Mayor
Kenneth Romney

City Council
James Ahlstrom
James Bruhn
Kelly Enquist
Debbie McKean
Mark Preece

WEST BOUNTIFUL CITY

550 North 800 West
West Bountiful, Utah 84087

Phone (801) 292-4486
FAX (801) 292-6355
www.WBCity.org

City Administrator
Duane Huffman

Acting Recorder
Cathy Brightwell

City Engineer
Ben White

Public Works Director
Steve Maughan

August 4, 2014

RE: FOLLOW-UP TO MAY 21 NEIGHBORHOOD MEETING WITH HOLLY REFINERY

Dear Resident:

West Bountiful City hosted a neighborhood meeting for residents and property owners on the northeast side of the refinery on May 21, 2014. At that meeting, residents raised concerns regarding the soil that was used to construct a berm on the east side of 800 West, and residents also expressed a desire to have the berm moved. This letter is in follow-up to those two issues.

Soil Testing for Berm
At the May 21st meeting, Holly Refinery agreed to allow the City to engage in additional testing for harmful elements in the soil that was used to construct the berm. The City engaged Kleinfelder, Inc. to develop a methodology and perform the testing. The complete results can be found on the City's website or at the city office.

The testing results did not reveal any concentration of materials that would be considered hazardous by the State of Utah, which was confirmed when the results were shared with the Utah Division of Solid and Hazardous Waste. The testing did detect levels of petroleum based materials such as oils, old asphalt or grease in the soil in every location that was tested, with one test area having a petroleum concentration higher than would be suitable when dealing with underground storage tanks. Kleinfelder, Inc. recommended that this section be removed from any re-design of the berm.

Upon reviewing the results of the soil testing, Holly Refinery has agreed to remove the section with the relatively high level of petroleum and to allow the soil to be re-tested after the berm has been moved.

Removing the Berm
After the May 21st meeting, Holly Refinery visited the properties and residents that live adjacent to the berm. These visits resulted in Holly Refinery deciding to reduce the height of the soil to 4 feet nearest the property line. This will allow the remaining soil to be leveled in such a way that storm water runoff will be directed away from residential properties. As stated above, the section

of the current berm with the higher concentration of petroleum base materials will be removed during this process and a new soil test will be performed once the area has been re-graded.

West Bountiful City appreciates the input received from residents during the May 21st meeting, as well as Holly Refinery's cooperation and intention of being a good neighbor.

With questions or any additional concerns, please contact me at the information below.

Duane Huffman
City Administrator
801-292-4486

July 8, 2014
File No.: 20151231.001A

Mr. Ben White
West Bountiful City
550 North 800 West
West Bountiful, Utah 84087

Subject: Soil Characterization Results
HollyFrontier Corporation Woods Cross Refinery Berm
West Bountiful City, Utah

Dear Mr. White:

Kleinfelder Inc. has prepared this report to document soil sampling activities in test pits excavated at the HollyFrontier Refinery Berm (Site). Specifically, our services consisted of overseeing the excavation of 15 test pits within the berm currently under construction on the northeast corner of the Site. The purpose of this assessment is to collect and analyze soil samples in order to assess if there are impacts to soil used to construct the berm, specifically related to petroleum hydrocarbons and metals. The work was completed according to our proposal (Kleinfelder Document No. SLC14P0322) dated May 30, 2014 and approved under the contract agreement between West Bountiful City (Client) and Kleinfelder.

SITE DESCRIPTION AND BACKGROUND

The soil berm is located in the northeast corner of the HollyFrontier Refinery to the east of 800 West and north of Mill Creek in West Bountiful, Utah (Figure 1). At the time of our investigation the berm was approximately 75 percent complete. The eastern two-thirds of the berm are approximately 700 feet long and 60 feet wide at the base and near completion. This portion of the berm ranges in height from 10 feet (on the southwest side) to 15 feet in height on the east end where the berm has been completed. The west side of the berm consisted of a mix of end dump soil piles and 3 feet of loosely compacted fill material.

Soils encountered within the berm during test pit excavating consisted primarily of dark brown to grey silty/clayey gravel with sand and some cobbles (GC/GM). Debris, including bricks, concrete, wood, wire, and other building materials was observed throughout the test pits. With the exception of staining visually observed on soils encountered within test pit HFR-11, petroleum impacts to soil were not observed.

TEST PIT EXCAVATION AND SAMPLING PROCEDURES

Prior to beginning excavation activities at the Site, Blue Stake Utility Notification Center of Utah (Blue stake) was contacted to mark public utilities. During Site activities, utility markings indicating the location of subsurface utilities were not observed in the vicinity of the berm. Excavation activities were stopped when native soils underlying the berm were encountered.

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Excavation activities did not extend more than 6 inches into existing native soils underlying the berm at the Site.

Kleinfelder personnel oversaw the excavation of 15 test pits within the HollyFrontier soil berm on June 12, 2014. The test pits were excavated by a contractor provided by HollyFrontier using a trackhoe with a 2-foot wide bucket. Figure 2 shows the approximate location of test pits excavated at the Site. Prior to beginning excavation activities, and after completing each test pit, excavation equipment was cleared of excessive soil buildup on the trackhoe bucket. Test pits were advanced to a minimum of 15 feet below the berm surface in areas where berm construction has been completed (test pits HFR-1 to HFR-12). In areas where the berm has not been completed, test pits were extended to the native ground surface (HFR-13 to HFR-15). During excavation, soils were piled on the sides of each test pit for observation and soil sampling.

Samples were collected and logged on individual test pit logs by Kleinfelder personnel according to the Unified Soil Classification System (USCS) and screened visually in the field for petroleum impacts (e.g., petroleum staining, oily sheens) and for the presence of organic vapors using a field-calibrated photoionization detector (PID). PID vapor concentration readings are a qualitative measurement of organic vapors which can volatilize off of the soil. This is not directly proportional to actual petroleum concentrations in the soil. PID readings help to indicate the possible presence/non-presence of petroleum hydrocarbons in the soil. Visually screening and PID readings were used for initial assessment of potential soil impacts and for possible preferred selection of soil samples to be submitted for analysis. Test pit logs for each location including PID readings are included in Attachment A. PID readings did not exceed values typically associated with ambient air in the area; therefore, discreet samples from high PID reading locations were not collected.

At each test pit location, representative soil samples were collected from various depths representing 5-foot vertical intervals within the excavation. The samples were placed in gallon-sized Ziploc bags and homogenized by hand mixing. Each 5-foot interval sample was then screened using the PID. Portions of each bag sample were transferred to a separate Ziploc bag for sampling. The composite soil sample was homogenized by hand and placed in two sets of laboratory provided containers labeled with the job number, job name, date, time, analysis to be conducted, and sample identification. The sample identification consisted of HFR-CS-1-61214 where “HFR” stands for HollyFrontier Refinery, “CS” stands or composite soil sample, “1” stands for the test pit number, and “61214” stands for the date the sample was collected. The sample jars were placed on ice in a cooler for transport. The samples were transported under proper chain-of-custody documentation and shipped to Environmental Science Corporation Laboratory (ESC) for analysis. The second set of soil sample jars was provided under chain of custody documentation to the HollyFrontier environmental representative overseeing the project.

Upon completion of sampling, the test pits were backfilled by the excavator. Each test pit location was marked with a wood lathe located on the edge of the berm where the test pit was located.

The 15 soil samples were analyzed for concentrations of total petroleum hydrocarbons as diesel range organics (TPH-DRO) and TPH as gasoline range organics (TPH-GRO) by EPA Method 3546/8015, benzene, toluene, ethylbenzene, total xylenes, naphthalene, (BTEXN) by EPA Method 8260B, oil and grease by EPA Method 9071B, and Resource Conservation and Recovery Act (RCRA) 8 Metals by EPA Methods 6010B and 7471.

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ANALYTICAL RESULTS

Petroleum hydrocarbon constituents were detected in each of the 15 soil samples submitted for analysis. Currently the State of Utah does not have established “clean-up levels” for petroleum or other impacts to soil when related to a refinery. Clean up levels are usually established on a case by case basis. The one exception is when the petroleum impacts are related to underground storage tanks (USTs). The DERR (Division of Environmental Response and Remediation) has established Initial Screening Levels (ISLs, or “clean-up levels”) for petroleum constituents at UST regulated facilities.

The DERR ISLs are not applicable to the Site because it is not a regulated leaking underground storage tank (LUST) facility. However, the DERR ISLs can provide a relative comparison of typical clean-up goals established by the DERR for remediation of petroleum releases to soil. If impacts to soil are found related to a UST then the DERR would oversee or “regulate” the clean-up of soils (and or groundwater if needed) related to the UST “release”. The DERR has established ISLs in order to give UST owners an endpoint for clean-up. Once these levels are achieved in soils and the DERR agrees that the investigation and/or clean-up is complete, the DERR will typically “close” the release by issuing a “No Further Action Letter”. These levels are provided for comparison purposes only in Table 1.

With the exception of the analyzed soil sample submitted from test pit HFR-15, oil and grease petroleum hydrocarbons were reported by the laboratory in each of the samples analyzed. The highest concentration of oil and grease reported by the laboratory is 1,900 mg/kg in the soil sample submitted from test pit HFR-3, which is above the established DERR ISL for oil and grease of 1,000 mg/kg in soil. Sample HFR-3 is the only soil sample analyzed that contained petroleum hydrocarbon constituents (oil and grease) above the DERR ISL.

With the exception of total xylenes, reported by the laboratory at a concentration of 0.0063 milligrams per kilogram (mg/kg) in the sample analyzed from test pit HFR-15, BTEXN constituents were not reported in the analyzed soil samples. The reported total xylenes concentration is below the DERR ISL of 142 mg/kg.

TPH-GRO was reported by the laboratory in four of the fifteen submitted soil samples analyzed. The highest concentration of TPH-GRO reported is 0.56 mg/kg in the sample analyzed from test pit HFR-6. Each of the reported TPH-GRO concentrations are below the DERR ISL of 150 mg/kg.

TPH-DRO was reported by the laboratory in ten of the fifteen submitted soil samples analyzed. The highest concentration of TPH-DRO reported is 65 mg/kg in the sample analyzed from test pit HFR-10. Each of the reported TPH-GRO concentrations are below the DERR ISL of 500 mg/kg.

With the exception of selenium, which was not detected, the RCRA 8 metals reported by the laboratory in soil samples submitted during this investigation are at concentrations typically found in subsurface soils in the Salt Lake Valley.

The soil analytical results reported by the laboratory are summarized in Table 1 at the end of this letter report. The laboratory provided analytical report is included as Attachment A.

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CONCLUSIONS AND RECOMMENDATIONS

Petroleum impacted soil was identified in each of the 15 composite soil samples analyzed from test pits excavated within the berm at the Site. Based on field observations and analytical results of collected soil samples, it appears soils used for construction of the berm contain relatively low concentrations of petroleum impacts with some isolated areas of identified higher petroleum impacts. Although the Site is not, and would not be regulated by the DERR, established ISLs for petroleum impacted soils at LUST facilities can provide a relative comparison of typical clean-up goals for remediation of petroleum releases to soil when related to USTs. With the exception of oil and grease reported by the laboratory in the sample from test pit HFR-3, reported concentrations are below established DERR ISLs for petroleum impacted soils. The oil and grease was reported by the laboratory at a concentration of 1,900 mg/kg in soil analyzed from test pit HFR-3. The reported concentration is above the DERR ISL of 1,000 mg/kg for oil and grease impacts to soil.

Reported RCRA 8 metals detected in soil by the laboratory at the Site were reported at concentrations within typical values accepted for the Salt Lake Valley.

We understand that HollyFrontier may move the constructed berm south, away from the north property line of the refinery, which borders residential homes. Kleinfelder recommends that during reconstruction of the berm, any visually impacted petroleum soils (i.e. stained or observed “oily” sheen) be removed from the berm. Additionally, we recommend the soil located within the area of HFR-3 not be used during reconstruction of the berm. This area is represented by an approximately 50-foot linear section of berm centered at HFR-3.

Please note that the collected composite soil samples represent a relatively large portion of soil used for construction of the berm (approximately 1,000 cubic yards of soil per sample). The completed assessment was not intended to address all potential impacts that may exist at the Site. If additional characterization of the soils used in construction of the berm is required, additional soil sampling will be required.

LIMITATIONS

This work was performed in a manner consistent with that level of care and skill ordinarily exercised by other members of Kleinfelder’s profession practicing in the same locality, under similar conditions and at the date the services are provided. Our conclusions, opinions, and recommendations are based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Kleinfelder makes no other representation, guarantee, or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

This report may be used only by the Client and the registered design professional in responsible charge and only for the purposes stated for this specific engagement within a reasonable time from its issuance, but in no event later than two (2) years from the date of the report. We understand the Client may produce copies of this report for their use and share the enclosed information with third parties as it deems appropriate, in order to share the data that has been collected and the conclusions upon which it is relying; however, no parties except the Client have the right to use or rely on this report.

Kleinfelder offers various levels of investigative and engineering services to suit the varying needs of different clients. It should be recognized that definition and evaluation of environmental conditions are a difficult and inexact science. Judgments leading to conclusions and

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recommendations are generally made with incomplete knowledge of the subsurface conditions present. Although risk can never be eliminated, more-detailed and extensive studies yield more information, which may help understand and manage the level of risk. Since detailed study and analysis involves greater expense, our clients participate in determining levels of service that provide adequate information for their purposes at acceptable levels of risk. More extensive studies, including additional field tests, could be performed if the Client wishes to reduce uncertainties.

We appreciate the opportunity to provide our services for this project. If you have any questions or if we may be of further assistance, please contact us at 801.261.3336.

Respectfully submitted,

KLEINFELDER, INC.

Corey A. Park, PG
Staff Geologist

Corinne Hillard, PG
Senior Project Manager

Attachments:

Table 1 – Summary of Soil Sampling Analytical Results

Figure 1 – Site Location Map

Figure 2 – Test Pit Sampling Location Map

Attachment A – Test Pit Logs

Attachment B – Laboratory Analytical Report and Chain of Custody Documentation

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TABLE

Table 1
Summary of Soil Sampling Laboratory Analytical Results
Holly Frontier Refinery Soil Berm
West Bountiful City, Utah

Sample ID	Sample Location	Date Sampled	Concentrations (mg/kg)															
			Benzene	Toluene	Ethyl-benzene	Total Xylenes	Naphtha-lene	TPH-GRO	TPH-DRO	TPH Oil and Grease	Mercury	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver
HFR-CS-1-61214	HFR-1	06/12/14	--	--	--	--	--	--	10.0	110	0.074	3.8	160	0.86	42.0	33.0	--	0.84
HFR-CS-2-61214	HFR-2	06/12/14	--	--	--	--	--	0.39	4.2	120	0.052	6.7	110	0.93	50.0	30.0	--	0.84
HFR-CS-3-61214	HFR-3	06/12/14	--	--	--	--	--	--	19.0	**1900**	0.039	6.9	110	0.90	31.0	40.0	--	0.80
HFR-CS-4-61214	HFR-4	06/12/14	--	--	--	--	--	1.3	--	110	0.017	4.2	88.0	0.65	36.0	22.0	--	0.93
HFR-CS-5-61214	HFR-5	06/12/14	--	--	--	--	--	0.46	11.0	160	0.058	13.0	130	1.2	34.0	100	--	1.1
HFR-CS-6-61214	HFR-6	06/12/14	--	--	--	--	--	0.56	1.1	130	0.025	6.5	120	1.0	36.0	28.0	--	1.2
HFR-CS-7-61214	HFR-7	06/12/14	--	--	--	--	--	--	25.0	180	0.064	11.0	130	1.1	34.0	130	--	1.2
HFR-CS-8-61214	HFR-8	06/12/14	--	--	--	--	--	--	4.8	140	0.16	8.2	170	0.86	30.0	24.0	--	1.3
HFR-CS-9-61214	HFR-9	06/12/14	--	--	--	--	--	--	--	140	0.032	8.9	97.0	1.1	35.0	17.0	--	1.3
HFR-CS-10-61214	HFR-10	06/12/14	--	--	--	--	--	--	64.0	100	0.014	8.0	93.0	0.92	51.0	20.0	--	0.60
HFR-CS-11-61214	HFR-11	06/12/14	--	--	--	--	--	--	2.4	140	0.058	6.0	190	1.0	56.0	22.0	--	1.8
HFR-CS-12-61214	HFR-12	06/12/14	--	--	--	--	--	--	--	200	0.068	ND	330	0.94	31.0	20.0	--	--
HFR-CS-13-61214	HFR-13	06/12/14	--	--	--	--	--	--	--	120	0.014	7.3	170	0.95	40.0	16.0	--	0.65
HFR-CS-14-61214	HFR-14	06/12/14	--	--	--	--	--	--	1.9	75.0	0.041	5.0	120	1.0	40.0	19.0	--	1.2
HFR-CS-15-61214	HFR-15	06/12/14	--	--	--	0.0063	--	--	--	--	0.030	7.2	130	0.89	30.0	39.0	--	1.2
DERR Initial Screening Levels			**0.2**	**9**	**5**	**142**	**51**	**150**	**500**	**1000**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

Notes
mg/kg - milligrams per kilogram
ND - analyte not detected above the laboratory reporting limit
bold - reported analytical concentration exceeds DERR Initial Screening Levels
NE -DERR Regulatory concentration not establishec
DERR - State of Utah Department of Environmental Quality Division of Environmental Response and Remediation

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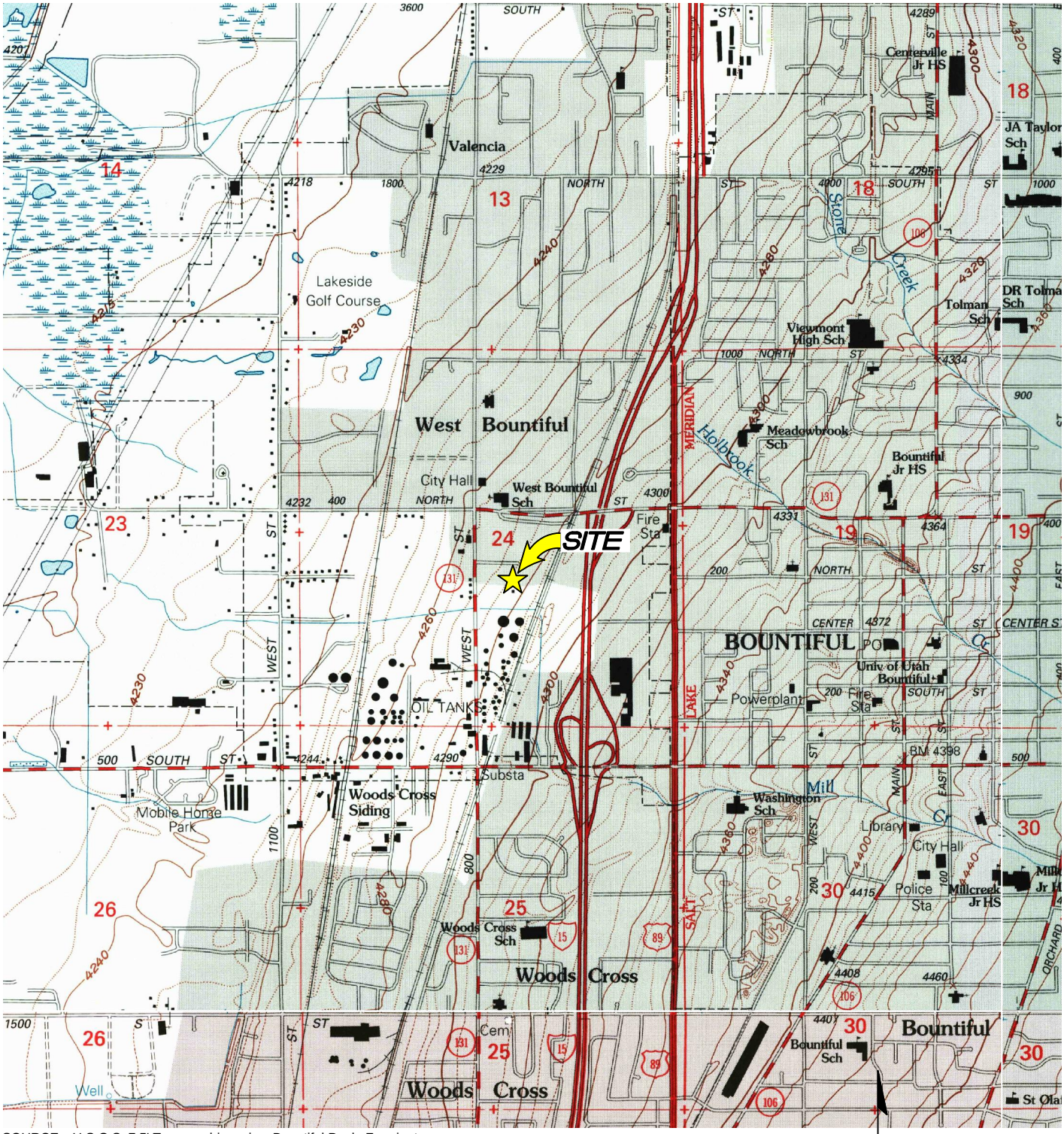
FIGURES



SOURCE: U.S.G.S. 7.5' Topographic series, Bountiful Peak, Farmington, Fort Douglas, and Salt Lake City North Quadrangle 1998.

N

2,000 1,000 0 2,000

APPROXIMATE SCALE (feet)

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PROJECT NO.	20151231
DRAWN:	7/2014
DRAWN BY:	MRG
CHECKED BY:	CH
FILE NAME:	20151231-fig_SLM.dwg

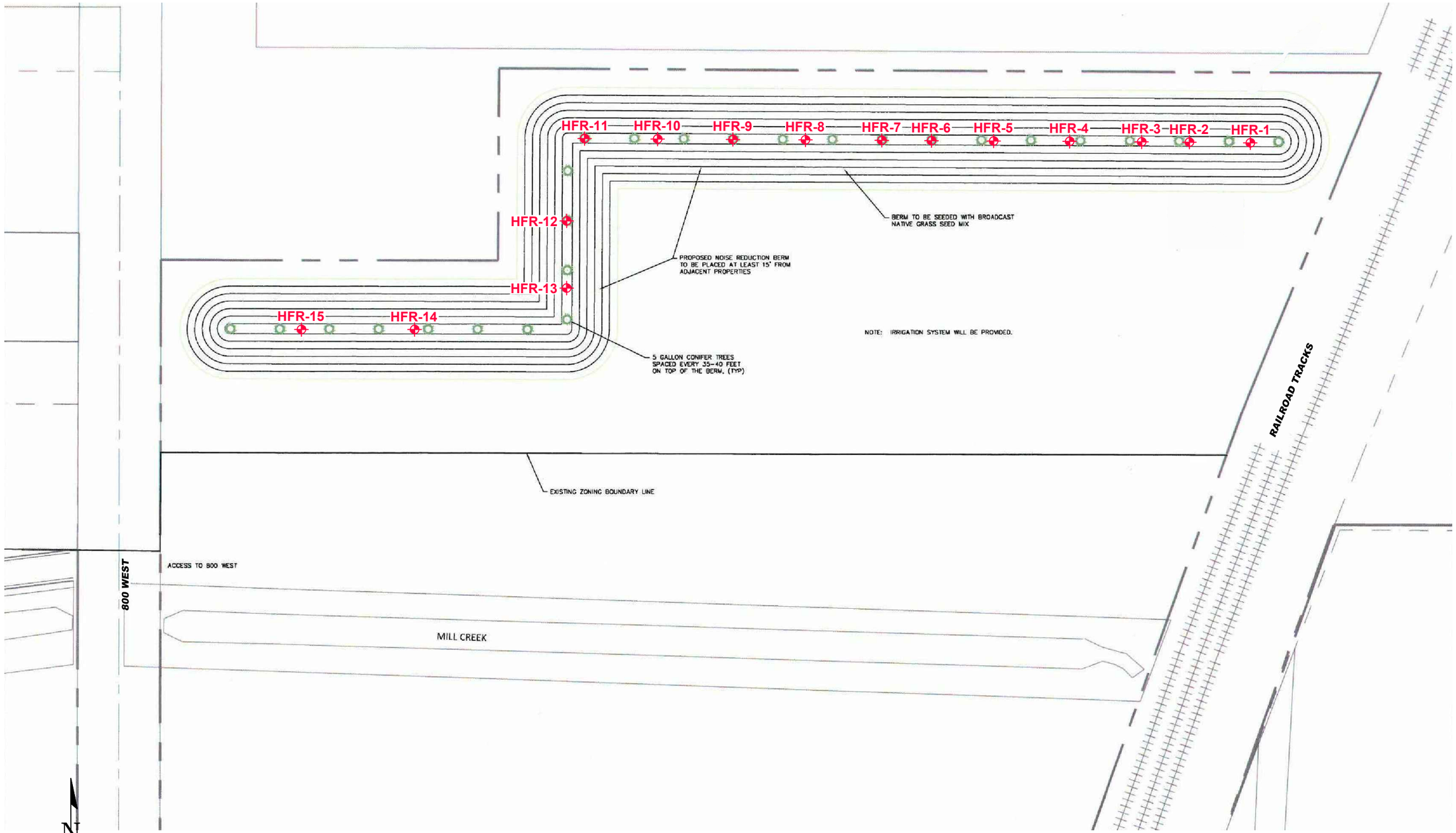
SITE LOCATION MAP

SOIL CHARACTERIZATION RESULTS
HOLLY FRONTIER CORPORATION
WOODS CROSS REFINERY BERM
WEST BOUNTIFUL CITY, UTAH

FIGURE
1

PLOTTED: 08 Jul 2014, 1:32pm, mgriffin
LAYOUT: 1
CAD FILE: L:\CADD\2014\20151231\WoodsCross-Refinery_7-2014\
LONG BEACH, CA

PLOTTED: 08 Jul 2014, 1:33pm, mgriffin
CAD FILE: L:\CADD\2014\20151231\WoodsCross-Refinery_7-2014\ LAYOUT: 2
ATTACHED IMAGES: Images: Clean_Berm Design.jpg Images: Draft_DOC014.jpg
ATTACHED XREFS:
LONG BEACH, CA



EXPLANATION

HFR-15 APPROXIMATE TEST PIT LOCATION

80 40 0 80

APPROXIMATE SCALE (feet)

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REFERENCE: BASE MAP PROVIDED BY, WILDING ENGINEERING, DATED 3/26/14.

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PROJECT NO.	20151231
DRAWN:	7/2014
DRAWN BY:	MRG
CHECKED BY:	CH
FILE NAME:	20151231-fig2_TP-SLM.dwg

TEST PIT SAMPLING LOCATION MAP

SOIL CHARACTERIZATION RESULTS
HOLLY FRONTIER CORPORATION
WOODS CROSS REFINERY BERM
CITY OF INDUSTRY, CALIFORNIA

FIGURE
2

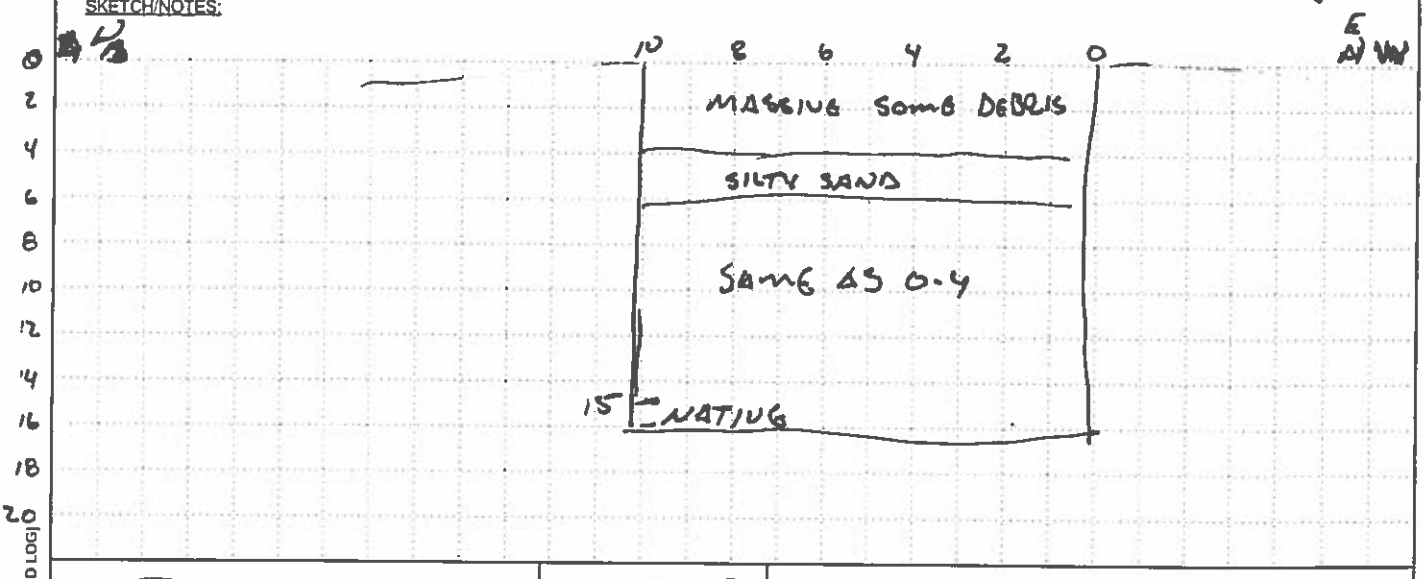
ATTACHMENT A

Test Pit Logs

Exploration ID:	HFR-1	H/V Datum:	—	Logged By:	C. PARK
Total Depth:	16	Latitude/Northing:	40° 53' 28.6"	Excavation Equipment:	TRACKHOG
Depth to Rock:	NOT ENCOUNTERED	Longitude/Easting:	111° 53' 56.0"	Excavation Bucket Size:	2'
Date Begin-End:	6/12/2014	Elevation:	—	Excavation Dimensions:	10 X 12
Surface Condition:	SOIL BERM	Excavation Co.:	HOLLY FRONTIER	Excavation Method:	BACKHOE/TRACHOE
Weather:	WARM	Excavation Co. Lic.#:	—	Shoring Used:	N/A
Groundwater During:	NOT ENCOUNTERED	Excavation Crew:	STEVE	Photo ID:	4552
Groundwater After:	/ / /				

Depth	Sample Type Sym.	Sample Number	FIELD LITHOLOGY DESCRIPTION AND CLASSIFICATION (Soil Description: Soil Type, Particle-Size Range, Particle Angularity, Particle Shape, Particle Hardness, Dry Strength, Dilatancy, Toughness, Color, Odor, Reaction to HCL, Structure, Cementation; Rock Mass Description: Formation and Rock Type, Color, Grain/Particle-Size, Bedding, Discontinuity Density/Spacing)	USCS Symbol	Water Content	Density / Consist.	Plasticity	Percent Gravel	Percent Sand	Percent Fines	PID	Weathering Grade	Discon. Spacing	Discon. Type
0		HFR-CS-1-6/12/14	SILTY GRAVEL W SAND, M DENSE, MOIST DK GREY ORGANIC ODOR WOOD AND CONCRETE DEBRIS	GM	M	MD	NP	55	30	15	8.0			
2											0.0			
4			SILTY SAND, LOOSE, MOIST, GREY	SM		L		40	60	30+	5.5			
6			AS ABOVE 0-4'	GM		MD		60	30	10	4.2			
8											[illegible]			
10														
12											5.0			
14											2.2			
16			NATIVE CLAY MODERATE ORGANICS	CL		S	P				[illegible]			
18														
20														

SKETCH/NOTES:



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PROJECT NO.: 20151231.001A
DRAWN BY:
CHECKED BY:
DATE:
REVISED:

TEST PIT FIELD LOG

Project Name: HOLLY FRONTIER SOUND BERM
Address: approx 800 W 200N
City/County, State: W BOUNTIFUL, UTAH
Page: 1 of 1

(FIELD LOG - TEST PIT FIELD LOG)

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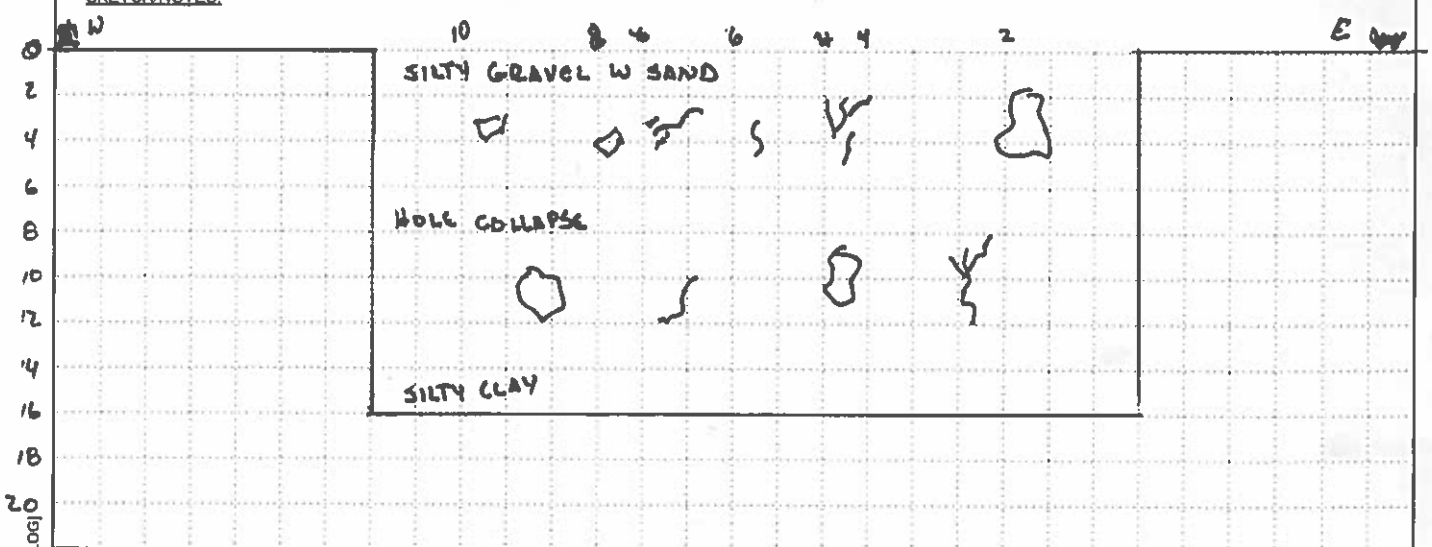
Exploration ID:	HFR-2	H/V Datum:		Logged By:	C. PARK
Total Depth:	16	Latitude/Northing:	40°53'28.9"	Excavation Equipment:	
Depth to Rock:	NOT ENCOUNTERED	Longitude/Easting:	111°53'56.7"	Excavation Bucket Size:	2'
Date Begin-End:	6/ /2014	Elevation:		Excavation Dimensions:	11.5 x 16
Surface Condition:	SOIL BERM	Excavation Co.:	HOLLY FRONTIER	Excavation Method:	BACKHOE/TRACHOE
Weather:		Excavation Co. Lic.#:		Shoring Used:	N/A
Groundwater During:	NOT ENCOUNTERED	Excavation Crew:	STEVE	Photo ID:	~~4555~~
Groundwater After:	/ / /				

Depth	Sample Type Sym.	Sample Number	Soil Description / Rock Mass Description	USCS Symbol	Water Content	Density / Consist.	Plasticity	Percent Gravel	Percent Sand	Percent Fines	PID	Weathering Grade	Discon. Spacing	Discon. Type
0		HFR-CS-2-61214	SILTY GRAVEL W SAND, M DENSE, V MOIST DK BROWN SOME ORGANICS DEBRIS INCLUDING BRICKS, WIRE, AND CONCRETE THROUGHOUT	GM	VM	MD	NP				5.0			
2											0.1			
4											0.3			
6											0.5			
8			(HOLE COLLAPSE FROM 6.5 - 14')								2.4			
10											3			
12											1.0			
14			SILTY CLAY W SAND, SOFT V FINE GRAINED	CL	M		P				0.5			
16			TOTAL DEPTH 16'											
18														
20														

SKETCH/NOTES:



KLEINFELDER
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PROJECT NO.: 20151231.001A
DRAWN BY:
CHECKED BY:
DATE:
REVISED:

TEST PIT FIELD LOG

Project Name: HOLLY FRONTIER SOUTH BERM
Address: approx 800 W 200N
City/County, State: W BOUNTIFUL, UTAH
Page: 1 of 1

[FIELD LOG - TEST PIT FIELD LOG]

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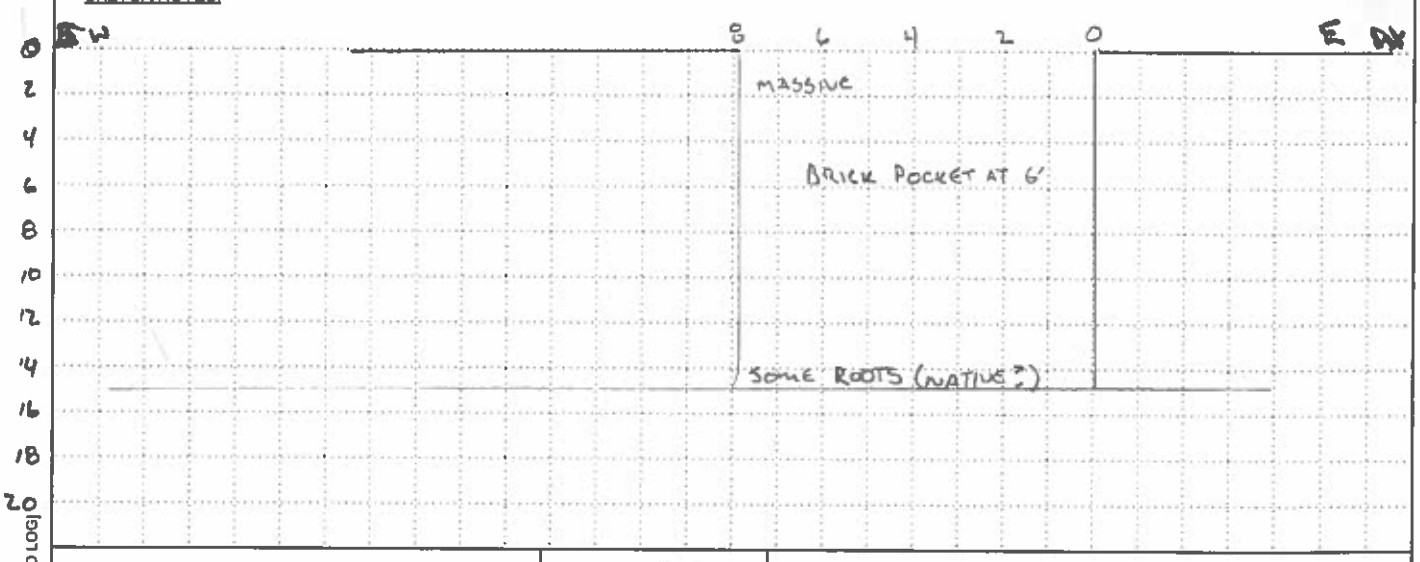
Exploration ID:	HFR-3	H/V Datum:		Logged By:	C. PARK
Total Depth:	15'	Latitude/Northing:	40° 57' 28.6'	Excavation Equipment:	
Depth to Rock:	NOT ENCOUNTERED	Longitude/Easting:	-111° 53' 57.6	Excavation Bucket Size:	2'
Date Begin-End:	6/ /2014	Elevation:		Excavation Dimensions:	8' x 15'
Surface Condition:	SOIL BERM	Excavation Co.:	HOLLY FRONTIER	Excavation Method:	BACKHOE/TRACHOE
Weather:	WARM	Excavation Co. Lic.#:		Shoring Used:	N/A
Groundwater During:	NOT ENCOUNTERED	Excavation Crew:	STEVE	Photo ID:	4561 (Wired)
Groundwater After:	/ / /				

Depth	Sample Type Sym.	Sample Number	Soil Description: Soil Type, Particle-Size Range, Particle Angularity, Particle Shape, Particle Hardness, Dry Strength, Dilatancy, Toughness, Color, Odor, Reaction to HCL, Structure, Cementation / Rock Mass Description: Formation and Rock Type, Color, Grain/Particle-Size, Bedding, Discontinuity Density/Spacing	USCS Symbol	Water Content	Density / Consist.	Plasticity	Percent Gravel	Percent Sand	Percent Fines	PID	Weathering Grade	Discon. Spacing	Discon. Type
0		1	SILTY GRAVEL W. SAND AND CLAY, MOIST	SC	M	MD	MP	60	20	20	0.0			
2		HFR-C3-	M DENSE DK BROWN SOME ORGANICS	GM										
		3-61214	DEBRIS INCLUDING BRICKS AND WIRE											
4											0.3			
6		1010									0.5			
8											3.0			
10											3.5			
12											4.2			
14											0.7			
			TOTAL DEPTH 15'								0.3			
16														
18														
20														

SKETCH/NOTES:



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TEST PIT FIELD LOG

Project Name: HOLLY FRONTIER SOUND BERM
Address: approx 800 W 200 N
City/County, State: W BOUNTIFUL, UTAH
Page: 1 of 1

[FIELD LOG - TEST PIT FIELD LOG]

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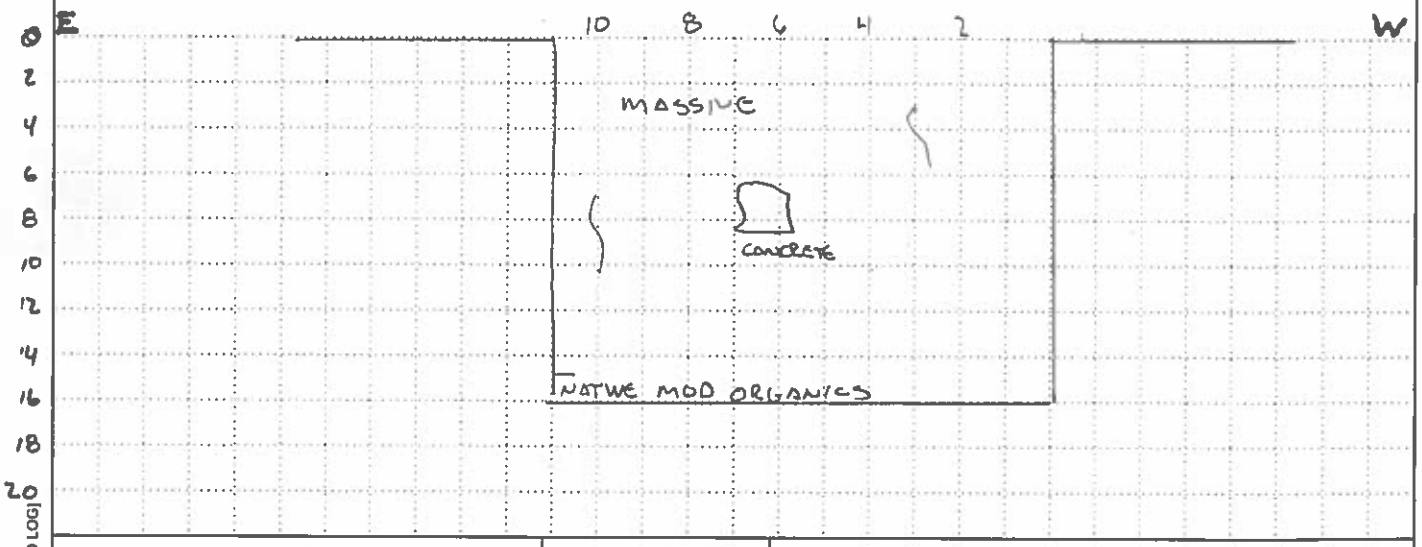
Exploration ID:	HFR-4	H/V Datum:	—	Logged By:	C. PARK
Total Depth:	16	Latitude/Northing:	40° 53' 28.9"	Excavation Equipment:	
Depth to Rock:	NOT ENCOUNTERED	Longitude/Easting:	111° 53' 57.1"	Excavation Bucket Size:	2'
Date Begin-End:	6/ /2014	Elevation:	—	Excavation Dimensions:	11 x 16
Surface Condition:	SOIL BERM	Excavation Co.:	HOLLY FRONTIER	Excavation Method:	BACKHOE/TRACHOE
Weather:	WARM	Excavation Co. Lic.#:	—	Shoring Used:	N/A
Groundwater During:	NOT ENCOUNTERED	Excavation Crew:	STEVE	Photo ID:	41571
Groundwater After:	/ / /				

Depth	Sample Type Sym.	Sample Number	Soil Description: Soil Type, Particle-Size Range, Particle Angularity, Particle Shape, Particle Hardness, Dry Strength, Dilatancy, Toughness, Color, Odor, Reaction to HCL, Structure, Cementation / Rock Mass Description: Formation and Rock Type, Color, Grain/Particle-Size, Bedding, Discontinuity Density/Spacing	USCS Symbol	Water Content	Density / Consist.	Plasticity	Percent Gravel	Percent Sand	Percent Fines	PID	Weathering Grade	Discon. Spacing	Discon. Type
0		HFR-CS-4-61214	SILTY/CLAYEY GRAVEL W SAND, M DENSE, MOIST, DK BROWN, ORGANIC ODOR	GC/GM	M	MD	NP/LP	50	20	30	0.3			
2			DEBRIS INCLUDING BRICK AND WIRE THROUGHOUT								0.6			
4											0.9			
6											1.2			
8			REDUCED FINES SEAM					65	30	5				
								50	20	30	0.7			
10											3.1			
12											1.4			
14			NATIVE (?)								3.3			
16		FN @ 16'	LEAN CLAY W SAND ORGANICS	CL		ST	P	—	15	85				
18														
20														

SKETCH/NOTES:



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TEST PIT FIELD LOG

Project Name: HOLLY FRONTIER SOUND BERM

Address: approx 800 W 200N

City/County, State: W BOUNTIFUL, UTAH

Page: 1 of 1

[FIELD LOG - TEST PIT FIELD LOG]

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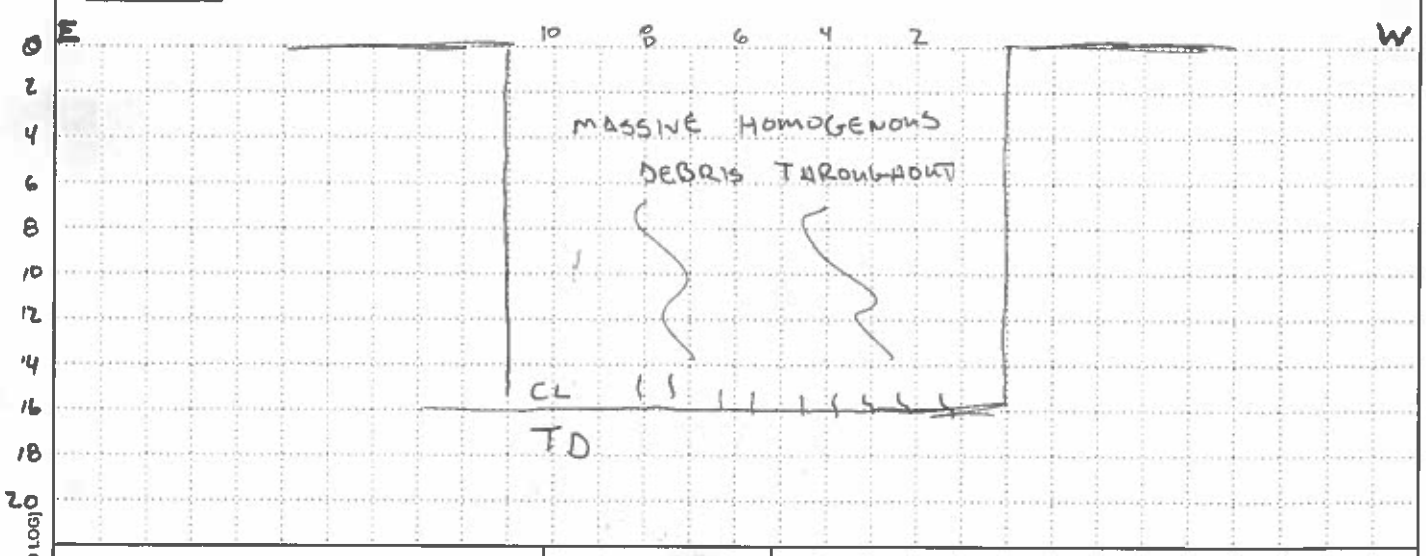
Exploration ID:	HFR-5	H/V Datum:		Logged By:	C. PARK
Total Depth:	16	Latitude/Northing:	40° 53' 29.9"	Excavation Equipment:	TRACKHOE
Depth to Rock:	NOT ENCOUNTERED	Longitude/Easting:	111° 53' 58.6"	Excavation Bucket Size:	2'
Date Begin-End:	6/ /2014	Elevation:		Excavation Dimensions:	11' x 16'
Surface Condition:	SOIL BERM	Excavation Co.:	HOLLY FRONTIER	Excavation Method:	BACKHOE/TRACHOE
Weather:	WARM	Excavation Co. Lic.#:		Shoring Used:	N/A
Groundwater During:	NOT ENCOUNTERED	Excavation Crew:	STEVE	Photo ID:	41577
Groundwater After:	/ / /				

Depth	Sample Type Sym.	Sample Number	Soil Description / Rock Mass Description	USCS Symbol	Water Content	Density / Consist.	Plasticity	Percent Gravel	Percent Sand	Percent Fines	PID	Weathering Grade	Discon. Spacing	Discon. Type
0		HFR-CS-5 6/2/14	SILTY CLAYEY GRAVEL W/ SAND, M DENSE MOIST DK BROWN SOME ORGANICS AND ODOR DEBRIS INCLUDING BRICKS AND WIRE THROUGHOUT	GC GM	M	MD	NP	55	30	15	0.0			
2											0.0			
4											0.1			
6											0.4			
8											0.9			
10											0.9			
12											1.3			
14											3.4			
16			NATIVE CLAY M STIFF MOIST DK BROWN ORGANIC	CL	VM	MST	P	—	25	75				
18														
20														

SKETCH/NOTES:



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TEST PIT FIELD LOG

Project Name: HOLLY FRONTIER SOUND BERM
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Page: 1 of 1

[FIELD LOG - TEST PIT FIELD LOG]

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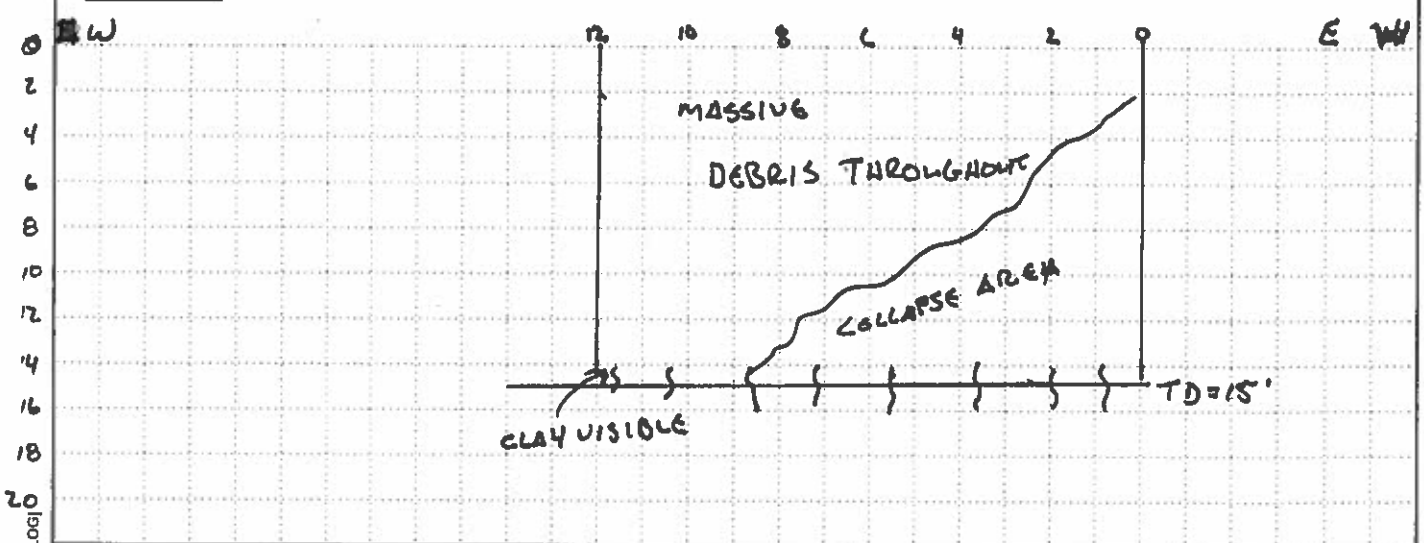
Exploration ID:	HFR-6	H/V Datum:	—	Logged By:	C. PARK
Total Depth:	15	Latitude/Northing:	40° 53' 28.8"	Excavation Equipment:	TRACKHOE
Depth to Rock:	NOT ENCOUNTERED	Longitude/Easting:	111° 53' 59.3"	Excavation Bucket Size:	2'
Date Begin-End:	6/ /2014	Elevation:	—	Excavation Dimensions:	12 x 15
Surface Condition:	SOIL BERM	Excavation Co.:	HOLLY FRONTIER	Excavation Method:	BACKHOE/TRACHOE
Weather:	WARM	Excavation Co. Lic.#:	—	Shoring Used:	N/A
Groundwater During:	NOT ENCOUNTERED	Excavation Crew:	STEVE	Photo ID:	4584
Groundwater After:	/ / /				

Depth	Sample Type Sym.	Sample Number	FIELD LITHOLOGY DESCRIPTION AND CLASSIFICATION (Soil Description: Soil Type, Particle-Size Range, Particle Angularity, Particle Shape, Particle Hardness, Dry Strength, Dilatancy, Toughness, Color, Odor, Reaction to HCL, Structure, Cementation; Rock Mass Description: Formation and Rock Type, Color, Grain/Particle-Size, Bedding, Discontinuity Density/Spacing)	USCS Symbol	Water Content	Density / Consist.	Plasticity	Percent Gravel	Percent Sand	Percent Fines	PID	Weathering Grade	Discon. Spacing	Discon. Type
0		HFR-CS-6-61214	SILTY/CLAYEY GRAVEL W SAND, M DENSE MOIST DK BROWN/GREY DEBRIS	GC GM	M	MD	LP	60	25	15	0.3			
2											0.5			
4			BRICKS WOOD WIRE THROUGHOUT								0.7			
6											0.3			
8											0.2			
10											0.7			
12											1.3			
14			NATIVE CLAY LAST 1' PARTIAL HOLE COLAPSE	CL	M	MST	P	—	10	90	2.4			
16			TD 15'											
18														
20														

SKETCH/NOTES:



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TEST PIT FIELD LOG

Project Name: HOLLY FRONTIER SOUND BERM

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Page: 1 of 1

[FIELD LOG - TEST PIT FIELD LOG]

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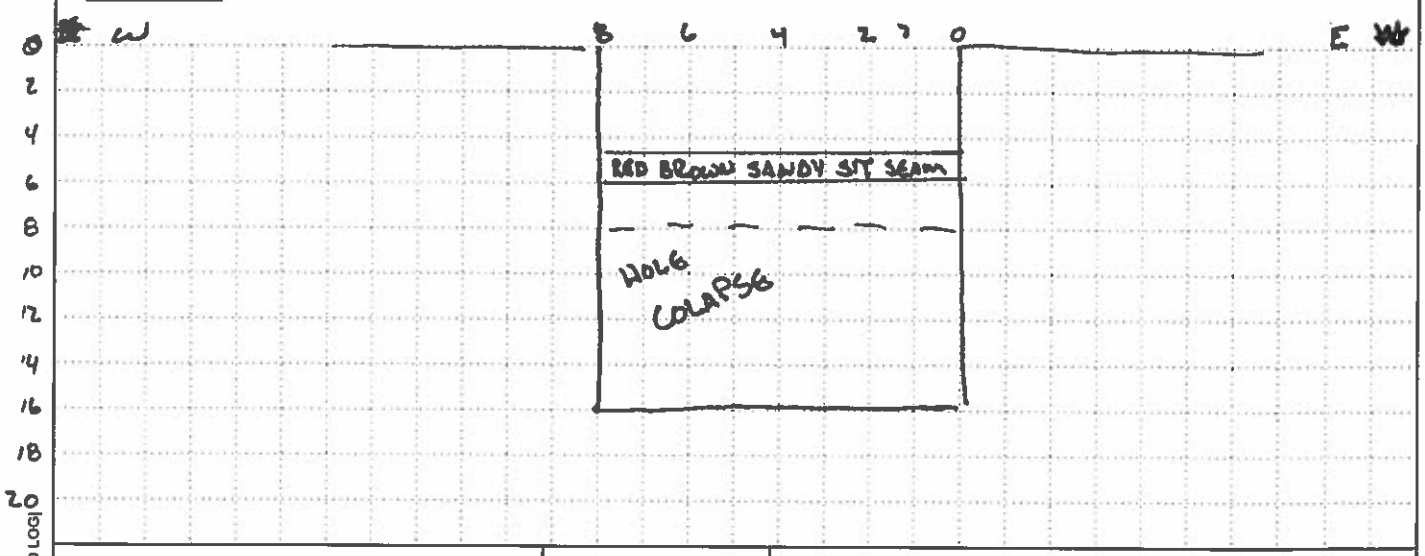
Exploration ID:	HFR-7	H/V Datum:	—	Logged By:	C. PARK
Total Depth:	16'	Latitude/Northing:	40° 53' 27.1"	Excavation Equipment:	TRACKHOE
Depth to Rock:	NOT ENCOUNTERED	Longitude/Easting:	111° 53' 58.2"	Excavation Bucket Size:	2'
Date Begin-End:	6/ /2014	Elevation:	—	Excavation Dimensions:	8' x 16'
Surface Condition:	SOIL BERM	Excavation Co.:	HOLLY FRONTIER	Excavation Method:	BACKHOE/TRACHOE
Weather:	WARM	Excavation Co. Lic.#:	—	Shoring Used:	N/A
Groundwater During:	NOT ENCOUNTERED	Excavation Crew:	STEVE	Photo ID:	4589
Groundwater After:	/ / /				

Depth	Sample Type Sym.	Sample Number	Soil Description / Rock Mass Description	USCS Symbol	Water Content	Density / Consist.	Plasticity	Percent Gravel	Percent Sand	Percent Fines	PID	Weathering Grade	Discon. Spacing	Discon. Type
0		HFR-CS-7-6/2/14	SILTY/CLAYEY GRAVEL W SAND M DENSE MOIST DK BROWN/GREY SOME DEBRIS	GC/GM	M	MD	NP	65	20	15	0.1			
2											3.7			
4											5.5			
6			SANDY SILT MOIST SOFT, RED BROWN (SEAM)	ML	M	S		–	30	70				
			SAME AS 0-5'	GC/GM	M	MD		65	30	10	2.1			
8											3.1			
10											4.4			
12											5.3			
14											1.1			
16			NATIVE CLAY AS BEFORE (SEE HFR-6)	CL	VM	MS	P	–	15	85				
18														
20														

SKETCH/NOTES:



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TEST PIT FIELD LOG

Project Name: HOLLY FRONTIER SOUND BERM

Address: approx 800 W 200 N

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[FIELD LOG - TEST PIT FIELD LOG]

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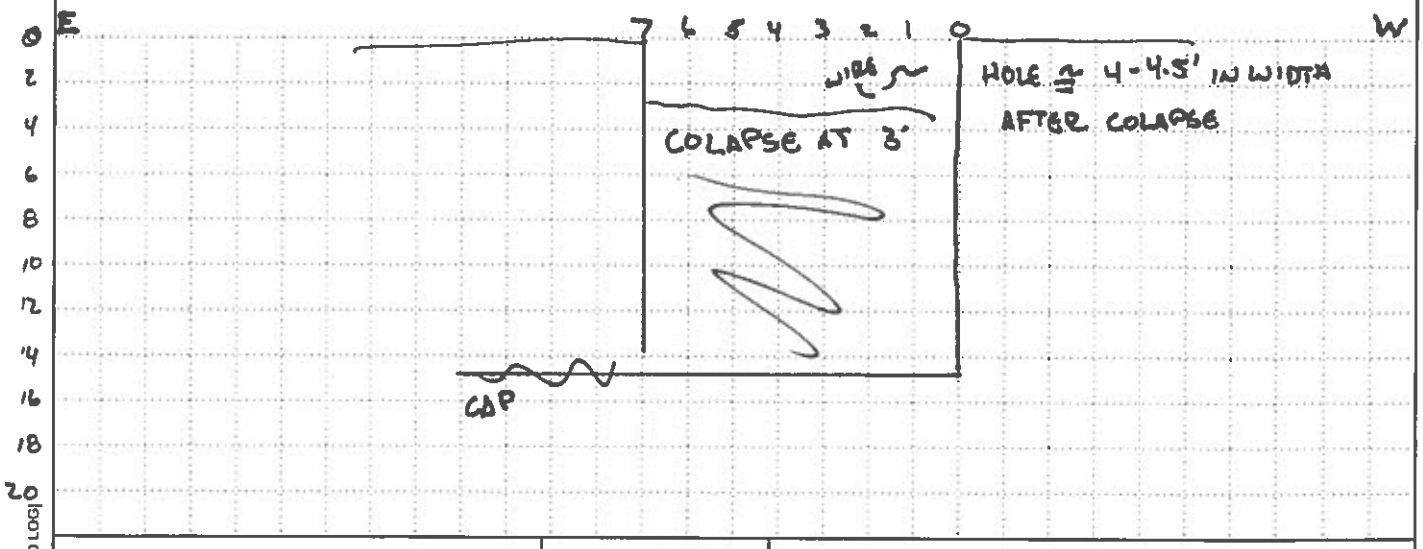
Exploration ID:	HFR-8	H/V Datum:	40° 53' 27.3"	Logged By:	C. PARK
Total Depth:	15	Latitude/Northing:	40° 53' 28.8"	Excavation Equipment:	TRACKHOE
Depth to Rock:	NOT ENCOUNTERED	Longitude/Easting:	111° 53.59.9"	Excavation Bucket Size:	2'
Date Begin-End:	6/ /2014	Elevation:		Excavation Dimensions:	7' x 15
Surface Condition:	SOIL BERM	Excavation Co.:	HOLLY FRONTIER	Excavation Method:	BACKHOE/TRACHOE
Weather:	WARM	Excavation Co. Lic.#:		Shoring Used:	N/A
Groundwater During:	NOT ENCOUNTERED	Excavation Crew:	STEVE	Photo ID:	4595
Groundwater After:	/ / /				

Depth	Sample Type Sym.	Sample Number	Soil Description: Soil Type, Particle-Size Range, Particle Angularity, Particle Shape, Particle Hardness, Dry Strength, Dilatancy, Toughness, Color, Odor, Reaction to HCL, Structure, Cementation / Rock Mass Description: Formation and Rock Type, Color, Grain/Particle-Size, Bedding, Discontinuity Density/Spacing	USCS Symbol	Water Content	Density / Consist.	Plasticity	Percent Gravel	Percent Sand	Percent Fines	PID	Weathering Grade	Discon. Spacing	Discon. Type
0		HFR-CS-B-61214	SILTY CLAYEY GRAVEL W SAND, DENSE, MOIST, GREY SOME DEBRIS	GC/GM	M	D	NP	70	15	15	1.3			
2											3.3			
4											2.1			
6											5.1			
8											10.3			
10											11.1			
12											0.3			
14											2.2			
16			TD 15'											
18														
20														

SKETCH/NOTES:



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TEST PIT FIELD LOG

Project Name: HOLLY FRONTIER SOUND BERM
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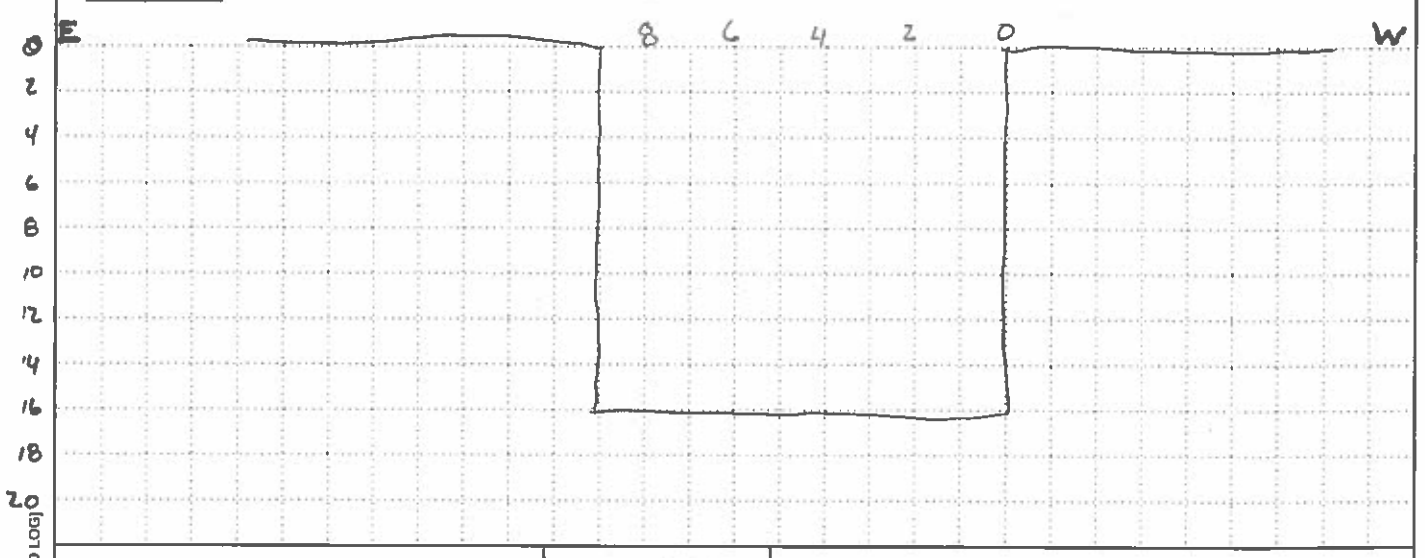
Exploration ID:	HFR-9	H/V Datum:		Logged By:	C. PARK
Total Depth:	16	Latitude/Northing:	40° 53' 28.9"	Excavation Equipment:	TRACKHOE
Depth to Rock:	NOT ENCOUNTERED	Longitude/Easting:	111° 54' 01.2"	Excavation Bucket Size:	2'
Date Begin-End:	6/ /2014	Elevation:		Excavation Dimensions:	9' x 16'
Surface Condition:	SOIL BERM	Excavation Co.:	HOLLY FRONTIER	Excavation Method:	BACKHOE/TRACHOE
Weather:	WARM	Excavation Co. Lic.#:		Shoring Used:	N/A
Groundwater During:	NOT ENCOUNTERED	Excavation Crew:	STEVE	Photo ID:	4603
Groundwater After:	/ / /				

Depth	Sample Type Sym.	Sample Number	Soil Description: Soil Type, Particle-Size Range, Particle Angularity, Particle Shape, Particle Hardness, Dry Strength, Dilatancy, Toughness, Color, Odor, Reaction to HCL, Structure, Cementation / Rock Mass Description: Formation and Rock Type, Color, Grain/Particle-Size, Bedding, Discontinuity Density/Spacing	USCS Symbol	Water Content	Density / Consist.	Plasticity	Percent Gravel	Percent Sand	Percent Fines	PID	Weathering Grade	Discon. Spacing	Discon. Type
0		HFR-CS-9-6/2/14	SILTY CLAYEY GRAVEL W SAND, m DENSG v MOIST TO MOIST DK GREY	GC GM	VM	MD	NP	60	30	10	0.1			
2											0.3			
4			DEBRIS INCLUDES WIRE CONCRETE AND ABS PIPE								0.7			
6											0.8			
8			SILTY SAND INTERBEDDED WITH IRON OXIDE STAINING	GC GM	M	MD	NP	50	35	15	5.2			
10											2.1			
12											0.3			
14											0.5			
16			NATIVE CLAY WITH ORGANICS	CL	M	S	P	–	10	90				
18														
20														

SKETCH/NOTES:



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TEST PIT FIELD LOG

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City/County, State: W BOUNTIFUL, UTAH

Page: 1 of 1

[FIELD LOG - TEST PIT FIELD LOG]

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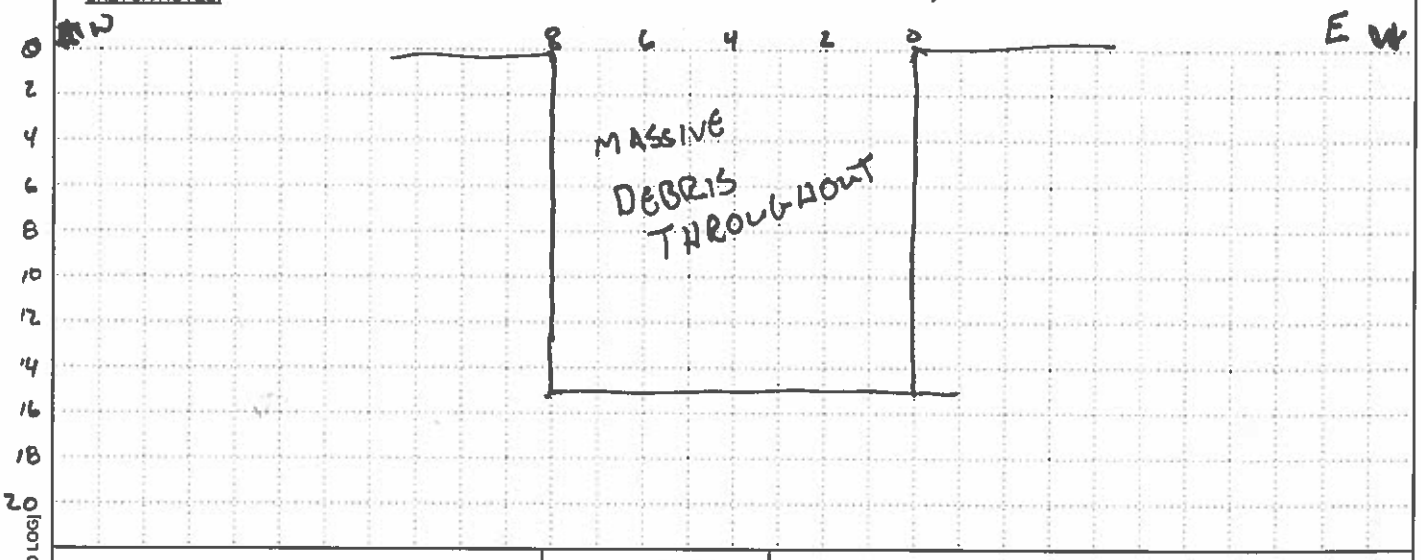
Exploration ID:	HFR 10	H/V Datum:	—	Logged By:	C. PARK
Total Depth:	15	Latitude/Northing:	40° 53 28.7"	Excavation Equipment:	TRACKHOE
Depth to Rock:	NOT ENCOUNTERED	Longitude/Easting:	111° 54 02.1"	Excavation Bucket Size:	2'
Date Begin-End:	6/ /2014	Elevation:	—	Excavation Dimensions:	8' x 15
Surface Condition:	SOIL BERM	Excavation Co.:	HOLLY FRONTIER	Excavation Method:	BACKHOE/TRACHOE
Weather:	WARM BREEZE	Excavation Co. Lic.#:	—	Shoring Used:	N/A
Groundwater During:	NOT ENCOUNTERED	Excavation Crew:	STEVE	Photo ID:	4613
Groundwater After:	/ / /				

Depth	Sample Type Sym.	Sample Number	Soil Description: Soil Type, Particle-Size Range, Particle Angularity, Particle Shape, Particle Hardness, Dry Strength, Dilatancy, Toughness, Color, Odor, Reaction to HCL, Structure, Cementation / Rock Mass Description: Formation and Rock Type, Color, Grain/Particle-Size, Bedding, Discontinuity Density/Spacing	USCS Symbol	Water Content	Density / Consist.	Plasticity	Percent Gravel	Percent Sand	Percent Fines	PID	Weathering Grade	Discon. Spacing	Discon. Type
0		HFR-CS-10-6/2/14	SEE HFR-5	GC/GM	M	MD	NP	70	20	10	0.0			
2											0.0			
4											0.0			
6											0.3			
8											0.5			
10											0.3			
12											0.7			
14											0.1			
16														
18														
20														

SKETCH/NOTES:



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TEST PIT FIELD LOG

Project Name: HOLLY FRONTIER SOUTH BERM
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Page: 1 of 1

[FIELD LOG - TEST PIT FIELD LOG]

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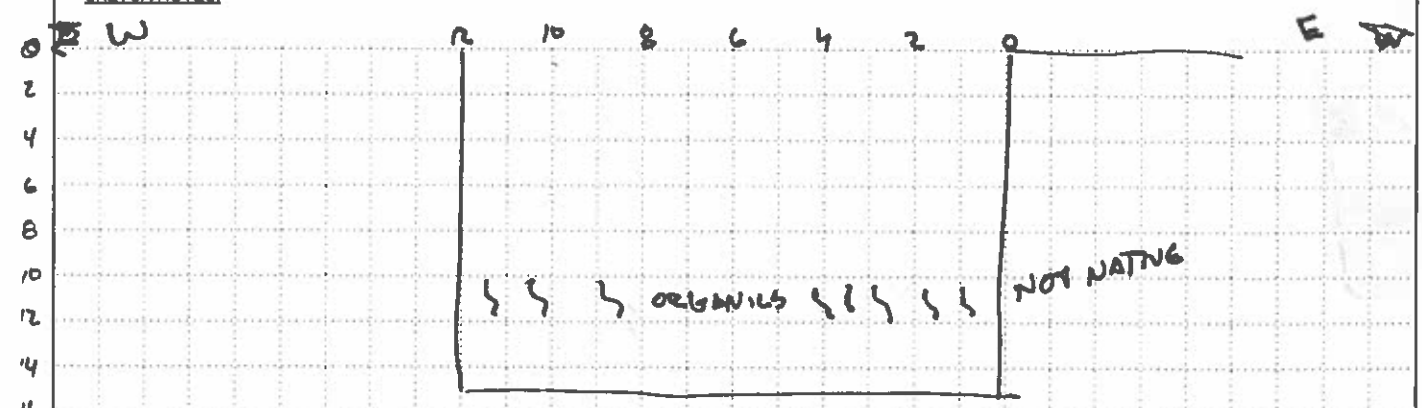
Exploration ID:	HFR 11	H/V Datum:		Logged By:	C. PARK
Total Depth:	15'	Latitude/Northing:	40° 53'28.8"	Excavation Equipment:	TRACKHOE
Depth to Rock:	NOT ENCOUNTERED	Longitude/Easting:	111°54'02.7"	Excavation Bucket Size:	2'
Date Begin-End:	6/ /2014	Elevation:		Excavation Dimensions:	12 x 15
Surface Condition:	SOIL BERM	Excavation Co.:	HOLLY FRONTIER	Excavation Method:	BACKHOE/TRACHOE
Weather:	WARM/WIND	Excavation Co. Lic.#:		Shoring Used:	N/A
Groundwater During:	NOT ENCOUNTERED	Excavation Crew:	STEVE	Photo ID:	4619
Groundwater After:	/ / /				

Depth	Sample Type Sym.	Sample Number	Soil Description / Rock Mass Description	USCS Symbol	Water Content	Density / Consist.	Plasticity	Percent Gravel	Percent Sand	Percent Fines	PID	Weathering Grade	Discon. Spacing	Discon. Type
0		HFR-CS-11-6MM	SILTY/CLAYEY GRAVEL W SAND, M DENSE V MOIST DK GREY DEBRIS INCLUDES WOOD ASPHALT ETC	GC GM	VM	MD	NP LP	50	30	20	0.3			
2											2.1			
4											3.3			
6											3.5			
8											3.7			
10			ORGANIC SEEM FROM 10-12'								5.4			
12											0.1			
14											2.2			
16														
18														
20														

SKETCH/NOTES:



TP LOCATED IN CORNER OF BERM WHERE BERM TURNS SOUTH

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[FIELD LOG - TEST PIT FIELD LOG]

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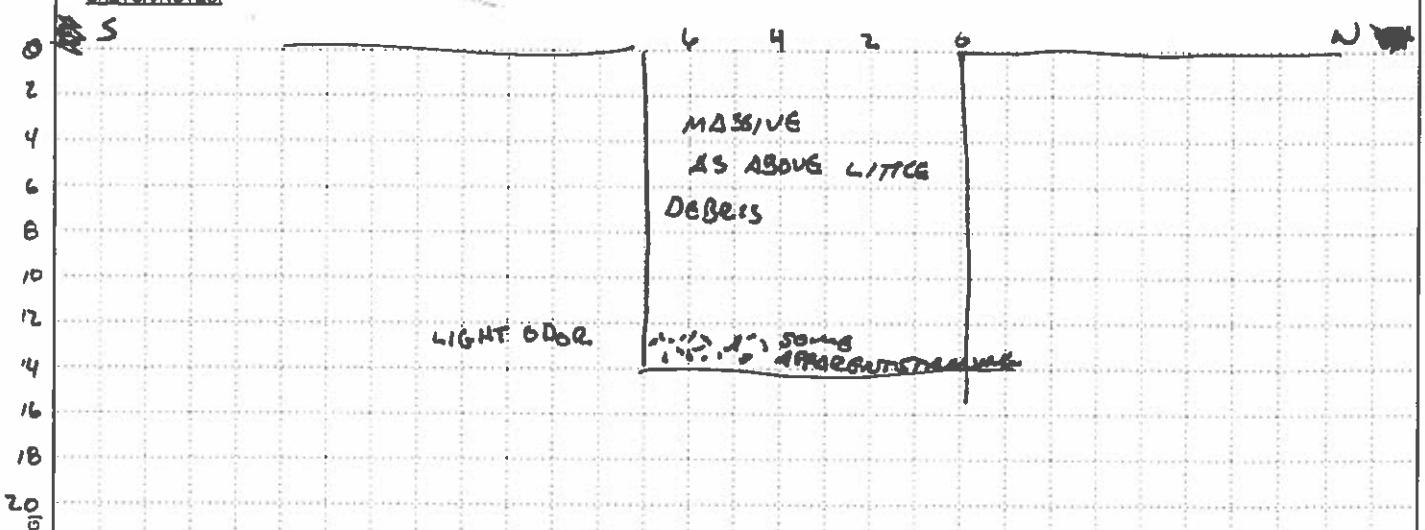
Exploration ID:	HFR 12	H/V Datum:	—	Logged By:	C. PARK
Total Depth:	14	Latitude/Northing:	40°53'28.8"	Excavation Equipment:	
Depth to Rock:	NOT ENCOUNTERED	Longitude/Easting:	111°54'02.7"	Excavation Bucket Size:	
Date Begin-End:	6/ /2014	Elevation:	—	Excavation Dimensions:	
Surface Condition:	SOIL BERM	Excavation Co.:	HOLLY FRONTIER	Excavation Method:	BACKHOE/TRACHOE
Weather:	WARM	Excavation Co. Lic.#:	—	Shoring Used:	N/A
Groundwater During:	NOT ENCOUNTERED	Excavation Crew:	STEVE	Photo ID:	
Groundwater After:	/ / /				

Depth	Sample Type Sym.	Sample Number	Soil Description / Rock Mass Description	USCS Symbol	Water Content	Density / Consist.	Plasticity	Percent Gravel	Percent Sand	Percent Fines	PID	Weathering Grade	Discon. Spacing	Discon. Type
0		HFR-CS-12-6/2/4	SILTY/CLAYEY GRAVEL AS BEFORE	GC/GM	M	MD	NP	60	35	15	0.1			
2			LIMITED DEBRIS								3.1			
4											0.3			
6											0.5			
8											0.7			
10											0.9			
12			SILTY SAND SOME STAINING	SM		L	NP	—	70	30	12.1			
14			TD NATIVE CLAY											
16														
18														
20														

SKETCH/NOTES:



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TEST PIT FIELD LOG

Project Name: HOLLY FRONTIER SOUND BERM

Address: approx 800 W 200N

City/County, State: W BOUNTIFUL, UTAH

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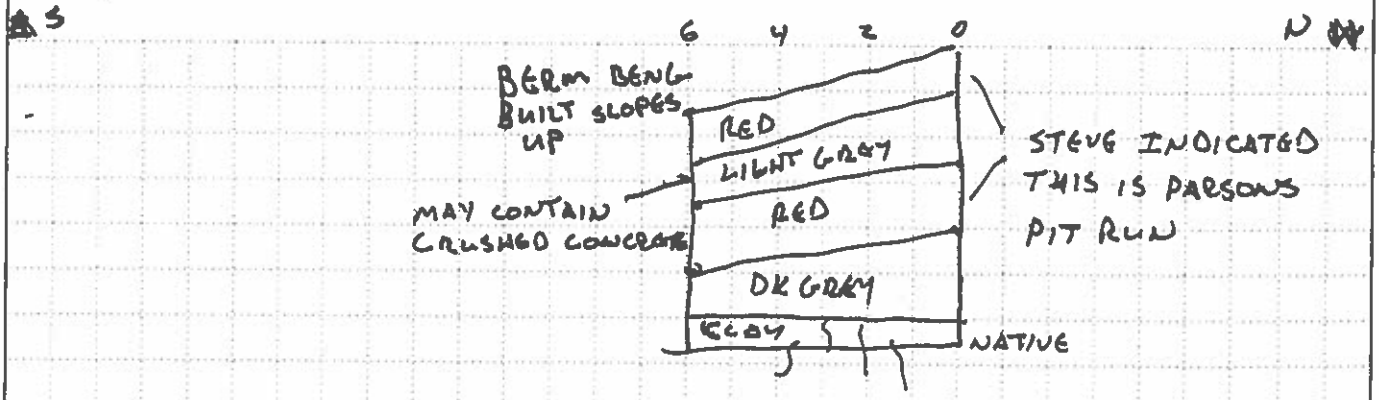
Exploration ID:	HFQ-13	H/V Datum:	~	Logged By:	C. PARK
Total Depth:	13	Latitude/Northing:	40° 53' 27.8"	Excavation Equipment:	TRACKHOE
Depth to Rock:	NOT ENCOUNTERED	Longitude/Easting:	111° 54' 02.9"	Excavation Bucket Size:	2'
Date Begin-End:	6/12/2014	Elevation:	~	Excavation Dimensions:	6' x 13'
Surface Condition:	SOIL BERM	Excavation Co.:	HOLLY FRONTIER	Excavation Method:	BACKHOE/TRACHOE
Weather:	WARM	Excavation Co. Lic.#:	—	Shoring Used:	N/A
Groundwater During:	NOT ENCOUNTERED	Excavation Crew:	STEVE	Photo ID:	4629
Groundwater After:	/ / /				

Depth	Sample Type Sym.	Sample Number	FIELD LITHOLOGY DESCRIPTION AND CLASSIFICATION (Soil Type, Particle-Size Range, Particle Angularity, Particle Shape, Particle Hardness, Dry Strength, Dilatancy, Toughness, Color, Odor, Reaction to HCL, Structure, Cementation; Rock Mass Description: Formation and Rock Type, Color, Grain/Particle-Size, Bedding, Discontinuity Density/Spacing)	USCS Symbol	Water Content	Density / Consist.	Plasticity	Percent Gravel	Percent Sand	Percent Fines	PID	[redacted] Weathering Grade	Discon. Spacing	Discon. Type
0		HFQ-CS-13-6/12/14	SILTY GRAVEL W SAND (RED) AND SILTY SAND W GRAVEL (INTERBEDDED) LIGHT GREY M DENSE TO LOOSE	GM		MD	NP	65	25	10	0.0			
2				SM				15	60	25	0.0			
4											0.0			
6				GM				50	30	20				
8											0.0			
10			SILTY GRAVEL W SAND TRACE CLAY, M DENSE V MOIST DK GREY	GC/GM		MD	LP	55	25	20	1.1			
12											3.3			
14			NATIVE AT 12'	CL	VM	S	P	–	35	65	2.1			
16														
18														
20														

SKETCH/NOTES:



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PROJECT NO.: 20151231.0014
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CHECKED BY:
DATE:
REVISED:

TEST PIT FIELD LOG

Project Name: HOLLY FRONTIER SOUND BERM
Address: approx 800 W 200N
City/County, State: W BOUNTIFUL, UTAH
Page: 1 of 1

(FIELD LOG - TEST PIT FIELD LOG)

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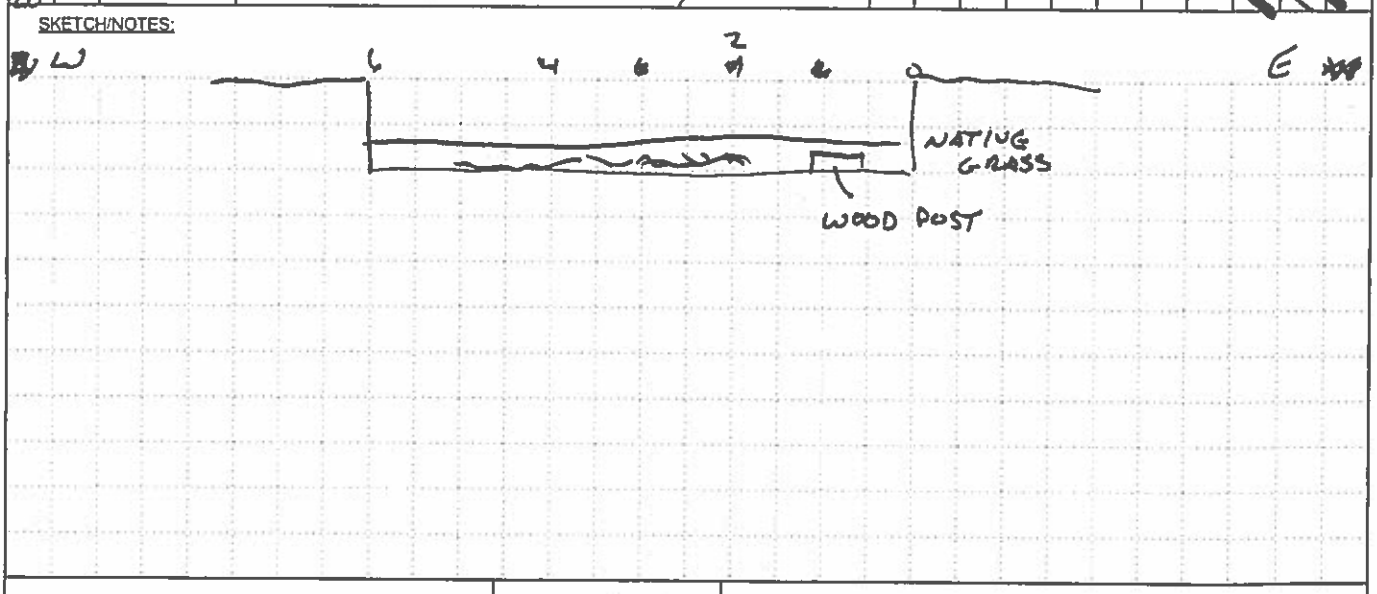
Exploration ID:	HFR 14	H/V Datum:	—	Logged By:	C. PARK
Total Depth:	4'	Latitude/Northing:	40° 53' 27.2"	Excavation Equipment:	TRACKHOE
Depth to Rock:	NOT ENCOUNTERED	Longitude/Easting:	111° 54.045"	Excavation Bucket Size:	2'
Date Begin-End:	6/12/2014	Elevation:	—	Excavation Dimensions:	6x 4'
Surface Condition:	SOIL BERM	Excavation Co.:	HOLLY FRONTIER	Excavation Method:	BACKHOE/TRACHOE
Weather:	V WARM	Excavation Co. Lic.#:	—	Shoring Used:	N/A
Groundwater During:	NOT ENCOUNTERED	Excavation Crew:	STEVE	Photo ID:	
Groundwater After:	/ / /				

Depth	Sample Type Sym.	Sample Number	FIELD LITHOLOGY DESCRIPTION AND CLASSIFICATION (Soil Description: Soil Type, Particle-Size Range, Particle Angularity, Particle Shape, Particle Hardness, Dry Strength, Dilatancy, Toughness, Color, Odor, Reaction to HCL, Structure, Cementation; Rock Mass Description: Formation and Rock Type, Color, Grain/Particle-Size, Bedding, Discontinuity Density/Spacing)	USCS Symbol	Water Content	Density / Consist.	Plasticity	Percent Gravel	Percent Sand	Percent Fines	PID	Weathering Grade	Discon. Spacing	Discon. Type
0		HFR-CS 14-6/12/14	SILTY GRAVEL W SAND LOOSE, S MOISTURE LIGHT GRAY	GM	SM	L	NP	70	20	10	0.0			
2											0.1			
4			NATIVE CONTACT SANDY LEAN CLAY WOOD POST GRASS	CL	M	S	P	10	20	70				
6														
8														
10														
12														
14														
16														
18														
20														

SKETCH/NOTES:



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PROJECT NO.: 20151231.001A
DRAWN BY:
CHECKED BY:
DATE:
REVISED:

TEST PIT FIELD LOG

Project Name: HOLLY FRONTIER SOUND BERM
Address: approx 800 W 200N
City/County, State: W BOUNTIFUL, UTAH
Page: 1 of 1

[FIELD LOG - TEST PIT FIELD LOG]

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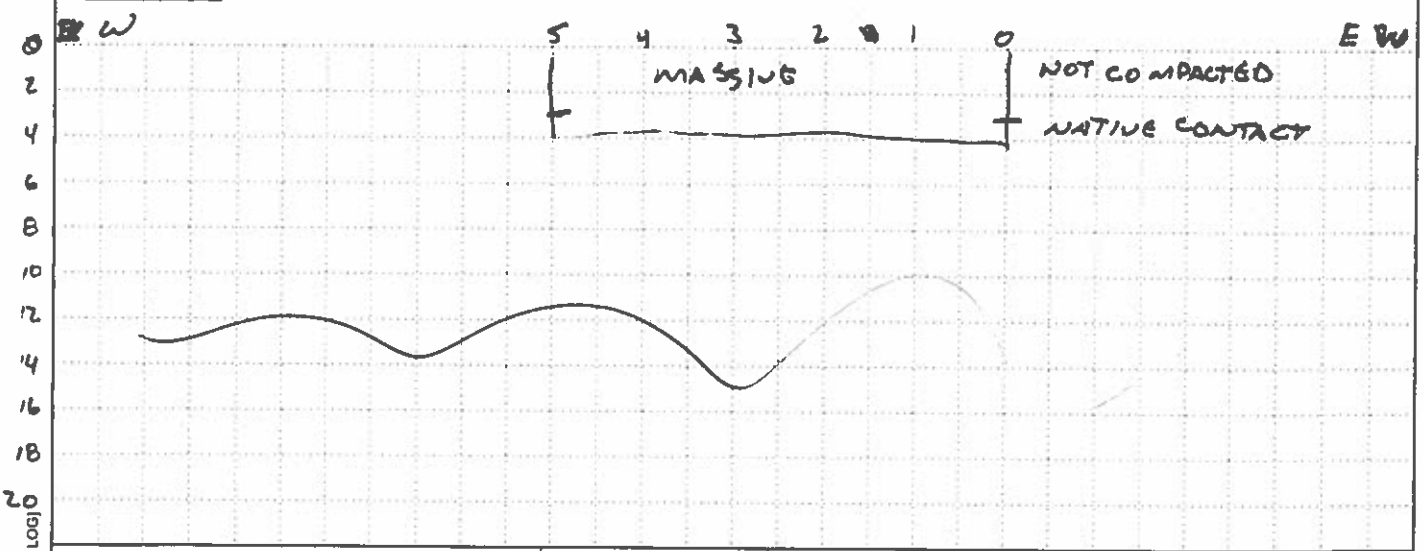
Exploration ID:	HFR-15	H/V Datum:	—	Logged By:	C. PARK
Total Depth:	4'	Latitude/Northing:	40° 53' 27.2"	Excavation Equipment:	TRACHOES
Depth to Rock:	NOT ENCOUNTERED	Longitude/Easting:	111° 54' 05.8"	Excavation Bucket Size:	2'
Date Begin-End:	6/2/2014	Elevation:	—	Excavation Dimensions:	5' x 4'
Surface Condition:	SOIL BERM	Excavation Co.:	HOLLY FRONTIER	Excavation Method:	BACKHOE/TRACHOE
Weather:	V WARM	Excavation Co. Lic.#:	—	Shoring Used:	N/A
Groundwater During:	NOT ENCOUNTERED	Excavation Crew:	STEVE	Photo ID:	4613
Groundwater After:	/ / /				

Depth	Sample Type Sym.	Sample Number	FIELD LITHOLOGY DESCRIPTION AND CLASSIFICATION (Soil Type, Particle-Size Range, Particle Angularity, Particle Shape, Particle Hardness, Dry Strength, Dilatancy, Toughness, Color, Odor, Reaction to HCL, Structure, Cementation; Rock Mass Description: Formation and Rock Type, Color, Grain/Particle-Size, Bedding, Discontinuity Density/Spacing)	USCS Symbol	Water Content	Density / Consist.	Plasticity	Percent Gravel	Percent Sand	Percent Fines	PID	Weathering Grade	Discon. Spacing	Discon. Type
0		HFR-CS-15-61214	SILTY GRAVEL W SAND, LOOSE, S MOISTURE LIGHT GRAY	GM	SM	L	NP	60	25	15	0.0			
2														
4			SILTY SAND W CLAY (NATIVE) GRASS	SM SC	M	MD	LP	10	60	40	0.0			
6														
8														
10														
12														
14														
16														
18														
20														

SKETCH/NOTES:



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PROJECT NO. 20151231.001A

DRAWN BY:

CHECKED BY:

DATE:

REVISED:

TEST PIT FIELD LOG

Project Name: HOLLY FRONTIER SOUND BERM

Address: approx 800 W 200 N

City/County, State: W BOUNTIFUL, UTAH

Page: 1 of 1

(FIELD LOG - TEST PIT FIELD LOG)

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ATTACHMENT B

Laboratory Analytical Results and Chain of Custody Documentation

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Est. 1970

Corey Park
GSC/Kleinfelder - SLC
849 W Levoy Dr, Ste 200
Taylorsville, UT 84123

Report Summary

Monday June 23, 2014

Report Number: L704881
Samples Received: 06/14/14
Client Project: 20151231.001A

Description: Holly Frontier Soil Berm Sampling

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: Jarred Willis

Jarred Willis , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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REPORT OF ANALYSIS

Corey Park
GSC/Kleinfelder - SLC
849 W Levoy Dr, Ste 200
Taylorsville, UT 84123

June 23,2014

ESC Sample # : L704881-01

Date Received : June 14, 2014
Description : Holly Frontier Soil Berm Sampling

Site ID :

Sample ID : HFR-CS-1-61214

Project # : 20151231.001A

Collected By : CAP
Collection Date : 06/12/14 09:09

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPH - Oil & Grease	110	33.	110	mg/kg	J	9071B	06/20/14	1
Total Solids	89.7	0.0333		%		2540 G-2	06/18/14	1
Mercury	0.074	0.0028	0.022	mg/kg		7471	06/17/14	1
Arsenic	3.8	0.65	2.2	mg/kg		6010B	06/20/14	1
Barium	160	0.17	0.56	mg/kg		6010B	06/20/14	1
Cadmium	0.86	0.070	0.56	mg/kg		6010B	06/20/14	1
Chromium	42.	0.14	1.1	mg/kg		6010B	06/20/14	1
Lead	33.	0.19	0.56	mg/kg		6010B	06/22/14	1
Selenium	U	0.74	2.2	mg/kg		6010B	06/20/14	1
Silver	0.84	0.28	1.1	mg/kg	J	6010B	06/20/14	1
TPH (GC/FID) Low Fraction	U	0.11	0.56	mg/kg		GRO	06/20/14	5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	98.1			% Rec.		GRO	06/20/14	5
Benzene	U	0.0014	0.0056	mg/kg		8260B	06/16/14	5
Toluene	U	0.0022	0.028	mg/kg		8260B	06/16/14	5
Ethylbenzene	U	0.0015	0.0056	mg/kg		8260B	06/16/14	5
Xylenes, Total	U	0.0035	0.017	mg/kg		8260B	06/16/14	5
Naphthalene	U	0.0050	0.028	mg/kg		8260B	06/16/14	5
Surrogate Recovery								
Toluene-d8	103.			% Rec.		8260B	06/16/14	5
Dibromofluoromethane	101.			% Rec.		8260B	06/16/14	5
a,a,a-Trifluorotoluene	98.5			% Rec.		8260B	06/16/14	5
4-Bromofluorobenzene	95.2			% Rec.		8260B	06/16/14	5
TPH (GC/FID) High Fraction	10.	0.77	4.4	mg/kg		3546/DRO	06/20/14	1
Surrogate recovery(%)								
o-Terphenyl	87.7			% Rec.		3546/DRO	06/20/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Corey Park
GSC/Kleinfelder - SLC
849 W Levoy Dr, Ste 200
Taylorsville, UT 84123

June 23,2014

ESC Sample # : L704881-02

Date Received : June 14, 2014
Description : Holly Frontier Soil Berm Sampling

Site ID :

Sample ID : HFR-CS-2-61214

Project # : 20151231.001A

Collected By : CAP
Collection Date : 06/12/14 09:50

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPH - Oil & Grease	120	33.	130	mg/kg	J	9071B	06/20/14	1
Total Solids	76.3	0.0333		%		2540 G-2	06/18/14	1
Mercury	0.052	0.0028	0.026	mg/kg		7471	06/17/14	1
Arsenic	6.7	0.65	2.6	mg/kg		6010B	06/20/14	1
Barium	110	0.17	0.66	mg/kg		6010B	06/20/14	1
Cadmium	0.93	0.070	0.66	mg/kg		6010B	06/20/14	1
Chromium	50.	0.14	1.3	mg/kg		6010B	06/20/14	1
Lead	30.	0.19	0.66	mg/kg		6010B	06/22/14	1
Selenium	U	0.74	2.6	mg/kg		6010B	06/20/14	1
Silver	0.84	0.28	1.3	mg/kg	J	6010B	06/20/14	1
TPH (GC/FID) Low Fraction	0.39	0.11	0.66	mg/kg	J	GRO	06/20/14	5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	98.9			% Rec.		GRO	06/20/14	5
Benzene	U	0.0014	0.0066	mg/kg		8260B	06/16/14	5
Toluene	U	0.0022	0.033	mg/kg		8260B	06/16/14	5
Ethylbenzene	U	0.0015	0.0066	mg/kg		8260B	06/16/14	5
Xylenes, Total	U	0.0035	0.020	mg/kg		8260B	06/16/14	5
Naphthalene	U	0.0050	0.033	mg/kg		8260B	06/16/14	5
Surrogate Recovery								
Toluene-d8	105.			% Rec.		8260B	06/16/14	5
Dibromofluoromethane	100.			% Rec.		8260B	06/16/14	5
a,a,a-Trifluorotoluene	99.9			% Rec.		8260B	06/16/14	5
4-Bromofluorobenzene	92.6			% Rec.		8260B	06/16/14	5
TPH (GC/FID) High Fraction	4.2	0.77	5.2	mg/kg	J	3546/DRO	06/20/14	1
Surrogate recovery(%)								
o-Terphenyl	74.2			% Rec.		3546/DRO	06/20/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Corey Park
GSC/Kleinfelder - SLC
849 W Levoy Dr, Ste 200
Taylorsville, UT 84123

June 23,2014

ESC Sample # : L704881-03

Date Received : June 14, 2014
Description : Holly Frontier Soil Berm Sampling

Site ID :

Sample ID : HFR-CS-3-61214

Project # : 20151231.001A

Collected By : CAP
Collection Date : 06/12/14 10:10

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPH - Oil & Grease	1900	33.	120	mg/kg		9071B	06/20/14	1
Total Solids	82.8	0.0333		%		2540 G-2	06/18/14	1
Mercury	0.039	0.0028	0.024	mg/kg		7471	06/17/14	1
Arsenic	6.9	0.65	2.4	mg/kg		6010B	06/20/14	1
Barium	110	0.17	0.60	mg/kg		6010B	06/20/14	1
Cadmium	0.90	0.070	0.60	mg/kg		6010B	06/20/14	1
Chromium	31.	0.14	1.2	mg/kg		6010B	06/20/14	1
Lead	40.	0.19	0.60	mg/kg		6010B	06/22/14	1
Selenium	U	0.74	2.4	mg/kg		6010B	06/20/14	1
Silver	0.80	0.28	1.2	mg/kg	J	6010B	06/20/14	1
TPH (GC/FID) Low Fraction	U	0.11	0.60	mg/kg		GRO	06/20/14	5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	98.2			% Rec.		GRO	06/20/14	5
Benzene	U	0.0014	0.0060	mg/kg		8260B	06/16/14	5
Toluene	U	0.0022	0.030	mg/kg		8260B	06/16/14	5
Ethylbenzene	U	0.0015	0.0060	mg/kg		8260B	06/16/14	5
Xylenes, Total	U	0.0035	0.018	mg/kg		8260B	06/16/14	5
Naphthalene	U	0.0050	0.030	mg/kg		8260B	06/16/14	5
Surrogate Recovery								
Toluene-d8	105.			% Rec.		8260B	06/16/14	5
Dibromofluoromethane	101.			% Rec.		8260B	06/16/14	5
a,a,a-Trifluorotoluene	98.8			% Rec.		8260B	06/16/14	5
4-Bromofluorobenzene	90.3			% Rec.		8260B	06/16/14	5
TPH (GC/FID) High Fraction	19.	0.77	4.8	mg/kg		3546/DRO	06/20/14	1
Surrogate recovery(%)								
o-Terphenyl	74.4			% Rec.		3546/DRO	06/20/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Corey Park
GSC/Kleinfelder - SLC
849 W Levoy Dr, Ste 200
Taylorsville, UT 84123

June 23,2014

ESC Sample # : L704881-04

Date Received : June 14, 2014
Description : Holly Frontier Soil Berm Sampling

Site ID :

Sample ID : HFR-CS-4-61214

Project # : 20151231.001A

Collected By : CAP
Collection Date : 06/12/14 10:30

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPH - Oil & Grease	110	33.	120	mg/kg	J	9071B	06/20/14	1
Total Solids	82.6	0.0333		%		2540 G-2	06/18/14	1
Mercury	0.017	0.0028	0.024	mg/kg	J	7471	06/17/14	1
Arsenic	4.2	0.65	2.4	mg/kg		6010B	06/20/14	1
Barium	88.	0.17	0.60	mg/kg		6010B	06/20/14	1
Cadmium	0.65	0.070	0.60	mg/kg		6010B	06/20/14	1
Chromium	36.	0.14	1.2	mg/kg		6010B	06/20/14	1
Lead	22.	0.19	0.60	mg/kg		6010B	06/22/14	1
Selenium	U	0.74	2.4	mg/kg		6010B	06/20/14	1
Silver	0.93	0.28	1.2	mg/kg	J	6010B	06/20/14	1
TPH (GC/FID) Low Fraction	1.3	0.11	0.60	mg/kg		GRO	06/20/14	5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	98.4			% Rec.		GRO	06/20/14	5
Benzene	U	0.0014	0.0060	mg/kg		8260B	06/16/14	5
Toluene	U	0.0022	0.030	mg/kg		8260B	06/16/14	5
Ethylbenzene	U	0.0015	0.0060	mg/kg		8260B	06/16/14	5
Xylenes, Total	U	0.0035	0.018	mg/kg		8260B	06/16/14	5
Naphthalene	U	0.0050	0.030	mg/kg		8260B	06/16/14	5
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	06/16/14	5
Dibromofluoromethane	105.			% Rec.		8260B	06/16/14	5
a,a,a-Trifluorotoluene	96.7			% Rec.		8260B	06/16/14	5
4-Bromofluorobenzene	92.0			% Rec.		8260B	06/16/14	5
TPH (GC/FID) High Fraction	U	0.77	4.8	mg/kg		3546/DRO	06/20/14	1
Surrogate recovery(%)								
o-Terphenyl	81.3			% Rec.		3546/DRO	06/20/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
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REPORT OF ANALYSIS

Corey Park
GSC/Kleinfelder - SLC
849 W Levoy Dr, Ste 200
Taylorsville, UT 84123

June 23,2014

ESC Sample # : L704881-05

Date Received : June 14, 2014
Description : Holly Frontier Soil Berm Sampling

Site ID :

Sample ID : HFR-CS-5-61214

Project # : 20151231.001A

Collected By : CAP
Collection Date : 06/12/14 10:50

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPH - Oil & Grease	160	33.	140	mg/kg		9071B	06/20/14	1
Total Solids	73.4	0.0333		%		2540 G-2	06/18/14	1
Mercury	0.058	0.0028	0.027	mg/kg		7471	06/17/14	1
Arsenic	13.	0.65	2.7	mg/kg		6010B	06/20/14	1
Barium	130	0.17	0.68	mg/kg		6010B	06/20/14	1
Cadmium	1.2	0.070	0.68	mg/kg		6010B	06/20/14	1
Chromium	34.	0.14	1.4	mg/kg		6010B	06/20/14	1
Lead	100	0.19	0.68	mg/kg		6010B	06/22/14	1
Selenium	U	0.74	2.7	mg/kg		6010B	06/20/14	1
Silver	1.1	0.28	1.4	mg/kg	J	6010B	06/20/14	1
TPH (GC/FID) Low Fraction	0.46	0.11	0.68	mg/kg	J	GRO	06/20/14	5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	98.3			% Rec.		GRO	06/20/14	5
Benzene	U	0.0014	0.0068	mg/kg		8260B	06/16/14	5
Toluene	U	0.0022	0.034	mg/kg		8260B	06/16/14	5
Ethylbenzene	U	0.0015	0.0068	mg/kg		8260B	06/16/14	5
Xylenes, Total	U	0.0035	0.020	mg/kg		8260B	06/16/14	5
Naphthalene	U	0.0050	0.034	mg/kg		8260B	06/16/14	5
Surrogate Recovery								
Toluene-d8	103.			% Rec.		8260B	06/16/14	5
Dibromofluoromethane	103.			% Rec.		8260B	06/16/14	5
a,a,a-Trifluorotoluene	96.0			% Rec.		8260B	06/16/14	5
4-Bromofluorobenzene	95.5			% Rec.		8260B	06/16/14	5
TPH (GC/FID) High Fraction	11.	0.77	5.4	mg/kg		3546/DRO	06/20/14	1
Surrogate recovery(%)								
o-Terphenyl	67.4			% Rec.		3546/DRO	06/20/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Corey Park
GSC/Kleinfelder - SLC
849 W Levoy Dr, Ste 200
Taylorsville, UT 84123

June 23,2014

ESC Sample # : L704881-06

Date Received : June 14, 2014
Description : Holly Frontier Soil Berm Sampling

Site ID :

Sample ID : HFR-CS-6-61214

Project # : 20151231.001A

Collected By : CAP
Collection Date : 06/12/14 11:15

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPH - Oil & Grease	130	33.	120	mg/kg		9071B	06/20/14	1
Total Solids	82.6	0.0333		%		2540 G-2	06/18/14	1
Mercury	0.025	0.0028	0.024	mg/kg		7471	06/17/14	1
Arsenic	6.5	0.65	2.4	mg/kg		6010B	06/20/14	1
Barium	120	0.17	0.60	mg/kg		6010B	06/20/14	1
Cadmium	1.0	0.070	0.60	mg/kg		6010B	06/20/14	1
Chromium	36.	0.14	1.2	mg/kg		6010B	06/20/14	1
Lead	28.	0.19	0.60	mg/kg		6010B	06/22/14	1
Selenium	U	0.74	2.4	mg/kg		6010B	06/20/14	1
Silver	1.2	0.28	1.2	mg/kg	J	6010B	06/20/14	1
TPH (GC/FID) Low Fraction	0.56	0.11	0.60	mg/kg	J	GRO	06/20/14	5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	98.5			% Rec.		GRO	06/20/14	5
Benzene	U	0.0014	0.0060	mg/kg		8260B	06/16/14	5
Toluene	U	0.0022	0.030	mg/kg		8260B	06/16/14	5
Ethylbenzene	U	0.0015	0.0060	mg/kg		8260B	06/16/14	5
Xylenes, Total	U	0.0035	0.018	mg/kg		8260B	06/16/14	5
Naphthalene	U	0.0050	0.030	mg/kg		8260B	06/16/14	5
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	06/16/14	5
Dibromofluoromethane	102.			% Rec.		8260B	06/16/14	5
a,a,a-Trifluorotoluene	96.4			% Rec.		8260B	06/16/14	5
4-Bromofluorobenzene	88.9			% Rec.		8260B	06/16/14	5
TPH (GC/FID) High Fraction	1.1	0.77	4.8	mg/kg	J	3546/DRO	06/20/14	1
Surrogate recovery(%)								
o-Terphenyl	69.9			% Rec.		3546/DRO	06/20/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Corey Park
GSC/Kleinfelder - SLC
849 W Levoy Dr, Ste 200
Taylorsville, UT 84123

June 23,2014

ESC Sample # : L704881-07

Date Received : June 14, 2014
Description : Holly Frontier Soil Berm Sampling

Site ID :

Sample ID : HFR-CS-7-61214

Project # : 20151231.001A

Collected By : CAP
Collection Date : 06/12/14 11:28

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPH - Oil & Grease	180	33.	120	mg/kg		9071B	06/20/14	1
Total Solids	84.1	0.0333		%		2540 G-2	06/18/14	1
Mercury	0.064	0.0028	0.024	mg/kg		7471	06/17/14	1
Arsenic	11.	0.65	2.4	mg/kg		6010B	06/20/14	1
Barium	130	0.17	0.59	mg/kg		6010B	06/20/14	1
Cadmium	1.1	0.070	0.59	mg/kg		6010B	06/20/14	1
Chromium	34.	0.14	1.2	mg/kg		6010B	06/20/14	1
Lead	130	0.19	0.59	mg/kg		6010B	06/22/14	1
Selenium	U	0.74	2.4	mg/kg		6010B	06/20/14	1
Silver	1.2	0.28	1.2	mg/kg	J	6010B	06/20/14	1
TPH (GC/FID) Low Fraction	U	0.11	0.59	mg/kg		GRO	06/19/14	5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	98.1			% Rec.		GRO	06/19/14	5
Benzene	U	0.0014	0.0059	mg/kg		8260B	06/16/14	5
Toluene	U	0.0022	0.030	mg/kg		8260B	06/16/14	5
Ethylbenzene	U	0.0015	0.0059	mg/kg		8260B	06/16/14	5
Xylenes, Total	U	0.0035	0.018	mg/kg		8260B	06/16/14	5
Naphthalene	U	0.0050	0.030	mg/kg		8260B	06/16/14	5
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	06/16/14	5
Dibromofluoromethane	108.			% Rec.		8260B	06/16/14	5
a,a,a-Trifluorotoluene	95.8			% Rec.		8260B	06/16/14	5
4-Bromofluorobenzene	91.8			% Rec.		8260B	06/16/14	5
TPH (GC/FID) High Fraction	25.	0.77	4.8	mg/kg		3546/DRO	06/20/14	1
Surrogate recovery(%)								
o-Terphenyl	95.6			% Rec.		3546/DRO	06/20/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Corey Park
GSC/Kleinfelder - SLC
849 W Levoy Dr, Ste 200
Taylorsville, UT 84123

June 23,2014

ESC Sample # : L704881-08

Date Received : June 14, 2014
Description : Holly Frontier Soil Berm Sampling

Site ID :

Sample ID : HFR-CS-8-61214

Project # : 20151231.001A

Collected By : CAP
Collection Date : 06/12/14 11:40

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPH - Oil & Grease	140	33.	120	mg/kg		9071B	06/20/14	1
Total Solids	82.9	0.0333		%		2540 G-2	06/18/14	1
Mercury	0.16	0.0028	0.024	mg/kg		7471	06/17/14	1
Arsenic	8.2	0.65	2.4	mg/kg		6010B	06/20/14	1
Barium	170	0.17	0.60	mg/kg		6010B	06/20/14	1
Cadmium	0.86	0.070	0.60	mg/kg		6010B	06/20/14	1
Chromium	30.	0.14	1.2	mg/kg		6010B	06/20/14	1
Lead	24.	0.19	0.60	mg/kg		6010B	06/22/14	1
Selenium	U	0.74	2.4	mg/kg		6010B	06/20/14	1
Silver	1.3	0.28	1.2	mg/kg		6010B	06/20/14	1
TPH (GC/FID) Low Fraction	U	0.11	0.60	mg/kg		GRO	06/19/14	5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	98.0			% Rec.		GRO	06/19/14	5
Benzene	U	0.0014	0.0060	mg/kg		8260B	06/16/14	5
Toluene	U	0.0022	0.030	mg/kg		8260B	06/16/14	5
Ethylbenzene	U	0.0015	0.0060	mg/kg		8260B	06/16/14	5
Xylenes, Total	U	0.0035	0.018	mg/kg		8260B	06/16/14	5
Naphthalene	U	0.0050	0.030	mg/kg		8260B	06/16/14	5
Surrogate Recovery								
Toluene-d8	103.			% Rec.		8260B	06/16/14	5
Dibromofluoromethane	105.			% Rec.		8260B	06/16/14	5
a,a,a-Trifluorotoluene	96.0			% Rec.		8260B	06/16/14	5
4-Bromofluorobenzene	91.7			% Rec.		8260B	06/16/14	5
TPH (GC/FID) High Fraction	4.8	0.77	4.8	mg/kg	J	3546/DRO	06/20/14	1
Surrogate recovery(%)								
o-Terphenyl	85.3			% Rec.		3546/DRO	06/20/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Corey Park
GSC/Kleinfelder - SLC
849 W Levoy Dr, Ste 200
Taylorsville, UT 84123

June 23,2014

ESC Sample # : L704881-09

Date Received : June 14, 2014
Description : Holly Frontier Soil Berm Sampling

Site ID :

Sample ID : HFR-CS-9-61214

Project # : 20151231.001A

Collected By : CAP
Collection Date : 06/12/14 11:55

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPH - Oil & Grease	140	33.	120	mg/kg		9071B	06/20/14	1
Total Solids	83.2	0.0333		%		2540 G-2	06/18/14	1
Mercury	0.032	0.0028	0.024	mg/kg		7471	06/17/14	1
Arsenic	8.9	0.65	2.4	mg/kg		6010B	06/20/14	1
Barium	97.	0.17	0.60	mg/kg		6010B	06/20/14	1
Cadmium	1.1	0.070	0.60	mg/kg		6010B	06/20/14	1
Chromium	35.	0.14	1.2	mg/kg		6010B	06/20/14	1
Lead	17.	0.19	0.60	mg/kg		6010B	06/22/14	1
Selenium	U	0.74	2.4	mg/kg		6010B	06/20/14	1
Silver	1.3	0.28	1.2	mg/kg		6010B	06/20/14	1
TPH (GC/FID) Low Fraction	U	0.11	0.60	mg/kg		GRO	06/19/14	5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	98.4			% Rec.		GRO	06/19/14	5
Benzene	U	0.0014	0.0060	mg/kg		8260B	06/16/14	5
Toluene	U	0.0022	0.030	mg/kg		8260B	06/16/14	5
Ethylbenzene	U	0.0015	0.0060	mg/kg		8260B	06/16/14	5
Xylenes, Total	U	0.0035	0.018	mg/kg		8260B	06/16/14	5
Naphthalene	U	0.0050	0.030	mg/kg		8260B	06/16/14	5
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	06/16/14	5
Dibromofluoromethane	101.			% Rec.		8260B	06/16/14	5
a,a,a-Trifluorotoluene	99.6			% Rec.		8260B	06/16/14	5
4-Bromofluorobenzene	93.1			% Rec.		8260B	06/16/14	5
TPH (GC/FID) High Fraction	U	0.77	4.8	mg/kg		3546/DRO	06/20/14	1
Surrogate recovery(%)								
o-Terphenyl	81.7			% Rec.		3546/DRO	06/20/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Corey Park
GSC/Kleinfelder - SLC
849 W Levoy Dr, Ste 200
Taylorsville, UT 84123

June 23,2014

ESC Sample # : L704881-10

Date Received : June 14, 2014
Description : Holly Frontier Soil Berm Sampling

Site ID :

Sample ID : HFR-CS-10-61214

Project # : 20151231.001A

Collected By : CAP
Collection Date : 06/12/14 12:30

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPH - Oil & Grease	100	33.	120	mg/kg	J	9071B	06/20/14	1
Total Solids	79.7	0.0333		%		2540 G-2	06/18/14	1
Mercury	0.014	0.0028	0.025	mg/kg	J	7471	06/17/14	1
Arsenic	8.0	0.65	2.5	mg/kg		6010B	06/20/14	1
Barium	93.	0.17	0.63	mg/kg		6010B	06/20/14	1
Cadmium	0.92	0.070	0.63	mg/kg		6010B	06/20/14	1
Chromium	51.	0.14	1.2	mg/kg		6010B	06/20/14	1
Lead	20.	0.19	0.63	mg/kg		6010B	06/22/14	1
Selenium	U	0.74	2.5	mg/kg		6010B	06/20/14	1
Silver	0.60	0.28	1.2	mg/kg	J	6010B	06/20/14	1
TPH (GC/FID) Low Fraction	U	0.11	0.63	mg/kg		GRO	06/19/14	5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	98.2			% Rec.		GRO	06/19/14	5
Benzene	U	0.0014	0.0063	mg/kg		8260B	06/17/14	5
Toluene	U	0.0022	0.031	mg/kg		8260B	06/17/14	5
Ethylbenzene	U	0.0015	0.0063	mg/kg		8260B	06/17/14	5
Xylenes, Total	U	0.0035	0.019	mg/kg		8260B	06/17/14	5
Naphthalene	U	0.0050	0.031	mg/kg		8260B	06/17/14	5
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	06/17/14	5
Dibromofluoromethane	100.			% Rec.		8260B	06/17/14	5
a,a,a-Trifluorotoluene	98.2			% Rec.		8260B	06/17/14	5
4-Bromofluorobenzene	92.2			% Rec.		8260B	06/17/14	5
TPH (GC/FID) High Fraction	64.	0.77	5.0	mg/kg		3546/DRO	06/20/14	1
Surrogate recovery(%)								
o-Terphenyl	67.4			% Rec.		3546/DRO	06/20/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Corey Park
GSC/Kleinfelder - SLC
849 W Levoy Dr, Ste 200
Taylorsville, UT 84123

June 23,2014

ESC Sample # : L704881-11

Date Received : June 14, 2014
Description : Holly Frontier Soil Berm Sampling

Site ID :

Sample ID : HFR-CS-11-61214

Project # : 20151231.001A

Collected By : CAP
Collection Date : 06/12/14 13:00

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPH - Oil & Grease	140	33.	130	mg/kg		9071B	06/20/14	1
Total Solids	78.8	0.0333		%		2540 G-2	06/18/14	1
Mercury	0.058	0.0028	0.025	mg/kg		7471	06/17/14	1
Arsenic	6.0	0.65	2.5	mg/kg		6010B	06/20/14	1
Barium	190	0.17	0.63	mg/kg		6010B	06/20/14	1
Cadmium	1.0	0.070	0.63	mg/kg		6010B	06/20/14	1
Chromium	56.	0.14	1.3	mg/kg		6010B	06/20/14	1
Lead	22.	0.19	0.63	mg/kg		6010B	06/22/14	1
Selenium	U	0.74	2.5	mg/kg		6010B	06/20/14	1
Silver	1.8	0.28	1.3	mg/kg		6010B	06/20/14	1
TPH (GC/FID) Low Fraction	U	0.11	0.63	mg/kg		GRO	06/19/14	5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	98.4			% Rec.		GRO	06/19/14	5
Benzene	U	0.0014	0.0063	mg/kg		8260B	06/17/14	5
Toluene	U	0.0022	0.032	mg/kg		8260B	06/17/14	5
Ethylbenzene	U	0.0015	0.0063	mg/kg		8260B	06/17/14	5
Xylenes, Total	U	0.0035	0.019	mg/kg		8260B	06/17/14	5
Naphthalene	U	0.0050	0.032	mg/kg		8260B	06/17/14	5
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	06/17/14	5
Dibromofluoromethane	105.			% Rec.		8260B	06/17/14	5
a,a,a-Trifluorotoluene	96.7			% Rec.		8260B	06/17/14	5
4-Bromofluorobenzene	93.3			% Rec.		8260B	06/17/14	5
TPH (GC/FID) High Fraction	2.4	0.77	5.1	mg/kg	J	3546/DRO	06/19/14	1
Surrogate recovery(%)								
o-Terphenyl	83.3			% Rec.		3546/DRO	06/19/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
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REPORT OF ANALYSIS

Corey Park
GSC/Kleinfelder - SLC
849 W Levoy Dr, Ste 200
Taylorsville, UT 84123

June 23,2014

ESC Sample # : L704881-12

Date Received : June 14, 2014
Description : Holly Frontier Soil Berm Sampling

Site ID :

Sample ID : HFR-CS-12-61214

Project # : 20151231.001A

Collected By : CAP
Collection Date : 06/12/14 13:28

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPH - Oil & Grease	200	33.	120	mg/kg		9071B	06/20/14	1
Total Solids	83.9	0.0333		%		2540 G-2	06/18/14	1
Mercury	0.068	0.0028	0.024	mg/kg		7471	06/17/14	1
Arsenic	U	3.2	12.	mg/kg	O	6010B	06/20/14	5
Barium	330	0.85	3.0	mg/kg		6010B	06/20/14	5
Cadmium	0.94	0.35	3.0	mg/kg	J	6010B	06/20/14	5
Chromium	31.	0.70	6.0	mg/kg		6010B	06/20/14	5
Lead	20.	0.19	0.60	mg/kg		6010B	06/22/14	1
Selenium	U	3.7	12.	mg/kg	O	6010B	06/20/14	5
Silver	U	1.4	6.0	mg/kg	O	6010B	06/20/14	5
TPH (GC/FID) Low Fraction	U	0.11	0.60	mg/kg		GRO	06/19/14	5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	98.3			% Rec.		GRO	06/19/14	5
Benzene	U	0.0014	0.0060	mg/kg		8260B	06/17/14	5
Toluene	U	0.0022	0.030	mg/kg		8260B	06/17/14	5
Ethylbenzene	U	0.0015	0.0060	mg/kg		8260B	06/17/14	5
Xylenes, Total	U	0.0035	0.018	mg/kg		8260B	06/17/14	5
Naphthalene	U	0.0050	0.030	mg/kg		8260B	06/17/14	5
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	06/17/14	5
Dibromofluoromethane	101.			% Rec.		8260B	06/17/14	5
a,a,a-Trifluorotoluene	97.5			% Rec.		8260B	06/17/14	5
4-Bromofluorobenzene	91.1			% Rec.		8260B	06/17/14	5
TPH (GC/FID) High Fraction	U	0.77	4.8	mg/kg		3546/DRO	06/19/14	1
Surrogate recovery(%)								
o-Terphenyl	85.3			% Rec.		3546/DRO	06/19/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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Mt. Juliet, TN 37122
(615) 758-5858
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Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Corey Park
GSC/Kleinfelder - SLC
849 W Levoy Dr, Ste 200
Taylorsville, UT 84123

June 23,2014

ESC Sample # : L704881-13

Date Received : June 14, 2014
Description : Holly Frontier Soil Berm Sampling

Site ID :

Sample ID : HFR-CS-13-61214

Project # : 20151231.001A

Collected By : CAP
Collection Date : 06/12/14 14:00

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPH - Oil & Grease	120	33.	120	mg/kg	J	9071B	06/20/14	1
Total Solids	83.5	0.0333		%		2540 G-2	06/18/14	1
Mercury	0.014	0.0028	0.024	mg/kg	J	7471	06/17/14	1
Arsenic	7.3	0.65	2.4	mg/kg		6010B	06/20/14	1
Barium	170	0.17	0.60	mg/kg		6010B	06/20/14	1
Cadmium	0.95	0.070	0.60	mg/kg		6010B	06/20/14	1
Chromium	40.	0.14	1.2	mg/kg		6010B	06/20/14	1
Lead	16.	0.19	0.60	mg/kg		6010B	06/22/14	1
Selenium	U	0.74	2.4	mg/kg		6010B	06/20/14	1
Silver	0.65	0.28	1.2	mg/kg	J	6010B	06/20/14	1
TPH (GC/FID) Low Fraction	U	0.11	0.60	mg/kg		GRO	06/19/14	5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	98.5			% Rec.		GRO	06/19/14	5
Benzene	U	0.0014	0.0060	mg/kg		8260B	06/19/14	5
Toluene	U	0.0022	0.030	mg/kg		8260B	06/19/14	5
Ethylbenzene	U	0.0015	0.0060	mg/kg		8260B	06/19/14	5
Xylenes, Total	U	0.0035	0.018	mg/kg		8260B	06/19/14	5
Naphthalene	U	0.0050	0.030	mg/kg		8260B	06/19/14	5
Surrogate Recovery								
Toluene-d8	102.			% Rec.		8260B	06/19/14	5
Dibromofluoromethane	97.1			% Rec.		8260B	06/19/14	5
a,a,a-Trifluorotoluene	101.			% Rec.		8260B	06/19/14	5
4-Bromofluorobenzene	92.1			% Rec.		8260B	06/19/14	5
TPH (GC/FID) High Fraction	U	0.77	4.8	mg/kg		3546/DRO	06/19/14	1
Surrogate recovery(%)								
o-Terphenyl	80.1			% Rec.		3546/DRO	06/19/14	1

Results listed are dry weight basis.
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MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
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REPORT OF ANALYSIS

Corey Park
GSC/Kleinfelder - SLC
849 W Levoy Dr, Ste 200
Taylorsville, UT 84123

June 23,2014

ESC Sample # : L704881-14

Date Received : June 14, 2014
Description : Holly Frontier Soil Berm Sampling

Site ID :

Sample ID : HFR-CS-14-61214

Project # : 20151231.001A

Collected By : CAP
Collection Date : 06/12/14 14:50

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPH - Oil & Grease	75.	33.	120	mg/kg	J	9071B	06/20/14	1
Total Solids	80.4	0.0333		%		2540 G-2	06/18/14	1
Mercury	0.041	0.0028	0.025	mg/kg		7471	06/17/14	1
Arsenic	5.0	0.65	2.5	mg/kg		6010B	06/20/14	1
Barium	120	0.17	0.62	mg/kg		6010B	06/20/14	1
Cadmium	1.0	0.070	0.62	mg/kg		6010B	06/20/14	1
Chromium	40.	0.14	1.2	mg/kg		6010B	06/20/14	1
Lead	19.	0.19	0.62	mg/kg		6010B	06/22/14	1
Selenium	U	0.74	2.5	mg/kg		6010B	06/20/14	1
Silver	1.2	0.28	1.2	mg/kg		6010B	06/20/14	1
TPH (GC/FID) Low Fraction	U	0.11	0.62	mg/kg		GRO	06/19/14	5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	98.0			% Rec.		GRO	06/19/14	5
Benzene	U	0.0014	0.0062	mg/kg		8260B	06/19/14	5
Toluene	U	0.0022	0.031	mg/kg		8260B	06/19/14	5
Ethylbenzene	U	0.0015	0.0062	mg/kg		8260B	06/19/14	5
Xylenes, Total	0.0051	0.0035	0.019	mg/kg	J	8260B	06/19/14	5
Naphthalene	U	0.0050	0.031	mg/kg		8260B	06/19/14	5
Surrogate Recovery								
Toluene-d8	104.			% Rec.		8260B	06/19/14	5
Dibromofluoromethane	98.9			% Rec.		8260B	06/19/14	5
a,a,a-Trifluorotoluene	105.			% Rec.		8260B	06/19/14	5
4-Bromofluorobenzene	93.5			% Rec.		8260B	06/19/14	5
TPH (GC/FID) High Fraction	1.9	0.77	5.0	mg/kg	J	3546/DRO	06/19/14	1
Surrogate recovery(%)								
o-Terphenyl	86.4			% Rec.		3546/DRO	06/19/14	1

Results listed are dry weight basis.
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MDL = Minimum Detection Limit = LOD = TRRP SDL
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REPORT OF ANALYSIS

Corey Park
GSC/Kleinfelder - SLC
849 W Levoy Dr, Ste 200
Taylorsville, UT 84123

June 23,2014

ESC Sample # : L704881-15

Date Received : June 14, 2014
Description : Holly Frontier Soil Berm Sampling

Site ID :

Sample ID : HFR-CS-15-61214

Project # : 20151231.001A

Collected By : CAP
Collection Date : 06/12/14 15:20

Parameter	Dry Result	MDL	RDL	Units	Qualifier	Method	Date	Dil.
TPH - Oil & Grease	U	33.	120	mg/kg		9071B	06/20/14	1
Total Solids	84.6	0.0333		%		2540 G-2	06/18/14	1
Mercury	0.030	0.0028	0.024	mg/kg		7471	06/18/14	1
Arsenic	7.2	0.65	2.4	mg/kg		6010B	06/20/14	1
Barium	130	0.17	0.59	mg/kg		6010B	06/20/14	1
Cadmium	0.89	0.070	0.59	mg/kg		6010B	06/20/14	1
Chromium	30.	0.14	1.2	mg/kg		6010B	06/20/14	1
Lead	39.	0.19	0.59	mg/kg		6010B	06/22/14	1
Selenium	U	0.74	2.4	mg/kg		6010B	06/20/14	1
Silver	1.2	0.28	1.2	mg/kg	J	6010B	06/20/14	1
TPH (GC/FID) Low Fraction	U	0.11	0.59	mg/kg		GRO	06/20/14	5
Surrogate Recovery-%								
a,a,a-Trifluorotoluene(FID)	98.2			% Rec.		GRO	06/20/14	5
Benzene	U	0.0014	0.0059	mg/kg		8260B	06/19/14	5
Toluene	U	0.0022	0.030	mg/kg		8260B	06/19/14	5
Ethylbenzene	U	0.0015	0.0059	mg/kg		8260B	06/19/14	5
Xylenes, Total	0.0063	0.0035	0.018	mg/kg	J	8260B	06/19/14	5
Naphthalene	U	0.0050	0.030	mg/kg		8260B	06/19/14	5
Surrogate Recovery								
Toluene-d8	103.			% Rec.		8260B	06/19/14	5
Dibromofluoromethane	96.3			% Rec.		8260B	06/19/14	5
a,a,a-Trifluorotoluene	102.			% Rec.		8260B	06/19/14	5
4-Bromofluorobenzene	90.3			% Rec.		8260B	06/19/14	5
TPH (GC/FID) High Fraction	U	0.77	4.7	mg/kg		3546/DRO	06/19/14	1
Surrogate recovery(%)								
o-Terphenyl	84.5			% Rec.		3546/DRO	06/19/14	1

Results listed are dry weight basis.
U = ND (Not Detected)
MDL = Minimum Detection Limit = LOD = TRRP SDL
RDL = Reported Detection Limit = LOQ = PQL = EQL = TRRP MQL
Note:
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Reported: 06/23/14 14:50 Printed: 06/23/14 14:51

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L704881-01	WG727308	SAMP	Silver	R2945412	J
	WG727189	SAMP	TPH - Oil & Grease	R2944880	J
L704881-02	WG727345	SAMP	TPH (GC/FID) Low Fraction	R2945505	J
	WG727252	SAMP	TPH (GC/FID) High Fraction	R2945665	J
	WG727308	SAMP	Silver	R2945412	J
	WG727189	SAMP	TPH - Oil & Grease	R2944880	J
L704881-03	WG727308	SAMP	Silver	R2945412	J
L704881-04	WG727308	SAMP	Silver	R2945412	J
	WG726497	SAMP	Mercury	R2942728	J
	WG727189	SAMP	TPH - Oil & Grease	R2944880	J
L704881-05	WG727345	SAMP	TPH (GC/FID) Low Fraction	R2945505	J
	WG727308	SAMP	Silver	R2945412	J
L704881-06	WG727345	SAMP	TPH (GC/FID) Low Fraction	R2945505	J
	WG727252	SAMP	TPH (GC/FID) High Fraction	R2945665	J
	WG727308	SAMP	Silver	R2945412	J
L704881-07	WG727308	SAMP	Silver	R2945412	J
L704881-08	WG727252	SAMP	TPH (GC/FID) High Fraction	R2945665	J
L704881-10	WG727308	SAMP	Silver	R2945412	J
	WG726497	SAMP	Mercury	R2942728	J
	WG727189	SAMP	TPH - Oil & Grease	R2944880	J
L704881-11	WG727253	SAMP	TPH (GC/FID) High Fraction	R2945067	J
L704881-12	WG727308	SAMP	Arsenic	R2945412	O
	WG727308	SAMP	Cadmium	R2945412	J
	WG727308	SAMP	Selenium	R2945695	O
	WG727308	SAMP	Silver	R2945412	O
L704881-13	WG727308	SAMP	Silver	R2945412	J
	WG726497	SAMP	Mercury	R2942728	J
	WG727189	SAMP	TPH - Oil & Grease	R2944880	J
L704881-14	WG727253	SAMP	TPH (GC/FID) High Fraction	R2945067	J
	WG727189	SAMP	TPH - Oil & Grease	R2944880	J
	WG727301	SAMP	Xylenes, Total	R2944390	J
L704881-15	WG727308	SAMP	Silver	R2945412	J
	WG727301	SAMP	Xylenes, Total	R2944390	J

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J	(EPA) - Estimated value below the lowest calibration point. Confidence correlates with concentration.
O	(ESC) Sample diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit is elevated in order to reflect the necessary dilution.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
06/23/14 at 14:51:10

TSR Signing Reports: 358
R5 - Desired TAT

Do NOT list any sample depths in the sample ID unless client lists depth in the sample ID.
DryWt needed on all soils. Log for TS. Log all samples for QC2MODCN.

Sample: L704881-01 Account: KLEINTUT Received: 06/14/14 09:00 Due Date: 06/20/14 00:00 RPT Date: 06/23/14 14:50

Sample: L704881-02 Account: KLEINTUT Received: 06/14/14 09:00 Due Date: 06/20/14 00:00 RPT Date: 06/23/14 14:50

Sample: L704881-03 Account: KLEINTUT Received: 06/14/14 09:00 Due Date: 06/20/14 00:00 RPT Date: 06/23/14 14:50

Sample: L704881-04 Account: KLEINTUT Received: 06/14/14 09:00 Due Date: 06/20/14 00:00 RPT Date: 06/23/14 14:50

Sample: L704881-05 Account: KLEINTUT Received: 06/14/14 09:00 Due Date: 06/20/14 00:00 RPT Date: 06/23/14 14:50

Sample: L704881-06 Account: KLEINTUT Received: 06/14/14 09:00 Due Date: 06/20/14 00:00 RPT Date: 06/23/14 14:50

Sample: L704881-07 Account: KLEINTUT Received: 06/14/14 09:00 Due Date: 06/20/14 00:00 RPT Date: 06/23/14 14:50

Sample: L704881-08 Account: KLEINTUT Received: 06/14/14 09:00 Due Date: 06/20/14 00:00 RPT Date: 06/23/14 14:50

Sample: L704881-09 Account: KLEINTUT Received: 06/14/14 09:00 Due Date: 06/20/14 00:00 RPT Date: 06/23/14 14:50

Sample: L704881-10 Account: KLEINTUT Received: 06/14/14 09:00 Due Date: 06/20/14 00:00 RPT Date: 06/23/14 14:50

Sample: L704881-11 Account: KLEINTUT Received: 06/14/14 09:00 Due Date: 06/20/14 00:00 RPT Date: 06/23/14 14:50

Sample: L704881-12 Account: KLEINTUT Received: 06/14/14 09:00 Due Date: 06/20/14 00:00 RPT Date: 06/23/14 14:50

Sample: L704881-13 Account: KLEINTUT Received: 06/14/14 09:00 Due Date: 06/20/14 00:00 RPT Date: 06/23/14 14:50

Sample: L704881-14 Account: KLEINTUT Received: 06/14/14 09:00 Due Date: 06/20/14 00:00 RPT Date: 06/23/14 14:50

Sample: L704881-15 Account: KLEINTUT Received: 06/14/14 09:00 Due Date: 06/20/14 00:00 RPT Date: 06/23/14 14:50

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Corey Park
849 W Levoy Dr, Ste 200

Taylorsville, UT 84123

Quality Assurance Report
Level II

L704881

June 23, 2014

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
Mercury	< .02	mg/kg			WG726497	06/17/14 10:36
Total Solids	< .1	%			WG726819	06/18/14 06:08
Total Solids	< .1	%			WG726820	06/18/14 08:42
Total Solids	< .1	%			WG726821	06/18/14 09:09
Mercury	< .02	mg/kg			WG726791	06/18/14 08:47
Benzene	< .001	mg/kg			WG726545	06/16/14 15:26
Ethylbenzene	< .001	mg/kg			WG726545	06/16/14 15:26
Naphthalene	< .005	mg/kg			WG726545	06/16/14 15:26
Toluene	< .005	mg/kg			WG726545	06/16/14 15:26
Xylenes, Total	< .003	mg/kg			WG726545	06/16/14 15:26
4-Bromofluorobenzene		% Rec.	94.60	71-126	WG726545	06/16/14 15:26
Dibromofluoromethane		% Rec.	95.00	78.3-121	WG726545	06/16/14 15:26
Toluene-d8		% Rec.	104.0	88.5-111	WG726545	06/16/14 15:26
a,a,a-Trifluorotoluene		% Rec.	100.0	85-114	WG726545	06/16/14 15:26
Benzene	< .001	mg/kg			WG727301	06/19/14 01:59
Ethylbenzene	< .001	mg/kg			WG727301	06/19/14 01:59
Naphthalene	< .005	mg/kg			WG727301	06/19/14 01:59
Toluene	< .005	mg/kg			WG727301	06/19/14 01:59
Xylenes, Total	< .003	mg/kg			WG727301	06/19/14 01:59
4-Bromofluorobenzene		% Rec.	92.70	71-126	WG727301	06/19/14 01:59
Dibromofluoromethane		% Rec.	96.50	78.3-121	WG727301	06/19/14 01:59
Toluene-d8		% Rec.	102.0	88.5-111	WG727301	06/19/14 01:59
a,a,a-Trifluorotoluene		% Rec.	102.0	85-114	WG727301	06/19/14 01:59
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG726624	06/19/14 12:16
a,a,a-Trifluorotoluene(FID)		% Rec.	99.30	59-128	WG726624	06/19/14 12:16
TPH - Oil & Grease	< 100	mg/kg			WG727189	06/20/14 00:50
TPH (GC/FID) High Fraction	< 4	mg/kg			WG727253	06/19/14 19:27
o-Terphenyl		% Rec.	85.50	50-150	WG727253	06/19/14 19:27
Arsenic	< 1	mg/kg			WG727308	06/20/14 08:50
Barium	< .25	mg/kg			WG727308	06/20/14 08:50
Cadmium	< .25	mg/kg			WG727308	06/20/14 08:50
Chromium	< .5	mg/kg			WG727308	06/20/14 08:50
Silver	< .5	mg/kg			WG727308	06/20/14 08:50
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG727345	06/20/14 08:28
a,a,a-Trifluorotoluene(FID)		% Rec.	99.50	59-128	WG727345	06/20/14 08:28

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Corey Park
849 W Levoy Dr, Ste 200

Taylorsville, UT 84123

Quality Assurance Report
Level II

L704881

June 23, 2014

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
TPH (GC/FID) High Fraction	< 4	mg/kg			WG727252	06/20/14 11:47
o-Terphenyl		% Rec.	75.30	50-150	WG727252	06/20/14 11:47
Selenium	< 1	mg/kg			WG727308	06/20/14 15:50
Lead	< .25	mg/kg			WG727805	06/22/14 01:59

Duplicate

Analyte	Units	Result	Duplicate	RPD	Limit	Ref Samp	Batch
Mercury	mg/kg	0.0	0.00588	43.0*	20	L704826-18	WG726497
Total Solids	%	82.5	82.8	0.389	5	L704881-03	WG726819
Total Solids	%	84.6	83.5	1.38	5	L704881-13	WG726820
Total Solids	%	87.0	81.0	7.09*	5	L704885-01	WG726821
Mercury	mg/kg	0.0	0.0102	21.0*	20	L704807-04	WG726791
TPH - Oil & Grease	mg/kg	120.	110.	8.70	20	L704881-11	WG727189

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
Mercury	mg/kg	12.4	12.4	100.	71.6-128	WG726497
Total Solids	%	50	50.0	100.	85-115	WG726819
Total Solids	%	50	50.0	100.	85-115	WG726820
Total Solids	%	50	50.0	100.	85-115	WG726821
Mercury	mg/kg	12.4	10.5	84.0	71.6-128	WG726791
Benzene	mg/kg	.025	0.0267	107.	77.1-121	WG726545
Ethylbenzene	mg/kg	.025	0.0260	104.	79.7-122	WG726545
Naphthalene	mg/kg	.025	0.0242	96.8	69.8-128	WG726545
Toluene	mg/kg	.025	0.0249	99.5	79.7-118	WG726545
Xylenes, Total	mg/kg	.075	0.0773	103.	78.8-121	WG726545
4-Bromofluorobenzene				93.00	71-126	WG726545
Dibromofluoromethane				102.0	78.3-121	WG726545
Toluene-d8				104.0	88.5-111	WG726545
a,a,a-Trifluorotoluene				99.60	85-114	WG726545
Benzene	mg/kg	.025	0.0242	96.7	77.1-121	WG727301

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Mt. Juliet, TN 37122
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Fax (615) 758-5859

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Quality Assurance Report
Level II

L704881

June 23, 2014

Analyte	Units	Laboratory Control Sample Known Val	Result	% Rec	Limit	Batch
Ethylbenzene	mg/kg	.025	0.0249	99.6	79.7-122	WG727301
Naphthalene	mg/kg	.025	0.0231	92.4	69.8-128	WG727301
Toluene	mg/kg	.025	0.0250	99.9	79.7-118	WG727301
Xylenes, Total	mg/kg	.075	0.0748	99.7	78.8-121	WG727301
4-Bromofluorobenzene				94.60	71-126	WG727301
Dibromofluoromethane				91.80	78.3-121	WG727301
Toluene-d8				103.0	88.5-111	WG727301
a,a,a-Trifluorotoluene				103.0	85-114	WG727301
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.29	96.2	63.5-137	WG726624
a,a,a-Trifluorotoluene(FID)				108.0	59-128	WG726624
TPH - Oil & Grease	mg/kg	2000	1960	98.0	80-120	WG727189
TPH (GC/FID) High Fraction	mg/kg	60	46.2	77.1	50-150	WG727253
o-Terphenyl				79.20	50-150	WG727253
Arsenic	mg/kg	237	254.	107.	83.1-117	WG727308
Barium	mg/kg	252	267.	106.	84.1-116	WG727308
Cadmium	mg/kg	191	203.	106.	83.2-117	WG727308
Chromium	mg/kg	128	142.	111.	81.3-118	WG727308
Silver	mg/kg	47.3	50.9	108.	66.2-134	WG727308
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.41	98.4	63.5-137	WG727345
a,a,a-Trifluorotoluene(FID)				112.0	59-128	WG727345
TPH (GC/FID) High Fraction	mg/kg	60	44.3	73.8	50-150	WG727252
o-Terphenyl				72.60	50-150	WG727252
Selenium	mg/kg	110	113.	103.	78.7-122	WG727308
Lead	mg/kg	103	94.5	92.0	83.1-117	WG727805

Analyte	Units	Laboratory Control Sample Duplicate Result	Ref	%Rec	Limit	RPD	Limit	Batch
Benzene	mg/kg	0.0261	0.0267	104.	77.1-121	2.17	20	WG726545
Ethylbenzene	mg/kg	0.0276	0.0260	110.	79.7-122	5.84	20	WG726545
Naphthalene	mg/kg	0.0238	0.0242	95.0	69.8-128	1.91	20	WG726545
Toluene	mg/kg	0.0252	0.0249	101.	79.7-118	1.39	20	WG726545
Xylenes, Total	mg/kg	0.0820	0.0773	109.	78.8-121	5.93	20	WG726545
4-Bromofluorobenzene				96.00	71-126			WG726545
Dibromofluoromethane				98.70	78.3-121			WG726545
Toluene-d8				102.0	88.5-111			WG726545
a,a,a-Trifluorotoluene				99.80	85-114			WG726545
Benzene	mg/kg	0.0249	0.0242	100.	77.1-121	3.02	20	WG727301
Ethylbenzene	mg/kg	0.0263	0.0249	105.	79.7-122	5.62	20	WG727301
Naphthalene	mg/kg	0.0247	0.0231	99.0	69.8-128	6.55	20	WG727301
Toluene	mg/kg	0.0258	0.0250	103.	79.7-118	3.32	20	WG727301

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Quality Assurance Report
Level II

L704881

June 23, 2014

Analyte	Units	Laboratory Control Sample Duplicate Result	Ref	%Rec	Limit	RPD	Limit	Batch
Xylenes, Total	mg/kg	0.0786	0.0748	105.	78.8-121	4.97	20	WG727301
4-Bromofluorobenzene				95.50	71-126			WG727301
Dibromofluoromethane				91.30	78.3-121			WG727301
Toluene-d8				103.0	88.5-111			WG727301
a,a,a-Trifluorotoluene				103.0	85-114			WG727301
TPH (GC/FID) Low Fraction	mg/kg	5.03	5.29	91.0	63.5-137	5.07	20	WG726624
a,a,a-Trifluorotoluene(FID)				106.0	59-128			WG726624
TPH - Oil & Grease	mg/kg	1900	1960	95.0	80-120	3.11	20	WG727189
TPH (GC/FID) High Fraction	mg/kg	44.8	46.2	75.0	50-150	3.22	20	WG727253
o-Terphenyl				74.70	50-150			WG727253
Arsenic	mg/kg	256.	254.	108.	83.1-117	1.00	20	WG727308
Barium	mg/kg	264.	267.	105.	84.1-116	1.00	20	WG727308
Cadmium	mg/kg	207.	203.	108.	83.2-117	2.00	20	WG727308
Chromium	mg/kg	145.	142.	114.	81.3-118	2.00	20	WG727308
Silver	mg/kg	50.8	50.9	107.	66.2-134	0.0	20	WG727308
TPH (GC/FID) Low Fraction	mg/kg	5.50	5.41	100.	63.5-137	1.50	20	WG727345
a,a,a-Trifluorotoluene(FID)				111.0	59-128			WG727345
TPH (GC/FID) High Fraction	mg/kg	42.0	44.3	70.0	50-150	5.43	20	WG727252
o-Terphenyl				69.30	50-150			WG727252
Selenium	mg/kg	115.	113.	105.	78.7-122	2.00	20	WG727308
Lead	mg/kg	93.3	94.5	90.0	83.1-117	1.00	20	WG727805

Analyte	Units	Matrix Spike MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Mercury	mg/kg	0.456	0.00588	.5	90.0	80-120	L704826-18	WG726497
Mercury	mg/kg	0.433	0.0102	.5	85.0	80-120	L704807-04	WG726791
Benzene	mg/kg	0.119	0.000682	.025	95.0	54.3-133	L704858-01	WG726545
Ethylbenzene	mg/kg	0.119	0.000834	.025	95.0	61.4-133	L704858-01	WG726545
Naphthalene	mg/kg	0.117	0.00128	.025	93.0	58-135	L704858-01	WG726545
Toluene	mg/kg	0.120	0.00418	.025	93.0	61.4-130	L704858-01	WG726545
Xylenes, Total	mg/kg	0.356	0.00489	.075	94.0	63.3-131	L704858-01	WG726545
4-Bromofluorobenzene					92.30	71-126		WG726545
Dibromofluoromethane					100.0	78.3-121		WG726545
Toluene-d8					104.0	88.5-111		WG726545
a,a,a-Trifluorotoluene					98.60	85-114		WG726545
Benzene	mg/kg	0.677	0.222	.025	100.	54.3-133	L704734-02	WG727301

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Quality Assurance Report
Level II

L704881

June 23, 2014

Analyte	Units	Matrix Spike MS Res	Ref Res	TV	% Rec	Limit	Ref Samp	Batch
Ethylbenzene	mg/kg	0.606	0.144	.025	110.	61.4-133	L704734-02	WG727301
Naphthalene	mg/kg	0.474	0.0361	.025	100.	58-135	L704734-02	WG727301
Toluene	mg/kg	0.529	0.0731	.025	100.	61.4-130	L704734-02	WG727301
Xylenes, Total	mg/kg	1.69	0.314	.075	100.	63.3-131	L704734-02	WG727301
4-Bromofluorobenzene					97.60	71-126		WG727301
Dibromofluoromethane					95.40	78.3-121		WG727301
Toluene-d8					103.0	88.5-111		WG727301
a,a,a-Trifluorotoluene					101.0	85-114		WG727301
TPH (GC/FID) Low Fraction	mg/kg	115.	0.665	5.5	99.0	28.5-138	L705014-11	WG726624
a,a,a-Trifluorotoluene(FID)					109.0	59-128		WG726624
TPH - Oil & Grease	mg/kg	2000	60.0	2000	97.0	80-120	L704881-14	WG727189
TPH (GC/FID) High Fraction	mg/kg	44.8	0.119	60	74.0	50-150	L704897-04	WG727253
o-Terphenyl					79.40	50-150		WG727253
Arsenic	mg/kg	57.7	8.33	50	99.0	75-125	L705445-01	WG727308
Barium	mg/kg	126.	77.3	50	98.0	75-125	L705445-01	WG727308
Cadmium	mg/kg	50.2	0.227	50	100.	75-125	L705445-01	WG727308
Chromium	mg/kg	64.5	14.6	50	100.	75-125	L705445-01	WG727308
Silver	mg/kg	51.3	1.17	50	100.	75-125	L705445-01	WG727308
TPH (GC/FID) Low Fraction	mg/kg	22.4	0.0908	5.5	81.0	28.5-138	L704881-01	WG727345
a,a,a-Trifluorotoluene(FID)					104.0	59-128		WG727345
TPH (GC/FID) High Fraction	mg/kg	40.0	0.0	60	67.0	50-150	L704809-03	WG727252
o-Terphenyl					81.70	50-150		WG727252
Selenium	mg/kg	45.7	-0.586	50	91.0	75-125	L705445-01	WG727308
Lead	mg/kg	49.8	1.95	50	96.0	75-125	L705445-01	WG727805

Analyte	Units	Matrix Spike Duplicate MSD	Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Mercury	mg/kg	0.450	0.456	88.9	80-120	1.00	20	L704826-18	WG726497
Mercury	mg/kg	0.442	0.433	86.4	80-120	2.00	20	L704807-04	WG726791
Benzene	mg/kg	0.116	0.119	91.9	54.3-133	3.17	20	L704858-01	WG726545
Ethylbenzene	mg/kg	0.116	0.119	92.5	61.4-133	2.26	20	L704858-01	WG726545
Naphthalene	mg/kg	0.114	0.117	89.9	58-135	2.88	25.5	L704858-01	WG726545
Toluene	mg/kg	0.106	0.120	81.2	61.4-130	12.7	20	L704858-01	WG726545
Xylenes, Total	mg/kg	0.348	0.356	91.4	63.3-131	2.32	20	L704858-01	WG726545
4-Bromofluorobenzene				94.10	71-126				WG726545
Dibromofluoromethane				101.0	78.3-121				WG726545
Toluene-d8				103.0	88.5-111				WG726545
a,a,a-Trifluorotoluene				97.30	85-114				WG726545

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Quality Assurance Report
Level II

L704881

June 23, 2014

Analyte	Units	MSD	Matrix Spike Duplicate Ref	%Rec	Limit	RPD	Limit	Ref Samp	Batch
Benzene	mg/kg	0.671	0.677	103.	54.3-133	0.800	20	L704734-02	WG727301
Ethylbenzene	mg/kg	0.602	0.606	105.	61.4-133	0.640	20	L704734-02	WG727301
Naphthalene	mg/kg	0.468	0.474	98.8	58-135	1.26	25.5	L704734-02	WG727301
Toluene	mg/kg	0.520	0.529	102.	61.4-130	1.73	20	L704734-02	WG727301
Xylenes, Total	mg/kg	1.67	1.69	104.	63.3-131	0.630	20	L704734-02	WG727301
4-Bromofluorobenzene				95.50	71-126				WG727301
Dibromofluoromethane				94.40	78.3-121				WG727301
Toluene-d8				102.0	88.5-111				WG727301
a,a,a-Trifluorotoluene				101.0	85-114				WG727301
TPH (GC/FID) Low Fraction	mg/kg	114.	115.	98.2	28.5-138	0.590	23.6	L705014-11	WG726624
a,a,a-Trifluorotoluene(FID)				108.0	59-128				WG726624
TPH - Oil & Grease	mg/kg	1960	2000	95.0	80-120	2.02	20	L704881-14	WG727189
TPH (GC/FID) High Fraction	mg/kg	44.3	44.8	73.7	50-150	0.940	20	L704897-04	WG727253
o-Terphenyl				67.10	50-150				WG727253
Arsenic	mg/kg	58.3	57.7	100.	75-125	1.00	20	L705445-01	WG727308
Barium	mg/kg	136.	126.	117.	75-125	7.00	20	L705445-01	WG727308
Cadmium	mg/kg	49.6	50.2	98.8	75-125	1.00	20	L705445-01	WG727308
Chromium	mg/kg	67.2	64.5	105.	75-125	4.00	20	L705445-01	WG727308
Silver	mg/kg	51.5	51.3	101.	75-125	0.0	20	L705445-01	WG727308
TPH (GC/FID) Low Fraction	mg/kg	21.5	22.4	77.8	28.5-138	4.15	23.6	L704881-01	WG727345
a,a,a-Trifluorotoluene(FID)				105.0	59-128				WG727345
TPH (GC/FID) High Fraction	mg/kg	35.5	40.0	59.2	50-150	12.0	20	L704809-03	WG727252
o-Terphenyl				75.10	50-150				WG727252
Selenium	mg/kg	45.1	45.7	91.4	75-125	1.00	20	L705445-01	WG727308
Lead	mg/kg	46.3	49.8	88.7	75-125	7.00	20	L705445-01	WG727805

Post Spike

Serial Dilution

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Quality Assurance Report
Level II

L704881

June 23, 2014

Serial Dilution

Batch number /Run number / Sample number cross reference

WG726497: R2942728: L704881-01 02 03 04 05 06 07 08 09 10 11 12 13 14
WG726819: R2943289: L704881-01 02 03
WG726820: R2943367: L704881-04 05 06 07 08 09 10 11 12 13
WG726821: R2943385: L704881-14 15
WG726791: R2943592: L704881-15
WG726545: R2943773: L704881-01 02 03 04 05 06 07 08 09 10 11 12
WG727301: R2944390: L704881-13 14 15
WG726624: R2944647: L704881-07 08 09 10 11 12 13 14
WG727189: R2944880: L704881-01 02 03 04 05 06 07 08 09 10 11 12 13 14 15
WG727253: R2945067: L704881-11 12 13 14 15
WG727308: R2945412 R2945695: L704881-01 02 03 04 05 06 07 08 09 10 11 12 13 14 15
WG727345: R2945505: L704881-01 02 03 04 05 06 15
WG727252: R2945665: L704881-01 02 03 04 05 06 07 08 09 10
WG727805: R2946157: L704881-01 02 03 04 05 06 07 08 09 10 11 12 13 14 15

* * Calculations are performed prior to rounding of reported values.
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Level II

L704881

June 23, 2014

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.