0.01	105.0	50-150	9/10/2018	9/11/2018
180907012-001	TCLP 2,4-D	ND	0.0869	mg/L	0.1	86.9	50-150	9/10/2018	9/11/2018
180907012-001	TCLP 2,4,5-TP (Silvex)	ND	0.0238	mg/L	0.025	95.2	50-150	9/10/2018	9/11/2018
180907015-001	Reactive sulfide	162	199	mg/kg	46.4	79.7	70-130	9/11/2018	9/11/2018
180907012-001	Cyanide (reactive)	ND	12.9	mg/kg	12.7	101.6	60-140	9/8/2018	9/11/2018

### Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
TCLP Pentachlorophenol	0.0105	mg/L	0.01	105.0	0.0	0-50	9/10/2018	9/11/2018
TCLP 2,4-D	0.0890	mg/L	0.1	89.0	2.4	0-50	9/10/2018	9/11/2018
TCLP 2,4,5-TP (Silvex)	0.0245	mg/L	0.025	98.0	2.9	0-50	9/10/2018	9/11/2018
Cyanide (reactive)	12.6	mg/kg	12.7	99.2	2.4	0-25	9/8/2018	9/11/2018

### Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Cyanide (reactive)	ND	mg/kg	1	9/8/2018	9/11/2018
Reactive sulfide	ND	mg/kg	1	9/11/2018	9/11/2018
TCLP 2,4,5-TP (Silvex)	ND	mg/L	0.1	9/10/2018	9/11/2018
TCLP 2,4-D	ND	mg/L	0.1	9/10/2018	9/11/2018
TCLP Pentachlorophenol	ND	mg/L	0.1	9/10/2018	9/11/2018

AR: Acceptable Range  
ND: Not Detected  
PQL: Practical Quantitation Limit  
RPD: Relative Percentage Difference

### Comments:

Certifications held by Anatek Labs ID: EPA ID00013, AZ 0701, FL (NELAP) E87893, ID ID00013, MT-CERT0026, NM: ID00013/NV:1000013, OR:ID209001-002, WA:CS85  
Certifications held by Anatek Labs WA: EPA WA00169, ID WA00169, WA:CS85, MT: Cert0095, FL (NELAP) E871099

Friday, September 14, 2018

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809220

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>LCS-40214</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40214</b>	RunNo:	<b>54034</b>					
Prep Date:	<b>9/7/2018</b>	Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>1785556</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	50.00	0	90.4	70	130			
Surr: DNOP	4.2		5.000		84.3	50.6	138			

Sample ID	<b>MB-40214</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40214</b>	RunNo:	<b>54034</b>					
Prep Date:	<b>9/7/2018</b>	Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>1785557</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.9		10.00		88.8	50.6	138			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809220**

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID <b>MB-40201</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>40201</b>	RunNo: <b>54007</b>								
Prep Date: <b>9/6/2018</b>	Analysis Date: <b>9/8/2018</b>	SeqNo: <b>1783978</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	950		1000		94.8	15	316			

Sample ID <b>LCS-40201</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>40201</b>	RunNo: <b>54007</b>								
Prep Date: <b>9/6/2018</b>	Analysis Date: <b>9/8/2018</b>	SeqNo: <b>1783979</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	96.2	75.9	131			
Surr: BFB	1000		1000		103	15	316			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809220

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	MB-40296	SampType:	MBLK	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	PBW	Batch ID:	40296	RunNo:	54176					
Prep Date:	9/12/2018	Analysis Date:	9/14/2018	SeqNo:	1791458	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0015		0.002500		58.4	58.3	109			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		62.6	40.1	101			

Sample ID	LCS-40296	SampType:	LCS	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	LCSW	Batch ID:	40296	RunNo:	54176					
Prep Date:	9/12/2018	Analysis Date:	9/14/2018	SeqNo:	1791459	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00036	0.00010	0.0005000	0	72.4	49.5	127			
gamma-BHC (Lindane)	0.00032	0.00010	0.0005000	0	64.0	49.9	124			
Heptachlor	0.00030	0.00010	0.0005000	0	60.7	41	122			
Heptachlor epoxide	0.00035	0.00010	0.0005000	0	70.6	52.2	121			
Methoxychlor	0.00034	0.00010	0.0005000	0	67.8	40.2	134			
Surr: Decachlorobiphenyl	0.0015		0.002500		60.5	58.3	109			
Surr: Tetrachloro-m-xylene	0.0011		0.002500		45.4	40.1	101			

Sample ID	LCSD-40296	SampType:	LCSD	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	LCSS02	Batch ID:	40296	RunNo:	54176					
Prep Date:	9/12/2018	Analysis Date:	9/14/2018	SeqNo:	1791460	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00044	0.00010	0.0005000	0	88.8	49.5	127	20.4	20	R
gamma-BHC (Lindane)	0.00041	0.00010	0.0005000	0	81.5	49.9	124	24.1	20	R
Heptachlor	0.00036	0.00010	0.0005000	0	72.1	41	122	17.1	20	
Heptachlor epoxide	0.00043	0.00010	0.0005000	0	86.0	52.2	121	19.6	20	
Methoxychlor	0.00042	0.00010	0.0005000	0	84.1	40.2	134	21.4	20	R
Surr: Decachlorobiphenyl	0.0019		0.002500		74.4	58.3	109	0	0	
Surr: Tetrachloro-m-xylene	0.0016		0.002500		62.2	40.1	101	0	0	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809220**

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>mb-40201</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8260B: Volatiles</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40201</b>	RunNo:	<b>54008</b>					
Prep Date:	<b>9/6/2018</b>	Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>1784083</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.51		0.5000		102	70	130			
Surr: 1,2-Dichloroethane-d4	0.52		0.5000		105	70	130			
Surr: Toluene-d8	0.55		0.5000		110	70	130			
Surr: 4-Bromofluorobenzene	0.52		0.5000		104	70	130			

Sample ID	<b>ics-40201</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8260B: Volatiles</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40201</b>	RunNo:	<b>54008</b>					
Prep Date:	<b>9/6/2018</b>	Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>1784084</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.88	0.025	1.000	0	87.5	70	130			
Toluene	1.0	0.050	1.000	0	102	70	130			
Surr: Dibromofluoromethane	0.48		0.5000		95.9	70	130			
Surr: 1,2-Dichloroethane-d4	0.48		0.5000		95.9	70	130			
Surr: Toluene-d8	0.56		0.5000		111	70	130			
Surr: 4-Bromofluorobenzene	0.60		0.5000		120	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809220

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>mb-40246</b> SampType: <b>MBLK</b> TestCode: <b>Volatiles by 8260B/1311</b>										
Client ID: <b>PBS</b> Batch ID: <b>40246</b> RunNo: <b>54084</b>										
Prep Date: <b>9/10/2018</b> Analysis Date: <b>9/11/2018</b> SeqNo: <b>1787253</b> Units: <b>mg/L</b>										
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		102	70	130			
Surr: 4-Bromofluorobenzene	0.20		0.2000		101	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		95.8	70	130			
Surr: Toluene-d8	0.20		0.2000		101	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>ics-40246</b> SampType: <b>LCS</b> TestCode: <b>Volatiles by 8260B/1311</b>										
Client ID: <b>LCSS</b> Batch ID: <b>40246</b> RunNo: <b>54084</b>										
Prep Date: <b>9/10/2018</b> Analysis Date: <b>9/11/2018</b> SeqNo: <b>1787254</b> Units: <b>mg/L</b>										
Benzene	0.39	0.30	0.4000	0	98.4	70	130			
Chlorobenzene	0.42	0.30	0.4000	0	105	70	130			
1,1-Dichloroethene	0.40	0.30	0.4000	0	100	70	130			
Trichloroethene (TCE)	0.36	0.30	0.4000	0	90.2	70	130			
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		99.5	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		97.3	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		93.6	70	130			
Surr: Toluene-d8	0.19		0.2000		93.4	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809220

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	Ics-40293		SampType: LCS	TestCode: EPA Method 8270C TCLP						
Client ID:	LCSS		Batch ID: 40293	RunNo: 54136						
Prep Date:	9/12/2018		Analysis Date: 9/13/2018	SeqNo: 1790031	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.068	0.0010	0.1000	0	68.0	47.8	99.2			
3+4-Methylphenol	0.13	0.0010	0.2000	0	65.2	41.5	118			
2,4-Dinitrotoluene	0.065	0.0010	0.1000	0	65.4	44.4	81			
Hexachlorobenzene	0.077	0.0010	0.1000	0	76.8	49.5	91.6			
Hexachlorobutadiene	0.063	0.0010	0.1000	0	62.8	38.6	93			
Hexachloroethane	0.060	0.0010	0.1000	0	59.8	39.4	79.9			
Nitrobenzene	0.070	0.0010	0.1000	0	69.6	47.4	96.2			
Pentachlorophenol	0.067	0.0010	0.1000	0	67.4	39.4	79.9			
Pyridine	0.034	0.0010	0.1000	0	34.0	15	79.9			
2,4,5-Trichlorophenol	0.074	0.0010	0.1000	0	74.3	47.4	118			
2,4,6-Trichlorophenol	0.081	0.0010	0.1000	0	80.9	47.4	101			
Cresols, Total	0.20	0.0010	0.3000	0	66.1	44.1	111			
Surr: 2-Fluorophenol	0.084		0.2000		41.8	15	102			
Surr: Phenol-d5	0.063		0.2000		31.3	15	87.7			
Surr: 2,4,6-Tribromophenol	0.13		0.2000		64.0	39.9	111			
Surr: Nitrobenzene-d5	0.061		0.1000		61.2	35.1	107			
Surr: 2-Fluorobiphenyl	0.064		0.1000		64.1	36.7	100			
Surr: 4-Terphenyl-d14	0.080		0.1000		80.3	42.6	129			

Sample ID	mb-40293		SampType: MBLK	TestCode: EPA Method 8270C TCLP						
Client ID:	PBS		Batch ID: 40293	RunNo: 54136						
Prep Date:	9/12/2018		Analysis Date: 9/13/2018	SeqNo: 1790032	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.13		0.2000		65.9	15	102			
Surr: Phenol-d5	0.11		0.2000		52.6	15	87.7			
Surr: 2,4,6-Tribromophenol	0.16		0.2000		80.4	39.9	111			

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809220**

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>mb-40293</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8270C TCLP</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40293</b>	RunNo:	<b>54136</b>					
Prep Date:	<b>9/12/2018</b>	Analysis Date:	<b>9/13/2018</b>	SeqNo:	<b>1790032</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.089		0.1000		88.6	35.1	107			
Surr: 2-Fluorobiphenyl	0.086		0.1000		86.5	36.7	100			
Surr: 4-Terphenyl-d14	0.098		0.1000		98.4	42.6	129			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809220**

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>MB-40278</b>	SampType:	<b>MBLK</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40278</b>	RunNo:	<b>54072</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>1786579</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	<b>LCS-40278</b>	SampType:	<b>LCS</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40278</b>	RunNo:	<b>54072</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>1786580</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	103	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809220

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	MB-40277	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals						
Client ID:	PBW	Batch ID:	40277	RunNo:	54079						
Prep Date:	9/11/2018	Analysis Date:	9/12/2018	SeqNo:	1787012	Units:	mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic	ND	5.0									
Barium	ND	100									
Cadmium	ND	1.0									
Chromium	ND	5.0									
Silver	ND	5.0									

Sample ID	MB-40277	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals						
Client ID:	PBW	Batch ID:	40277	RunNo:	54079						
Prep Date:	9/11/2018	Analysis Date:	9/12/2018	SeqNo:	1787014	Units:	mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Lead	ND	5.0									

Sample ID	LCS-40277	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals						
Client ID:	LCSW	Batch ID:	40277	RunNo:	54079						
Prep Date:	9/11/2018	Analysis Date:	9/12/2018	SeqNo:	1787015	Units:	mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Arsenic	ND	5.0	0.5000	0	99.2	80	120				
Barium	ND	100	0.5000	0	101	80	120				
Cadmium	ND	1.0	0.5000	0	101	80	120				
Chromium	ND	5.0	0.5000	0	98.7	80	120				
Lead	ND	5.0	0.5000	0	94.9	80	120				
Silver	ND	5.0	0.1000	0	110	80	120				

Sample ID	MB-40277	SampType:	MBLK	TestCode:	EPA Method 6010B: TCLP Metals						
Client ID:	PBW	Batch ID:	40277	RunNo:	54079						
Prep Date:	9/11/2018	Analysis Date:	9/12/2018	SeqNo:	1787034	Units:	mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Selenium	ND	1.0									

Sample ID	LCS-40277	SampType:	LCS	TestCode:	EPA Method 6010B: TCLP Metals						
Client ID:	LCSW	Batch ID:	40277	RunNo:	54079						
Prep Date:	9/11/2018	Analysis Date:	9/12/2018	SeqNo:	1787036	Units:	mg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Selenium	ND	1.0	0.5000	0	102	80	120				

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 11 of 11

**ALL ENVIRONMENTAL ANALYSIS LABORATORY**

Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87105  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

**Sample Log-In Check List**

Client Name: EA Engineering Alb Work Order Number: 1809220 RcptNo: 1

Received By: Erin Melendrez 9/4/2018 4:54:00 PM *EM*  
 Completed By: Ashley Gallegos 9/6/2018 10:07:54 AM *AG*  
 Reviewed By: ENM 9/6/18 Labeled by: *mg 09/06/18*

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: *MO*  
 (<2 or =12 unless noted)  
 Adjusted?  
 Checked by:

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.9	Good	Not Present			

## CHAIN-OF-CUSTODY RECORD

**EA** 225 Shilling Circle, Suite 400, Hunt Valley, MD 21031  
 Tel No: (410) 584-7800 Fax No: (410) 584-7802  
 E-mail: ea@ea.com

**PROJECT NAME:** Kirtland AFB BFF  
**PROJECT NUMBER:** 62599DM01.1017.3  
**LAB NAME AND CONTACT:** Hall Environmental  
**LAB PO NUMBER:** 15182  
**DO NUMBER:** 15182  
**PROJECT TEL NO AND FAX NO:** 505-345-3975  
**LAB TEL NO AND FAX NO:** Fax 505-345-4167  
**PROJECT CONTACT:** E. Morse  
**RECIPENT 1 (Name and Company):** Amanda Smith/ smith@ceast.com  
**RECIPENT 2 (Name and Company):** Pam Moss/ pmoss@ceast.com  
**RECIPENT 3 (Name and Company):** Earl Morse/ emorse@ceast.com

**1** COC NUMBER: HAFB-106246-1-1042

17 ITEM	18 SAMPLE IDENTIFIER	19 SAMPLE DESCRIPTION/LOCATION	20 MATRIX (see codes on SOP)	21 DATE COLLECTED	22 TIME COLLECTED	23 DATA PROJ LEVEL (see codes on SOP)	24 LAB TAT (business days)	25 Bottle Type	26 ANALYSES REQUIRED (Include Method Numbers)							27 COMMENTS/ SCREENING READINGS (for 10A) (for 10B) (for 10C)	28 LAB ID
									TPH VOC, SVOC, Pest, Herb, Metals (1311/8260B/8270C/808)	PTEX (8260B)	TPH GRO, DRO, RRO (8015D)	Reactive Cyanide/ Sulfide (9012B/9034)	Corrosivity - PH (9045D)	Inhibitory (1010A)			
1	HAFB-106246-1-1042	Roll off bin 1	Soil	9-4-18	1431	IV	7	3	X	X	X	X	X	X	X	1802220	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

**27** COURIER AND SHIPPING NUMBER: FedEx Number: N/A Hand delivered to lab

**28** RELINQUISHED BY: Pete Ferraro  
 Printed Name and Signature: *Pete Ferraro*  
 DATE: 9-4-18 TIME: 1654

**29** RECEIVED BY: Erin Hernandez  
 Printed Name and Signature: *Erin Hernandez*  
 DATE: 09/04/18 TIME: 1654

**30** SAMPLER(S) AND COMPANY: (please print) Field Sampler/EA Engineering  
 Printed Name and Signature: *Pete Ferraro*  
 DATE: 09/04/18 TIME: 1654



EA Engineering, Science, & Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, New Mexico 87102  
Phone: (505) 224-9013

September 20, 2018

Ms. Katrina Wheelock  
Solid Waste Program Manager  
Environmental Management  
377 MSG/CEIE  
Kirtland AFB, New Mexico 87117

Subject: Request to dispose non-hazardous soil cuttings at Kirtland C&D Landfill  
Roll-off Identification: KAFB-106246-2 (Bin ID #0126.20)  
USACE Contract No. W912DR-12-D-0006-DM01

Dear Ms. Wheelock,

EA Engineering, Science, and Technology, Inc., PBC (EA) is requesting permission to dispose of non-hazardous soil drill cuttings and plastic liner from one roll-off container to the Kirtland Air Force Base (AFB) Construction and Demolition (C&D) debris landfill. The roll-off bin included in this request is:

- EA identification of KAFB-106246-2 (Bin ID #0126.20) contains approximately 13 cubic yards of soil in a 20-yard, open top, roll off.

In September 2018 EA installed a groundwater monitoring well, KAFB-106246, associated with the Kirtland Bulk Fuels Facility environmental restoration project. Well KAFB-106246 is located on Kirtland Air Force Base on VA Hospital property just west of Bullhead Park. Drill cuttings were containerized in a plastic-lined, steel, roll-off pending laboratory analysis for waste characterization. Any excess moisture in the bin was stabilized using Hydrosorb®, a superabsorbent polymer. The roll-off bin is currently residing in the EA investigation derived waste yard near 1601 Perimeter Circle SE, on Kirtland AFB.

One five-point composite waste characterization sample was collected from the roll-off bin and delivered to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis. The sample was analyzed for all the required parameters per the Kirtland AFB Landfill Acceptance Memorandum (January 2009). The attached analytical results (Report 1809221) for the composite sample confirms the drill cuttings meet waste acceptance requirements for disposal at the Kirtland C&D landfill.

The roll-off container is owned and/or leased by Advanced Chemical Transport Environmental Services Inc. (ACT) with the roll-off identification numbers marked clearly on the roll off. ACT will utilize one of the following vehicles for waste transport:



W912DR-12-D-0006-DM01  
 Kirtland Air Force Base Bulk Fuels Facility Expansion  
 of the Dissolved Plume Groundwater Treatment System Design  
 20 September 2018  
 Page 2 of 2

- 2015 Western Star Roll Off Truck, License #: WD121651, registered in New Mexico
- 2015 Western Star Roll Off Truck, License #: WD124756, registered in New Mexico

Ms. Jeanne Dye-Porto (AFCEC/CZO) has reviewed this package and authorized EA to forward it for your review. EA respectfully requests your review of the attached summary table and analytical data for determination if disposal can be authorized at the Kirtland AFB C&D landfill. Upon receiving notification of Kirtland AFB's acceptance of the waste, EA will coordinate transport and disposal of the roll-off contents with ACT.

EA's Kirtland AFB Point of Contact is Mr. Scott Clark; 505-846-9017.

If you have any questions, please do not hesitate to contact me at 505-266-2225, or via e-mail at [landress@eaest.com](mailto:landress@eaest.com).

Sincerely,

Lane Address, PG

Attachments: Summary Analytical Table  
 Hall Environmental Analysis Laboratory Order No: Report 1809221

cc: Jeanne Dye-Porto, [jeanne.dye-porto@us.af.mil](mailto:jeanne.dye-porto@us.af.mil)  
 Scott Clark, [scott.clark@us.af.mil](mailto:scott.clark@us.af.mil)  
 Sheen Kottkamp, [sheen.kottkamp.1@us.af.mil](mailto:sheen.kottkamp.1@us.af.mil)  
 Melissa Clark, [melissa.clark.8@us.af.mil](mailto:melissa.clark.8@us.af.mil)  
 Ben Moayyad, [Behnaum.Moayyad@usace.army.mil](mailto:Behnaum.Moayyad@usace.army.mil)  
 Devon Jercinovic, [djercinovic@eaest.com](mailto:djercinovic@eaest.com)  
 Bernie Bockisch, [bbockisch@eaest.com](mailto:bbockisch@eaest.com)  
 Earl Morse, [emorse@eaest.com](mailto:emorse@eaest.com)

		LOCATION CODE					
		FIELD SAMPLE ID	KAFB-106246-2-IDW				
		SAMPLE DATE	4-Sep-18				
		SAMPLE PURPOSE	Waste Characterization				
		ROLL-OFF NO.	KAFB-106246-2				
Parameter	Method	Analyte	Units	TCLP Regulatory Level <sup>a</sup> or KAFB Limits <sup>b</sup>	Result	QUAL	PQL
RCRA Characteristics	SW1030	IGNITABILITY	°F	See footnote <sup>c</sup>	Neg	--	--
	SW846 Chapter 7	REACTIVE CYANIDE	mg/kg	NE	ND	--	23.7
	SW846 Chapter 7	REACTIVE SULFIDE (as total)	mg/kg	NE	ND	--	23.7
	SW9045	CORROSIVITY (pH)	S.U.	≥2 or ≤12.5	8.47	J	--
TCLP HERBICIDES	SW1311/8151A	2,4,5-TP (Silvex)	mg/L	1	ND	--	0.1
		2,4-D (2,4-Dichlorophenoxyacetic acid)	mg/L	10	ND	--	0.1
TCLP METALS	SW1311/6010B	ARSENIC	mg/L	5	ND	--	5.0
		BARIUM	mg/L	100	ND	--	100
		CADMIUM	mg/L	1	ND	--	1.0
		CHROMIUM	mg/L	5	ND	--	5.0
		LEAD	mg/L	5	ND	--	5.0
		SELENIUM	mg/L	1	ND	--	1.0
		SILVER	mg/L	5	ND	--	5.0
	SW1311/7470A	MERCURY	mg/L	0.02	ND	--	0.020
TCLP PESTICIDES	SW1311/8081	CHLORDANE	mg/L	0.03	ND	--	0.030
		ENDRIN	mg/L	0.02	ND	--	0.020
		GAMMA-BHC (LINDANE)	mg/L	0.4	ND	--	0.40
		HEPTACHLOR	mg/L	0.008	ND	--	0.0080
		HEPTACHLOR EPOXIDE	mg/L	0.008	ND	--	0.0080
		METHOXYCHLOR	mg/L	10	ND	--	10
		TOXAPHENE	mg/L	0.5	ND	--	0.50
TCLP SVOCs	SW1311/8270C	2,4,5-TRICHLOROPHENOL	mg/L	400	ND	--	400
		2,4,6-TRICHLOROPHENOL	mg/L	2	ND	--	2.0
		2,4-DINITROTOLUENE	mg/L	0.13	ND	--	0.13
		2-METHYLPHENOL (o-Cresol)	mg/L	200	ND	--	200
		3- and 4-METHYLPHENOL (m- and o-Cresol)	mg/L	200	ND	--	200
		HEXACHLOROBENZENE	mg/L	0.13	ND	--	0.13
		HEXACHLOROBTADIENE	mg/L	0.5	ND	--	0.50
		HEXACHLOROETHANE	mg/L	3	ND	--	3.0
		NITROBENZENE	mg/L	2	ND	--	2.0
		PENTACHLOROPHENOL	mg/L	100	ND	--	100
		PYRIDINE	mg/L	5	ND	--	5.0
		CRESOLS, TOTAL	mg/L	200	ND	--	200
TCLP VOCs	SW1311/8260B	1,1-DICHLOROETHENE	mg/L	0.7	ND	--	0.70
		1,2-DICHLOROETHANE	mg/L	0.5	ND	--	0.50
		1,4-DICHLOROBENZENE	mg/L	7.5	ND	--	7.5
		2-BUTANONE (MEK)	mg/L	200	ND	--	200
		BENZENE	mg/L	0.5	ND	--	0.50
		CARBON TETRACHLORIDE	mg/L	0.5	ND	--	0.50
		CHLOROBENZENE	mg/L	100	ND	--	100
		CHLOROFORM	mg/L	6.0	ND	--	6.0
		TETRACHLOROETHENE	mg/L	0.7	ND	--	0.70
		TRICHLOROETHENE	mg/L	0.5	ND	--	0.50
		VINYL CHLORIDE	mg/L	0.2	ND	--	0.20
TPH	SW8015M/D	DIESEL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	9.2
		MOTOR OIL RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	46
		GASOLINE RANGE ORGANICS	mg/kg	100 <sup>d</sup>	ND	--	4.8
VOLATILES (BTEX)	SW8260B	BENZENE	mg/kg	10	ND	--	0.024
		ETHYLBENZENE	mg/kg	50 <sup>e</sup>	ND	--	0.048
		TOLUENE	mg/kg	50 <sup>e</sup>	ND	--	0.048
		XYLENES, TOTAL	mg/kg	50 <sup>e</sup>	ND	--	0.096

Notes:

<sup>a</sup>TCLP Regulatory Level - Resource Conservation Recovery Act (RCRA) hazardous waste characteristic limits per 40CFR Part 261 Subpart C, Section 261.20 - 261.24.

<sup>b</sup>KAFB Limits - Kirtland AFB landfill requirements per the Department of Air Force Technical Memorandum for Kirtland AFB/Department of Energy/Sandia National Laboratories Restoration Agencies and Their Commercial Contractors (2009).

<sup>c</sup>Ignitability characteristic for solids from 40 CFR Part 261.21: "It is not a liquid and is capable under standard temperature and pressure of causing fire through friction, absorption of

<sup>d</sup>KAFB limit for TPH measured as the sum of gasoline, diesel and motor oil range organics.

<sup>e</sup>KAFB limit for BTEX measured as the sum of benzene, toluene, ethylbenzene, and total xylenes.

> - greater than

BTEX - benzene, toluene, ethylbenzene, total xylenes

°F - degrees fahrenheit

J - Analyte detected below quantitation limit or estimated value

mg/L - milligram per liter

mg/kg - milligram per kilogram

ND - not detected above the PQL

NE - not established

Neg - negative

PQL - practical quantitation limit

QUAL - laboratory data qualifier

Shade- analyte detected above the detection limit

**Shade and Bold-** analyte detected above KAFB Landfill acceptance limit or TCLP Regulatory Level.

SVOCs - semivolatle organic compounds

S.U. - Standard units

TCLP - Toxicity Characteristic Leaching Procedure

TPH - total petroleum hydrocarbons

VOCs - volatile organic compounds



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 18, 2018

Earl Morse  
EA Engineering  
320 Gold Ave SW Suite 1210  
Albuquerque, NM 87102  
TEL: (505) 224-9013  
FAX

RE: Kirtland AFB BFF

OrderNo.: 1809221

Dear Earl Morse:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/4/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a white background.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order 1809221

Date Reported: 9/18/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: KAFB-106246-2-idw

Project: Kirtland AFB BFF

Collection Date: 9/4/2018 2:45:00 PM

Lab ID: 1809221-001

Matrix: SOIL

Received Date: 9/4/2018 4:54:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: <b>rde</b>
Mercury	ND	0.020		mg/L	1	9/11/2018 4:37:56 PM	40278
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: <b>ELS</b>
Arsenic	ND	5.0		mg/L	1	9/12/2018 6:53:34 AM	40277
Barium	ND	100		mg/L	1	9/12/2018 6:53:34 AM	40277
Cadmium	ND	1.0		mg/L	1	9/12/2018 6:53:34 AM	40277
Chromium	ND	5.0		mg/L	1	9/12/2018 6:53:34 AM	40277
Lead	ND	5.0		mg/L	1	9/12/2018 6:53:34 AM	40277
Selenium	ND	1.0		mg/L	1	9/12/2018 7:39:20 AM	40277
Silver	ND	5.0		mg/L	1	9/12/2018 6:53:34 AM	40277
<b>EPA METHOD 8081: PESTICIDES TCLP</b>							Analyst: <b>JME</b>
Chlordane	ND	0.030		mg/L	1	9/14/2018 12:35:51 PM	40296
Endrin	ND	0.020		mg/L	1	9/14/2018 12:35:51 PM	40296
gamma-BHC (Lindane)	ND	0.40		mg/L	1	9/14/2018 12:35:51 PM	40296
Heptachlor	ND	0.0080		mg/L	1	9/14/2018 12:35:51 PM	40296
Heptachlor epoxide	ND	0.0080		mg/L	1	9/14/2018 12:35:51 PM	40296
Methoxychlor	ND	10		mg/L	1	9/14/2018 12:35:51 PM	40296
Toxaphene	ND	0.50		mg/L	1	9/14/2018 12:35:51 PM	40296
Surr: Decachlorobiphenyl	66.5	58.3-109		%Rec	1	9/14/2018 12:35:51 PM	40296
Surr: Tetrachloro-m-xylene	74.3	40.1-101		%Rec	1	9/14/2018 12:35:51 PM	40296
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>lrm</b>
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	9/11/2018 1:08:09 AM	40215
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	9/11/2018 1:08:09 AM	40215
Surr: DNOP	99.6	50.6-138		%Rec	1	9/11/2018 1:08:09 AM	40215
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/8/2018 3:20:58 PM	40201
Surr: BFB	92.5	15-316		%Rec	1	9/8/2018 3:20:58 PM	40201
<b>EPA METHOD 8270C TCLP</b>							Analyst: <b>DAM</b>
2-Methylphenol	ND	200		mg/L	1	9/14/2018 1:53:31 AM	40293
3+4-Methylphenol	ND	200		mg/L	1	9/14/2018 1:53:31 AM	40293
2,4-Dinitrotoluene	ND	0.13		mg/L	1	9/14/2018 1:53:31 AM	40293
Hexachlorobenzene	ND	0.13		mg/L	1	9/14/2018 1:53:31 AM	40293
Hexachlorobutadiene	ND	0.50		mg/L	1	9/14/2018 1:53:31 AM	40293
Hexachloroethane	ND	3.0		mg/L	1	9/14/2018 1:53:31 AM	40293
Nitrobenzene	ND	2.0		mg/L	1	9/14/2018 1:53:31 AM	40293
Pentachlorophenol	ND	100		mg/L	1	9/14/2018 1:53:31 AM	40293
Pyridine	ND	5.0		mg/L	1	9/14/2018 1:53:31 AM	40293
2,4,5-Trichlorophenol	ND	400		mg/L	1	9/14/2018 1:53:31 AM	40293

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809221

Date Reported: 9/18/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: KAFB-106246-2-idw

Project: Kirtland AFB BFF

Collection Date: 9/4/2018 2:45:00 PM

Lab ID: 1809221-001

Matrix: SOIL

Received Date: 9/4/2018 4:54:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C TCLP</b>							Analyst: <b>DAM</b>
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	9/14/2018 1:53:31 AM	40293
Cresols, Total	ND	200		mg/L	1	9/14/2018 1:53:31 AM	40293
Surr: 2-Fluorophenol	39.5	15-102		%Rec	1	9/14/2018 1:53:31 AM	40293
Surr: Phenol-d5	30.4	15-87.7		%Rec	1	9/14/2018 1:53:31 AM	40293
Surr: 2,4,6-Tribromophenol	55.5	39.9-111		%Rec	1	9/14/2018 1:53:31 AM	40293
Surr: Nitrobenzene-d5	60.3	35.1-107		%Rec	1	9/14/2018 1:53:31 AM	40293
Surr: 2-Fluorobiphenyl	63.0	36.7-100		%Rec	1	9/14/2018 1:53:31 AM	40293
Surr: 4-Terphenyl-d14	73.2	42.6-129		%Rec	1	9/14/2018 1:53:31 AM	40293
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: <b>DJF</b>
Benzene	ND	0.024		mg/Kg	1	9/7/2018 3:38:32 PM	40201
Toluene	ND	0.048		mg/Kg	1	9/7/2018 3:38:32 PM	40201
Ethylbenzene	ND	0.048		mg/Kg	1	9/7/2018 3:38:32 PM	40201
Xylenes, Total	ND	0.096		mg/Kg	1	9/7/2018 3:38:32 PM	40201
Surr: Dibromofluoromethane	108	70-130		%Rec	1	9/7/2018 3:38:32 PM	40201
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	1	9/7/2018 3:38:32 PM	40201
Surr: Toluene-d8	109	70-130		%Rec	1	9/7/2018 3:38:32 PM	40201
Surr: 4-Bromofluorobenzene	111	70-130		%Rec	1	9/7/2018 3:38:32 PM	40201
<b>VOLATILES BY 8260B/1311</b>							Analyst: <b>DJF</b>
Benzene	ND	0.50		mg/L	1	9/11/2018 6:22:37 PM	40246
2-Butanone	ND	200		mg/L	1	9/11/2018 6:22:37 PM	40246
Carbon Tetrachloride	ND	0.50		mg/L	1	9/11/2018 6:22:37 PM	40246
Chlorobenzene	ND	100		mg/L	1	9/11/2018 6:22:37 PM	40246
Chloroform	ND	6.0		mg/L	1	9/11/2018 6:22:37 PM	40246
1,4-Dichlorobenzene	ND	7.5		mg/L	1	9/11/2018 6:22:37 PM	40246
1,2-Dichloroethane (EDC)	ND	0.50		mg/L	1	9/11/2018 6:22:37 PM	40246
1,1-Dichloroethene	ND	0.70		mg/L	1	9/11/2018 6:22:37 PM	40246
Tetrachloroethene (PCE)	ND	0.70		mg/L	1	9/11/2018 6:22:37 PM	40246
Trichloroethene (TCE)	ND	0.50		mg/L	1	9/11/2018 6:22:37 PM	40246
Vinyl chloride	ND	0.20		mg/L	1	9/11/2018 6:22:37 PM	40246
Surr: 1,2-Dichloroethane-d4	93.8	70-130		%Rec	1	9/11/2018 6:22:37 PM	40246
Surr: 4-Bromofluorobenzene	98.9	57.3-148		%Rec	1	9/11/2018 6:22:37 PM	40246
Surr: Dibromofluoromethane	91.1	70-130		%Rec	1	9/11/2018 6:22:37 PM	40246
Surr: Toluene-d8	96.3	70-130		%Rec	1	9/11/2018 6:22:37 PM	40246

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

# Anatek Labs, Inc.

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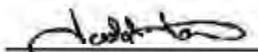
**Client:** HALL ENVIRONMENTAL ANALYSIS LAB      **Batch #:** 180907014  
**Address:** 4901 HAWKINS NE SUITE D      **Project Name:** 1809221  
ALBUQUERQUE, NM 87109  
**Attn:** ANDY FREEMAN

## Analytical Results Report

**Sample Number** 180907014-001      **Sampling Date** 9/4/2018      **Date/Time Received** 9/7/2018 11:34 AM  
**Client Sample ID** 1809221-001B / KAFB-106246-1-IDW      **Sampling Time** 2:45 PM  
**Matrix** Solid  
**Comments**

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Cyanide (reactive)	ND	mg/Kg	23.7	9/11/2018 10:45:00 AM	BKP	SW846 CH7	
Ignitability	Negative			9/13/2018 12:11:00 PM	GPB	EPA 1030	
pH	8.47	ph Units		9/11/2018 10:45:00 AM	LAC	EPA 9045	
Reactive sulfide	ND	mg/kg	23.7	9/11/2018 1:30:00 PM	ETL	SW846 CH7	
TCLP 2,4,5-TP (Silvex)	ND	mg/L	0.1	9/11/2018 7:52:00 PM	MAH	EPA 8151A	
TCLP 2,4-D	ND	mg/L	0.1	9/11/2018 7:52:00 PM	MAH	EPA 8151A	
TCLP Pentachlorophenol	ND	mg/L	0.1	9/11/2018 7:52:00 PM	MAH	EPA 8151A	

Authorized Signature



Todd Taruscio, Lab Manager

MCL EPA's Maximum Contaminant Level  
ND Not Detected  
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.  
The results reported relate only to the samples indicated.  
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA-ID00013; AZ:0701; FL(NELAP)E87593; ID-ID00013; MT-CERTC026; NM: ID00013; NV-ID00013; OR-ID200001-002; WA-C685  
Certifications held by Anatek Labs WA: EPA-WA00169; ID-WA00169; WA-C685; MT-Cert0095; FL(NELAP):E871099

Friday, September 14, 2018

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# Anatek Labs, Inc.

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 504 E Sprague Ste. D • Spokane WA 99202 • (509) 636-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

**Client:** HALL ENVIRONMENTAL ANALYSIS LAB      **Batch #:** 180907014  
**Address:** 4901 HAWKINS NE SUITE D      **Project Name:** 1809221  
 ALBUQUERQUE, NM 87109  
**Attn:** ANDY FREEMAN

## Analytical Results Report Quality Control Data

### Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
TCLP Pentachlorophenol	0.0110	mg/L	0.01	110.0	50-150	9/10/2018	9/11/2018
TCLP 2,4-D	0.0898	mg/L	0.1	89.8	50-150	9/10/2018	9/11/2018
TCLP 2,4,5-TP (Silvex)	0.0254	mg/L	0.025	101.6	50-150	9/10/2018	9/11/2018
Reactive sulfide	0.180	mg/kg	0.2	90.0	70-130	9/11/2018	9/11/2018
Cyanide (reactive)	0.521	mg/kg	0.5	104.2	70-130	9/8/2018	9/11/2018

### Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
180907012-001	TCLP Pentachlorophenol	ND	0.0105	mg/L	0.01	105.0	50-150	9/10/2018	9/11/2018
180907012-001	TCLP 2,4-D	ND	0.0869	mg/L	0.1	86.9	50-150	9/10/2018	9/11/2018
180907012-001	TCLP 2,4,5-TP (Silvex)	ND	0.0238	mg/L	0.025	95.2	50-150	9/10/2018	9/11/2018
180907015-001	Reactive sulfide	162	199	mg/kg	46.4	79.7	70-130	9/11/2018	9/11/2018
180907012-001	Cyanide (reactive)	ND	12.9	mg/kg	12.7	101.6	60-140	9/8/2018	9/11/2018

### Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
TCLP Pentachlorophenol	0.0105	mg/L	0.01	105.0	0.0	0-50	9/10/2018	9/11/2018
TCLP 2,4-D	0.0890	mg/L	0.1	89.0	2.4	0-50	9/10/2018	9/11/2018
TCLP 2,4,5-TP (Silvex)	0.0245	mg/L	0.025	98.0	2.9	0-50	9/10/2018	9/11/2018
Cyanide (reactive)	12.6	mg/kg	12.7	99.2	2.4	0-25	9/8/2018	9/11/2018

### Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Cyanide (reactive)	ND	mg/Kg	1	9/8/2018	9/11/2018
Reactive sulfide	ND	mg/kg	1	9/11/2018	9/11/2018
TCLP 2,4,5-TP (Silvex)	ND	mg/L	0.1	9/10/2018	9/11/2018
TCLP 2,4-D	ND	mg/L	0.1	9/10/2018	9/11/2018
TCLP Pentachlorophenol	ND	mg/L	0.1	9/10/2018	9/11/2018

AR Acceptable Range  
 ND Not Detected  
 PQL Practical Quantitation Limit  
 RPD Relative Percentage Difference

### Comments:

Certifications held by Anatek Labs ID: EPA3D80013, AZ:0791; FL(NELAP):E87993; ID:300013; MT:CERT0026; NM: ID00013; NV: ID00013; OR:ID200001-002; WA:C595  
 Certifications held by Anatek Labs WA: EPA-WA00169, ID-WA00169; WA:C396; MT: Cert(0095); FL(NELAP): E871099

Friday, September 14, 2018

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809221

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>LCS-40215</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40215</b>	RunNo:	<b>54038</b>					
Prep Date:	<b>9/7/2018</b>	Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>1785644</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	53	10	50.00	0	106	70	130			
Surr: DNOP	4.4		5.000		88.0	50.6	138			

Sample ID	<b>MB-40215</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40215</b>	RunNo:	<b>54038</b>					
Prep Date:	<b>9/7/2018</b>	Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>1785645</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.8		10.00		98.5	50.6	138			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809221

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>MB-40201</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015D: Gasoline Range</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40201</b>	RunNo:	<b>54007</b>					
Prep Date:	<b>9/6/2018</b>	Analysis Date:	<b>9/8/2018</b>	SeqNo:	<b>1783978</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	950		1000		94.8	15	316			

Sample ID	<b>LCS-40201</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015D: Gasoline Range</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40201</b>	RunNo:	<b>54007</b>					
Prep Date:	<b>9/6/2018</b>	Analysis Date:	<b>9/8/2018</b>	SeqNo:	<b>1783979</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	96.2	75.9	131			
Surr: BFB	1000		1000		103	15	316			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809221**

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	MB-40296	SampType:	MBLK	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	PBW	Batch ID:	40296	RunNo:	54176					
Prep Date:	9/12/2018	Analysis Date:	9/14/2018	SeqNo:	1791458	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chlordane	ND	0.030								
Endrin	ND	0.020								
gamma-BHC (Lindane)	ND	0.40								
Heptachlor	ND	0.0080								
Heptachlor epoxide	ND	0.0080								
Methoxychlor	ND	10								
Toxaphene	ND	0.50								
Surr: Decachlorobiphenyl	0.0015		0.002500		58.4	58.3	109			
Surr: Tetrachloro-m-xylene	0.0016		0.002500		62.6	40.1	101			

Sample ID	LCS-40296	SampType:	LCS	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	LCSW	Batch ID:	40296	RunNo:	54176					
Prep Date:	9/12/2018	Analysis Date:	9/14/2018	SeqNo:	1791459	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00036	0.00010	0.0005000	0	72.4	49.5	127			
gamma-BHC (Lindane)	0.00032	0.00010	0.0005000	0	64.0	49.9	124			
Heptachlor	0.00030	0.00010	0.0005000	0	60.7	41	122			
Heptachlor epoxide	0.00035	0.00010	0.0005000	0	70.6	52.2	121			
Methoxychlor	0.00034	0.00010	0.0005000	0	67.8	40.2	134			
Surr: Decachlorobiphenyl	0.0015		0.002500		60.5	58.3	109			
Surr: Tetrachloro-m-xylene	0.0011		0.002500		45.4	40.1	101			

Sample ID	LCSD-40296	SampType:	LCSD	TestCode:	EPA Method 8081: Pesticides TCLP					
Client ID:	LCSS02	Batch ID:	40296	RunNo:	54176					
Prep Date:	9/12/2018	Analysis Date:	9/14/2018	SeqNo:	1791460	Units:	mg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Endrin	0.00044	0.00010	0.0005000	0	88.8	49.5	127	20.4	20	R
gamma-BHC (Lindane)	0.00041	0.00010	0.0005000	0	81.5	49.9	124	24.1	20	R
Heptachlor	0.00036	0.00010	0.0005000	0	72.1	41	122	17.1	20	
Heptachlor epoxide	0.00043	0.00010	0.0005000	0	86.0	52.2	121	19.6	20	
Methoxychlor	0.00042	0.00010	0.0005000	0	84.1	40.2	134	21.4	20	R
Surr: Decachlorobiphenyl	0.0019		0.002500		74.4	58.3	109	0	0	
Surr: Tetrachloro-m-xylene	0.0016		0.002500		62.2	40.1	101	0	0	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809221**

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>mb-40201</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8260B: Volatiles</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40201</b>	RunNo:	<b>54008</b>					
Prep Date:	<b>9/6/2018</b>	Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>1784083</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.51		0.5000		102	70	130			
Surr: 1,2-Dichloroethane-d4	0.52		0.5000		105	70	130			
Surr: Toluene-d8	0.55		0.5000		110	70	130			
Surr: 4-Bromofluorobenzene	0.52		0.5000		104	70	130			

Sample ID	<b>ics-40201</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8260B: Volatiles</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40201</b>	RunNo:	<b>54008</b>					
Prep Date:	<b>9/6/2018</b>	Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>1784084</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.88	0.025	1.000	0	87.5	70	130			
Toluene	1.0	0.050	1.000	0	102	70	130			
Surr: Dibromofluoromethane	0.48		0.5000		95.9	70	130			
Surr: 1,2-Dichloroethane-d4	0.48		0.5000		95.9	70	130			
Surr: Toluene-d8	0.56		0.5000		111	70	130			
Surr: 4-Bromofluorobenzene	0.60		0.5000		120	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809221

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>mb-40246</b> SampType: <b>MBLK</b> TestCode: <b>Volatiles by 8260B/1311</b> Client ID: <b>PBS</b> Batch ID: <b>40246</b> RunNo: <b>54084</b> Prep Date: <b>9/10/2018</b> Analysis Date: <b>9/11/2018</b> SeqNo: <b>1787253</b> Units: <b>mg/L</b>										
Benzene	ND	0.50								
2-Butanone	ND	200								
Carbon Tetrachloride	ND	0.50								
Chlorobenzene	ND	100								
Chloroform	ND	6.0								
1,4-Dichlorobenzene	ND	7.5								
1,2-Dichloroethane (EDC)	ND	0.50								
1,1-Dichloroethene	ND	0.70								
Tetrachloroethene (PCE)	ND	0.70								
Trichloroethene (TCE)	ND	0.50								
Vinyl chloride	ND	0.20								
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		102	70	130			
Surr: 4-Bromofluorobenzene	0.20		0.2000		101	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		95.8	70	130			
Surr: Toluene-d8	0.20		0.2000		101	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>ics-40246</b> SampType: <b>LCS</b> TestCode: <b>Volatiles by 8260B/1311</b> Client ID: <b>LCSS</b> Batch ID: <b>40246</b> RunNo: <b>54084</b> Prep Date: <b>9/10/2018</b> Analysis Date: <b>9/11/2018</b> SeqNo: <b>1787254</b> Units: <b>mg/L</b>										
Benzene	0.39	0.30	0.4000	0	98.4	70	130			
Chlorobenzene	0.42	0.30	0.4000	0	105	70	130			
1,1-Dichloroethene	0.40	0.30	0.4000	0	100	70	130			
Trichloroethene (TCE)	0.36	0.30	0.4000	0	90.2	70	130			
Surr: 1,2-Dichloroethane-d4	0.20		0.2000		99.5	70	130			
Surr: 4-Bromofluorobenzene	0.19		0.2000		97.3	57.3	148			
Surr: Dibromofluoromethane	0.19		0.2000		93.6	70	130			
Surr: Toluene-d8	0.19		0.2000		93.4	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809221

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	Ics-40293		SampType: LCS	TestCode: EPA Method 8270C TCLP						
Client ID:	LCSS		Batch ID: 40293	RunNo: 54136						
Prep Date:	9/12/2018		Analysis Date: 9/13/2018	SeqNo: 1790031	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.068	0.0010	0.1000	0	68.0	47.8	99.2			
3+4-Methylphenol	0.13	0.0010	0.2000	0	65.2	41.5	118			
2,4-Dinitrotoluene	0.065	0.0010	0.1000	0	65.4	44.4	81			
Hexachlorobenzene	0.077	0.0010	0.1000	0	76.8	49.5	91.6			
Hexachlorobutadiene	0.063	0.0010	0.1000	0	62.8	38.6	93			
Hexachloroethane	0.060	0.0010	0.1000	0	59.8	39.4	79.9			
Nitrobenzene	0.070	0.0010	0.1000	0	69.6	47.4	96.2			
Pentachlorophenol	0.067	0.0010	0.1000	0	67.4	39.4	79.9			
Pyridine	0.034	0.0010	0.1000	0	34.0	15	79.9			
2,4,5-Trichlorophenol	0.074	0.0010	0.1000	0	74.3	47.4	118			
2,4,6-Trichlorophenol	0.081	0.0010	0.1000	0	80.9	47.4	101			
Cresols, Total	0.20	0.0010	0.3000	0	66.1	44.1	111			
Surr: 2-Fluorophenol	0.084		0.2000		41.8	15	102			
Surr: Phenol-d5	0.063		0.2000		31.3	15	87.7			
Surr: 2,4,6-Tribromophenol	0.13		0.2000		64.0	39.9	111			
Surr: Nitrobenzene-d5	0.061		0.1000		61.2	35.1	107			
Surr: 2-Fluorobiphenyl	0.064		0.1000		64.1	36.7	100			
Surr: 4-Terphenyl-d14	0.080		0.1000		80.3	42.6	129			

Sample ID	mb-40293		SampType: MBLK	TestCode: EPA Method 8270C TCLP						
Client ID:	PBS		Batch ID: 40293	RunNo: 54136						
Prep Date:	9/12/2018		Analysis Date: 9/13/2018	SeqNo: 1790032	Units: mg/L					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.13		0.2000		65.9	15	102			
Surr: Phenol-d5	0.11		0.2000		52.6	15	87.7			
Surr: 2,4,6-Tribromophenol	0.16		0.2000		80.4	39.9	111			

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Kirtland AFB BFF  
 Completion Report for Data Gap Monitoring Wells  
 SWMUs ST-106/SS-111

Page 655 of 686

June 2020

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809221**

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>mb-40293</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8270C TCLP</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40293</b>	RunNo:	<b>54136</b>					
Prep Date:	<b>9/12/2018</b>	Analysis Date:	<b>9/13/2018</b>	SeqNo:	<b>1790032</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.089		0.1000		88.6	35.1	107			
Surr: 2-Fluorobiphenyl	0.086		0.1000		86.5	36.7	100			
Surr: 4-Terphenyl-d14	0.098		0.1000		98.4	42.6	129			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809221**

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>MB-40278</b>	SampType:	<b>MBLK</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40278</b>	RunNo:	<b>54072</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>1786579</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	<b>LCS-40278</b>	SampType:	<b>LCS</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40278</b>	RunNo:	<b>54072</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>1786580</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	103	80	120			

Sample ID	<b>1809221-001AMS</b>	SampType:	<b>MS</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>KAFB-106246-2-idw</b>	Batch ID:	<b>40278</b>	RunNo:	<b>54072</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>1786582</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.8	75	125			

Sample ID	<b>1809221-001AMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>KAFB-106246-2-idw</b>	Batch ID:	<b>40278</b>	RunNo:	<b>54072</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>1786583</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	101	75	125	0	20	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809221

18-Sep-18

**Client:** EA Engineering  
**Project:** Kirtland AFB BFF

Sample ID	<b>MB-40277</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40277</b>	RunNo:	<b>54079</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/12/2018</b>	SeqNo:	<b>1787012</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Silver	ND	5.0								

Sample ID	<b>MB-40277</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40277</b>	RunNo:	<b>54079</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/12/2018</b>	SeqNo:	<b>1787014</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Lead	ND	5.0								
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Sample ID	<b>LCS-40277</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40277</b>	RunNo:	<b>54079</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/12/2018</b>	SeqNo:	<b>1787015</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Arsenic	ND	5.0	0.5000	0	99.2	80	120			
Barium	ND	100	0.5000	0	101	80	120			
Cadmium	ND	1.0	0.5000	0	101	80	120			
Chromium	ND	5.0	0.5000	0	98.7	80	120			
Lead	ND	5.0	0.5000	0	94.9	80	120			
Silver	ND	5.0	0.1000	0	110	80	120			

Sample ID	<b>MB-40277</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40277</b>	RunNo:	<b>54079</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/12/2018</b>	SeqNo:	<b>1787034</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Selenium	ND	1.0								
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Sample ID	<b>LCS-40277</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40277</b>	RunNo:	<b>54079</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/12/2018</b>	SeqNo:	<b>1787036</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Selenium	ND	1.0	0.5000	0	102	80	120			
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**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87105  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

**Sample Log-In Check List**

Client Name: EA Engineering Alb

Work Order Number: 1809221

RcptNo: 1

Received By: Erin Melendrez 9/4/2018 4:54:00 PM *UUG*

Completed By: Ashley Gallegos 9/6/2018 10:10:20 AM *AG*

Reviewed By: *ENM* 9/6/18 Labeled by: *m-09/06/18*

**Chain of Custody**

- 1. Is Chain of Custody complete? Yes  No  Not Present
- 2. How was the sample delivered? Client

**Log In**

- 3. Was an attempt made to cool the samples? Yes  No  NA
- 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA
- 5. Sample(s) in proper container(s)? Yes  No
- 6. Sufficient sample volume for indicated test(s)? Yes  No
- 7. Are samples (except VOA and ONG) properly preserved? Yes  No
- 8. Was preservative added to bottles? Yes  No  NA
- 9. VOA vials have zero headspace? Yes  No  No VOA Vials
- 10. Were any sample containers received broken? Yes  No
- 11. Does paperwork match bottle labels? Yes  No
- 12. Are matrices correctly identified on Chain of Custody? Yes  No
- 13. Is it clear what analyses were requested? Yes  No
- 14. Were all holding times able to be met? Yes  No

# of preserved bottles checked for pH: *m-09/06/18*  
 (<2 or >42 unless noted)  
 Adjusted?  
 Checked by:

**Special Handling (if applicable)**

- 15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.9	Good	Not Present			

## CHAIN-OF-CUSTODY RECORD

**EA**  
228 Scudder Circle, Suite 400, Hunt Valley, MD 21031  
Tel No: (410) 584-7000  
Fax No: (410) 772-0255

1 COC NUMBER:  
11AFB-106246-2-1162

100 NUMBER:  
11AFB-106246-2-1162

---

2 PROJECT NAME:  
Kirtland AFB BFF

3 PROJECT PHASE/SITE/TASK:  
Data Gap Wells

4 PROJECT CONTACT:  
E. Morse

5 LAB NAME AND CONTACT:  
Hall Environmental

6 DO NUMBER:  
15182

7 PROJECT TEL NO AND FAX NO:  
Tel: 505 345-3475  
Fax: 505 345-4107

8 FAX AND MAIL REPORTS/EDD TO:  
RECIPIENT 1 (Name and Company):  
Amanda Smith / asmith@enest.com

9 FAX AND MAIL REPORTS/EDD TO:  
RECIPIENT 2 (Name and Company):  
Pam Mossposos / pmossposos@enest.com

10 FAX AND MAIL REPORTS/EDD TO:  
RECIPIENT 3 (Name and Company):  
Earl Morse / emorse@enest.com

---

11 ITEM	12 SAMPLE IDENTIFIER	13 SAMPLE DESCRIPTION/LOCATION	14 MATRIX (see codes on SOP)	15 DATE COLLECTED	16 TIME COLLECTED	17 DATA PKG LEVEL (see codes on SOP)	18 Lab TAT (Business days)	19 Bottle Type	20 ANALYSES REQUIRED (Include Method Numbers)							21 SAMPLE TYPE (see codes on SOP)	22 COMMENTS/SCREENING READINGS	23 LAB ID (for lab's use)
									24 TCEP VOC, SVOC, Pcs, Herb, Metals (1311/8260B/8270C/808/8151A/6010B/7470A)	25 BTEX (8260B)	26 TPH GRO, DRO, RRO (8015D)	27 Reactive Cyanide/Sulfide (9012B/9034)	28 Corrosivity - PH (9045D)	29 Inhibility (1010A)				
1	11AFB-106246-2-1162	roll off bin 2	soil	7-4-18	1445	IV	7	3	X	X	X	X	X	X	X	1809221		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

---

21 SAMPLERS) AND COMPANY: (please print)  
Field Sampler/EA Engineering  
*Robt Ferraro*

22 COURIER AND SHIPPING NUMBER:  
FedEx Number: N/A Hand delivered to lab

23 RECEIVED BY:  
ENM9418  
TEMP: 5.4-10.0C = 44

---

24 RELINQUISHED BY:  
*Robt Ferraro*

25 DATE:  
7-4-18

26 TIME:  
1654

---

27 PRINTED NAME AND SIGNATURE:  
*Robt Ferraro*

28 DATE:  
7-4-18

29 TIME:  
1654

---

30 PRINTED NAME AND SIGNATURE:  
*Earl Morse*

31 DATE:  
7-4-18

32 TIME:  
1654

---

33 PRINTED NAME AND SIGNATURE:  
*Earl Morse*

34 DATE:  
7-4-18

35 TIME:  
1654



**DEPARTMENT OF THE AIR FORCE**  
377TH AIR BASE WING (AFGSC)

02 October 2018

MEMORANDUM FOR: AFCEC/CZO

FROM: 377 MSG/CEIE (Solid Waste Program Manager)

SUBJECT: Landfill Disposal

Reference: EA Engineering, Science, & Technology, Inc, letters (3) dated: 20 September 2018  
USACE Contract No. W912DR-12-D-0006-DM01

Disposal of non-hazardous soil cuttings from groundwater monitoring wells KAFB-106245 and KAFB-106246

1. Authorization is granted to EA to dispose of soil generated from installation of groundwater monitoring wells KAFB-106245 and KAFB-106246, in support of the Bulk Fuels Facility project, at the Kirtland AFB Construction & Demolition Landfill. The soil will be delivered to the landfill by Advanced Chemical Transport Environmental Services, Inc (ACT), and will be in three 20-cubic-yard open top roll-off containers labeled 4536, 0543-20, and 0126.20. The roll-offs will be transported using one of two 2015 Western Star roll-off trucks depending on ACT's vehicle availability: either NM license plate WD121651, or NM license plate WD124756. Lab results are on file in the Solid Waste Management office. EA shall be issued a Kirtland AFB landfill pass for this disposal action. A copy of this letter will accompany each roll-off and will be left with the gate keeper at the landfill.

2. Please direct questions to me at 853-2486.

**WHEELOCK.** Digitally signed  
by  
**KATRINA.E.** WHEELOCK.KATRI  
**140274958** NAE.1402749586  
**6** Date: 2018.10.02  
14:51:13 -06'00'  
**KATRINA E. WHEELOCK**  
Solid Waste Program Manager  
Environmental Management



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 26, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: KAFB BFF Data Gap Wells

OrderNo.: 1809A63

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/18/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

## Case Narrative

WO#: 1809A63  
Date: 9/26/2018

---

**CLIENT:** EA Engineering Science & Technology  
**Project:** KAFB BFF Data Gap Wells

---

Analytical Notes Regarding EPA Method 8270:  
Surrogates not recoverable due to sample dilution.

## Analytical Report

Lab Order 1809A63

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106246-3-IDW-S

Project: KAFB BFF Data Gap Wells

Collection Date: 9/18/2018 1:50:00 PM

Lab ID: 1809A63-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>MERCURY, TCLP</b>							Analyst: <b>rde</b>
Mercury	ND	0.020		mg/L	1	9/24/2018 3:40:33 PM	40525
<b>EPA METHOD 6010B: TCLP METALS</b>							Analyst: <b>pmf</b>
Arsenic	ND	5.0		mg/L	1	9/24/2018 12:27:45 PM	40518
Barium	ND	100		mg/L	1	9/24/2018 12:27:45 PM	40518
Cadmium	ND	1.0		mg/L	1	9/24/2018 12:27:45 PM	40518
Chromium	ND	5.0		mg/L	1	9/24/2018 12:27:45 PM	40518
Lead	ND	5.0		mg/L	1	9/24/2018 12:27:45 PM	40518
Selenium	ND	1.0		mg/L	1	9/24/2018 12:27:45 PM	40518
Silver	ND	5.0		mg/L	1	9/24/2018 12:27:45 PM	40518
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>AG</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	9/20/2018 6:36:51 PM	40456
Surr: BFB	103	70-130		%Rec	1	9/20/2018 6:36:51 PM	40456
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	41	10		mg/Kg	1	9/20/2018 7:05:47 PM	40460
Motor Oil Range Organics (MRO)	170	50		mg/Kg	1	9/20/2018 7:05:47 PM	40460
Surr: DNOP	134	50.6-138		%Rec	1	9/20/2018 7:05:47 PM	40460
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
Acenaphthene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Acenaphthylene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Aniline	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Anthracene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Azobenzene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Benz(a)anthracene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Benzo(a)pyrene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Benzo(b)fluoranthene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Benzo(g,h,i)perylene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Benzo(k)fluoranthene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Benzoic acid	ND	4.7	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Benzyl alcohol	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Bis(2-chloroethoxy)methane	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Bis(2-chloroethyl)ether	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Bis(2-chloroisopropyl)ether	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Bis(2-ethylhexyl)phthalate	ND	4.7	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
4-Bromophenyl phenyl ether	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Butyl benzyl phthalate	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Carbazole	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
4-Chloro-3-methylphenol	ND	4.7	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A63

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106246-3-IDW-S

Project: KAFB BFF Data Gap Wells

Collection Date: 9/18/2018 1:50:00 PM

Lab ID: 1809A63-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
4-Chloroaniline	ND	4.7	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
2-Chloronaphthalene	ND	2.4	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
2-Chlorophenol	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
4-Chlorophenyl phenyl ether	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Chrysene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Di-n-butyl phthalate	ND	3.8	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Di-n-octyl phthalate	ND	3.8	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Dibenz(a,h)anthracene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Dibenzofuran	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
1,2-Dichlorobenzene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
1,3-Dichlorobenzene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
1,4-Dichlorobenzene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
3,3'-Dichlorobenzidine	ND	2.4	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Diethyl phthalate	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Dimethyl phthalate	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
2,4-Dichlorophenol	ND	3.8	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
2,4-Dimethylphenol	ND	2.8	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
4,6-Dinitro-2-methylphenol	ND	3.8	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
2,4-Dinitrophenol	ND	4.7	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
2,4-Dinitrotoluene	ND	4.7	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
2,6-Dinitrotoluene	ND	4.7	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Fluoranthene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Fluorene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Hexachlorobenzene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Hexachlorobutadiene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Hexachlorocyclopentadiene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Hexachloroethane	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Indeno(1,2,3-cd)pyrene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Isophorone	ND	3.8	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
1-Methylnaphthalene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
2-Methylnaphthalene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
2-Methylphenol	ND	3.8	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
3+4-Methylphenol	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
N-Nitrosodi-n-propylamine	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
N-Nitrosodiphenylamine	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Naphthalene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
2-Nitroaniline	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
3-Nitroaniline	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
4-Nitroaniline	ND	3.8	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A63

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106246-3-IDW-S

Project: KAFB BFF Data Gap Wells

Collection Date: 9/18/2018 1:50:00 PM

Lab ID: 1809A63-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8270C: SEMIVOLATILES</b>							Analyst: <b>DAM</b>
Nitrobenzene	ND	3.8	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
2-Nitrophenol	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
4-Nitrophenol	ND	2.4	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Pentachlorophenol	ND	3.8	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Phenanthrene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Phenol	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Pyrene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Pyridine	ND	3.8	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
1,2,4-Trichlorobenzene	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
2,4,5-Trichlorophenol	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
2,4,6-Trichlorophenol	ND	1.9	D	mg/Kg	1	9/21/2018 9:54:00 PM	40469
Surr: 2-Fluorophenol	0	21.7-87.9	SD	%Rec	1	9/21/2018 9:54:00 PM	40469
Surr: Phenol-d5	0	30.2-92.2	SD	%Rec	1	9/21/2018 9:54:00 PM	40469
Surr: 2,4,6-Tribromophenol	0	47.1-103	SD	%Rec	1	9/21/2018 9:54:00 PM	40469
Surr: Nitrobenzene-d5	0	23.9-102	SD	%Rec	1	9/21/2018 9:54:00 PM	40469
Surr: 2-Fluorobiphenyl	0	32.6-101	SD	%Rec	1	9/21/2018 9:54:00 PM	40469
Surr: 4-Terphenyl-d14	0	37.2-117	SD	%Rec	1	9/21/2018 9:54:00 PM	40469
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: <b>DJF</b>
Benzene	ND	0.025		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Toluene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Ethylbenzene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Methyl tert-butyl ether (MTBE)	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,2,4-Trimethylbenzene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,3,5-Trimethylbenzene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,2-Dichloroethane (EDC)	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,2-Dibromoethane (EDB)	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Naphthalene	ND	0.10		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1-Methylnaphthalene	ND	0.20		mg/Kg	1	9/21/2018 11:19:03 AM	40456
2-Methylnaphthalene	ND	0.20		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Acetone	ND	0.75		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Bromobenzene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Bromodichloromethane	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Bromoform	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Bromomethane	ND	0.15		mg/Kg	1	9/21/2018 11:19:03 AM	40456
2-Butanone	ND	0.50		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Carbon disulfide	ND	0.50		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Carbon tetrachloride	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Chlorobenzene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Chloroethane	ND	0.10		mg/Kg	1	9/21/2018 11:19:03 AM	40456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A63

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106246-3-IDW-S

Project: KAFB BFF Data Gap Wells

Collection Date: 9/18/2018 1:50:00 PM

Lab ID: 1809A63-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
Chloroform	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Chloromethane	ND	0.15		mg/Kg	1	9/21/2018 11:19:03 AM	40456
2-Chlorotoluene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
4-Chlorotoluene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
cis-1,2-DCE	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
cis-1,3-Dichloropropene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,2-Dibromo-3-chloropropane	ND	0.10		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Dibromochloromethane	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Dibromomethane	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,2-Dichlorobenzene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,3-Dichlorobenzene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,4-Dichlorobenzene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Dichlorodifluoromethane	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,1-Dichloroethane	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,1-Dichloroethene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,2-Dichloropropane	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,3-Dichloropropane	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
2,2-Dichloropropane	ND	0.10		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,1-Dichloropropene	ND	0.10		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Hexachlorobutadiene	ND	0.10		mg/Kg	1	9/21/2018 11:19:03 AM	40456
2-Hexanone	ND	0.50		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Isopropylbenzene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
4-Isopropyltoluene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
4-Methyl-2-pentanone	ND	0.50		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Methylene chloride	ND	0.15		mg/Kg	1	9/21/2018 11:19:03 AM	40456
n-Butylbenzene	ND	0.15		mg/Kg	1	9/21/2018 11:19:03 AM	40456
n-Propylbenzene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
sec-Butylbenzene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Styrene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
tert-Butylbenzene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,1,1,2-Tetrachloroethane	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,1,1,2-Tetrachloroethane	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Tetrachloroethene (PCE)	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
trans-1,2-DCE	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
trans-1,3-Dichloropropene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,2,3-Trichlorobenzene	ND	0.10		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,2,4-Trichlorobenzene	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,1,1-Trichloroethane	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,1,2-Trichloroethane	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456

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<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809A63

Date Reported: 9/26/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106246-3-IDW-S

Project: KAFB BFF Data Gap Wells

Collection Date: 9/18/2018 1:50:00 PM

Lab ID: 1809A63-001

Matrix: SOIL

Received Date: 9/18/2018 3:48:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8260B: VOLATILES</b>							Analyst: DJF
Trichloroethene (TCE)	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Trichlorofluoromethane	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
1,2,3-Trichloropropane	ND	0.10		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Vinyl chloride	ND	0.050		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Xylenes, Total	ND	0.10		mg/Kg	1	9/21/2018 11:19:03 AM	40456
Surr: Dibromofluoromethane	95.3	70-130		%Rec	1	9/21/2018 11:19:03 AM	40456
Surr: 1,2-Dichloroethane-d4	94.2	70-130		%Rec	1	9/21/2018 11:19:03 AM	40456
Surr: Toluene-d8	92.0	70-130		%Rec	1	9/21/2018 11:19:03 AM	40456
Surr: 4-Bromofluorobenzene	93.8	70-130		%Rec	1	9/21/2018 11:19:03 AM	40456

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified



1809A63-001B KAFB-106246-3-IDW-S

SAMPLE RESULTS - 01

Collected date/time: 09/18/18 13:50

L1027443

Wet Chemistry by Method 9012 B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Cyanide	NY		0.250	1	09/24/2018 09:20	WG116871

Wet Chemistry by Method 9034-9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		25.0	1	09/23/2018 17:49	WG116877

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	9.00	NS	1	09/21/2018 09:40	WG116872

Sample Narrative:

L1027443-01 WG1168872: 9 at 20.6C

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DMI at 170		1	09/20/2018 20:01	WG116876



ACCOUNT: Hill Environmental Analysis Laboratory

PROJECT:

SDG: L1027443

DATE/TIME: 09/25/18 08:29

**WG1169232**

Met Chemistry by Method 9012 B

Method Blank (MB)

(MB) R3344432-1 09/24/18 09:14

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Cyanide	U		0.0390	0.250

L1027473-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1027473-01 09/24/18 09:29 • (DUP) R3344432-4 09/24/18 09:30

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	0.000	1	0.000		20

L1027473-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1027473-02 09/24/18 10:08 • (DUP) R3344432-5 09/24/18 10:09

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	3.63	4.60	5	23.5	E	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3344432-2 09/24/18 09:15 • (LCS-D) R3344432-3 09/24/18 09:16

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec %	LCSD Result mg/kg	LCSD Rec %	Rec Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	2.50	2.14	70	2.77	111	50.0-150		0.987	22	22

L1027473-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MS-D)

(OS) L1027473-02 09/24/18 09:31 • (MS) R3344432-5 09/24/18 09:32 • (MS-D) R3344432-6 09/24/18 09:33

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec %	MSD Rec %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	1.67	ND	1.26	1.30	75.8	77.9	1	75.0-175		2.66	20	20

L1027473-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MS-D)

(OS) L1027473-10 09/24/18 09:44 • (MS) R3344432-7 09/24/18 09:45 • (MS-D) R3344432-8 09/24/18 09:46

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec %	MSD Rec %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	1.67	ND	1.56	1.62	88.4	80.1	1	75.0-175		3.85	20	20

ACCOUNT:

Hill Environmental Analysis Laboratory

PROJECT:

SDG:  
L1027443

DATE/TIME:

09/25/18 09:29

**QUALITY CONTROL SUMMARY**

L1027443-01

OHIO LAB. NATION-WIDE

WG1168677

Wat Chemistry by Method 9034-90308

QUALITY CONTROL SUMMARY

L1027483-01

ONE LAB NATIONWIDE

(Method Blank (MB))

(MB) R3344333-1 09/23/18 17:49

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Sulfide	U	7.53	7.53	25.0

L1027458-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1027468-01 09/23/18 17:49 • (DUP) R3344333-5 09/23/18 17:49

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP RPD Limits %
Reactive Sulfide	54.8	54.8	1	0.000	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3344333-2 09/23/18 17:49 • (LCS-D) R3344333-3 09/23/18 17:49

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec %	LCS Rec Limits %	LCSD Result mg/kg	LCSD Rec %	LCSD Rec Limits %	LCSD Qualifier	RPD %	RPD Limits %
Reactive Sulfide	100	73.1	73.1	70.0-130	73.1	73.1	70.0-130		0.000	20

ACCOUNT: Heli Environmental Analysis Laboratory

PROJECT

SDG: L1027448

DATE/TIME: 09/25/18 08:29



ONE LAB. NATIONWIDE

# QUALITY CONTROL SUMMARY

L1027443-01

**WG1168872**

Wet Chemistry by Method 9045D

L1027459-01 Original Sample (OS) - Duplicate (DUP)

(OS) L1027459-01 09/21/18 09:40 • (DUP) R3343835-4 09/21/18 09:40

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	µL	µL	%	%	%	%
Corrosivity by pH	9.06	9.03	1	0.332		1

**Sample Narrative:**

OS: 9.06 at 20.6C  
DUP: 9.03 at 20.2C

Laboratory Control Sample (LCS) - Laboratory Control Sample Duplicate (LCSD)

(LCS) R3343835-1 09/21/18 09:40 - (LCSD) R3343835-2 09/21/18 09:40

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec	LCSD Rec	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	µL	µL	µL	%	%	%	%	%	%	%
Corrosivity by pH	10.0	9.98	9.99	99.8	99.9	99.0-101			0.100	1

**Sample Narrative:**

LCS: 9.98 at 19.3C  
LCSD: 9.99 at 19.4C

**WG1169226**

Wet Chemistry by Method 093/1010A

**QUALITY CONTROL SUMMARY**

L1027443-01

ONE LAB. NATIONWIDE

L1027405-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1027405-01 09/20/18 20:01 • (DUP) R3343731-3 09/20/18 20:01

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ignitability	Deg. F DNI at 170	Deg. F DNI at 173	1	% 0.000	% 10	% 10

L1027473-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1027473-10 09/20/18 20:01 • (DUP) R3343731-4 09/20/18 20:01

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ignitability	Deg. F DNI at 170	Deg. F DNI at 173	1	% 0.000	% 10	% 10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCS-D)

(LCS) R3343731-1 09/20/18 20:01 • (LCS-D) R3343731-2 09/20/18 20:01

Analyte	Spike Amount	LCS Result	LCS Rec	LCSD Result	LCSD Rec	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Ignitability	Deg. F 80.0	Deg. F 80.7	% 101	Deg. F 83.7	% 101	% 95.0-104	% 10	% 10	% 0.000	% 10

# GLOSSARY OF TERMS



## Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

### Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Correction	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cr)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.
Qualifier	Description
PI	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
TB	Sample(s) received past/too close to holding time expiration.

To

So

Cn

S

Qc

GI

AI

Sc

ACCOUNT:  
Hall Environmental Analysis Laboratory

PROJECT:

SDG:  
L1027443

DATE/TIME:  
09/25/08 08:29

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A63

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	<b>LCS-40460</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40460</b>	RunNo:	<b>54275</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797655</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.00	0	101	70	130			
Surr: DNOP	4.4		5.000		87.3	50.6	138			

Sample ID	<b>MB-40460</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40460</b>	RunNo:	<b>54275</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797656</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		101	50.6	138			

Sample ID	<b>LCS-40485</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40485</b>	RunNo:	<b>54322</b>					
Prep Date:	<b>9/20/2018</b>	Analysis Date:	<b>9/21/2018</b>	SeqNo:	<b>1798291</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.0		5.000		100	50.6	138			

Sample ID	<b>MB-40485</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015M/D: Diesel Range Organics</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40485</b>	RunNo:	<b>54322</b>					
Prep Date:	<b>9/20/2018</b>	Analysis Date:	<b>9/21/2018</b>	SeqNo:	<b>1798292</b>	Units:	<b>%Rec</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		108	50.6	138			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A63

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Methyl tert-butyl ether (MTBE)	ND	0.050								
1,2,4-Trimethylbenzene	ND	0.050								
1,3,5-Trimethylbenzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
1,2-Dibromoethane (EDB)	ND	0.050								
Naphthalene	ND	0.10								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
Acetone	ND	0.75								
Bromobenzene	ND	0.050								
Bromodichloromethane	ND	0.050								
Bromoform	ND	0.050								
Bromomethane	ND	0.15								
2-Butanone	ND	0.50								
Carbon disulfide	ND	0.50								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	0.050								
Chloroethane	ND	0.10								
Chloroform	ND	0.050								
Chloromethane	ND	0.15								
2-Chlorotoluene	ND	0.050								
4-Chlorotoluene	ND	0.050								
cis-1,2-DCE	ND	0.050								
cis-1,3-Dichloropropene	ND	0.050								
1,2-Dibromo-3-chloropropane	ND	0.10								
Dibromochloromethane	ND	0.050								
Dibromomethane	ND	0.050								
1,2-Dichlorobenzene	ND	0.050								
1,3-Dichlorobenzene	ND	0.050								
1,4-Dichlorobenzene	ND	0.050								
Dichlorodifluoromethane	ND	0.050								
1,1-Dichloroethane	ND	0.050								
1,1-Dichloroethene	ND	0.050								
1,2-Dichloropropane	ND	0.050								
1,3-Dichloropropane	ND	0.050								
2,2-Dichloropropane	ND	0.10								

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 8 of 16

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A63

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	<b>mb-40456</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8260B: Volatiles</b>						
Client ID:	<b>PBS</b>	Batch ID: <b>40456</b>		RunNo: <b>54347</b>						
Prep Date:	<b>9/19/2018</b>	Analysis Date: <b>9/21/2018</b>		SeqNo: <b>1799119</b>		Units: <b>mg/Kg</b>				
1,1-Dichloropropene	ND	0.10								
Hexachlorobutadiene	ND	0.10								
2-Hexanone	ND	0.50								
Isopropylbenzene	ND	0.050								
4-Isopropyltoluene	ND	0.050								
4-Methyl-2-pentanone	ND	0.50								
Methylene chloride	ND	0.15								
n-Butylbenzene	ND	0.15								
n-Propylbenzene	ND	0.050								
sec-Butylbenzene	ND	0.050								
Styrene	ND	0.050								
tert-Butylbenzene	ND	0.050								
1,1,1,2-Tetrachloroethane	ND	0.050								
1,1,2,2-Tetrachloroethane	ND	0.050								
Tetrachloroethene (PCE)	ND	0.050								
trans-1,2-DCE	ND	0.050								
trans-1,3-Dichloropropene	ND	0.050								
1,2,3-Trichlorobenzene	ND	0.10								
1,2,4-Trichlorobenzene	ND	0.050								
1,1,1-Trichloroethane	ND	0.050								
1,1,2-Trichloroethane	ND	0.050								
Trichloroethene (TCE)	ND	0.050								
Trichlorofluoromethane	ND	0.050								
1,2,3-Trichloropropane	ND	0.10								
Vinyl chloride	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: Dibromofluoromethane	0.47		0.5000		94.2	70	130			
Surr: 1,2-Dichloroethane-d4	0.47		0.5000		94.4	70	130			
Surr: Toluene-d8	0.45		0.5000		90.2	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		91.8	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID	<b>ics-40456</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8260B: Volatiles</b>						
Client ID:	<b>LCSS</b>	Batch ID: <b>40456</b>		RunNo: <b>54347</b>						
Prep Date:	<b>9/19/2018</b>	Analysis Date: <b>9/21/2018</b>		SeqNo: <b>1799121</b>		Units: <b>mg/Kg</b>				
Benzene	1.2	0.025	1.000	0	119	70	130			
Toluene	1.0	0.050	1.000	0	102	70	130			
Chlorobenzene	1.1	0.050	1.000	0	112	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A63**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	<b>Ics-40456</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8260B: Volatiles</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54347</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/21/2018</b>	SeqNo:	<b>1799121</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloroethene	1.3	0.050	1.000	0	126	70	130			
Trichloroethene (TCE)	1.1	0.050	1.000	0	112	70	130			
Surr: Dibromofluoromethane	0.52		0.5000		103	70	130			
Surr: 1,2-Dichloroethane-d4	0.49		0.5000		98.8	70	130			
Surr: Toluene-d8	0.45		0.5000		89.4	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		98.4	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Kirtland AFB BFF  
Completion Report for Data Gap Monitoring Wells  
SWMUs ST-106/SS-111

June 2020

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1809A63

26-Sep-18

**Client:** EA Engineering Science & Technology  
**Project:** KAFB BFF Data Gap Wells

Sample ID	Ics-40469		SampType: LCS	TestCode: EPA Method 8270C: Semivolatiles						
Client ID:	LCSS		Batch ID: 40469	RunNo: 54318						
Prep Date:	9/20/2018		Analysis Date: 9/21/2018	SeqNo: 1798894	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	1.1	0.20	1.670	0	66.6	42	110			
4-Chloro-3-methylphenol	2.3	0.50	3.330	0	69.6	42.3	117			
2-Chlorophenol	1.8	0.20	3.330	0	52.9	27.6	117			
1,4-Dichlorobenzene	0.81	0.20	1.670	0	48.7	28.8	105			
2,4-Dinitrotoluene	1.2	0.50	1.670	0	70.5	42	98.7			
N-Nitrosodi-n-propylamine	1.2	0.20	1.670	0	69.4	41.8	112			
4-Nitrophenol	3.2	0.25	3.330	0	95.2	54	113			
Pentachlorophenol	2.6	0.40	3.330	0	78.0	41.5	101			
Phenol	1.8	0.20	3.330	0	53.8	32.2	115			
Pyrene	1.5	0.20	1.670	0	91.5	48.5	121			
1,2,4-Trichlorobenzene	1.0	0.20	1.670	0	60.6	39.9	112			
Surr: 2-Fluorophenol	1.5		3.330		45.1	21.7	87.9			
Surr: Phenol-d5	2.0		3.330		59.2	30.2	92.2			
Surr: 2,4,6-Tribromophenol	2.8		3.330		83.4	47.1	103			
Surr: Nitrobenzene-d5	0.96		1.670		57.3	23.9	102			
Surr: 2-Fluorobiphenyl	1.1		1.670		63.0	32.6	101			
Surr: 4-Terphenyl-d14	1.7		1.670		99.5	37.2	117			

Sample ID	mb-40469		SampType: MBLK	TestCode: EPA Method 8270C: Semivolatiles						
Client ID:	PBS		Batch ID: 40469	RunNo: 54318						
Prep Date:	9/20/2018		Analysis Date: 9/21/2018	SeqNo: 1798895	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Acenaphthene	ND	0.20								
Acenaphthylene	ND	0.20								
Aniline	ND	0.20								
Anthracene	ND	0.20								
Azobenzene	ND	0.20								
Benz(a)anthracene	ND	0.20								
Benzo(a)pyrene	ND	0.20								
Benzo(b)fluoranthene	ND	0.20								
Benzo(g,h,i)perylene	ND	0.20								
Benzo(k)fluoranthene	ND	0.20								
Benzoic acid	ND	0.50								
Benzyl alcohol	ND	0.20								
Bis(2-chloroethoxy)methane	ND	0.20								
Bis(2-chloroethyl)ether	ND	0.20								
Bis(2-chloroisopropyl)ether	ND	0.20								
Bis(2-ethylhexyl)phthalate	ND	0.50								

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Page 11 of 16

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809A63

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	mb-40469	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	40469	RunNo:	54318					
Prep Date:	9/20/2018	Analysis Date:	9/21/2018	SeqNo:	1798895	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Bromophenyl phenyl ether	ND	0.20								
Butyl benzyl phthalate	ND	0.20								
Carbazole	ND	0.20								
4-Chloro-3-methylphenol	ND	0.50								
4-Chloroaniline	ND	0.50								
2-Chloronaphthalene	ND	0.25								
2-Chlorophenol	ND	0.20								
4-Chlorophenyl phenyl ether	ND	0.20								
Chrysene	ND	0.20								
Di-n-butyl phthalate	ND	0.40								
Di-n-octyl phthalate	ND	0.40								
Dibenz(a,h)anthracene	ND	0.20								
Dibenzofuran	ND	0.20								
1,2-Dichlorobenzene	ND	0.20								
1,3-Dichlorobenzene	ND	0.20								
1,4-Dichlorobenzene	ND	0.20								
3,3'-Dichlorobenzidine	ND	0.25								
Diethyl phthalate	ND	0.20								
Dimethyl phthalate	ND	0.20								
2,4-Dichlorophenol	ND	0.40								
2,4-Dimethylphenol	ND	0.30								
4,6-Dinitro-2-methylphenol	ND	0.40								
2,4-Dinitrophenol	ND	0.50								
2,4-Dinitrotoluene	ND	0.50								
2,6-Dinitrotoluene	ND	0.50								
Fluoranthene	ND	0.20								
Fluorene	ND	0.20								
Hexachlorobenzene	ND	0.20								
Hexachlorobutadiene	ND	0.20								
Hexachlorocyclopentadiene	ND	0.20								
Hexachloroethane	ND	0.20								
Indeno(1,2,3-cd)pyrene	ND	0.20								
Isophorone	ND	0.40								
1-Methylnaphthalene	ND	0.20								
2-Methylnaphthalene	ND	0.20								
2-Methylphenol	ND	0.40								
3+4-Methylphenol	ND	0.20								
N-Nitrosodi-n-propylamine	ND	0.20								
N-Nitrosodiphenylamine	ND	0.20								

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1809A63

26-Sep-18

Client: EA Engineering Science &amp; Technology

Project: KAFB BFF Data Gap Wells

Sample ID	mb-40469	SampType:	MBLK	TestCode:	EPA Method 8270C: Semivolatiles					
Client ID:	PBS	Batch ID:	40469	RunNo:	54318					
Prep Date:	9/20/2018	Analysis Date:	9/21/2018	SeqNo:	1798895	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	0.20								
2-Nitroaniline	ND	0.20								
3-Nitroaniline	ND	0.20								
4-Nitroaniline	ND	0.40								
Nitrobenzene	ND	0.40								
2-Nitrophenol	ND	0.20								
4-Nitrophenol	ND	0.25								
Pentachlorophenol	ND	0.40								
Phenanthrene	ND	0.20								
Phenol	ND	0.20								
Pyrene	ND	0.20								
Pyridine	ND	0.40								
1,2,4-Trichlorobenzene	ND	0.20								
2,4,5-Trichlorophenol	ND	0.20								
2,4,6-Trichlorophenol	ND	0.20								
Surr: 2-Fluorophenol	1.8		3.330		52.8	21.7	87.9			
Surr: Phenol-d5	2.2		3.330		64.6	30.2	92.2			
Surr: 2,4,6-Tribromophenol	2.6		3.330		78.3	47.1	103			
Surr: Nitrobenzene-d5	1.0		1.670		62.3	23.9	102			
Surr: 2-Fluorobiphenyl	1.1		1.670		65.2	32.6	101			
Surr: 4-Terphenyl-d14	1.6		1.670		95.3	37.2	117			

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
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S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A63**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	<b>MB-40525</b>	SampType:	<b>MBLK</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40525</b>	RunNo:	<b>54370</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1799878</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID	<b>LCS-40525</b>	SampType:	<b>LCS</b>	TestCode:	<b>MERCURY, TCLP</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40525</b>	RunNo:	<b>54370</b>					
Prep Date:	<b>9/24/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1799879</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	99.0	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A63**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	<b>MB-40518</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40518</b>	RunNo:	<b>54358</b>					
Prep Date:	<b>9/21/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1800649</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID	<b>LCS-40518</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: TCLP Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40518</b>	RunNo:	<b>54358</b>					
Prep Date:	<b>9/21/2018</b>	Analysis Date:	<b>9/24/2018</b>	SeqNo:	<b>1800651</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	97.7	80	120			
Barium	ND	100	0.5000	0	98.8	80	120			
Cadmium	ND	1.0	0.5000	0	102	80	120			
Chromium	ND	5.0	0.5000	0	98.0	80	120			
Lead	ND	5.0	0.5000	0	98.1	80	120			
Selenium	ND	1.0	0.5000	0	106	80	120			
Silver	ND	5.0	0.1000	0	111	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809A63**

26-Sep-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Wells

Sample ID	<b>Ics-40456</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8015D Mod: Gasoline Range</b>					
Client ID:	<b>LCSS</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54305</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797289</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	91.6	70	130			
Surr: BFB	470		500.0		93.2	70	130			

Sample ID	<b>mb-40456</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8015D Mod: Gasoline Range</b>					
Client ID:	<b>PBS</b>	Batch ID:	<b>40456</b>	RunNo:	<b>54305</b>					
Prep Date:	<b>9/19/2018</b>	Analysis Date:	<b>9/20/2018</b>	SeqNo:	<b>1797290</b>	Units:	<b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	500		500.0		99.4	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87105  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

**Sample Log-In Check List**

Client Name: EA Engineering Alb

Work Order Number: 1809A63

RcptNo: 1

Received By: Jazzmine Burkhead 9/18/2018 3:48:00 PM

Completed By: Ashley Gallegos 9/18/2018 5:34:30 PM

Reviewed By: ENM 9/18/18

Labeled by: JAB 09/19/18

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: JAB 09/19/18

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	_____	Date:	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.8	Good	Not Present			

**Chain-of-Custody Record**

Client: EA Engineering  
 320 Gold Ave SW ST 1300  
 Mailing Address: Albu, NM 87102  
 Phone #: 505-224-9013  
 email or Fax#: pmoose@eaesti.com  
 QA/QC Package: pmoose@eaesti.com  
 Standard  Level 4 (Full Validation)  
 NELAP  Other  
 EDD (Type)

Turn-Around Time:  
 Standard  Rush 5-Day  
 Project Name: KAFB-BFF  
 Data Gap Wells  
 Project #: 02599PM81-101713  
 15182  
 Project Manager:  
 Devon Jeronovic  
 Sampler: L. Address / J. Messenger  
 On Ice:  Yes  No  
 Sample Temperature: 34-10(C) = 24  
 Container Type and #  
 Preservative Type  
 HEAL No.  
 1803AUB3  
 -001



**HALL ENVIRONMENTAL ANALYSIS LABORATORY**  
 www.hallenvironmental.com  
 4901 Hawkins NE - Albuquerque, NM 87109  
 Tel. 505-345-3975 Fax 505-345-4107

**Analysis Request**

BTEX + MTBE + TMB's (8021)	
BTEX + MTBE + TPH (Gas only)	
TPH 8015B (GRO/DBD/MRO)	X
TPH (Method 418.1)	
EDB (Method 504.1)	
PAH's (8310 or 8270 SIMS)	
RCRA 8 Metals TCLP	X
Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	
8081 Pesticides / 8082 PCB's	
8260B (VOA)	X
8270 (Semi-VOA)	X
RCI	X
Air Bubbles (Y or N)	

Date: 9/18/18 1540  
 Date: 9/18/18 15:48  
 Relinquished by: Joshua Messenger  
 Relinquished by: Jeffrey Bunkhead  
 Received by: Jeffrey Bunkhead  
 Date: 09/18/18 15:48  
 Remarks: Client

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 19, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland BFF Data Gap Drilling

OrderNo.: 1809197

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/4/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1809197

Date Reported: 9/19/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106241-3-idw

Project: Kirtland BFF Data Gap Drilling

Collection Date: 9/4/2018 3:50:00 PM

Lab ID: 1809197-001

Matrix: AQUEOUS

Received Date: 9/4/2018 4:54:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 7470: MERCURY</b>							Analyst: JLF
Mercury	ND	0.00020		mg/L	1	9/13/2018 12:09:40 PM	40321
<b>EPA METHOD 6010B: DISSOLVED METALS</b>							Analyst: JLF
Iron	0.045	0.020		mg/L	1	9/7/2018 1:45:44 PM	A54000
Manganese	0.16	0.0020		mg/L	1	9/7/2018 1:45:44 PM	A54000
<b>EPA 6010B: TOTAL RECOVERABLE METALS</b>							Analyst: ELS
Arsenic	ND	0.020		mg/L	1	9/10/2018 10:41:35 AM	40231
Barium	0.090	0.020		mg/L	1	9/10/2018 10:41:35 AM	40231
Cadmium	ND	0.0020		mg/L	1	9/10/2018 11:42:41 AM	40231
Chromium	ND	0.0060		mg/L	1	9/10/2018 10:41:35 AM	40231
Lead	ND	0.0050		mg/L	1	9/10/2018 10:41:35 AM	40231
Selenium	ND	0.050		mg/L	1	9/10/2018 10:41:35 AM	40231
Silver	ND	0.0050		mg/L	1	9/10/2018 10:41:35 AM	40231
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: CLP
1,2-Dibromoethane	ND	0.0093		µg/L	1	9/10/2018 10:25:47 PM	40238
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: RAA
Benzene	ND	1.0		µg/L	1	9/11/2018 7:46:23 PM	R54071
Toluene	ND	1.0		µg/L	1	9/11/2018 7:46:23 PM	R54071
Ethylbenzene	ND	1.0		µg/L	1	9/11/2018 7:46:23 PM	R54071
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/11/2018 7:46:23 PM	R54071
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/11/2018 7:46:23 PM	R54071
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/11/2018 7:46:23 PM	R54071
Xylenes, Total	ND	1.5		µg/L	1	9/11/2018 7:46:23 PM	R54071
Surr: 4-Bromofluorobenzene	107	70-130		%Rec	1	9/11/2018 7:46:23 PM	R54071
Surr: Toluene-d8	101	70-130		%Rec	1	9/11/2018 7:46:23 PM	R54071

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809197**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID <b>MB-40238</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8011/504.1: EDB</b>								
Client ID: <b>PBW</b>	Batch ID: <b>40238</b>	RunNo: <b>54050</b>								
Prep Date: <b>9/10/2018</b>	Analysis Date: <b>9/10/2018</b>	SeqNo: <b>1785820</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID <b>LCS-40238</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8011/504.1: EDB</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>40238</b>	RunNo: <b>54050</b>								
Prep Date: <b>9/10/2018</b>	Analysis Date: <b>9/10/2018</b>	SeqNo: <b>1785822</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.087	0.010	0.1000	0	86.7	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809197**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>100ng btex lcs</b> SampType: <b>LCS4</b> TestCode: <b>EPA Method 8260: Volatiles Short List</b>										
Client ID: <b>BatchQC</b> Batch ID: <b>R54071</b> RunNo: <b>54071</b>										
Prep Date: Analysis Date: <b>9/11/2018</b> SeqNo: <b>1786549</b> Units: <b>µg/L</b>										
Benzene	20	1.0	20.00	0	100	80	120			
Toluene	21	1.0	20.00	0	105	80	120			
Ethylbenzene	21	1.0	20.00	0	106	80	120			
Methyl tert-butyl ether (MTBE)	19	1.0	20.00	0	94.7	80	120			
1,2,4-Trimethylbenzene	20	1.0	20.00	0	99.5	80	120			
1,3,5-Trimethylbenzene	21	1.0	20.00	0	103	80	120			
Xylenes, Total	62	1.5	60.00	0	104	80	120			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>rb</b> SampType: <b>MBLK</b> TestCode: <b>EPA Method 8260: Volatiles Short List</b>										
Client ID: <b>PBW</b> Batch ID: <b>R54071</b> RunNo: <b>54071</b>										
Prep Date: Analysis Date: <b>9/11/2018</b> SeqNo: <b>1786559</b> Units: <b>µg/L</b>										
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 4-Bromofluorobenzene	11		10.00		108	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809197**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-40321</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40321</b>	RunNo:	<b>54130</b>					
Prep Date:	<b>9/12/2018</b>	Analysis Date:	<b>9/13/2018</b>	SeqNo:	<b>1789572</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	<b>LCS-40321</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40321</b>	RunNo:	<b>54130</b>					
Prep Date:	<b>9/12/2018</b>	Analysis Date:	<b>9/13/2018</b>	SeqNo:	<b>1789573</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	104	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809197**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID <b>MB-A</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 6010B: Dissolved Metals</b>								
Client ID: <b>PBW</b>	Batch ID: <b>A54000</b>	RunNo: <b>54000</b>								
Prep Date:	Analysis Date: <b>9/7/2018</b>	SeqNo: <b>1783545</b> Units: <b>mg/L</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								
Manganese	ND	0.0020								

Sample ID <b>LCS-A</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 6010B: Dissolved Metals</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>A54000</b>	RunNo: <b>54000</b>								
Prep Date:	Analysis Date: <b>9/7/2018</b>	SeqNo: <b>1783547</b> Units: <b>mg/L</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.50	0.020	0.5000	0	100	80	120			
Manganese	0.49	0.0020	0.5000	0	97.8	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 5 of 7

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809197

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-40231</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40231</b>	RunNo:	<b>54031</b>					
Prep Date:	<b>9/8/2018</b>	Analysis Date:	<b>9/10/2018</b>	SeqNo:	<b>1784968</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	<b>LCS-40231</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40231</b>	RunNo:	<b>54031</b>					
Prep Date:	<b>9/8/2018</b>	Analysis Date:	<b>9/10/2018</b>	SeqNo:	<b>1784970</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.020	0.5000	0	103	80	120			
Barium	0.51	0.020	0.5000	0	102	80	120			
Chromium	0.50	0.0060	0.5000	0	99.5	80	120			
Lead	0.49	0.0050	0.5000	0	98.7	80	120			
Selenium	0.47	0.050	0.5000	0	93.7	80	120			
Silver	0.11	0.0050	0.1000	0	113	80	120			

Sample ID	<b>1809197-001DMS</b>	SampType:	<b>MS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>KAFB-106241-3-idw</b>	Batch ID:	<b>40231</b>	RunNo:	<b>54031</b>					
Prep Date:	<b>9/8/2018</b>	Analysis Date:	<b>9/10/2018</b>	SeqNo:	<b>1784972</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.55	0.020	0.5000	0.01883	106	75	125			
Barium	0.59	0.020	0.5000	0.09030	100	75	125			
Chromium	0.50	0.0060	0.5000	0	99.4	75	125			
Lead	0.49	0.0050	0.5000	0	98.0	75	125			
Selenium	0.46	0.050	0.5000	0	91.2	75	125			
Silver	0.11	0.0050	0.1000	0.002510	104	75	125			

Sample ID	<b>1809197-001DMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>KAFB-106241-3-idw</b>	Batch ID:	<b>40231</b>	RunNo:	<b>54031</b>					
Prep Date:	<b>9/8/2018</b>	Analysis Date:	<b>9/10/2018</b>	SeqNo:	<b>1784973</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.52	0.020	0.5000	0.01883	99.7	75	125	6.33	20	
Barium	0.58	0.020	0.5000	0.09030	98.2	75	125	1.62	20	
Chromium	0.48	0.0060	0.5000	0	96.7	75	125	2.71	20	
Lead	0.49	0.0050	0.5000	0	97.2	75	125	0.836	20	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809197**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>1809197-001DMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>KAFB-106241-3-idw</b>	Batch ID:	<b>40231</b>	RunNo:	<b>54031</b>					
Prep Date:	<b>9/8/2018</b>	Analysis Date:	<b>9/10/2018</b>	SeqNo:	<b>1784973</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.44	0.050	0.5000	0	88.2	75	125	3.39	20	
Silver	0.10	0.0050	0.1000	0.002510	102	75	125	1.95	20	

Sample ID	<b>MB-40231</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40231</b>	RunNo:	<b>54031</b>					
Prep Date:	<b>9/8/2018</b>	Analysis Date:	<b>9/10/2018</b>	SeqNo:	<b>1784996</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	ND	0.0020								

Sample ID	<b>LCS-40231</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40231</b>	RunNo:	<b>54031</b>					
Prep Date:	<b>9/8/2018</b>	Analysis Date:	<b>9/10/2018</b>	SeqNo:	<b>1784998</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.49	0.0020	0.5000	0	98.5	80	120			

Sample ID	<b>1809197-001DMS</b>	SampType:	<b>MS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>KAFB-106241-3-idw</b>	Batch ID:	<b>40231</b>	RunNo:	<b>54031</b>					
Prep Date:	<b>9/8/2018</b>	Analysis Date:	<b>9/10/2018</b>	SeqNo:	<b>1785000</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.50	0.0020	0.5000	0	99.1	75	125			

Sample ID	<b>1809197-001DMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>KAFB-106241-3-idw</b>	Batch ID:	<b>40231</b>	RunNo:	<b>54031</b>					
Prep Date:	<b>9/8/2018</b>	Analysis Date:	<b>9/10/2018</b>	SeqNo:	<b>1785001</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Cadmium	0.48	0.0020	0.5000	0	96.8	75	125	2.26	20	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87105  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: www.hallenvironmental.com

### Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1809197

RcptNo: 1

Received By: Erin Melendrez 9/4/2018 4:54:00 PM

*EM*

Completed By: Ashley Gallegos 9/5/2018 7:42:33 PM

*AG*

Reviewed By: ENM

9/6/18 Labeled by: *my* 09/06/18

**Chain of Custody**

- 1. Is Chain of Custody complete? Yes  No  Not Present
- 2. How was the sample delivered? Client

**Log In**

- 3. Was an attempt made to cool the samples? Yes  No  NA
- 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA

**Samples were collected the same day and chilled.**

- 5. Sample(s) in proper container(s)? Yes  No
- 6. Sufficient sample volume for indicated test(s)? Yes  No
- 7. Are samples (except VOA and ONG) properly preserved? Yes  No
- 8. Was preservative added to bottles? Yes  No  NA

- 9. VOA vials have zero headspace? Yes  No  No VOA Vials
- 10. Were any sample containers received broken? Yes  No

- 11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes  No
- 12. Are matrices correctly identified on Chain of Custody? Yes  No
- 13. Is it clear what analyses were requested? Yes  No
- 14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes  No

# of preserved bottles checked for pH: 2  
 (<2 or >12 unless noted)  
 Adjusted? NO  
 Checked by: *my* 09/06/18

**Special Handling (if applicable)**

- 15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

16. Additional remarks:

**17. Cooler Information**

Cooler No.	Temp °C	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	8.1	Good	Not Present			

**Chain-of-Custody Record**

Client: EA Environmental  
320 Gold SW #300  
 Mailing Address:  
Albuquerque NM 87102  
 Phone #: 505 238-4410  
 email or Fax#: (505) 238-~~emars@ea~~  
 QA/QC Package:  Standard  Level 4 (Full Validation)  
 Accreditation  NELAP  Other \_\_\_\_\_  
 EDD (Type) \_\_\_\_\_

Turn-Around Time:  Standard  Rush  
 Project Name: Kirtland BFF  
Data Gap Drilling  
 Project #: 62599DM01.1017.3  
 Project Manager: Devon Jerchow  
 Sampler: Pete Ferrari  
 On Ice:  Yes  No  
 Sample Temperature: -1.0 (C) = 8.1

Container Type and #  
 Preservative Type  
 HEAL No.  
300 ml HCl  
200 ml Na2SO3  
1250 ml HNO3  
1125 ml HNO3  
1809197  
-001

Date	Time	Matrix	Sample Request ID
4-18	1550	H <sub>2</sub> O	KAFB-106241-3-1duw
4-18			KAFB-106241-3-1duw
4-18			KAFB-106241-3-1duw
4-18			KAFB-106241-3-1duw



**HALL ENVIRONMENTAL ANALYSIS LABORATORY**  
 www.hallenvironmental.com  
 4901 Hawkins NE - Albuquerque, NM 87109  
 Tel. 505-345-3975 Fax 505-345-4107

**Analysis Request**

<input checked="" type="checkbox"/>	BTEX + MTBE + TMB's (8021)
<input type="checkbox"/>	BTEX + MTBE + TPH (Gas only)
<input type="checkbox"/>	TPH 8015B (GRO / DRO / MRO)
<input type="checkbox"/>	TPH (Method 418.1)
<input checked="" type="checkbox"/>	EDB (Method 504.1)
<input type="checkbox"/>	PAH's (8310 or 8270 SIMS)
<input type="checkbox"/>	RCRA 8 Metals
<input type="checkbox"/>	Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )
<input type="checkbox"/>	8081 Pesticides / 8082 PCBs
<input type="checkbox"/>	8260B (VOA)
<input type="checkbox"/>	8270 (Semi-VOA)
<input type="checkbox"/>	Classical Fe, Mn (Fill the red)
<input type="checkbox"/>	Air Bubbles (Y or N)

Remarks: email pross@caest.com  
PO # 15182

Date: 4-18 1654 Date: 9/18 1654  
 Relinquished by: Pete Ferrari Received by: Kirt  
 Relinquished by: \_\_\_\_\_ Received by: \_\_\_\_\_

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 19, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland BFF Data Gap Drilling

OrderNo.: 1809714

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 2 sample(s) on 9/13/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a white background.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1809714

Date Reported: 9/19/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106241-Dev IDW

Project: Kirtland BFF Data Gap Drilling

Collection Date: 9/12/2018 3:35:00 PM

Lab ID: 1809714-001

Matrix: AQUEOUS

Received Date: 9/13/2018 9:37:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 7470: MERCURY</b>							Analyst: <b>JLF</b>
Mercury	ND	0.00020		mg/L	1	9/17/2018 5:38:06 PM	40385
<b>EPA METHOD 6010B: DISSOLVED METALS</b>							Analyst: <b>ELS</b>
Iron	ND	0.020		mg/L	1	9/15/2018 2:10:01 PM	B54168
Manganese	0.090	0.0020		mg/L	1	9/15/2018 2:10:01 PM	B54168
<b>EPA 6010B: TOTAL RECOVERABLE METALS</b>							Analyst: <b>ELS</b>
Arsenic	ND	0.020		mg/L	1	9/15/2018 11:00:40 AM	40353
Barium	0.099	0.020		mg/L	1	9/15/2018 11:00:40 AM	40353
Cadmium	ND	0.0020		mg/L	1	9/15/2018 11:00:40 AM	40353
Chromium	ND	0.0060		mg/L	1	9/15/2018 11:00:40 AM	40353
Lead	ND	0.0050		mg/L	1	9/15/2018 12:34:08 PM	40353
Selenium	ND	0.050		mg/L	1	9/15/2018 11:00:40 AM	40353
Silver	ND	0.0050		mg/L	1	9/15/2018 11:00:40 AM	40353
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: <b>CLP</b>
1,2-Dibromoethane	0.017	0.0095		µg/L	1	9/14/2018 2:25:17 PM	40345
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	ND	1.0		µg/L	1	9/14/2018 3:55:38 PM	C54152
Toluene	ND	1.0		µg/L	1	9/14/2018 3:55:38 PM	C54152
Ethylbenzene	ND	1.0		µg/L	1	9/14/2018 3:55:38 PM	C54152
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/14/2018 3:55:38 PM	C54152
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/14/2018 3:55:38 PM	C54152
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/14/2018 3:55:38 PM	C54152
Xylenes, Total	ND	1.5		µg/L	1	9/14/2018 3:55:38 PM	C54152
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	9/14/2018 3:55:38 PM	C54152
Surr: Toluene-d8	98.9	70-130		%Rec	1	9/14/2018 3:55:38 PM	C54152

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809714

Date Reported: 9/19/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Trip Blank

Project: Kirtland BFF Data Gap Drilling

Collection Date:

Lab ID: 1809714-002

Matrix: AQUEOUS

Received Date: 9/13/2018 9:37:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: <b>CLP</b>
1,2-Dibromoethane	ND	0.0096		µg/L	1	9/14/2018 2:40:14 PM	40345
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	ND	1.0		µg/L	1	9/14/2018 5:05:13 PM	C54152
Toluene	ND	1.0		µg/L	1	9/14/2018 5:05:13 PM	C54152
Ethylbenzene	ND	1.0		µg/L	1	9/14/2018 5:05:13 PM	C54152
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/14/2018 5:05:13 PM	C54152
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/14/2018 5:05:13 PM	C54152
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/14/2018 5:05:13 PM	C54152
Xylenes, Total	ND	1.5		µg/L	1	9/14/2018 5:05:13 PM	C54152
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	1	9/14/2018 5:05:13 PM	C54152
Surr: Toluene-d8	102	70-130		%Rec	1	9/14/2018 5:05:13 PM	C54152

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809714**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-40345</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8011/504.1: EDB</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40345</b>	RunNo:	<b>54194</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/14/2018</b>	SeqNo:	<b>1792083</b>	Units:	<b>µg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID	<b>LCS-40345</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8011/504.1: EDB</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40345</b>	RunNo:	<b>54194</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/14/2018</b>	SeqNo:	<b>1792084</b>	Units:	<b>µg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.078	0.010	0.1000	0	77.6	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 3 of 9

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809714**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID <b>100ng btex lcs</b>		SampType: <b>LCS4</b>		TestCode: <b>EPA Method 8260: Volatiles Short List</b>						
Client ID: <b>BatchQC</b>		Batch ID: <b>C54152</b>		RunNo: <b>54152</b>						
Prep Date:		Analysis Date: <b>9/14/2018</b>		SeqNo: <b>1791516</b>		Units: <b>µg/L</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	103	80	120			
Toluene	21	1.0	20.00	0	105	80	120			
Ethylbenzene	21	1.0	20.00	0	107	80	120			
Methyl tert-butyl ether (MTBE)	20	1.0	20.00	0	98.5	80	120			
1,2,4-Trimethylbenzene	20	1.0	20.00	0	99.8	80	120			
1,3,5-Trimethylbenzene	20	1.0	20.00	0	102	80	120			
Xylenes, Total	62	1.5	60.00	0	103	80	120			
Surr: 4-Bromofluorobenzene	9.2		10.00		92.4	70	130			
Surr: Toluene-d8	9.8		10.00		97.7	70	130			

Sample ID <b>1809714-001ams</b>		SampType: <b>MS4</b>		TestCode: <b>EPA Method 8260: Volatiles Short List</b>						
Client ID: <b>KAFB-106241-Dev I</b>		Batch ID: <b>C54152</b>		RunNo: <b>54152</b>						
Prep Date:		Analysis Date: <b>9/14/2018</b>		SeqNo: <b>1791519</b>		Units: <b>µg/L</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	105	80	120			
Toluene	21	1.0	20.00	0	107	80	120			
Ethylbenzene	21	1.0	20.00	0	107	80	120			
Methyl tert-butyl ether (MTBE)	21	1.0	20.00	0	104	43.6	145			
1,2,4-Trimethylbenzene	21	1.0	20.00	0	104	80	120			
1,3,5-Trimethylbenzene	21	1.0	20.00	0	104	80	120			
Xylenes, Total	64	1.5	60.00	0	106	80	120			
Surr: 4-Bromofluorobenzene	9.5		10.00		95.0	70	130			
Surr: Toluene-d8	9.9		10.00		99.0	70	130			

Sample ID <b>1809714-001amsd</b>		SampType: <b>MSD4</b>		TestCode: <b>EPA Method 8260: Volatiles Short List</b>						
Client ID: <b>KAFB-106241-Dev I</b>		Batch ID: <b>C54152</b>		RunNo: <b>54152</b>						
Prep Date:		Analysis Date: <b>9/14/2018</b>		SeqNo: <b>1791520</b>		Units: <b>µg/L</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	100	80	120	4.92	20	
Toluene	21	1.0	20.00	0	103	80	120	3.61	20	
Ethylbenzene	21	1.0	20.00	0	105	80	120	1.89	20	
Methyl tert-butyl ether (MTBE)	20	1.0	20.00	0	98.7	43.6	145	5.42	20	
1,2,4-Trimethylbenzene	20	1.0	20.00	0	98.6	80	120	5.53	20	
1,3,5-Trimethylbenzene	20	1.0	20.00	0	99.6	80	120	4.28	20	
Xylenes, Total	62	1.5	60.00	0	103	80	120	2.85	20	
Surr: 4-Bromofluorobenzene	9.1		10.00		90.6	70	130	0	0	
Surr: Toluene-d8	9.9		10.00		99.1	70	130	0	0	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809714**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	PBW	Batch ID:	C54152	RunNo:	54152					
Prep Date:		Analysis Date:	9/14/2018	SeqNo:	1791528	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809714**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-40385</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40385</b>	RunNo:	<b>54212</b>					
Prep Date:	<b>9/17/2018</b>	Analysis Date:	<b>9/17/2018</b>	SeqNo:	<b>1792784</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	<b>LCS-40385</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40385</b>	RunNo:	<b>54212</b>					
Prep Date:	<b>9/17/2018</b>	Analysis Date:	<b>9/17/2018</b>	SeqNo:	<b>1792785</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0046	0.00020	0.005000	0	92.6	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

Page 6 of 9

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809714

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-B</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: Dissolved Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>B54168</b>	RunNo:	<b>54168</b>					
Prep Date:		Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791280</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								
Manganese	ND	0.0020								

Sample ID	<b>LCS-B</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: Dissolved Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>B54168</b>	RunNo:	<b>54168</b>					
Prep Date:		Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791282</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.51	0.020	0.5000	0	102	80	120			
Manganese	0.50	0.0020	0.5000	0	101	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809714

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-40353</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791215</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	<b>LCS-40353</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791217</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0	91.8	80	120			
Barium	0.50	0.020	0.5000	0	101	80	120			
Cadmium	0.51	0.0020	0.5000	0	102	80	120			
Chromium	0.48	0.0060	0.5000	0	96.8	80	120			
Selenium	0.49	0.050	0.5000	0	97.8	80	120			
Silver	0.11	0.0050	0.1000	0	105	80	120			

Sample ID	<b>1809714-001CMS</b>	SampType:	<b>MS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>KAFB-106241-Dev I</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791230</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.47	0.020	0.5000	0	94.4	75	125			
Barium	0.61	0.020	0.5000	0.09906	102	75	125			
Cadmium	0.51	0.0020	0.5000	0	102	75	125			
Chromium	0.48	0.0060	0.5000	0	95.7	75	125			
Selenium	0.47	0.050	0.5000	0	94.8	75	125			
Silver	0.11	0.0050	0.1000	0	109	75	125			

Sample ID	<b>1809714-001CMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>KAFB-106241-Dev I</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791231</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.50	0.020	0.5000	0	99.4	75	125	5.18	20	
Barium	0.63	0.020	0.5000	0.09906	106	75	125	3.07	20	
Cadmium	0.52	0.0020	0.5000	0	105	75	125	2.27	20	
Chromium	0.50	0.0060	0.5000	0	99.3	75	125	3.74	20	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809714**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>1809714-001CMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>KAFB-106241-Dev I</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791231</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Selenium	0.48	0.050	0.5000	0	95.9	75	125	1.17	20	
Silver	0.11	0.0050	0.1000	0	113	75	125	3.78	20	

Sample ID	<b>MB-40353</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791249</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								

Sample ID	<b>LCS-40353</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791251</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.49	0.0050	0.5000	0	98.3	80	120			

Sample ID	<b>1809714-001CMS</b>	SampType:	<b>MS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>KAFB-106241-Dev I</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791264</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.51	0.0050	0.5000	0	103	75	125			

Sample ID	<b>1809714-001CMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>KAFB-106241-Dev I</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791265</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.52	0.0050	0.5000	0	103	75	125	0.467	20	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

### Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1809714

RcptNo: 1

Received By: Anne Thorne 9/13/2018 9:37:00 AM

*Anne Thorne*

Completed By: Anne Thorne 9/13/2018 10:28:59 AM

*Anne Thorne*

Reviewed By:

*mg 09/12/18*  
*Labeled by: JAB 09/13/18*

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: 3  
 (<2 or >12 unless noted)  
 Adjusted? No  
 Checked by: JAB 09/13/18

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good	Not Present			

**Chain-of-Custody Record**

Client: EA Engineering  
320 Gold SW #1800  
 Mailing Address:  
Albuquerque NM 87102  
(505) 238-4410  
 Phone #: emorse@eaest.com  
 email or Fax#:

Turn-Around Time:  
 Standard  Rush  
 Project Name: Kirtland BFF  
Data Gap Drilling 15182  
 Project #: 62599DM01, 10173

**HALL ENVIRONMENTAL ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM: 87109  
 Tel. 505-345-3975 Fax 505-345-4107

**Analysis Request**

QA/QC Package:  
 Standard  Level 4 (Full Validation)  
 NELAP  Other  
 EDD (Type) \_\_\_\_\_

Project Manager:  
Devon Terinovic

Sampler: Lane Address \_\_\_\_\_  
 On Ice:  Yes  No  
 Sample Temperature: 24°C (75°F)

BTEX + MTBE + TPH (Gas only)	
TPH 8015B (GRO / DRO / MRO)	
TPH (Method 418.1)	
EDB (Method 504.1)	X
PAH's (8310 or 8270 SIMS)	
RCRA 8 Metals	
Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	
8081 Pesticides / 8082 PCB's	
8260B (VOA)	
8270 (Semi-VOA)	
Dr. F. M. (Fitzgerald)	
Air Bubbles (Y or N)	

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
9-12-18	1535	H <sub>2</sub> O	KAFB-106241-Dev-Idw	3 <sup>rd</sup> ml	HCl	1809714
			KAFB-106241-Dev-Idw	2 <sup>nd</sup> ml	Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub>	
			KAFB-106241-Dev-Idw	125 ml	HNO <sub>3</sub>	
			KAFB-106241-Dev-Idw	1250 ml	HNO <sub>3</sub>	
			HAIP blank	11	11	

Date: 9/13/18 Time: 0937 Relinquished by: [Signature]  
 Date: 09/13/18 Time: 0937 Received by: [Signature]

Remarks: email pmoss@eaest.com  
P.O. # 15182

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

### Chain-of-Custody Record

Client: EA Engineering  
320 679 SW A1300  
 Mailing Address:  
Albuquerque, NM 87102  
232-4410  
 Phone #: (505) 232-4410  
 email or Fax#: emrose@ceust.com

QA/QC Package:  
 Standard     Level 4 (Full Validation)  
 NELAP     Other \_\_\_\_\_  
 EDD (Type) \_\_\_\_\_

Turn-Around Time:  
 Standard     Rush  
 Project Name: Kirtland AFB BFF  
Gap Drilling  
 Project #: 625990MOL1017.3  
Ref # 15182  
 Project Manager: Oliver Jorjovic

Sampler: Lane Address  
 On Ice:  Yes     No  
 Sample Temperature: 2.4 (f-1.4) 1.4

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
1-12-18	1515		KAFB-106242-Dev-Idw	3 40 ml	HCl	
			KAFB-106242-Dev-Idw	2 40 ml	Na <sub>2</sub> SO <sub>3</sub>	
			KAFB-106242-Dev-Idw	1 125 ml	HNO <sub>3</sub>	
			KAFB-106242-Dev-Idw	1 25 ml	HNO <sub>3</sub>	
			HCP Blank	1	"	

BTEX + MTBE + TMBs (8021)

BTEX + MTBE + TPH (Gas only)

TPH 8015B (GRO / DRO / MRO)

TPH (Method 418.1)

EDB (Method 504.1)

PAH's (8310 or 8270 SIMS)

RCRA 8 Metals

Anions (F<sup>-</sup>, Cl<sup>-</sup>, NO<sub>3</sub><sup>-</sup>, NO<sub>2</sub><sup>-</sup>, PO<sub>4</sub><sup>3-</sup>, SO<sub>4</sub><sup>2-</sup>)

8081 Pesticides / 8082 PCB's

8260B (VOA)

8270 (Semi-VOA)

(Filtered)

Air Bubbles (Y or N)

### Analysis Request

Remarks: email p.moss@ceust.com  
P.O. # 15182



If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 19, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland BFF Data Gap Drilling

OrderNo.: 1809732

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 2 sample(s) on 9/13/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1809732

Date Reported: 9/19/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106242-Dev- IDW

Project: Kirtland BFF Data Gap Drilling

Collection Date: 9/12/2018 3:15:00 PM

Lab ID: 1809732-001

Matrix: AQUEOUS

Received Date: 9/13/2018 9:37:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 7470: MERCURY</b>							Analyst: JLF
Mercury	ND	0.00020		mg/L	1	9/17/2018 5:49:37 PM	40385
<b>EPA METHOD 6010B: DISSOLVED METALS</b>							Analyst: ELS
Iron	ND	0.020		mg/L	1	9/15/2018 2:14:48 PM	B54168
Manganese	0.092	0.0020		mg/L	1	9/15/2018 2:14:48 PM	B54168
<b>EPA 6010B: TOTAL RECOVERABLE METALS</b>							Analyst: ELS
Arsenic	ND	0.020		mg/L	1	9/15/2018 11:12:59 AM	40353
Barium	0.096	0.020		mg/L	1	9/15/2018 11:12:59 AM	40353
Cadmium	ND	0.0020		mg/L	1	9/15/2018 11:12:59 AM	40353
Chromium	ND	0.0060		mg/L	1	9/15/2018 11:12:59 AM	40353
Lead	ND	0.0050		mg/L	1	9/15/2018 12:48:23 PM	40353
Selenium	ND	0.050		mg/L	1	9/15/2018 11:12:59 AM	40353
Silver	ND	0.0050		mg/L	1	9/15/2018 11:12:59 AM	40353
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: CLP
1,2-Dibromoethane	ND	0.0094		µg/L	1	9/14/2018 4:10:47 PM	40345
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: AG
Benzene	ND	1.0		µg/L	1	9/14/2018 7:01:03 PM	C54152
Toluene	ND	1.0		µg/L	1	9/14/2018 7:01:03 PM	C54152
Ethylbenzene	ND	1.0		µg/L	1	9/14/2018 7:01:03 PM	C54152
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/14/2018 7:01:03 PM	C54152
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/14/2018 7:01:03 PM	C54152
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/14/2018 7:01:03 PM	C54152
Xylenes, Total	ND	1.5		µg/L	1	9/14/2018 7:01:03 PM	C54152
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	1	9/14/2018 7:01:03 PM	C54152
Surr: Toluene-d8	101	70-130		%Rec	1	9/14/2018 7:01:03 PM	C54152

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809732

Date Reported: 9/19/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Trip Blank

Project: Kirtland BFF Data Gap Drilling

Collection Date:

Lab ID: 1809732-002

Matrix: AQUEOUS

Received Date: 9/13/2018 9:37:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: <b>CLP</b>
1,2-Dibromoethane	ND	0.0094		µg/L	1	9/14/2018 4:25:45 PM	40345
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	ND	1.0		µg/L	1	9/14/2018 7:24:09 PM	C54152
Toluene	ND	1.0		µg/L	1	9/14/2018 7:24:09 PM	C54152
Ethylbenzene	ND	1.0		µg/L	1	9/14/2018 7:24:09 PM	C54152
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/14/2018 7:24:09 PM	C54152
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/14/2018 7:24:09 PM	C54152
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/14/2018 7:24:09 PM	C54152
Xylenes, Total	ND	1.5		µg/L	1	9/14/2018 7:24:09 PM	C54152
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	9/14/2018 7:24:09 PM	C54152
Surr: Toluene-d8	104	70-130		%Rec	1	9/14/2018 7:24:09 PM	C54152

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809732**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID <b>MB-40345</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8011/504.1: EDB</b>								
Client ID: <b>PBW</b>	Batch ID: <b>40345</b>	RunNo: <b>54194</b>								
Prep Date: <b>9/14/2018</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>1792083</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID <b>LCS-40345</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8011/504.1: EDB</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>40345</b>	RunNo: <b>54194</b>								
Prep Date: <b>9/14/2018</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>1792084</b>			Units: <b>µg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.078	0.010	0.1000	0	77.6	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 3 of 7

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809732**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>100ng btex lcs</b> SampType: <b>LCS4</b> TestCode: <b>EPA Method 8260: Volatiles Short List</b>										
Client ID: <b>BatchQC</b> Batch ID: <b>C54152</b> RunNo: <b>54152</b>										
Prep Date: Analysis Date: <b>9/14/2018</b> SeqNo: <b>1791516</b> Units: <b>µg/L</b>										
Benzene	21	1.0	20.00	0	103	80	120			
Toluene	21	1.0	20.00	0	105	80	120			
Ethylbenzene	21	1.0	20.00	0	107	80	120			
Methyl tert-butyl ether (MTBE)	20	1.0	20.00	0	98.5	80	120			
1,2,4-Trimethylbenzene	20	1.0	20.00	0	99.8	80	120			
1,3,5-Trimethylbenzene	20	1.0	20.00	0	102	80	120			
Xylenes, Total	62	1.5	60.00	0	103	80	120			
Surr: 4-Bromofluorobenzene	9.2		10.00		92.4	70	130			
Surr: Toluene-d8	9.8		10.00		97.7	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>rb</b> SampType: <b>MBLK</b> TestCode: <b>EPA Method 8260: Volatiles Short List</b>										
Client ID: <b>PBW</b> Batch ID: <b>C54152</b> RunNo: <b>54152</b>										
Prep Date: Analysis Date: <b>9/14/2018</b> SeqNo: <b>1791528</b> Units: <b>µg/L</b>										
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 4 of 7

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809732**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-40385</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40385</b>	RunNo:	<b>54212</b>					
Prep Date:	<b>9/17/2018</b>	Analysis Date:	<b>9/17/2018</b>	SeqNo:	<b>1792784</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	<b>LCS-40385</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40385</b>	RunNo:	<b>54212</b>					
Prep Date:	<b>9/17/2018</b>	Analysis Date:	<b>9/17/2018</b>	SeqNo:	<b>1792785</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0046	0.00020	0.005000	0	92.6	80	120			

Sample ID	<b>1809732-001CMS</b>	SampType:	<b>MS</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>KAFB-106242-Dev- I</b>	Batch ID:	<b>40385</b>	RunNo:	<b>54212</b>					
Prep Date:	<b>9/17/2018</b>	Analysis Date:	<b>9/17/2018</b>	SeqNo:	<b>1792793</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0049	0.00020	0.005000	.00007462	96.2	75	125			

Sample ID	<b>1809732-001CMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>KAFB-106242-Dev- I</b>	Batch ID:	<b>40385</b>	RunNo:	<b>54212</b>					
Prep Date:	<b>9/17/2018</b>	Analysis Date:	<b>9/17/2018</b>	SeqNo:	<b>1792794</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0048	0.00020	0.005000	.00007462	94.5	75	125	1.77	20	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809732

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-B</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: Dissolved Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>B54168</b>	RunNo:	<b>54168</b>					
Prep Date:		Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791280</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								
Manganese	ND	0.0020								

Sample ID	<b>LCS-B</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: Dissolved Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>B54168</b>	RunNo:	<b>54168</b>					
Prep Date:		Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791282</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.51	0.020	0.5000	0	102	80	120			
Manganese	0.50	0.0020	0.5000	0	101	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809732

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-40353</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791215</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	<b>LCS-40353</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791217</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0	91.8	80	120			
Barium	0.50	0.020	0.5000	0	101	80	120			
Cadmium	0.51	0.0020	0.5000	0	102	80	120			
Chromium	0.48	0.0060	0.5000	0	96.8	80	120			
Selenium	0.49	0.050	0.5000	0	97.8	80	120			
Silver	0.11	0.0050	0.1000	0	105	80	120			

Sample ID	<b>MB-40353</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791249</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								

Sample ID	<b>LCS-40353</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791251</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.49	0.0050	0.5000	0	98.3	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

### Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1809732

RcptNo: 1

Received By: Anne Thorne 9/13/2018 9:37:00 AM  
 Completed By: Anne Thorne 9/13/2018 11:42:44 AM  
 Reviewed By: *mg 09/13/18*  
*Labeled by: JAB 09/13/18*

*Anne Thorne*  
*Anne Thorne*

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: 2  
 (<2 or >12 unless noted)  
 Adjusted? No  
 Checked by: JAB 09/13/18

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	1.4	Good	Not Present			

**Chain-of-Custody Record**

Client: EA Engineering  
320 Gold SW #1300  
 Mailing Address:  
Albuquerque, NM 87102  
Phone #: (505) 238-4410  
 email or Fax#: emorse@east.com

QA/QC Package:  
 Standard  Level 4 (Full Validation)  
 NELAP  Other  
 EDD (Type)

Turn-Around Time:  
 Standard  Rush  
 Project Name: Kirtland BFF A site  
Coy D. Williams  
 Project #: 62599DM01, 1017.3  
PO# 15782

Project Manager:  
Derm Jorshovic

Sampler: Lane Address  
 On/ice:  Yes  No  
 Sample Temperature: 4-10-1.4

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
9-12-18	1515	H <sub>2</sub> O	KAFB-106242-Dev-104	3 40 mL	HCl	1809732
			KAFB-106242-Dev-104	2 40 mL	N <sub>2</sub> S <sub>2</sub> O <sub>8</sub>	201
			KAFB-106242-Dev-104	1 125 mL	HNO <sub>3</sub>	201
			KAFB-106242-Dev-104	1 250 mL	HNO <sub>3</sub>	201
			HP Blank	11	"	202

**HALL ENVIRONMENTAL ANALYSIS LABORATORY**  
 www.hallenvironmental.com  
 4901 Hawkins NE - Albuquerque, NM 87109  
 Tel. 505-345-3975 Fax 505-345-4107

**Analysis Request**

<input checked="" type="checkbox"/>	BTEX + MTBE + TMB's (8021)
<input checked="" type="checkbox"/>	BTEX + MTBE + TPH (Gas only)
<input type="checkbox"/>	TPH 8015B (GRO / DRO / MRO)
<input type="checkbox"/>	TPH (Method 418.1)
<input checked="" type="checkbox"/>	EDB (Method 504.1)
<input type="checkbox"/>	PAH's (8310 or 8270 SIMS)
<input type="checkbox"/>	RCRA 8 Metals
<input type="checkbox"/>	Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )
<input type="checkbox"/>	8081 Pesticides / 8082 PCB's
<input type="checkbox"/>	8260B (VOA)
<input type="checkbox"/>	8270 (Semi-VOA)
<input type="checkbox"/>	Air Bubbles (Y or N)

Remarks: email p miss@east.com  
RO. # 15782

Date: 9/13/18 Time: 0937 Relinquished by: [Signature]  
 Date: 09/13/18 Time: 0937 Received by: [Signature]

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 19, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland BFF Data Gap Drilling

OrderNo.: 1809480

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/7/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1809480

Date Reported: 9/19/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106245-3-idw

Project: Kirtland BFF Data Gap Drilling

Collection Date: 9/7/2018 2:35:00 PM

Lab ID: 1809480-001

Matrix: AQUEOUS

Received Date: 9/7/2018 3:52:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 7470: MERCURY</b>							Analyst: JLF
Mercury	ND	0.00020		mg/L	1	9/13/2018 12:25:45 PM	40321
<b>EPA METHOD 6010B: DISSOLVED METALS</b>							Analyst: ELS
Iron	0.41	0.020		mg/L	1	9/15/2018 1:15:09 PM	A54168
Manganese	0.44	0.0020		mg/L	1	9/15/2018 1:15:09 PM	A54168
<b>EPA 6010B: TOTAL RECOVERABLE METALS</b>							Analyst: ELS
Arsenic	ND	0.10		mg/L	5	9/15/2018 11:14:51 AM	40282
Barium	2.9	0.10		mg/L	5	9/15/2018 11:14:51 AM	40282
Cadmium	ND	0.010		mg/L	5	9/15/2018 11:14:51 AM	40282
Chromium	0.52	0.030		mg/L	5	9/15/2018 11:14:51 AM	40282
Lead	0.034	0.025		mg/L	5	9/15/2018 12:26:19 PM	40282
Selenium	ND	0.25		mg/L	5	9/15/2018 11:14:51 AM	40282
Silver	ND	0.025		mg/L	5	9/15/2018 11:14:51 AM	40282
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: CLP
1,2-Dibromoethane	ND	0.0093		µg/L	1	9/14/2018 1:25:00 PM	40345
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: RAA
Benzene	ND	1.0		µg/L	1	9/11/2018 8:55:43 PM	R54071
Toluene	ND	1.0		µg/L	1	9/11/2018 8:55:43 PM	R54071
Ethylbenzene	ND	1.0		µg/L	1	9/11/2018 8:55:43 PM	R54071
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/11/2018 8:55:43 PM	R54071
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/11/2018 8:55:43 PM	R54071
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/11/2018 8:55:43 PM	R54071
Xylenes, Total	ND	1.5		µg/L	1	9/11/2018 8:55:43 PM	R54071
Surr: 4-Bromofluorobenzene	107	70-130		%Rec	1	9/11/2018 8:55:43 PM	R54071
Surr: Toluene-d8	101	70-130		%Rec	1	9/11/2018 8:55:43 PM	R54071

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809480**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID <b>MB-40345</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8011/504.1: EDB</b>								
Client ID: <b>PBW</b>	Batch ID: <b>40345</b>	RunNo: <b>54194</b>								
Prep Date: <b>9/14/2018</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>1792083</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID <b>LCS-40345</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8011/504.1: EDB</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>40345</b>	RunNo: <b>54194</b>								
Prep Date: <b>9/14/2018</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>1792084</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.078	0.010	0.1000	0	77.6	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 2 of 6

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809480**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>100ng btex lcs</b> SampType: <b>LCS4</b> TestCode: <b>EPA Method 8260: Volatiles Short List</b>										
Client ID: <b>BatchQC</b> Batch ID: <b>R54071</b> RunNo: <b>54071</b>										
Prep Date: Analysis Date: <b>9/11/2018</b> SeqNo: <b>1786549</b> Units: <b>µg/L</b>										
Benzene	20	1.0	20.00	0	100	80	120			
Toluene	21	1.0	20.00	0	105	80	120			
Ethylbenzene	21	1.0	20.00	0	106	80	120			
Methyl tert-butyl ether (MTBE)	19	1.0	20.00	0	94.7	80	120			
1,2,4-Trimethylbenzene	20	1.0	20.00	0	99.5	80	120			
1,3,5-Trimethylbenzene	21	1.0	20.00	0	103	80	120			
Xylenes, Total	62	1.5	60.00	0	104	80	120			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>rb</b> SampType: <b>MBLK</b> TestCode: <b>EPA Method 8260: Volatiles Short List</b>										
Client ID: <b>PBW</b> Batch ID: <b>R54071</b> RunNo: <b>54071</b>										
Prep Date: Analysis Date: <b>9/11/2018</b> SeqNo: <b>1786559</b> Units: <b>µg/L</b>										
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 4-Bromofluorobenzene	11		10.00		108	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809480**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-40321</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40321</b>	RunNo:	<b>54130</b>					
Prep Date:	<b>9/12/2018</b>	Analysis Date:	<b>9/13/2018</b>	SeqNo:	<b>1789572</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	<b>LCS-40321</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40321</b>	RunNo:	<b>54130</b>					
Prep Date:	<b>9/12/2018</b>	Analysis Date:	<b>9/13/2018</b>	SeqNo:	<b>1789573</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	104	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809480**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID <b>MB-A</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 6010B: Dissolved Metals</b>								
Client ID: <b>PBW</b>	Batch ID: <b>A54168</b>	RunNo: <b>54168</b>								
Prep Date:	Analysis Date: <b>9/15/2018</b>	SeqNo: <b>1791275</b>			Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								
Manganese	ND	0.0020								

Sample ID <b>LCS-A</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 6010B: Dissolved Metals</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>A54168</b>	RunNo: <b>54168</b>								
Prep Date:	Analysis Date: <b>9/15/2018</b>	SeqNo: <b>1791277</b>			Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.50	0.020	0.5000	0	101	80	120			
Manganese	0.50	0.0020	0.5000	0	100	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809480**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-40282</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40282</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791212</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	<b>LCS-40282</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40282</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791214</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	98.6	80	120			
Barium	0.51	0.020	0.5000	0	102	80	120			
Cadmium	0.52	0.0020	0.5000	0	103	80	120			
Chromium	0.49	0.0060	0.5000	0	98.6	80	120			
Selenium	0.50	0.050	0.5000	0	99.9	80	120			
Silver	0.11	0.0050	0.1000	0	107	80	120			

Sample ID	<b>LCS-40282</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40282</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791247</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.50	0.0050	0.5000	0	100	80	120			

Sample ID	<b>MB-40282</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40282</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791248</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87105  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

### Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1809480

RcptNo: 1

Received By: Jazzmine Burkhead 9/7/2018 3:52:00 PM

Completed By: Ashley Gallegos 9/10/2018 3:50:37 PM

Reviewed By: *[Signature]* 09/11/18 Labeled by: *[Signature]* 09/11/18

**Chain of Custody**

- 1. Is Chain of Custody complete? Yes  No  Not Present
- 2. How was the sample delivered? Client

**Log In**

- 3. Was an attempt made to cool the samples? Yes  No  NA
- 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA
- 5. Sample(s) in proper container(s)? Yes  No
- 6. Sufficient sample volume for indicated test(s)? Yes  No
- 7. Are samples (except VOA and ONG) properly preserved? Yes  No
- 8. Was preservative added to bottles? Yes  No  NA
- 9. VOA vials have zero headspace? Yes  No  No VOA Vials
- 10. Were any sample containers received broken? Yes  No

**Samples were collected the same day and chilled.**

- 11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes  No
- 12. Are matrices correctly identified on Chain of Custody? Yes  No
- 13. Is it clear what analyses were requested? Yes  No
- 14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes  No

# of preserved bottles checked for pH: 2  
 Adjusted? NO  
 Checked by: IO 9/11/18

**Special Handling (if applicable)**

- 15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	12.2	Good	Not Present			





Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 19, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland BFF Data Gap Drilling

OrderNo.: 1809479

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/7/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1809479

Date Reported: 9/19/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106245-4-idw

Project: Kirtland BFF Data Gap Drilling

Collection Date: 9/7/2018 3:00:00 PM

Lab ID: 1809479-001

Matrix: AQUEOUS

Received Date: 9/7/2018 3:52:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 7470: MERCURY</b>							Analyst: JLF
Mercury	ND	0.00020		mg/L	1	9/13/2018 12:23:26 PM	40321
<b>EPA METHOD 6010B: DISSOLVED METALS</b>							Analyst: ELS
Iron	0.020	0.020		mg/L	1	9/15/2018 1:13:35 PM	A54168
Manganese	0.26	0.0020		mg/L	1	9/15/2018 1:13:35 PM	A54168
<b>EPA 6010B: TOTAL RECOVERABLE METALS</b>							Analyst: ELS
Arsenic	ND	0.020		mg/L	1	9/15/2018 10:45:27 AM	40282
Barium	0.13	0.020		mg/L	1	9/15/2018 10:45:27 AM	40282
Cadmium	ND	0.0020		mg/L	1	9/15/2018 10:45:27 AM	40282
Chromium	ND	0.0060		mg/L	1	9/15/2018 10:45:27 AM	40282
Lead	ND	0.0050		mg/L	1	9/15/2018 12:24:44 PM	40282
Selenium	ND	0.050		mg/L	1	9/15/2018 10:45:27 AM	40282
Silver	ND	0.0050		mg/L	1	9/15/2018 10:45:27 AM	40282
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: CLP
1,2-Dibromoethane	ND	0.0095		µg/L	1	9/14/2018 1:10:03 PM	40345
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: RAA
Benzene	ND	1.0		µg/L	1	9/11/2018 8:32:37 PM	R54071
Toluene	ND	1.0		µg/L	1	9/11/2018 8:32:37 PM	R54071
Ethylbenzene	ND	1.0		µg/L	1	9/11/2018 8:32:37 PM	R54071
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/11/2018 8:32:37 PM	R54071
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/11/2018 8:32:37 PM	R54071
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/11/2018 8:32:37 PM	R54071
Xylenes, Total	ND	1.5		µg/L	1	9/11/2018 8:32:37 PM	R54071
Surr: 4-Bromofluorobenzene	111	70-130		%Rec	1	9/11/2018 8:32:37 PM	R54071
Surr: Toluene-d8	104	70-130		%Rec	1	9/11/2018 8:32:37 PM	R54071

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809479**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID <b>MB-40345</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8011/504.1: EDB</b>								
Client ID: <b>PBW</b>	Batch ID: <b>40345</b>	RunNo: <b>54194</b>								
Prep Date: <b>9/14/2018</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>1792083</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID <b>LCS-40345</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8011/504.1: EDB</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>40345</b>	RunNo: <b>54194</b>								
Prep Date: <b>9/14/2018</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>1792084</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.078	0.010	0.1000	0	77.6	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809479**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>100ng btex lcs</b> SampType: <b>LCS4</b> TestCode: <b>EPA Method 8260: Volatiles Short List</b>										
Client ID: <b>BatchQC</b> Batch ID: <b>R54071</b> RunNo: <b>54071</b>										
Prep Date: Analysis Date: <b>9/11/2018</b> SeqNo: <b>1786549</b> Units: <b>µg/L</b>										
Benzene	20	1.0	20.00	0	100	80	120			
Toluene	21	1.0	20.00	0	105	80	120			
Ethylbenzene	21	1.0	20.00	0	106	80	120			
Methyl tert-butyl ether (MTBE)	19	1.0	20.00	0	94.7	80	120			
1,2,4-Trimethylbenzene	20	1.0	20.00	0	99.5	80	120			
1,3,5-Trimethylbenzene	21	1.0	20.00	0	103	80	120			
Xylenes, Total	62	1.5	60.00	0	104	80	120			
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130			
Surr: Toluene-d8	10		10.00		101	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>rb</b> SampType: <b>MBLK</b> TestCode: <b>EPA Method 8260: Volatiles Short List</b>										
Client ID: <b>PBW</b> Batch ID: <b>R54071</b> RunNo: <b>54071</b>										
Prep Date: Analysis Date: <b>9/11/2018</b> SeqNo: <b>1786559</b> Units: <b>µg/L</b>										
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 4-Bromofluorobenzene	11		10.00		108	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 3 of 6

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809479**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-40321</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40321</b>	RunNo:	<b>54130</b>					
Prep Date:	<b>9/12/2018</b>	Analysis Date:	<b>9/13/2018</b>	SeqNo:	<b>1789572</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	<b>LCS-40321</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40321</b>	RunNo:	<b>54130</b>					
Prep Date:	<b>9/12/2018</b>	Analysis Date:	<b>9/13/2018</b>	SeqNo:	<b>1789573</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0052	0.00020	0.005000	0	104	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809479**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID <b>MB-A</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 6010B: Dissolved Metals</b>								
Client ID: <b>PBW</b>	Batch ID: <b>A54168</b>	RunNo: <b>54168</b>								
Prep Date:	Analysis Date: <b>9/15/2018</b>	SeqNo: <b>1791275</b>			Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								
Manganese	ND	0.0020								

Sample ID <b>LCS-A</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 6010B: Dissolved Metals</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>A54168</b>	RunNo: <b>54168</b>								
Prep Date:	Analysis Date: <b>9/15/2018</b>	SeqNo: <b>1791277</b>			Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.50	0.020	0.5000	0	101	80	120			
Manganese	0.50	0.0020	0.5000	0	100	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809479**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-40282</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40282</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791212</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	<b>LCS-40282</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40282</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791214</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	98.6	80	120			
Barium	0.51	0.020	0.5000	0	102	80	120			
Cadmium	0.52	0.0020	0.5000	0	103	80	120			
Chromium	0.49	0.0060	0.5000	0	98.6	80	120			
Selenium	0.50	0.050	0.5000	0	99.9	80	120			
Silver	0.11	0.0050	0.1000	0	107	80	120			

Sample ID	<b>LCS-40282</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40282</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791247</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.50	0.0050	0.5000	0	100	80	120			

Sample ID	<b>MB-40282</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40282</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/11/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791248</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87105  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

### Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1809479

RcptNo: 1

Received By: Jazzmine Burkhead 9/7/2018 3:52:00 PM

Completed By: Ashley Gallegos 9/10/2018 3:47:39 PM

Reviewed By: *AG* 09/10/18 Labeled by: *TO* 09/11/18  
 " *AG* 09/11/18

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA

**Samples were collected the same day and chilled.**

5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No

11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: 22  
 or >12 unless noted  
 Adjusted? NO  
 Checked by: TO 9/11/18

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	12.2	Good	Not Present			





Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 19, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland BFF Data Gap Drilling

OrderNo.: 1809717

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 2 sample(s) on 9/13/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1809717

Date Reported: 9/19/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106245-Dev IDW

Project: Kirtland BFF Data Gap Drilling

Collection Date: 9/12/2018 4:23:00 PM

Lab ID: 1809717-001

Matrix: AQUEOUS

Received Date: 9/13/2018 9:42:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 7470: MERCURY</b>							Analyst: <b>JLF</b>
Mercury	ND	0.00020		mg/L	1	9/17/2018 5:40:24 PM	40385
<b>EPA METHOD 6010B: DISSOLVED METALS</b>							Analyst: <b>ELS</b>
Iron	0.24	0.020		mg/L	1	9/15/2018 2:11:35 PM	B54168
Manganese	0.23	0.0020		mg/L	1	9/15/2018 2:11:35 PM	B54168
<b>EPA 6010B: TOTAL RECOVERABLE METALS</b>							Analyst: <b>ELS</b>
Arsenic	ND	0.020		mg/L	1	9/15/2018 11:06:08 AM	40353
Barium	0.56	0.020		mg/L	1	9/15/2018 11:06:08 AM	40353
Cadmium	ND	0.0020		mg/L	1	9/15/2018 11:06:08 AM	40353
Chromium	0.12	0.0060		mg/L	1	9/15/2018 11:06:08 AM	40353
Lead	0.013	0.0050		mg/L	1	9/15/2018 12:39:39 PM	40353
Selenium	ND	0.050		mg/L	1	9/15/2018 11:06:08 AM	40353
Silver	ND	0.0050		mg/L	1	9/15/2018 11:06:08 AM	40353
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: <b>CLP</b>
1,2-Dibromoethane	ND	0.0094		µg/L	1	9/14/2018 2:55:21 PM	40345
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	ND	1.0		µg/L	1	9/14/2018 5:28:28 PM	C54152
Toluene	ND	1.0		µg/L	1	9/14/2018 5:28:28 PM	C54152
Ethylbenzene	ND	1.0		µg/L	1	9/14/2018 5:28:28 PM	C54152
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/14/2018 5:28:28 PM	C54152
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/14/2018 5:28:28 PM	C54152
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/14/2018 5:28:28 PM	C54152
Xylenes, Total	ND	1.5		µg/L	1	9/14/2018 5:28:28 PM	C54152
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	1	9/14/2018 5:28:28 PM	C54152
Surr: Toluene-d8	103	70-130		%Rec	1	9/14/2018 5:28:28 PM	C54152

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809717

Date Reported: 9/19/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Trip Blank

Project: Kirtland BFF Data Gap Drilling

Collection Date:

Lab ID: 1809717-002

Matrix: AQUEOUS

Received Date: 9/13/2018 9:42:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: <b>CLP</b>
1,2-Dibromoethane	ND	0.0094		µg/L	1	9/14/2018 3:25:36 PM	40345
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	ND	1.0		µg/L	1	9/14/2018 5:51:41 PM	C54152
Toluene	ND	1.0		µg/L	1	9/14/2018 5:51:41 PM	C54152
Ethylbenzene	ND	1.0		µg/L	1	9/14/2018 5:51:41 PM	C54152
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/14/2018 5:51:41 PM	C54152
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/14/2018 5:51:41 PM	C54152
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/14/2018 5:51:41 PM	C54152
Xylenes, Total	ND	1.5		µg/L	1	9/14/2018 5:51:41 PM	C54152
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	9/14/2018 5:51:41 PM	C54152
Surr: Toluene-d8	103	70-130		%Rec	1	9/14/2018 5:51:41 PM	C54152

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809717**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID <b>MB-40345</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8011/504.1: EDB</b>								
Client ID: <b>PBW</b>	Batch ID: <b>40345</b>	RunNo: <b>54194</b>								
Prep Date: <b>9/14/2018</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>1792083</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID <b>LCS-40345</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8011/504.1: EDB</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>40345</b>	RunNo: <b>54194</b>								
Prep Date: <b>9/14/2018</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>1792084</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.078	0.010	0.1000	0	77.6	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 3 of 7

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809717**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>100ng btex lcs</b> SampType: <b>LCS4</b> TestCode: <b>EPA Method 8260: Volatiles Short List</b>										
Client ID: <b>BatchQC</b> Batch ID: <b>C54152</b> RunNo: <b>54152</b>										
Prep Date: Analysis Date: <b>9/14/2018</b> SeqNo: <b>1791516</b> Units: <b>µg/L</b>										
Benzene	21	1.0	20.00	0	103	80	120			
Toluene	21	1.0	20.00	0	105	80	120			
Ethylbenzene	21	1.0	20.00	0	107	80	120			
Methyl tert-butyl ether (MTBE)	20	1.0	20.00	0	98.5	80	120			
1,2,4-Trimethylbenzene	20	1.0	20.00	0	99.8	80	120			
1,3,5-Trimethylbenzene	20	1.0	20.00	0	102	80	120			
Xylenes, Total	62	1.5	60.00	0	103	80	120			
Surr: 4-Bromofluorobenzene	9.2		10.00		92.4	70	130			
Surr: Toluene-d8	9.8		10.00		97.7	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>rb</b> SampType: <b>MBLK</b> TestCode: <b>EPA Method 8260: Volatiles Short List</b>										
Client ID: <b>PBW</b> Batch ID: <b>C54152</b> RunNo: <b>54152</b>										
Prep Date: Analysis Date: <b>9/14/2018</b> SeqNo: <b>1791528</b> Units: <b>µg/L</b>										
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 4 of 7

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809717

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-40385</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40385</b>	RunNo:	<b>54212</b>					
Prep Date:	<b>9/17/2018</b>	Analysis Date:	<b>9/17/2018</b>	SeqNo:	<b>1792784</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	<b>LCS-40385</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40385</b>	RunNo:	<b>54212</b>					
Prep Date:	<b>9/17/2018</b>	Analysis Date:	<b>9/17/2018</b>	SeqNo:	<b>1792785</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0046	0.00020	0.005000	0	92.6	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809717

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-B</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: Dissolved Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>B54168</b>	RunNo:	<b>54168</b>					
Prep Date:		Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791280</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								
Manganese	ND	0.0020								

Sample ID	<b>LCS-B</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: Dissolved Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>B54168</b>	RunNo:	<b>54168</b>					
Prep Date:		Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791282</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.51	0.020	0.5000	0	102	80	120			
Manganese	0.50	0.0020	0.5000	0	101	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809717**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-40353</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791215</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	<b>LCS-40353</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791217</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0	91.8	80	120			
Barium	0.50	0.020	0.5000	0	101	80	120			
Cadmium	0.51	0.0020	0.5000	0	102	80	120			
Chromium	0.48	0.0060	0.5000	0	96.8	80	120			
Selenium	0.49	0.050	0.5000	0	97.8	80	120			
Silver	0.11	0.0050	0.1000	0	105	80	120			

Sample ID	<b>MB-40353</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791249</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								

Sample ID	<b>LCS-40353</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791251</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.49	0.0050	0.5000	0	98.3	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

### Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1809717

RcptNo: 1

Received By: Anne Thorne 9/13/2018 9:42:00 AM *Anne Thorne*  
 Completed By: Anne Thorne 9/13/2018 10:46:56 AM *Anne Thorne*  
 Reviewed By: *mg 09/13/18*  
*Checked by: JAB 09/13/18*

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: 03  
 (2 or >12 unless noted)  
 Adjusted? No  
 Checked by: JAB 09/13/18

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.9	Good	Not Present			

**Chain-of-Custody Record**

Client: EA Engineering  
320 Gold SW #1300  
 Mailing Address:  
Albuquerque NM 87102  
 Phone #: (505) 238-4410  
 email or Fax#: emorse@caest.com

Turn-Around Time:  
 Standard  Rush  
 Project Name: Kirtland BFF Data  
Gap Drilling  
 Project #: PO# 15182  
62599 DM01.1017.3



**HALL ENVIRONMENTAL ANALYSIS LABORATORY**  
 www.hallenvironmental.com  
 4901 Hawkins NE - Albuquerque, NM 87109  
 Tel. 505-345-3975 Fax 505-345-4107

QA/QC Package:  
 Standard  Level 4 (Full Validation)  
 Accreditation  
 NELAP  Other  
 EDD (Type)

Project Manager:  
Devan Jeredovic  
 Sampler: Lane Address  
 On Ice:  Yes  No  
 Sample Temperature: 29-CELO-109

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
9-12-18	1623	A <sub>2</sub> O	KAFB-106245-Dev-Idn 3	40 ml	HCl	1809717
			KAFB-106245-Dev-Idn 2	40 ml	HNO <sub>3</sub>	201
			KAFB-106245-Dev-Idn 1	125 ml	HNO <sub>3</sub>	202
			KAFB-106245-Dev-Idn 1	125 ml	HNO <sub>3</sub>	201
			TRPBLWk	V		202

**Analysis Request**

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Air Bubbles (Y or N)
X			X	X		X				X	

Date: 9/13/18 Time: 0942 Relinquished by: [Signature]  
 Date: 9/13/18 Time: 0942 Relinquished by: [Signature]  
 Received by: [Signature] Date: 09/13/18 Time: 0942  
 Received by: [Signature] Date: 09/13/18 Time: 0942

Remarks: email pmoss@caest.com  
 P.O. # 15182

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 19, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: Kirtland BFF Data Gap Drilling

OrderNo.: 1809720

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 2 sample(s) on 9/13/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a white background.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1809720

Date Reported: 9/19/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106246-3 IDW

Project: Kirtland BFF Data Gap Drilling

Collection Date: 9/12/2018 4:14:00 PM

Lab ID: 1809720-001

Matrix: AQUEOUS

Received Date: 9/13/2018 9:34:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 7470: MERCURY</b>							Analyst: <b>JLF</b>
Mercury	ND	0.00020		mg/L	1	9/17/2018 5:47:18 PM	40385
<b>EPA METHOD 6010B: DISSOLVED METALS</b>							Analyst: <b>ELS</b>
Iron	0.23	0.020		mg/L	1	9/15/2018 2:13:11 PM	B54168
Manganese	0.087	0.0020		mg/L	1	9/15/2018 2:13:11 PM	B54168
<b>EPA 6010B: TOTAL RECOVERABLE METALS</b>							Analyst: <b>ELS</b>
Arsenic	ND	0.020		mg/L	1	9/15/2018 11:07:40 AM	40353
Barium	0.072	0.020		mg/L	1	9/15/2018 11:07:40 AM	40353
Cadmium	ND	0.0020		mg/L	1	9/15/2018 11:07:40 AM	40353
Chromium	ND	0.0060		mg/L	1	9/15/2018 11:07:40 AM	40353
Lead	ND	0.0050		mg/L	1	9/15/2018 12:46:47 PM	40353
Selenium	ND	0.050		mg/L	1	9/15/2018 11:07:40 AM	40353
Silver	ND	0.0050		mg/L	1	9/15/2018 11:07:40 AM	40353
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: <b>CLP</b>
1,2-Dibromoethane	ND	0.0095		µg/L	1	9/14/2018 3:40:33 PM	40345
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	ND	1.0		µg/L	1	9/14/2018 6:14:55 PM	C54152
Toluene	ND	1.0		µg/L	1	9/14/2018 6:14:55 PM	C54152
Ethylbenzene	ND	1.0		µg/L	1	9/14/2018 6:14:55 PM	C54152
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/14/2018 6:14:55 PM	C54152
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/14/2018 6:14:55 PM	C54152
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/14/2018 6:14:55 PM	C54152
Xylenes, Total	ND	1.5		µg/L	1	9/14/2018 6:14:55 PM	C54152
Surr: 4-Bromofluorobenzene	99.8	70-130		%Rec	1	9/14/2018 6:14:55 PM	C54152
Surr: Toluene-d8	102	70-130		%Rec	1	9/14/2018 6:14:55 PM	C54152

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1809720

Date Reported: 9/19/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Trip Blank

Project: Kirtland BFF Data Gap Drilling

Collection Date:

Lab ID: 1809720-002

Matrix: AQUEOUS

Received Date: 9/13/2018 9:34:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: <b>CLP</b>
1,2-Dibromoethane	ND	0.0095		µg/L	1	9/14/2018 3:55:38 PM	40345
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	ND	1.0		µg/L	1	9/14/2018 6:37:57 PM	C54152
Toluene	ND	1.0		µg/L	1	9/14/2018 6:37:57 PM	C54152
Ethylbenzene	ND	1.0		µg/L	1	9/14/2018 6:37:57 PM	C54152
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/14/2018 6:37:57 PM	C54152
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/14/2018 6:37:57 PM	C54152
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/14/2018 6:37:57 PM	C54152
Xylenes, Total	ND	1.5		µg/L	1	9/14/2018 6:37:57 PM	C54152
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	9/14/2018 6:37:57 PM	C54152
Surr: Toluene-d8	103	70-130		%Rec	1	9/14/2018 6:37:57 PM	C54152

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809720**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID <b>MB-40345</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8011/504.1: EDB</b>								
Client ID: <b>PBW</b>	Batch ID: <b>40345</b>	RunNo: <b>54194</b>								
Prep Date: <b>9/14/2018</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>1792083</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID <b>LCS-40345</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8011/504.1: EDB</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>40345</b>	RunNo: <b>54194</b>								
Prep Date: <b>9/14/2018</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>1792084</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.078	0.010	0.1000	0	77.6	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809720**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>100ng btex lcs</b> SampType: <b>LCS4</b> TestCode: <b>EPA Method 8260: Volatiles Short List</b>										
Client ID: <b>BatchQC</b> Batch ID: <b>C54152</b> RunNo: <b>54152</b>										
Prep Date: Analysis Date: <b>9/14/2018</b> SeqNo: <b>1791516</b> Units: <b>µg/L</b>										
Benzene	21	1.0	20.00	0	103	80	120			
Toluene	21	1.0	20.00	0	105	80	120			
Ethylbenzene	21	1.0	20.00	0	107	80	120			
Methyl tert-butyl ether (MTBE)	20	1.0	20.00	0	98.5	80	120			
1,2,4-Trimethylbenzene	20	1.0	20.00	0	99.8	80	120			
1,3,5-Trimethylbenzene	20	1.0	20.00	0	102	80	120			
Xylenes, Total	62	1.5	60.00	0	103	80	120			
Surr: 4-Bromofluorobenzene	9.2		10.00		92.4	70	130			
Surr: Toluene-d8	9.8		10.00		97.7	70	130			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sample ID <b>rb</b> SampType: <b>MBLK</b> TestCode: <b>EPA Method 8260: Volatiles Short List</b>										
Client ID: <b>PBW</b> Batch ID: <b>C54152</b> RunNo: <b>54152</b>										
Prep Date: Analysis Date: <b>9/14/2018</b> SeqNo: <b>1791528</b> Units: <b>µg/L</b>										
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Toluene-d8	10		10.00		104	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809720**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-40385</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40385</b>	RunNo:	<b>54212</b>					
Prep Date:	<b>9/17/2018</b>	Analysis Date:	<b>9/17/2018</b>	SeqNo:	<b>1792784</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	<b>LCS-40385</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40385</b>	RunNo:	<b>54212</b>					
Prep Date:	<b>9/17/2018</b>	Analysis Date:	<b>9/17/2018</b>	SeqNo:	<b>1792785</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0046	0.00020	0.005000	0	92.6	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

Page 5 of 7

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1809720**

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID <b>MB-B</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 6010B: Dissolved Metals</b>								
Client ID: <b>PBW</b>	Batch ID: <b>B54168</b>	RunNo: <b>54168</b>								
Prep Date:	Analysis Date: <b>9/15/2018</b>	SeqNo: <b>1791280</b>			Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								
Manganese	ND	0.0020								

Sample ID <b>LCS-B</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 6010B: Dissolved Metals</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>B54168</b>	RunNo: <b>54168</b>								
Prep Date:	Analysis Date: <b>9/15/2018</b>	SeqNo: <b>1791282</b>			Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.51	0.020	0.5000	0	102	80	120			
Manganese	0.50	0.0020	0.5000	0	101	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 6 of 7

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1809720

19-Sep-18

**Client:** EA Engineering Science & Technology**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-40353</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791215</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	<b>LCS-40353</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791217</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.46	0.020	0.5000	0	91.8	80	120			
Barium	0.50	0.020	0.5000	0	101	80	120			
Cadmium	0.51	0.0020	0.5000	0	102	80	120			
Chromium	0.48	0.0060	0.5000	0	96.8	80	120			
Selenium	0.49	0.050	0.5000	0	97.8	80	120			
Silver	0.11	0.0050	0.1000	0	105	80	120			

Sample ID	<b>MB-40353</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791249</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								

Sample ID	<b>LCS-40353</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40353</b>	RunNo:	<b>54168</b>					
Prep Date:	<b>9/14/2018</b>	Analysis Date:	<b>9/15/2018</b>	SeqNo:	<b>1791251</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.49	0.0050	0.5000	0	98.3	80	120			

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

### Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1809720

RcptNo: 1

Received By: Anne Thorne 9/13/2018 9:34:00 AM

*Anne Thorne*

Completed By: Anne Thorne 9/13/2018 10:53:40 AM

*Anne Thorne*

Reviewed By: *ms 09/13/18*  
 Labeled by: *SAB 09/13/18*

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH:	<u>2</u>
Adjusted?	<u>No</u>
Checked by:	<u>SAB 09/13/18</u>

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:		Date:	
By Whom:		Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:			
Client Instructions:			

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good	Not Present			

### Chain-of-Custody Record

Client: EA Engineering  
 320 Gold SW #1300  
 Mailing Address:  
 Albuquerque, NM 87102  
 Phone #: (505) 238-4410  
 email or Fax#: emorse@east.com

QA/QC Package:  
 Standard  
 Level 4 (Full Validation)  
 Accreditation  
 NELAP  
 Other  
 EDD (Type)

Turn-Around Time:  
 Standard  
 Rush  
 Project Name: Kirtland BFF Data  
 Gap Drilling  
 Project #: 62599DM01, 1017.3  
 Project Manager: Devon Terchovic  
 Sampler: Lane Address  
 On Ice:  Yes  No  
 Sample Temperature: 24.06-10-17  
 HEAL No: 1809720

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No
9-12-18	1614	H <sub>2</sub> O	KAFB-106246-3-1dm-3	40 ml	HCl	201
			KAFB-106243-3-1dm-2	40 ml	N <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	201
			KAFB-106243-3-1dm-1	125 ml	HNO <sub>3</sub>	102
			KAFB-106243-3-1dm-1	250 ml	HNO <sub>3</sub>	202
			trip blank	u		202

Analysis Request

BTEX + MTBE + TMB's (8021)	X
BTEX + MTBE + TPH (Gas only)	
TPH 8015B (GRO / DRO / MRO)	
TPH (Method 418.1)	
EDB (Method 504.1)	X
PAH's (8310 or 8270 SIMS)	
RCRA 8 Metals	X
Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	
8081 Pesticides / 8082 PCB's	
8260B (VOA)	
8270 (Semi-VOA)	
Air Bubbles (Y or N)	

Received by: [Signature] Date: 9/13/18 Time: 9:34  
 Relinquished by: [Signature] Date: 9/13/18 Time: 9:34  
 Remarks: email pmorse@east.com  
 P.O. # 15182

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

August 30, 2018

Devon Jercinovic

EA Engineering

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL: (505) 224-9013

FAX

RE: Kirtland BFF Data Gap Drilling

OrderNo.: 1808979

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 2 sample(s) on 8/14/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a white background.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1808979

Date Reported: 8/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: KAFB-106240-dev-H2O

Project: Kirtland BFF Data Gap Drilling

Collection Date: 8/14/2018 2:30:00 PM

Lab ID: 1808979-001

Matrix: AQUEOUS

Received Date: 8/14/2018 3:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 7470: MERCURY</b>							Analyst: <b>rde</b>
Mercury	ND	0.00020		mg/L	1	8/29/2018 11:21:34 AM	40027
<b>EPA METHOD 6010B: DISSOLVED METALS</b>							Analyst: <b>pmf</b>
Iron	0.026	0.020		mg/L	1	8/20/2018 1:47:23 PM	A53550
Manganese	0.53	0.0020		mg/L	1	8/20/2018 1:47:23 PM	A53550
<b>EPA 6010B: TOTAL RECOVERABLE METALS</b>							Analyst: <b>pmf</b>
Arsenic	ND	0.020		mg/L	1	8/20/2018 1:03:21 PM	39852
Barium	0.21	0.020		mg/L	1	8/20/2018 11:30:18 AM	39852
Cadmium	ND	0.0020		mg/L	1	8/20/2018 11:30:18 AM	39852
Chromium	ND	0.0060		mg/L	1	8/20/2018 11:30:18 AM	39852
Lead	ND	0.0050		mg/L	1	8/22/2018 3:48:51 PM	39852
Selenium	ND	0.050		mg/L	1	8/20/2018 11:30:18 AM	39852
Silver	ND	0.0050		mg/L	1	8/20/2018 11:30:18 AM	39852
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: <b>JME</b>
1,2-Dibromoethane	ND	0.0095		µg/L	1	8/17/2018 1:41:58 PM	39818
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	ND	1.0		µg/L	1	8/17/2018 3:10:07 AM	B53492
Toluene	ND	1.0		µg/L	1	8/17/2018 3:10:07 AM	B53492
Ethylbenzene	ND	1.0		µg/L	1	8/17/2018 3:10:07 AM	B53492
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/17/2018 3:10:07 AM	B53492
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/17/2018 3:10:07 AM	B53492
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/17/2018 3:10:07 AM	B53492
Xylenes, Total	ND	1.5		µg/L	1	8/17/2018 3:10:07 AM	B53492
Surr: 4-Bromofluorobenzene	117	70-130		%Rec	1	8/17/2018 3:10:07 AM	B53492
Surr: Toluene-d8	99.8	70-130		%Rec	1	8/17/2018 3:10:07 AM	B53492

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1808979

Date Reported: 8/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: TRIP BLANK

Project: Kirtland BFF Data Gap Drilling

Collection Date:

Lab ID: 1808979-002

Matrix: AQUEOUS

Received Date: 8/14/2018 3:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: <b>JME</b>
1,2-Dibromoethane	ND	0.0096		µg/L	1	8/17/2018 1:56:59 PM	39818
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	ND	1.0		µg/L	1	8/17/2018 3:33:08 AM	B53492
Toluene	ND	1.0		µg/L	1	8/17/2018 3:33:08 AM	B53492
Ethylbenzene	ND	1.0		µg/L	1	8/17/2018 3:33:08 AM	B53492
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/17/2018 3:33:08 AM	B53492
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/17/2018 3:33:08 AM	B53492
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/17/2018 3:33:08 AM	B53492
Xylenes, Total	ND	1.5		µg/L	1	8/17/2018 3:33:08 AM	B53492
Surr: 4-Bromofluorobenzene	118	70-130		%Rec	1	8/17/2018 3:33:08 AM	B53492
Surr: Toluene-d8	100	70-130		%Rec	1	8/17/2018 3:33:08 AM	B53492

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808979**

30-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-39818</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8011/504.1: EDB</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39818</b>	RunNo:	<b>53512</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/16/2018</b>	SeqNo:	<b>1763819</b>	Units:	<b>µg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID	<b>LCS-39818</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8011/504.1: EDB</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39818</b>	RunNo:	<b>53512</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/16/2018</b>	SeqNo:	<b>1763823</b>	Units:	<b>µg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.092	0.010	0.1000	0	92.5	70	130			

Sample ID	<b>LCSD-39818</b>	SampType:	<b>LCSD</b>	TestCode:	<b>EPA Method 8011/504.1: EDB</b>					
Client ID:	<b>LCSS02</b>	Batch ID:	<b>39818</b>	RunNo:	<b>53512</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/16/2018</b>	SeqNo:	<b>1763828</b>	Units:	<b>µg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.097	0.010	0.1000	0	96.8	70	130	4.53	20	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 3 of 7

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808979**

30-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland BFF Data Gap Drilling

Sample ID	100ng lcs	SampType:	LCS4	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	BatchQC	Batch ID:	B53492	RunNo:	53492					
Prep Date:		Analysis Date:	8/16/2018	SeqNo:	1763289	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	90.7	80	120			
Toluene	19	1.0	20.00	0	97.5	80	120			
Ethylbenzene	20	1.0	20.00	0	98.1	80	120			
Methyl tert-butyl ether (MTBE)	19	1.0	20.00	0	92.8	80	120			
1,2,4-Trimethylbenzene	20	1.0	20.00	0	99.7	80	120			
1,3,5-Trimethylbenzene	20	1.0	20.00	0	98.8	80	120			
Xylenes, Total	60	1.5	60.00	0	99.5	80	120			
Surr: 4-Bromofluorobenzene	10		10.00		105	70	130			
Surr: Toluene-d8	9.6		10.00		96.3	70	130			

Sample ID	rb2	SampType:	MBLK	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	PBW	Batch ID:	B53492	RunNo:	53492					
Prep Date:		Analysis Date:	8/16/2018	SeqNo:	1763298	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 4-Bromofluorobenzene	12		10.00		116	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808979**

30-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-40027</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40027</b>	RunNo:	<b>53784</b>					
Prep Date:	<b>8/28/2018</b>	Analysis Date:	<b>8/29/2018</b>	SeqNo:	<b>1775007</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	<b>LCS-40027</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40027</b>	RunNo:	<b>53784</b>					
Prep Date:	<b>8/28/2018</b>	Analysis Date:	<b>8/29/2018</b>	SeqNo:	<b>1775008</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.1	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

Page 5 of 7

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808979**

30-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland BFF Data Gap Drilling

Sample ID <b>MB-A</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 6010B: Dissolved Metals</b>								
Client ID: <b>PBW</b>	Batch ID: <b>A53550</b>	RunNo: <b>53550</b>								
Prep Date:	Analysis Date: <b>8/20/2018</b>	SeqNo: <b>1765751</b>			Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								
Manganese	ND	0.0020								

Sample ID <b>LCS-A</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 6010B: Dissolved Metals</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>A53550</b>	RunNo: <b>53550</b>								
Prep Date:	Analysis Date: <b>8/20/2018</b>	SeqNo: <b>1765753</b>			Units: <b>mg/L</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.50	0.020	0.5000	0	101	80	120			
Manganese	0.50	0.0020	0.5000	0	101	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 6 of 7

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808979**

30-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-39852</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39852</b>	RunNo:	<b>53550</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/20/2018</b>	SeqNo:	<b>1765745</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	<b>LCS-39852</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39852</b>	RunNo:	<b>53550</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/20/2018</b>	SeqNo:	<b>1765747</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.51	0.020	0.5000	0	102	80	120			
Barium	0.52	0.020	0.5000	0	104	80	120			
Cadmium	0.50	0.0020	0.5000	0	99.5	80	120			
Chromium	0.52	0.0060	0.5000	0	104	80	120			
Selenium	0.51	0.050	0.5000	0	103	80	120			
Silver	0.10	0.0050	0.1000	0	104	80	120			

Sample ID	<b>MB-39852</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39852</b>	RunNo:	<b>53642</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/22/2018</b>	SeqNo:	<b>1768995</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								

Sample ID	<b>LCS-39852</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39852</b>	RunNo:	<b>53642</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/22/2018</b>	SeqNo:	<b>1768997</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.49	0.0050	0.5000	0	98.5	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

### Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1808979

RcptNo: 1

Received By: Erin Melendrez 8/14/2018 3:50:00 PM

Completed By: Ashley Gallegos 8/15/2018 2:54:12 PM

Reviewed By: JAB 08/16/18

*U. H. S.*  
*AG*  
 labeled by: TO 08/16/18

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
Samples were collected the same day and chilled.  
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: 2  
 or >12 unless noted  
 Adjusted? NO  
 Checked by: TO 8/16/18

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:		Date:	
By Whom:		Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:			
Client Instructions:			

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	9.8	Good	Not Present			

**Chain-of-Custody Record**

Client: EA Engineering  
320. Gold SW #1300  
 Mailing Address:  
Albuquerque NM 87102  
 Phone #: (505) 238-4410  
 email or Fax#: emorse@east.com

QA/QC Package:  
 Standard  Level 4 (Full Validation)  
 Accreditation  
 NELAP  Other  
 EDD (Type)

Turn-Around Time:  
 Standard  Rush  
 Project Name: Kirtland BFF  
Data Gap Drilling  
 Project #:  
62599DM01, 1017.3  
 Project Manager:  
Devon Jerichovic  
 Sampler: Pete Ferrari  
 On Job:  Yes  No  
 Sample Temperature: 11.8-20(40)°C/18

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
8-14-18	1430	H <sub>2</sub> O	KAFB-106240-dev-H <sub>2</sub> O	3 40 ml HCl		1808079 -001
	1430		KAFB-106240-dev-H <sub>2</sub> O	2 40 ml Na <sub>2</sub> SO <sub>3</sub>		
	1430		KAFB-106240-dev-H <sub>2</sub> O	1 250 ml HNO <sub>3</sub>		
	1430		KAFB-106240-dev-H <sub>2</sub> O	1 125 ml HNO <sub>3</sub>		
			Trip Blank	2 40 ml HCl		-002
			Trip Blank	1 40 ml Na <sub>2</sub> SO <sub>3</sub>		

Date: 8-14-18 Time: 1550  
 Relinquished by: Pete Ferrari  
 Date: 8/14/18 Time: 1550  
 Received by: ATB  
 Date: 8/14/18 Time: 1550  
 Relinquished by:  
 Date:  
 Time:

Analysis Request

Analysis Request	Result
BTEX + MTBE + TPH (Gas only)	
BTEX + MTBE + TPH (GRO / DRO / MRO)	
TPH (Method 418.1)	
EDB (Method 504.1)	X
PAH's (8310 or 8270 SIMS)	
RCRA 8 Metals	X
Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	
8081 Pesticides / 8082 PCB's	
8260B (VOA)	
8270 (Semi-VOA)	Dissolved F <sub>2</sub> M <sub>2</sub> (Filtered)
Air Bubbles (Y or N)	

Remarks:  
 email pmoss@east.com  
 PO # 15182

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

August 15, 2018

Devon Jercinovic

EA Engineering

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL: (505) 224-9013

FAX

RE: KAFB BFF Data Cap Drilling

OrderNo.: 1808420

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 2 sample(s) on 8/7/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a white background.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1808420

Date Reported: 8/15/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: KAFB-106240-5-IDW

Project: KAFB BFF Data Cap Drilling

Collection Date: 8/7/2018 11:40:00 AM

Lab ID: 1808420-001

Matrix: AQUEOUS

Received Date: 8/7/2018 12:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 7470: MERCURY</b>							Analyst: <b>rde</b>
Mercury	ND	0.00020		mg/L	1	8/13/2018 6:09:41 PM	39750
<b>EPA METHOD 6010B: DISSOLVED METALS</b>							Analyst: <b>pmf</b>
Iron	0.042	0.020		mg/L	1	8/13/2018 12:30:50 PM	A53393
Manganese	0.32	0.0020		mg/L	1	8/13/2018 12:30:50 PM	A53393
<b>EPA 6010B: TOTAL RECOVERABLE METALS</b>							Analyst: <b>pmf</b>
Arsenic	ND	0.020		mg/L	1	8/13/2018 4:06:17 PM	39664
Barium	0.055	0.020		mg/L	1	8/13/2018 12:43:44 PM	39664
Cadmium	ND	0.0020		mg/L	1	8/13/2018 12:43:44 PM	39664
Chromium	ND	0.0060		mg/L	1	8/13/2018 12:43:44 PM	39664
Lead	ND	0.0050		mg/L	1	8/13/2018 8:06:22 PM	39664
Selenium	ND	0.050		mg/L	1	8/13/2018 12:43:44 PM	39664
Silver	ND	0.0050		mg/L	1	8/13/2018 12:43:44 PM	39664
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: <b>JME</b>
1,2-Dibromoethane	ND	0.0095		µg/L	1	8/14/2018 3:09:12 PM	39763
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>RAA</b>
Benzene	ND	1.0		µg/L	1	8/9/2018 5:40:00 PM	SLW533
Toluene	ND	1.0		µg/L	1	8/9/2018 5:40:00 PM	SLW533
Ethylbenzene	ND	1.0		µg/L	1	8/9/2018 5:40:00 PM	SLW533
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/9/2018 5:40:00 PM	SLW533
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/9/2018 5:40:00 PM	SLW533
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/9/2018 5:40:00 PM	SLW533
Xylenes, Total	ND	1.5		µg/L	1	8/9/2018 5:40:00 PM	SLW533
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	8/9/2018 5:40:00 PM	SLW533
Surr: 4-Bromofluorobenzene	98.2	70-130		%Rec	1	8/9/2018 5:40:00 PM	SLW533
Surr: Dibromofluoromethane	100	70-130		%Rec	1	8/9/2018 5:40:00 PM	SLW533
Surr: Toluene-d8	94.2	70-130		%Rec	1	8/9/2018 5:40:00 PM	SLW533

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1808420

Date Reported: 8/15/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: TRIP BLANK

Project: KAFB BFF Data Cap Drilling

Collection Date:

Lab ID: 1808420-002

Matrix: AQUEOUS

Received Date: 8/7/2018 12:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: <b>JME</b>
1,2-Dibromoethane	ND	0.0095		µg/L	1	8/14/2018 3:24:14 PM	39763
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>RAA</b>
Benzene	ND	1.0		µg/L	1	8/9/2018 6:04:00 PM	SLW533
Toluene	ND	1.0		µg/L	1	8/9/2018 6:04:00 PM	SLW533
Ethylbenzene	ND	1.0		µg/L	1	8/9/2018 6:04:00 PM	SLW533
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/9/2018 6:04:00 PM	SLW533
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/9/2018 6:04:00 PM	SLW533
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/9/2018 6:04:00 PM	SLW533
Xylenes, Total	ND	1.5		µg/L	1	8/9/2018 6:04:00 PM	SLW533
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	8/9/2018 6:04:00 PM	SLW533
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	8/9/2018 6:04:00 PM	SLW533
Surr: Dibromofluoromethane	99.8	70-130		%Rec	1	8/9/2018 6:04:00 PM	SLW533
Surr: Toluene-d8	94.5	70-130		%Rec	1	8/9/2018 6:04:00 PM	SLW533

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808420**

15-Aug-18

**Client:** EA Engineering  
**Project:** KAFB BFF Data Cap Drilling

Sample ID <b>MB-39763</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8011/504.1: EDB</b>								
Client ID: <b>PBW</b>	Batch ID: <b>39763</b>	RunNo: <b>53425</b>								
Prep Date: <b>8/14/2018</b>	Analysis Date: <b>8/14/2018</b>	SeqNo: <b>1760822</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID <b>LCS-39763</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8011/504.1: EDB</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>39763</b>	RunNo: <b>53425</b>								
Prep Date: <b>8/14/2018</b>	Analysis Date: <b>8/14/2018</b>	SeqNo: <b>1760825</b>	Units: <b>µg/L</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.088	0.010	0.1000	0	88.1	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 3 of 8

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808420**

15-Aug-18

**Client:** EA Engineering  
**Project:** KAFB BFF Data Cap Drilling

Sample ID	100ng lcs	SampType:	LCS	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	LCSW	Batch ID:	SLW53334	RunNo:	53334					
Prep Date:		Analysis Date:	8/9/2018	SeqNo:	1756926	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	107	70	130			
Toluene	20	1.0	20.00	0	98.9	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	9.4		10.00		94.4	70	130			

Sample ID	RB	SampType:	MBLK	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	PBW	Batch ID:	SLW53334	RunNo:	53334					
Prep Date:		Analysis Date:	8/9/2018	SeqNo:	1756927	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	10		10.00		103	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	10		10.00		99.9	70	130			
Surr: Toluene-d8	9.3		10.00		93.3	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 4 of 8

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808420**

15-Aug-18

**Client:** EA Engineering  
**Project:** KAFB BFF Data Cap Drilling

Sample ID	<b>MB-39750</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39750</b>	RunNo:	<b>53407</b>					
Prep Date:	<b>8/13/2018</b>	Analysis Date:	<b>8/13/2018</b>	SeqNo:	<b>1758798</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	<b>LCS-39750</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39750</b>	RunNo:	<b>53407</b>					
Prep Date:	<b>8/13/2018</b>	Analysis Date:	<b>8/13/2018</b>	SeqNo:	<b>1758799</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0046	0.00020	0.005000	0	92.7	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 5 of 8

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808420**

15-Aug-18

**Client:** EA Engineering  
**Project:** KAFB BFF Data Cap Drilling

Sample ID <b>MB-A</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 6010B: Dissolved Metals</b>								
Client ID: <b>PBW</b>	Batch ID: <b>A53393</b>	RunNo: <b>53393</b>								
Prep Date:	Analysis Date: <b>8/13/2018</b>	SeqNo: <b>1758349</b> Units: <b>mg/L</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								
Manganese	ND	0.0020								

Sample ID <b>LCS-A</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 6010B: Dissolved Metals</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>A53393</b>	RunNo: <b>53393</b>								
Prep Date:	Analysis Date: <b>8/13/2018</b>	SeqNo: <b>1758351</b> Units: <b>mg/L</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.48	0.020	0.5000	0	96.8	80	120			
Manganese	0.48	0.0020	0.5000	0	95.9	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 6 of 8

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808420

15-Aug-18

**Client:** EA Engineering  
**Project:** KAFB BFF Data Cap Drilling

Sample ID	<b>MB-39664</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39664</b>	RunNo:	<b>53393</b>					
Prep Date:	<b>8/8/2018</b>	Analysis Date:	<b>8/13/2018</b>	SeqNo:	<b>1758343</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	0.0055	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	<b>LCS-39664</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39664</b>	RunNo:	<b>53393</b>					
Prep Date:	<b>8/8/2018</b>	Analysis Date:	<b>8/13/2018</b>	SeqNo:	<b>1758345</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.51	0.020	0.5000	0	101	80	120			
Cadmium	0.51	0.0020	0.5000	0	102	80	120			
Chromium	0.49	0.0060	0.5000	0	97.3	80	120			
Lead	0.50	0.0050	0.5000	0	99.9	80	120			B
Selenium	0.48	0.050	0.5000	0	96.9	80	120			
Silver	0.10	0.0050	0.1000	0	100	80	120			

Sample ID	<b>MB-39664</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39664</b>	RunNo:	<b>53393</b>					
Prep Date:	<b>8/8/2018</b>	Analysis Date:	<b>8/13/2018</b>	SeqNo:	<b>1758431</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								

Sample ID	<b>LCS-39664</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39664</b>	RunNo:	<b>53393</b>					
Prep Date:	<b>8/8/2018</b>	Analysis Date:	<b>8/13/2018</b>	SeqNo:	<b>1758433</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.50	0.020	0.5000	0	99.3	80	120			

Sample ID	<b>MB-39664</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39664</b>	RunNo:	<b>53387</b>					
Prep Date:	<b>8/8/2018</b>	Analysis Date:	<b>8/13/2018</b>	SeqNo:	<b>1759158</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Page 7 of 8

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808420**

15-Aug-18

**Client:** EA Engineering  
**Project:** KAFB BFF Data Cap Drilling

Sample ID	<b>LCS-39664</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39664</b>	RunNo:	<b>53387</b>					
Prep Date:	<b>8/8/2018</b>	Analysis Date:	<b>8/13/2018</b>	SeqNo:	<b>1759160</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.50	0.0050	0.5000	0	99.1	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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June 2020



Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

### Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1808420

RcptNo: 1

Received By: Ashley Gallegos 8/7/2018 12:50:00 PM

Completed By: Ashley Gallegos 8/8/2018 8:57:45 AM

Reviewed By: JAB 08/10/18

labeled by: ENM 8/8/18

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present
2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA
4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA
- Samples were collected the same day and chilled.
5. Sample(s) in proper container(s)? Yes  No
6. Sufficient sample volume for indicated test(s)? Yes  No
7. Are samples (except VOA and ONG) properly preserved? Yes  No
8. Was preservative added to bottles? Yes  No  NA
9. VOA vials have zero headspace? Yes  No  No VOA Vials
10. Were any sample containers received broken? Yes  No
11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)
12. Are matrices correctly identified on Chain of Custody? Yes  No
13. Is it clear what analyses were requested? Yes  No
14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: 2  
 (or >12 unless noted)

Adjusted? NO

Checked by: ENM 8/8/18

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:		Date:	
By Whom:		Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:			
Client Instructions:			

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	7.6	Good	Not Present			

**Chain-of-Custody Record**

Client: EA Engineering  
320 Gold SW # 100  
 Mailing Address:  
Albuquerque NM 87102  
 Phone #: 505 238-4410  
 email or Fax#: emors@east.com

QA/QC Package:  
 Standard  Level 4 (Full Validation)  
 NELAP  Other  
 EDD (Type)

Turn-Around Time:  
 Standard  Rush 5 day TAT  
 Project Name:  
KAFB - BFF Data Gap  
Drilling  
 Project #:  
62599DMO1.1017.3  
 Project Manager:  
Devon Jercinovic

Sampler: Pete Ferreri/Joshua M.  
 On Ice:  Yes  No  
 Sample Temperature: 8.10-10(C) 7.6

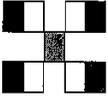
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
8/7/18	1140	H <sub>2</sub> O	KAFB-106240-5-10W	340 mL HCl		1808A20
8/7/18	1140		KAFB-106240-5-10W	340 mL Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>		
8/7/18	1140		KAFB-106240-5-10W	1250 mL HNO <sub>3</sub>		
8/7/18	1140		KAFB-106240-5-10W	125 mL HNO <sub>3</sub>		
--	--		Trip Blank	240 mL HCl		-002
--	--		Trip Blank	140 mL Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>		-1

Date	Time	Relinquished by:	Relinquished by:
8-7-18	1230	Joshua Messenger	

Date: 8-7-18 Time: 1230  
 Relinquished by: Joshua Messenger

Date: 08/07/18 Time: 1250  
 Received by: [Signature]  
 Date: 08/07/18 Time: 1250  
 Received by: [Signature]

Remarks: PO # 15182  
also email: Pam Moss  
p.moss@east.com



**HALL ENVIRONMENTAL ANALYSIS LABORATORY**  
 www.hallenvironmental.com  
 4901 Hawkins NE - Albuquerque, NM 87109  
 Tel. 505-345-3975 Fax 505-345-4107

**Analysis Request**

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Dissolved Fe/Mn (Filtered)	Air Bubbles (Y or N)
<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

August 30, 2018

Devon Jercinovic

EA Engineering

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL: (505) 224-9013

FAX

RE: Kirtland BFF Data Gap Drilling

OrderNo.: 1808982

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 2 sample(s) on 8/14/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written in a cursive style.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1808982

Date Reported: 8/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: KAFB-106243-dev-H2O

Project: Kirtland BFF Data Gap Drilling

Collection Date: 8/14/2018 3:10:00 PM

Lab ID: 1808982-001

Matrix: AQUEOUS

Received Date: 8/14/2018 3:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 7470: MERCURY</b>							Analyst: <b>rde</b>
Mercury	ND	0.00020		mg/L	1	8/29/2018 11:23:49 AM	40027
<b>EPA METHOD 6010B: DISSOLVED METALS</b>							Analyst: <b>pmf</b>
Iron	0.061	0.020		mg/L	1	8/20/2018 1:49:11 PM	A53550
Manganese	0.49	0.0020		mg/L	1	8/20/2018 1:49:11 PM	A53550
<b>EPA 6010B: TOTAL RECOVERABLE METALS</b>							Analyst: <b>pmf</b>
Arsenic	ND	0.020		mg/L	1	8/20/2018 1:05:01 PM	39852
Barium	0.073	0.020		mg/L	1	8/20/2018 11:31:59 AM	39852
Cadmium	ND	0.0020		mg/L	1	8/20/2018 11:31:59 AM	39852
Chromium	ND	0.0060		mg/L	1	8/20/2018 11:31:59 AM	39852
Lead	ND	0.0050		mg/L	1	8/22/2018 3:57:39 PM	39852
Selenium	ND	0.050		mg/L	1	8/20/2018 11:31:59 AM	39852
Silver	ND	0.0050		mg/L	1	8/20/2018 11:31:59 AM	39852
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: <b>JME</b>
1,2-Dibromoethane	ND	0.0095		µg/L	1	8/17/2018 2:12:09 PM	39818
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	ND	1.0		µg/L	1	8/17/2018 3:56:13 AM	B53492
Toluene	ND	1.0		µg/L	1	8/17/2018 3:56:13 AM	B53492
Ethylbenzene	ND	1.0		µg/L	1	8/17/2018 3:56:13 AM	B53492
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/17/2018 3:56:13 AM	B53492
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/17/2018 3:56:13 AM	B53492
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/17/2018 3:56:13 AM	B53492
Xylenes, Total	ND	1.5		µg/L	1	8/17/2018 3:56:13 AM	B53492
Surr: 4-Bromofluorobenzene	114	70-130		%Rec	1	8/17/2018 3:56:13 AM	B53492
Surr: Toluene-d8	97.3	70-130		%Rec	1	8/17/2018 3:56:13 AM	B53492

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1808982

Date Reported: 8/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: TRIP BLANK

Project: Kirtland BFF Data Gap Drilling

Collection Date:

Lab ID: 1808982-002

Matrix: AQUEOUS

Received Date: 8/14/2018 3:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: <b>JME</b>
1,2-Dibromoethane	ND	0.0095		µg/L	1	8/17/2018 2:27:18 PM	39818
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	ND	1.0		µg/L	1	8/17/2018 4:19:18 AM	B53492
Toluene	ND	1.0		µg/L	1	8/17/2018 4:19:18 AM	B53492
Ethylbenzene	ND	1.0		µg/L	1	8/17/2018 4:19:18 AM	B53492
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/17/2018 4:19:18 AM	B53492
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/17/2018 4:19:18 AM	B53492
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/17/2018 4:19:18 AM	B53492
Xylenes, Total	ND	1.5		µg/L	1	8/17/2018 4:19:18 AM	B53492
Surr: 4-Bromofluorobenzene	120	70-130		%Rec	1	8/17/2018 4:19:18 AM	B53492
Surr: Toluene-d8	100	70-130		%Rec	1	8/17/2018 4:19:18 AM	B53492

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808982

30-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-39818</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8011/504.1: EDB</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39818</b>	RunNo:	<b>53512</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/16/2018</b>	SeqNo:	<b>1763819</b>	Units:	<b>µg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID	<b>LCS-39818</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8011/504.1: EDB</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39818</b>	RunNo:	<b>53512</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/16/2018</b>	SeqNo:	<b>1763823</b>	Units:	<b>µg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.092	0.010	0.1000	0	92.5	70	130			

Sample ID	<b>LCSD-39818</b>	SampType:	<b>LCSD</b>	TestCode:	<b>EPA Method 8011/504.1: EDB</b>					
Client ID:	<b>LCSS02</b>	Batch ID:	<b>39818</b>	RunNo:	<b>53512</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/16/2018</b>	SeqNo:	<b>1763828</b>	Units:	<b>µg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.097	0.010	0.1000	0	96.8	70	130	4.53	20	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 3 of 7

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808982**

30-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland BFF Data Gap Drilling

Sample ID	100ng lcs	SampType:	LCS4	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	BatchQC	Batch ID:	B53492	RunNo:	53492					
Prep Date:		Analysis Date:	8/16/2018	SeqNo:	1763289	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	90.7	80	120			
Toluene	19	1.0	20.00	0	97.5	80	120			
Ethylbenzene	20	1.0	20.00	0	98.1	80	120			
Methyl tert-butyl ether (MTBE)	19	1.0	20.00	0	92.8	80	120			
1,2,4-Trimethylbenzene	20	1.0	20.00	0	99.7	80	120			
1,3,5-Trimethylbenzene	20	1.0	20.00	0	98.8	80	120			
Xylenes, Total	60	1.5	60.00	0	99.5	80	120			
Surr: 4-Bromofluorobenzene	10		10.00		105	70	130			
Surr: Toluene-d8	9.6		10.00		96.3	70	130			

Sample ID	rb2	SampType:	MBLK	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	PBW	Batch ID:	B53492	RunNo:	53492					
Prep Date:		Analysis Date:	8/16/2018	SeqNo:	1763298	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 4-Bromofluorobenzene	12		10.00		116	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Page 4 of 7

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808982**

30-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-40027</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40027</b>	RunNo:	<b>53784</b>					
Prep Date:	<b>8/28/2018</b>	Analysis Date:	<b>8/29/2018</b>	SeqNo:	<b>1775007</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	<b>LCS-40027</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40027</b>	RunNo:	<b>53784</b>					
Prep Date:	<b>8/28/2018</b>	Analysis Date:	<b>8/29/2018</b>	SeqNo:	<b>1775008</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.1	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808982

30-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-A</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 6010B: Dissolved Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>A53550</b>	RunNo:	<b>53550</b>					
Prep Date:		Analysis Date:	<b>8/20/2018</b>	SeqNo:	<b>1765751</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								
Manganese	ND	0.0020								

Sample ID	<b>LCS-A</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 6010B: Dissolved Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>A53550</b>	RunNo:	<b>53550</b>					
Prep Date:		Analysis Date:	<b>8/20/2018</b>	SeqNo:	<b>1765753</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.50	0.020	0.5000	0	101	80	120			
Manganese	0.50	0.0020	0.5000	0	101	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808982

30-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland BFF Data Gap Drilling

Sample ID	<b>MB-39852</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39852</b>	RunNo:	<b>53550</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/20/2018</b>	SeqNo:	<b>1765745</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	<b>LCS-39852</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39852</b>	RunNo:	<b>53550</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/20/2018</b>	SeqNo:	<b>1765747</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.51	0.020	0.5000	0	102	80	120			
Barium	0.52	0.020	0.5000	0	104	80	120			
Cadmium	0.50	0.0020	0.5000	0	99.5	80	120			
Chromium	0.52	0.0060	0.5000	0	104	80	120			
Selenium	0.51	0.050	0.5000	0	103	80	120			
Silver	0.10	0.0050	0.1000	0	104	80	120			

Sample ID	<b>MB-39852</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39852</b>	RunNo:	<b>53642</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/22/2018</b>	SeqNo:	<b>1768995</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								

Sample ID	<b>LCS-39852</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39852</b>	RunNo:	<b>53642</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/22/2018</b>	SeqNo:	<b>1768997</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.49	0.0050	0.5000	0	98.5	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

### Sample Log-In Check List

Client Name: EA Engineering Alb      Work Order Number: 1808982      RptNo: 1

Received By: Erin Melendrez      8/14/2018 3:50:00 PM      *EM*

Completed By: Ashley Gallegos      8/15/2018 6:07:35 PM      *AG*

Reviewed By: *JAB 08/16/18*      *labeled by: JO 08/16/18*

**Chain of Custody**

1. Is Chain of Custody complete?      Yes       No       Not Present
2. How was the sample delivered?      Client

**Log In**

3. Was an attempt made to cool the samples?      Yes       No       NA
4. Were all samples received at a temperature of >0° C to 6.0° C      Yes       No       NA
- Samples were collected the same day and chilled.
5. Sample(s) in proper container(s)?      Yes       No
6. Sufficient sample volume for indicated test(s)?      Yes       No
7. Are samples (except VOA and ONG) properly preserved?      Yes       No
8. Was preservative added to bottles?      Yes       No       NA
9. VOA vials have zero headspace?      Yes       No       No VOA Vials
10. Were any sample containers received broken?      Yes       No
11. Does paperwork match bottle labels?      Yes       No
- (Note discrepancies on chain of custody)
12. Are matrices correctly identified on Chain of Custody?      Yes       No
13. Is it clear what analyses were requested?      Yes       No
14. Were all holding times able to be met?      Yes       No
- (If no, notify customer for authorization.)

# of preserved bottles checked for pH: 2  
 (2) or >12 unless noted

Adjusted? NO

Checked by: JO 8/16/18

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order?      Yes       No       NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_

By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person

Regarding: \_\_\_\_\_

Client Instructions: \_\_\_\_\_

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	14.3	Good	Not Present			

**Chain-of-Custody Record**

Client: EA Engineering  
320 Gold SW # 1300  
 Mailing Address:  
Albuquerque NM 87102  
 Phone #: (505) 238-4710  
 email or Fax#: emr@east.com

QA/QC Package:  
 Standard  Level 4 (Full Validation)  
 Accreditation  
 NELAP  Other  
 EDD (Type)

Date	Time	Matrix	Sample Request ID
6-M-18	1510	H <sub>2</sub> O	KAFB-106243-dev-HO
	1510		KAFB-106243-dev-HO
	1510		KAFB-106243-dev-HO
	1510		KAFB-106243-dev-HO
			Trip Blank
			Trip Blank

Date: 8-14-18 Time: 1550  
 Relinquished by: Pete Ferran  
 Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_

Turn-Around Time:  
 Standard  Rush  
 Project Name: Kirtland BFF  
Data Gap Drilling  
 Project #:  
62599DM01.1017.3

Project Manager:  
Devon Jericovic  
 Sampler: Pete Ferran  
 On Job:  Yes  No  
 Sample Temperature: 16.3-2.0(C)  
 HEAL No.  
1808982

Container Type and #	Preservative Type	HEAL No.
3 <sup>40</sup> ml HCl		-001
2 <sup>40</sup> ml Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>		
1 <sup>250</sup> ml HNO <sub>3</sub>		
1 <sup>125</sup> ml HNO <sub>3</sub>		
2 <sup>40</sup> ml HCl		-002
1 <sup>40</sup> ml Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>		

Received by: [Signature] Date: 8/14/18 Time: 1550  
 Received by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

**HALL ENVIRONMENTAL ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109  
 Tel. 505-345-3975 Fax 505-345-4107

**Analysis Request**

BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F <sub>2</sub> , Cl <sub>2</sub> , NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Disolved Fe, Mn (E/F/ArCd)	Air Bubbles (Y or N)
<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>						

Remarks: email pmr@east.com  
PO # 15182

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

August 14, 2018

Devon Jercinovic

EA Engineering Science & Technology

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL:

FAX

RE: KAFB BFF Data Gap Drilling

OrderNo.: 1808145

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 2 sample(s) on 8/2/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1808145

Date Reported: 8/14/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: KAFB-106243-4-idw

Project: KAFB BFF Data Gap Drilling

Collection Date: 8/2/2018 9:25:00 AM

Lab ID: 1808145-001

Matrix: AQUEOUS

Received Date: 8/2/2018 10:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 7470: MERCURY</b>							Analyst: <b>rde</b>
Mercury	ND	0.00020		mg/L	1	8/6/2018 6:40:40 PM	39609
<b>EPA METHOD 6010B: DISSOLVED METALS</b>							Analyst: <b>pmf</b>
Iron	ND	0.020		mg/L	1	8/6/2018 11:03:41 AM	A53229
Manganese	0.59	0.0020		mg/L	1	8/6/2018 11:03:41 AM	A53229
<b>EPA 6010B: TOTAL RECOVERABLE METALS</b>							Analyst: <b>pmf</b>
Arsenic	ND	0.020		mg/L	1	8/8/2018 11:26:24 AM	39612
Barium	0.15	0.020		mg/L	1	8/7/2018 6:48:15 PM	39612
Cadmium	ND	0.0020		mg/L	1	8/7/2018 6:48:15 PM	39612
Chromium	ND	0.0060		mg/L	1	8/7/2018 6:48:15 PM	39612
Lead	ND	0.0050		mg/L	1	8/7/2018 6:48:15 PM	39612
Selenium	ND	0.050		mg/L	1	8/7/2018 6:48:15 PM	39612
Silver	ND	0.0050		mg/L	1	8/7/2018 6:48:15 PM	39612
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: <b>JME</b>
1,2-Dibromoethane	ND	0.0093		µg/L	1	8/8/2018 6:15:22 PM	39655
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	ND	1.0		µg/L	1	8/4/2018 8:58:35 AM	A53199
Toluene	ND	1.0		µg/L	1	8/4/2018 8:58:35 AM	A53199
Ethylbenzene	ND	1.0		µg/L	1	8/4/2018 8:58:35 AM	A53199
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/4/2018 8:58:35 AM	A53199
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/4/2018 8:58:35 AM	A53199
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/4/2018 8:58:35 AM	A53199
Xylenes, Total	ND	1.5		µg/L	1	8/4/2018 8:58:35 AM	A53199
Surr: 4-Bromofluorobenzene	116	70-130		%Rec	1	8/4/2018 8:58:35 AM	A53199
Surr: Toluene-d8	104	70-130		%Rec	1	8/4/2018 8:58:35 AM	A53199

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1808145

Date Reported: 8/14/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering Science &amp; Technology

Client Sample ID: Trip Blank

Project: KAFB BFF Data Gap Drilling

Collection Date:

Lab ID: 1808145-002

Matrix: AQUEOUS

Received Date: 8/2/2018 10:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: <b>JME</b>
1,2-Dibromoethane	ND	0.0094		µg/L	1	8/8/2018 7:16:05 PM	39655
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	ND	1.0		µg/L	1	8/4/2018 9:21:37 AM	A53199
Toluene	ND	1.0		µg/L	1	8/4/2018 9:21:37 AM	A53199
Ethylbenzene	ND	1.0		µg/L	1	8/4/2018 9:21:37 AM	A53199
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/4/2018 9:21:37 AM	A53199
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/4/2018 9:21:37 AM	A53199
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/4/2018 9:21:37 AM	A53199
Xylenes, Total	ND	1.5		µg/L	1	8/4/2018 9:21:37 AM	A53199
Surr: 4-Bromofluorobenzene	117	70-130		%Rec	1	8/4/2018 9:21:37 AM	A53199
Surr: Toluene-d8	104	70-130		%Rec	1	8/4/2018 9:21:37 AM	A53199

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808145

14-Aug-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Drilling

Sample ID	<b>MB-39655</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8011/504.1: EDB</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39655</b>	RunNo:	<b>53314</b>					
Prep Date:	<b>8/8/2018</b>	Analysis Date:	<b>8/8/2018</b>	SeqNo:	<b>1755265</b>	Units:	<b>µg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID	<b>LCS-39655</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8011/504.1: EDB</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39655</b>	RunNo:	<b>53314</b>					
Prep Date:	<b>8/8/2018</b>	Analysis Date:	<b>8/8/2018</b>	SeqNo:	<b>1755266</b>	Units:	<b>µg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.086	0.010	0.1000	0	86.2	70	130			

Sample ID	<b>1808145-001BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>EPA Method 8011/504.1: EDB</b>					
Client ID:	<b>KAFB-106243-4-idw</b>	Batch ID:	<b>39655</b>	RunNo:	<b>53314</b>					
Prep Date:	<b>8/8/2018</b>	Analysis Date:	<b>8/8/2018</b>	SeqNo:	<b>1755268</b>	Units:	<b>µg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.093	0.0093	0.09333	0	99.9	55	125			

Sample ID	<b>1808145-001BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA Method 8011/504.1: EDB</b>					
Client ID:	<b>KAFB-106243-4-idw</b>	Batch ID:	<b>39655</b>	RunNo:	<b>53314</b>					
Prep Date:	<b>8/8/2018</b>	Analysis Date:	<b>8/8/2018</b>	SeqNo:	<b>1755269</b>	Units:	<b>µg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.098	0.0094	0.09358	0	105	55	125	4.74	20	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 3 of 7

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808145**

14-Aug-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Drilling

Sample ID	rb	SampType:	MBLK	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	PBW	Batch ID:	A53199	RunNo:	53199					
Prep Date:		Analysis Date:	8/4/2018	SeqNo:	1751672	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 4-Bromofluorobenzene	12		10.00		118	70	130			
Surr: Toluene-d8	10		10.00		105	70	130			

Sample ID	100ng Ics	SampType:	LCS4	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	BatchQC	Batch ID:	A53199	RunNo:	53199					
Prep Date:		Analysis Date:	8/4/2018	SeqNo:	1751707	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	102	80	120			
Toluene	21	1.0	20.00	0	106	80	120			
Ethylbenzene	22	1.0	20.00	0	110	80	120			
Methyl tert-butyl ether (MTBE)	19	1.0	20.00	0	95.0	80	120			
1,2,4-Trimethylbenzene	21	1.0	20.00	0	105	80	120			
1,3,5-Trimethylbenzene	22	1.0	20.00	0	108	80	120			
Xylenes, Total	64	1.5	60.00	0	106	80	120			
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130			
Surr: Toluene-d8	10		10.00		102	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 4 of 7

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808145**

14-Aug-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Drilling

Sample ID	<b>MB-39609</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39609</b>	RunNo:	<b>53253</b>					
Prep Date:	<b>8/6/2018</b>	Analysis Date:	<b>8/6/2018</b>	SeqNo:	<b>1752477</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	<b>LCS-39609</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39609</b>	RunNo:	<b>53253</b>					
Prep Date:	<b>8/6/2018</b>	Analysis Date:	<b>8/6/2018</b>	SeqNo:	<b>1752479</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	101	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank           |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                            |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits                |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                                    |
| PQL Practical Quantitative Limit                        | RL Reporting Detection Limit                                |
| S % Recovery outside of range due to dilution or matrix | W Sample container temperature is out of limit as specified |

Page 5 of 7

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808145**

14-Aug-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Drilling

Sample ID <b>MB-A</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 6010B: Dissolved Metals</b>								
Client ID: <b>PBW</b>	Batch ID: <b>A53229</b>	RunNo: <b>53229</b>								
Prep Date:	Analysis Date: <b>8/6/2018</b>	SeqNo: <b>1751732</b> Units: <b>mg/L</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								
Manganese	ND	0.0020								

Sample ID <b>LCS-A</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 6010B: Dissolved Metals</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>A53229</b>	RunNo: <b>53229</b>								
Prep Date:	Analysis Date: <b>8/6/2018</b>	SeqNo: <b>1751734</b> Units: <b>mg/L</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.50	0.020	0.5000	0	99.1	80	120			
Manganese	0.50	0.0020	0.5000	0	99.1	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Page 6 of 7

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1808145

14-Aug-18

**Client:** EA Engineering Science & Technology**Project:** KAFB BFF Data Gap Drilling

Sample ID	<b>MB-39612</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39612</b>	RunNo:	<b>53279</b>					
Prep Date:	<b>8/6/2018</b>	Analysis Date:	<b>8/7/2018</b>	SeqNo:	<b>1753695</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Lead	ND	0.0050								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	<b>LCS-39612</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39612</b>	RunNo:	<b>53279</b>					
Prep Date:	<b>8/6/2018</b>	Analysis Date:	<b>8/7/2018</b>	SeqNo:	<b>1753697</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.49	0.020	0.5000	0	98.8	80	120			
Cadmium	0.51	0.0020	0.5000	0	103	80	120			
Chromium	0.50	0.0060	0.5000	0	99.0	80	120			
Lead	0.50	0.0050	0.5000	0	99.5	80	120			
Selenium	0.49	0.050	0.5000	0	97.6	80	120			
Silver	0.11	0.0050	0.1000	0	108	80	120			

Sample ID	<b>MB-39612</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39612</b>	RunNo:	<b>53284</b>					
Prep Date:	<b>8/6/2018</b>	Analysis Date:	<b>8/8/2018</b>	SeqNo:	<b>1754540</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								

Sample ID	<b>LCS-39612</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39612</b>	RunNo:	<b>53284</b>					
Prep Date:	<b>8/6/2018</b>	Analysis Date:	<b>8/8/2018</b>	SeqNo:	<b>1754542</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.50	0.020	0.5000	0	99.9	80	120			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

### Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1808145

RcptNo: 1

Received By: Anne Thorne 8/2/2018 10:45:00 AM

*Anne Thorne*

Completed By: Anne Thorne 8/2/2018 1:47:00 PM

*Anne Thorne*

Reviewed By: *Leah* 8/2/18

*lb: SAB 08/02/18*

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present
2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA
4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA
5. Sample(s) in proper container(s)? Yes  No
6. Sufficient sample volume for indicated test(s)? Yes  No
7. Are samples (except VOA and ONG) properly preserved? Yes  No
8. Was preservative added to bottles? Yes  No  NA
9. VOA vials have zero headspace? Yes  No  No VOA Vials
10. Were any sample containers received broken? Yes  No
11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)
12. Are matrices correctly identified on Chain of Custody? Yes  No
13. Is it clear what analyses were requested? Yes  No
14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: 2  
 (or >12 unless noted)  
 Adjusted? No  
 Checked by: SAB 08/02/18

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good	Not Present			

**Chain-of-Custody Record**

Client: EIA Engineering  
320 Bald SW #1300  
 Mailing Address:  
Albuquerque, NM 87102  
 Phone #: 505-238-4410  
 email or Fax#: emore@east.com

QA/QC Package:  
 Standard  
 Level 4 (Full Validation)  
 Accreditation  
 NELAP  
 Other  
 EDD (Type)

Project Manager:  
Devon Jeronimo

Sampler: Pete Ferrari

On Ice:  Yes  No  
 Sample Temperature: 4.3-CF-1.0=3.3

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
8/2/18	0925	H <sub>2</sub> O	KAFB-106243-4-idw	3 40 ml	HCl	1808145
8/2/18	0925		KAFB-106243-4-idw	3 40 ml	HCl	1808145
8/2/18	0925		KAFB-106243-4-idw	1 250 ml	HCl	1808145
8/2/18	0925		KAFB-106243-4-idw	1 125 ml	HNO <sub>3</sub>	1808145
-	-		Trip Blank	2 40 ml	HCl	1808145
-	-		Trip Blank	1 40 ml	HCl	1808145

Relinquished by: Pete Ferrari Date: 8/2/18 Time: 1045  
 Relinquished by: Pete Ferrari Date: 8/2/18 Time: 1045

Turn-Around Time:  
 Standard  
 Rush 5-Day TAT  
 Project Name: KAFB BFF Data Gap  
 Project #: Drilling  
62599DMO1.1017.3



**HALL ENVIRONMENTAL ANALYSIS LABORATORY**

www.hallenvironmental.com  
 4901 Hawkins NE - Albuquerque, NM 87109  
 Tel. 505-345-3975 Fax 505-345-4107

**Analysis Request**

Analysis Request	Result
BTEX + MTBE + TMB's (8021)	X
BTEX + MTBE + TPH (Gas only)	
TPH 8015B (GRO / DRO / MRO)	
TPH (Method 418.1)	X
EDB (Method 504.1)	X
PAH's (8310 or 8270 SIMS)	X
RCRA 8 Metals	X
Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	
8081 Pesticides / 8082 PCB's	
8260B (VOA)	
8270 (Semi-VOA)	X Dissolved Fe/Mn (Filtered)
Air Bubbles (Y or N)	

Remarks: PO# 15182  
also email Pam Moss / pmoss@east.com

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

August 30, 2018

Devon Jercinovic

EA Engineering

320 Gold Ave SW Suite 1210

Albuquerque, NM 87102

TEL: (505) 224-9013

FAX

RE: Kirtland BFF Data Gap

OrderNo.: 1808977

Dear Devon Jercinovic:

Hall Environmental Analysis Laboratory received 2 sample(s) on 8/14/2018 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a white background.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 1808977

Date Reported: 8/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: KAFB-106244-dev-H2O

Project: Kirtland BFF Data Gap

Collection Date: 8/14/2018 2:55:00 PM

Lab ID: 1808977-001

Matrix: AQUEOUS

Received Date: 8/14/2018 3:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 7470: MERCURY</b>							Analyst: <b>rde</b>
Mercury	ND	0.00020		mg/L	1	8/29/2018 11:14:54 AM	40027
<b>EPA METHOD 6010B: DISSOLVED METALS</b>							Analyst: <b>pmf</b>
Iron	ND	0.020		mg/L	1	8/20/2018 1:41:50 PM	A53550
Manganese	0.35	0.0020		mg/L	1	8/20/2018 1:41:50 PM	A53550
<b>EPA 6010B: TOTAL RECOVERABLE METALS</b>							Analyst: <b>pmf</b>
Arsenic	ND	0.020		mg/L	1	8/20/2018 12:31:25 PM	39852
Barium	0.21	0.020		mg/L	1	8/20/2018 11:28:38 AM	39852
Cadmium	ND	0.0020		mg/L	1	8/20/2018 11:28:38 AM	39852
Chromium	ND	0.0060		mg/L	1	8/20/2018 11:28:38 AM	39852
Lead	0.010	0.0050		mg/L	1	8/22/2018 3:43:16 PM	39852
Selenium	ND	0.050		mg/L	1	8/20/2018 11:28:38 AM	39852
Silver	ND	0.0050		mg/L	1	8/20/2018 11:28:38 AM	39852
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: <b>JME</b>
1,2-Dibromoethane	ND	0.0095		µg/L	1	8/17/2018 1:11:49 PM	39818
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	ND	1.0		µg/L	1	8/17/2018 1:37:51 AM	B53492
Toluene	ND	1.0		µg/L	1	8/17/2018 1:37:51 AM	B53492
Ethylbenzene	ND	1.0		µg/L	1	8/17/2018 1:37:51 AM	B53492
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/17/2018 1:37:51 AM	B53492
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/17/2018 1:37:51 AM	B53492
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/17/2018 1:37:51 AM	B53492
Xylenes, Total	ND	1.5		µg/L	1	8/17/2018 1:37:51 AM	B53492
Surr: 4-Bromofluorobenzene	115	70-130		%Rec	1	8/17/2018 1:37:51 AM	B53492
Surr: Toluene-d8	98.8	70-130		%Rec	1	8/17/2018 1:37:51 AM	B53492

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

## Analytical Report

Lab Order 1808977

Date Reported: 8/30/2018

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: EA Engineering

Client Sample ID: TRIP BLANK

Project: Kirtland BFF Data Gap

Collection Date:

Lab ID: 1808977-002

Matrix: AQUEOUS

Received Date: 8/14/2018 3:50:00 PM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 8011/504.1: EDB</b>							Analyst: <b>JME</b>
1,2-Dibromoethane	ND	0.0095		µg/L	1	8/17/2018 1:26:53 PM	39818
<b>EPA METHOD 8260: VOLATILES SHORT LIST</b>							Analyst: <b>AG</b>
Benzene	ND	1.0		µg/L	1	8/17/2018 2:47:02 AM	B53492
Toluene	ND	1.0		µg/L	1	8/17/2018 2:47:02 AM	B53492
Ethylbenzene	ND	1.0		µg/L	1	8/17/2018 2:47:02 AM	B53492
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	8/17/2018 2:47:02 AM	B53492
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	8/17/2018 2:47:02 AM	B53492
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	8/17/2018 2:47:02 AM	B53492
Xylenes, Total	ND	1.5		µg/L	1	8/17/2018 2:47:02 AM	B53492
Surr: 4-Bromofluorobenzene	114	70-130		%Rec	1	8/17/2018 2:47:02 AM	B53492
Surr: Toluene-d8	96.2	70-130		%Rec	1	8/17/2018 2:47:02 AM	B53492

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808977**

30-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland BFF Data Gap

Sample ID	<b>MB-39818</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 8011/504.1: EDB</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39818</b>	RunNo:	<b>53512</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/16/2018</b>	SeqNo:	<b>1763819</b>	Units:	<b>µg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID	<b>LCS-39818</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 8011/504.1: EDB</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39818</b>	RunNo:	<b>53512</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/16/2018</b>	SeqNo:	<b>1763823</b>	Units:	<b>µg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.092	0.010	0.1000	0	92.5	70	130			

Sample ID	<b>LCSD-39818</b>	SampType:	<b>LCSD</b>	TestCode:	<b>EPA Method 8011/504.1: EDB</b>					
Client ID:	<b>LCSS02</b>	Batch ID:	<b>39818</b>	RunNo:	<b>53512</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/16/2018</b>	SeqNo:	<b>1763828</b>	Units:	<b>µg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.097	0.010	0.1000	0	96.8	70	130	4.53	20	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808977**

30-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland BFF Data Gap

Sample ID <b>100ng lcs</b>		SampType: <b>LCS4</b>		TestCode: <b>EPA Method 8260: Volatiles Short List</b>						
Client ID: <b>BatchQC</b>		Batch ID: <b>B53492</b>		RunNo: <b>53492</b>						
Prep Date:		Analysis Date: <b>8/16/2018</b>		SeqNo: <b>1763289</b>		Units: <b>µg/L</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	90.7	80	120			
Toluene	19	1.0	20.00	0	97.5	80	120			
Ethylbenzene	20	1.0	20.00	0	98.1	80	120			
Methyl tert-butyl ether (MTBE)	19	1.0	20.00	0	92.8	80	120			
1,2,4-Trimethylbenzene	20	1.0	20.00	0	99.7	80	120			
1,3,5-Trimethylbenzene	20	1.0	20.00	0	98.8	80	120			
Xylenes, Total	60	1.5	60.00	0	99.5	80	120			
Surr: 4-Bromofluorobenzene	10		10.00		105	70	130			
Surr: Toluene-d8	9.6		10.00		96.3	70	130			

Sample ID <b>1808977-001ams</b>		SampType: <b>MS4</b>		TestCode: <b>EPA Method 8260: Volatiles Short List</b>						
Client ID: <b>KAFB-106244-dev-H</b>		Batch ID: <b>B53492</b>		RunNo: <b>53492</b>						
Prep Date:		Analysis Date: <b>8/17/2018</b>		SeqNo: <b>1763291</b>		Units: <b>µg/L</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	96.7	80	120			
Toluene	21	1.0	20.00	0	107	80	120			
Ethylbenzene	21	1.0	20.00	0	104	80	120			
Methyl tert-butyl ether (MTBE)	19	1.0	20.00	0	95.6	43.6	145			
1,2,4-Trimethylbenzene	20	1.0	20.00	0	99.9	80	120			
1,3,5-Trimethylbenzene	21	1.0	20.00	0	103	80	120			
Xylenes, Total	62	1.5	60.00	0	103	80	120			
Surr: 4-Bromofluorobenzene	11		10.00		112	70	130			
Surr: Toluene-d8	9.7		10.00		96.8	70	130			

Sample ID <b>1808977-001amsd</b>		SampType: <b>MSD4</b>		TestCode: <b>EPA Method 8260: Volatiles Short List</b>						
Client ID: <b>KAFB-106244-dev-H</b>		Batch ID: <b>B53492</b>		RunNo: <b>53492</b>						
Prep Date:		Analysis Date: <b>8/17/2018</b>		SeqNo: <b>1763292</b>		Units: <b>µg/L</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	94.5	80	120	2.34	20	
Toluene	21	1.0	20.00	0	104	80	120	2.59	20	
Ethylbenzene	20	1.0	20.00	0	102	80	120	1.34	20	
Methyl tert-butyl ether (MTBE)	19	1.0	20.00	0	93.3	43.6	145	2.49	20	
1,2,4-Trimethylbenzene	20	1.0	20.00	0	97.7	80	120	2.19	20	
1,3,5-Trimethylbenzene	20	1.0	20.00	0	101	80	120	1.49	20	
Xylenes, Total	54	1.5	60.00	0	89.9	80	120	13.3	20	
Surr: 4-Bromofluorobenzene	11		10.00		106	70	130	0	0	
Surr: Toluene-d8	10		10.00		100	70	130	0	0	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808977**

30-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland BFF Data Gap

Sample ID	rb2	SampType:	MBLK	TestCode:	EPA Method 8260: Volatiles Short List					
Client ID:	PBW	Batch ID:	B53492	RunNo:	53492					
Prep Date:		Analysis Date:	8/16/2018	SeqNo:	1763298	Units:	µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 4-Bromofluorobenzene	12		10.00		116	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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Kirtland AFB BFF  
 Completion Report for Data Gap Monitoring Wells  
 SWMUs ST-106/SS-111

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June 2020

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808977**

30-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland BFF Data Gap

Sample ID	<b>MB-40027</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>40027</b>	RunNo:	<b>53784</b>					
Prep Date:	<b>8/28/2018</b>	Analysis Date:	<b>8/29/2018</b>	SeqNo:	<b>1775007</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.00020								

Sample ID	<b>LCS-40027</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>40027</b>	RunNo:	<b>53784</b>					
Prep Date:	<b>8/28/2018</b>	Analysis Date:	<b>8/29/2018</b>	SeqNo:	<b>1775008</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.1	80	120			

Sample ID	<b>1808977-001CMS</b>	SampType:	<b>MS</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>KAFB-106244-dev-H</b>	Batch ID:	<b>40027</b>	RunNo:	<b>53784</b>					
Prep Date:	<b>8/28/2018</b>	Analysis Date:	<b>8/29/2018</b>	SeqNo:	<b>1775010</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0050	0.00020	0.005000	0	99.3	75	125			

Sample ID	<b>1808977-001CMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA Method 7470: Mercury</b>					
Client ID:	<b>KAFB-106244-dev-H</b>	Batch ID:	<b>40027</b>	RunNo:	<b>53784</b>					
Prep Date:	<b>8/28/2018</b>	Analysis Date:	<b>8/29/2018</b>	SeqNo:	<b>1775011</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	0.0051	0.00020	0.005000	0	102	75	125	2.70	20	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808977**

30-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland BFF Data Gap

Sample ID <b>MB-A</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 6010B: Dissolved Metals</b>								
Client ID: <b>PBW</b>	Batch ID: <b>A53550</b>	RunNo: <b>53550</b>								
Prep Date:	Analysis Date: <b>8/20/2018</b>	SeqNo: <b>1765751</b> Units: <b>mg/L</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								
Manganese	ND	0.0020								

Sample ID <b>LCS-A</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 6010B: Dissolved Metals</b>								
Client ID: <b>LCSW</b>	Batch ID: <b>A53550</b>	RunNo: <b>53550</b>								
Prep Date:	Analysis Date: <b>8/20/2018</b>	SeqNo: <b>1765753</b> Units: <b>mg/L</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.50	0.020	0.5000	0	101	80	120			
Manganese	0.50	0.0020	0.5000	0	101	80	120			

Sample ID <b>1808977-001DMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 6010B: Dissolved Metals</b>								
Client ID: <b>KAFB-106244-dev-H</b>	Batch ID: <b>A53550</b>	RunNo: <b>53550</b>								
Prep Date:	Analysis Date: <b>8/20/2018</b>	SeqNo: <b>1765815</b> Units: <b>mg/L</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.48	0.020	0.5000	0	96.6	75	125			
Manganese	0.82	0.0020	0.5000	0.3477	94.1	75	125			

Sample ID <b>1808977-001DMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 6010B: Dissolved Metals</b>								
Client ID: <b>KAFB-106244-dev-H</b>	Batch ID: <b>A53550</b>	RunNo: <b>53550</b>								
Prep Date:	Analysis Date: <b>8/20/2018</b>	SeqNo: <b>1765816</b> Units: <b>mg/L</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.48	0.020	0.5000	0	96.0	75	125	0.637	20	
Manganese	0.81	0.0020	0.5000	0.3477	92.6	75	125	0.928	20	

**Qualifiers:**

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808977**

30-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland BFF Data Gap

Sample ID	<b>MB-39852</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39852</b>	RunNo:	<b>53550</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/20/2018</b>	SeqNo:	<b>1765745</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	0.020								
Barium	ND	0.020								
Cadmium	ND	0.0020								
Chromium	ND	0.0060								
Selenium	ND	0.050								
Silver	ND	0.0050								

Sample ID	<b>LCS-39852</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39852</b>	RunNo:	<b>53550</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/20/2018</b>	SeqNo:	<b>1765747</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.51	0.020	0.5000	0	102	80	120			
Barium	0.52	0.020	0.5000	0	104	80	120			
Cadmium	0.50	0.0020	0.5000	0	99.5	80	120			
Chromium	0.52	0.0060	0.5000	0	104	80	120			
Selenium	0.51	0.050	0.5000	0	103	80	120			
Silver	0.10	0.0050	0.1000	0	104	80	120			

Sample ID	<b>1808977-001CMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>KAFB-106244-dev-H</b>	Batch ID:	<b>39852</b>	RunNo:	<b>53550</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/20/2018</b>	SeqNo:	<b>1765754</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.72	0.020	0.5000	0.2111	102	75	125	0.919	20	
Cadmium	0.50	0.0020	0.5000	0	101	75	125	0.839	20	
Chromium	0.51	0.0060	0.5000	0.001270	102	75	125	1.07	20	
Selenium	0.43	0.050	0.5000	0	85.1	75	125	7.78	20	
Silver	0.11	0.0050	0.1000	0.003350	107	75	125	2.02	20	

Sample ID	<b>1808977-001CMS</b>	SampType:	<b>MS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>KAFB-106244-dev-H</b>	Batch ID:	<b>39852</b>	RunNo:	<b>53550</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/20/2018</b>	SeqNo:	<b>1765758</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	0.72	0.020	0.5000	0.2111	101	75	125			
Cadmium	0.50	0.0020	0.5000	0	100	75	125			
Chromium	0.51	0.0060	0.5000	0.001270	101	75	125			
Selenium	0.46	0.050	0.5000	0	92.0	75	125			
Silver	0.11	0.0050	0.1000	0.003350	105	75	125			

**Qualifiers:**

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H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

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**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**WO#: **1808977**

30-Aug-18

**Client:** EA Engineering  
**Project:** Kirtland BFF Data Gap

Sample ID	<b>1808977-001CMS</b>	SampType:	<b>MS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>KAFB-106244-dev-H</b>	Batch ID:	<b>39852</b>	RunNo:	<b>53550</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/20/2018</b>	SeqNo:	<b>1765791</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.49	0.020	0.5000	0	98.1	75	125			

Sample ID	<b>1808977-001CMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>KAFB-106244-dev-H</b>	Batch ID:	<b>39852</b>	RunNo:	<b>53550</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/20/2018</b>	SeqNo:	<b>1765792</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	0.50	0.020	0.5000	0	99.1	75	125	1.00	20	

Sample ID	<b>MB-39852</b>	SampType:	<b>MBLK</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>PBW</b>	Batch ID:	<b>39852</b>	RunNo:	<b>53642</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/22/2018</b>	SeqNo:	<b>1768995</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	ND	0.0050								

Sample ID	<b>LCS-39852</b>	SampType:	<b>LCS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>LCSW</b>	Batch ID:	<b>39852</b>	RunNo:	<b>53642</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/22/2018</b>	SeqNo:	<b>1768997</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.49	0.0050	0.5000	0	98.5	80	120			

Sample ID	<b>1808977-001CMS</b>	SampType:	<b>MS</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>KAFB-106244-dev-H</b>	Batch ID:	<b>39852</b>	RunNo:	<b>53642</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/22/2018</b>	SeqNo:	<b>1769002</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.48	0.0050	0.5000	0.01020	93.6	75	125			

Sample ID	<b>1808977-001CMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>EPA 6010B: Total Recoverable Metals</b>					
Client ID:	<b>KAFB-106244-dev-H</b>	Batch ID:	<b>39852</b>	RunNo:	<b>53642</b>					
Prep Date:	<b>8/16/2018</b>	Analysis Date:	<b>8/22/2018</b>	SeqNo:	<b>1769003</b>	Units:	<b>mg/L</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Lead	0.49	0.0050	0.5000	0.01020	95.9	75	125	2.42	20	

**Qualifiers:**

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D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
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Hall Environmental Analysis Laboratory  
 4901 Hawkins NE  
 Albuquerque, NM 87109  
 TEL: 505-345-3975 FAX: 505-345-4107  
 Website: www.hallenvironmental.com

# Sample Log-In Check List

Client Name: EA Engineering Alb

Work Order Number: 1808977

RcptNo: 1

Received By: Erin Melendrez 8/14/2018 3:50:00 PM

Completed By: Ashley Gallegos 8/15/2018 2:44:28 PM

Reviewed By: JAB 08/16/18

labeled by: IO 08/16/18

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present
2. How was the sample delivered? Client

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA
4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA
- Samples were collected the same day and chilled.
5. Sample(s) in proper container(s)? Yes  No
6. Sufficient sample volume for indicated test(s)? Yes  No
7. Are samples (except VOA and ONG) properly preserved? Yes  No
8. Was preservative added to bottles? Yes  No  NA
9. VOA vials have zero headspace? Yes  No  No VOA Vials
10. Were any sample containers received broken? Yes  No
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes  No
12. Are matrices correctly identified on Chain of Custody? Yes  No
13. Is it clear what analyses were requested? Yes  No
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes  No

# of preserved bottles checked for pH: 2  
 (2) or >12 unless noted  
 Adjusted? NO  
 Checked by: IO 8/16/18

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:		Date:	
By Whom:		Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:			
Client Instructions:			

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	11.9	Good	Not Present			

# Chain-of-Custody Record

Client: EA Engineering  
320 Gold SW # 1800  
 Mailing Address:  
Albuquerque NM 87102  
Phone #: (505) 238 4410  
email or Fax#: emorse@caest.com

QA/QC Package:  
 Standard  Level 4 (Full Validation)  
 Accreditation  
 NELAP  Other  
 EDD (Type)

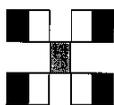
Project Manager:  
Devon Serechovic  
 Sampler: Pete Ferran  
 On Ice:  Yes  No  
 Sample Temperature: 13.9-2.0 (REF)

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
11-18	1455	H <sub>2</sub> O	KAFB-106244-dev-H <sub>2</sub> O	3 <sup>rd</sup> ml HCl		-001
	1455		KAFB-106244-dev-H <sub>2</sub> O	2 <sup>nd</sup> ml Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>		
	1455		KAFB-106244-dev-H <sub>2</sub> O	250 ml H <sub>2</sub> O		
	1455		KAFB-106244-dev-H <sub>2</sub> O	1 <sup>st</sup> 125 ml H <sub>2</sub> O		
			Top Blank	2 <sup>nd</sup> ml HCl		-002
			Top Blank	1 <sup>st</sup> ml Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>		

Relinquished by: Pete Ferran  
 Relinquished by: \_\_\_\_\_  
 Date: 11-18 1550  
 Date: \_\_\_\_\_

Received by: [Signature]  
 Received by: \_\_\_\_\_  
 Date: 8/14/18 1550  
 Date: \_\_\_\_\_

Turn-Around Time:  
 Standard  Rush  
 Project Name:  
Kirtland BFF Data Gap  
 Project #:  
62599DM01.1017.3



**HALL ENVIRONMENTAL ANALYSIS LABORATORY**  
 www.hallenvironmental.com  
 4901 Hawkins NE - Albuquerque, NM 87109  
 Tel. 505-345-3975 Fax 505-345-4107

Analysis Request	
BTEX + MTBE + TMBs (8021)	X
BTEX + MTBE + TPH (Gas only)	
TPH 8015B (GRO / DRO / MRO)	
TPH (Method 418.1)	
EDB (Method 504.1)	X
PAHs (8310 or 8270 SIMS)	
RCRA 8 Metals	X
Anions (F <sup>-</sup> , Cl <sup>-</sup> , NO <sub>3</sub> <sup>-</sup> , NO <sub>2</sub> <sup>-</sup> , PO <sub>4</sub> <sup>3-</sup> , SO <sub>4</sub> <sup>2-</sup> )	
8081 Pesticides / 8082 PCBs	
8260B (VOA)	
8270 (Semi-VOA)	
8270 (Semi-VOA)	Disolved Fe Mn (Filtered)
Air Bubbles (Y or N)	

Remarks:  
email pmoss@caest.com  
PO # 15182

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.