

**Notice:** Use this form to request a **written response (on agency letterhead)** from the Department of Natural Resources (DNR) regarding technical assistance, a post-closure change to a site, a specialized agreement or liability clarification for Property with known or suspected environmental contamination. A fee will be required as is authorized by s. 292.55, Wis. Stats., and NR 749, Wis. Adm. Code., unless noted in the instructions below. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records law [ss. 19.31 - 19.39, Wis. Stats.].

### Definitions

**"Property"** refers to the subject Property that is perceived to have been or has been impacted by the discharge of hazardous substances.

**"Liability Clarification"** refers to a written determination by the Department provided in response to a request made on this form. The response clarifies whether a person is or may become liable for the environmental contamination of a Property, as provided in s. 292.55, Wis. Stats.

**"Technical Assistance"** refers to the Department's assistance or comments on the planning and implementation of an environmental investigation or environmental cleanup on a Property in response to a request made on this form as provided in s. 292.55, Wis. Stats.

**"Post-closure modification"** refers to changes to Property boundaries and/or continuing obligations for Properties or sites that received closure letters for which continuing obligations have been applied or where contamination remains. Many, but not all, of these sites are included on the GIS Registry layer of RR Sites Map to provide public notice of residual contamination and continuing obligations.

### Select the Correct Form

This form should be used to request the following from the DNR:

- Technical Assistance
- Liability Clarification
- Post-Closure Modifications
- Specialized Agreements (tax cancellation, negotiated agreements, etc.)

**Do not use this form if one of the following applies:**

- Request for an **off-site liability exemption or clarification** for Property that has been or is perceived to be contaminated by one or more hazardous substances that originated on another Property containing the source of the contamination. Use DNR's Off-Site Liability Exemption and Liability Clarification Application Form 4400-201.
- Submittal of an Environmental Assessment for the **Lender Liability Exemption**, s 292.21, Wis. Stats., **if no response or review by DNR is requested**. Use the Lender Liability Exemption Environmental Assessment Tracking Form 4400-196.
- Request for an **exemption to develop on a historic fill site** or licensed landfill. Use DNR's Form 4400-226 or 4400-226A.
- **Request for closure** for Property where the investigation and cleanup actions are completed. Use DNR's Case Closure - GIS Registry Form 4400-202.

All forms, publications and additional information are available on the internet at: [dnr.wi.gov/topic/Brownfields/Pubs.html](http://dnr.wi.gov/topic/Brownfields/Pubs.html).

### Instructions

1. Complete sections 1, 2, 6 and 7 for all requests. Be sure to provide adequate and complete information.
2. Select the type of assistance requested: Section 3 for technical assistance or post-closure modifications, Section 4 for a written determination or clarification of environmental liabilities; or Section 5 for a specialized agreement.
3. Include the fee payment that is listed in Section 3, 4, or 5, unless you are a "Voluntary Party" enrolled in the Voluntary Party Liability Exemption Program **and** the questions in Section 2 direct otherwise. Information on to whom and where to send the fee is found in Section 8 of this form.
4. Send the completed request, supporting materials and the fee to the appropriate DNR regional office where the Property is located. See the map on the last page of this form. A paper copy of the signed form and all reports and supporting materials shall be sent with an electronic copy of the form and supporting materials on a compact disk. For electronic document submittal requirements see: <http://dnr.wi.gov/files/PDF/pubs/rr/RR690.pdf>

The time required for DNR's determination varies depending on the complexity of the site, and the clarity and completeness of the request and supporting documentation.

# Technical Assistance, Environmental Liability Clarification or Post-Closure Modification Request

Form 4400-237 (R 12/18)

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## Section 1. Contact and Recipient Information

### Requester Information

This is the person requesting technical assistance or a post-closure modification review, that his or her liability be clarified or a specialized agreement and is identified as the requester in Section 7. DNR will address its response letter to this person.

Last Name	First	MI	Organization/ Business Name		
			Superior Refining Company, LLC		
Mailing Address			City	State	ZIP Code
2407 Stinson Avenue			Superior	WI	54880
Phone # (include area code)	Fax # (include area code)	Email			
(715) 398-8434		matthew.turner@huskyenergy.com			

The requester listed above: (select all that apply)

- Is currently the owner  Is considering selling the Property
- Is renting or leasing the Property  Is considering acquiring the Property
- Is a lender with a mortgagee interest in the Property
- Other. Explain the status of the Property with respect to the applicant:

### Contact Information (to be contacted with questions about this request)

Select if same as requester

Contact Last Name	First	MI	Organization/ Business Name		
Turner	Matthew		Superior Refining Company, LLC		
Mailing Address			City	State	ZIP Code
2407 Stinson Avenue			Superior	WI	54880
Phone # (include area code)	Fax # (include area code)	Email			
(715) 969-4873		matthew.turner@huskyenergy.com			

### Environmental Consultant (if applicable)

Contact Last Name	First	MI	Organization/ Business Name		
Carney	Lynette		Barr Engineering Company		
Mailing Address			City	State	ZIP Code
325 S Lake Avenue, Ste 700			Duluth	MN	55803
Phone # (include area code)	Fax # (include area code)	Email			
(218) 529-7141		lcarney@barr.com			

## Section 2. Property Information

Property Name	FID No. (if known)		
Husky Energy Superior Refinery	816009590		
BRRTS No. (if known)	Parcel Identification Number		
02-16-581317			
Street Address	City	State	ZIP Code
2407 Stinson Avenue	Superior	WI	54880
County	Municipality where the Property is located	Property is composed of:	Property Size Acres
Douglas	<input checked="" type="radio"/> City <input type="radio"/> Town <input type="radio"/> Village of	<input type="radio"/> Single tax parcel <input checked="" type="radio"/> Multiple tax parcels	250

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1. Is a response needed by a specific date? (e.g., Property closing date) Note: Most requests are completed within 60 days. Please plan accordingly.

No  Yes

Date requested by: \_\_\_\_\_

Reason: \_\_\_\_\_

2. Is the "Requester" enrolled as a Voluntary Party in the Voluntary Party Liability Exemption (VPLE) program?

No. **Include the fee that is required for your request in Section 3, 4 or 5.**

Yes. **Do not include a separate fee.** This request will be billed separately through the VPLE Program.

Fill out the information in Section 3, 4 or 5 which corresponds with the type of request:

**Section 3. Technical Assistance or Post-Closure Modifications;**

**Section 4. Liability Clarification; or Section 5. Specialized Agreement.**

**Section 3. Request for Technical Assistance or Post-Closure Modification**

Select the type of technical assistance requested: [Numbers in brackets are for WI DNR Use]

- No Further Action Letter (NFA) (Immediate Actions) - NR 708.09, [183] - **Include a fee of \$350.** Use for a written response to an immediate action after a discharge of a hazardous substance occurs. Generally, these are for a one-time spill event.
- Review of Site Investigation Work Plan - NR 716.09, [135] - **Include a fee of \$700.**
- Review of Site Investigation Report - NR 716.15, [137] - **Include a fee of \$1050.**
- Approval of a Site-Specific Soil Cleanup Standard - NR 720.10 or 12, [67] - **Include a fee of \$1050.**
- Review of a Remedial Action Options Report - NR 722.13, [143] - **Include a fee of \$1050.**
- Review of a Remedial Action Design Report - NR 724.09, [148] - **Include a fee of \$1050.**
- Review of a Remedial Action Documentation Report - NR 724.15, [152] - **Include a fee of \$350**
- Review of a Long-term Monitoring Plan - NR 724.17, [25] - **Include a fee of \$425.**
- Review of an Operation and Maintenance Plan - NR 724.13, [192] - **Include a fee of \$425.**

Other Technical Assistance - s. 292.55, Wis. Stats. [97] (For request to build on an abandoned landfill use Form 4400-226)

- Schedule a Technical Assistance Meeting - **Include a fee of \$700.**
- Hazardous Waste Determination - **Include a fee of \$700.**
- Other Technical Assistance - **Include a fee of \$700.** Explain your request in an attachment.

Post-Closure Modifications - NR 727, [181]

- Post-Closure Modifications: Modification to Property boundaries and/or continuing obligations of a closed site or Property; sites may be on the GIS Registry. This also includes removal of a site or Property from the GIS Registry. **Include a fee of \$1050, and:**
  - Include a fee of \$300 for sites with residual soil contamination; and
  - Include a fee of \$350 for sites with residual groundwater contamination, monitoring wells or for vapor intrusion continuing obligations.

Attach a description of the changes you are proposing, and documentation as to why the changes are needed (if the change to a Property, site or continuing obligation will result in revised maps, maintenance plans or photographs, those documents may be submitted later in the approval process, on a case-by-case basis).

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**Skip Sections 4 and 5 if the technical assistance you are requesting is listed above and complete Sections 6 and 7 of this form.**

**Section 4. Request for Liability Clarification**

Select the type of liability clarification requested. Use the available space given or attach information, explanations, or specific questions that you need answered in DNR's reply. Complete Sections 6 and 7 of this form. **[Numbers in brackets are for DNR Use]**

"Lender" liability exemption clarification - s. 292.21, Wis. Stats. [686]

❖ **Include a fee of \$700.**

Provide the following documentation:

- (1) ownership status of the real Property, and/or the personal Property and fixtures;
- (2) an environmental assessment, in accordance with s. 292.21, Wis. Stats.;
- (3) the date the environmental assessment was conducted by the lender;
- (4) the date of the Property acquisition; for foreclosure actions, include a copy of the signed and dated court order confirming the sheriff's sale.
- (5) documentation showing how the Property was acquired and the steps followed under the appropriate state statutes.
- (6) a copy of the Property deed with the correct legal description; and,
- (7) the Lender Liability Exemption Environmental Assessment Tracking Form (Form 4400-196).
- (8) If no sampling was done, please provide reasoning as to why it was **not** conducted. Include this either in the accompanying environmental assessment or as an attachment to this form, and cite language in s. 292. 21(1)(c)2.,h.-i., Wis. Stats.:
  - h. The collection and analysis of representative samples of soil or other materials in the ground that are suspected of being contaminated based on observations made during a visual inspection of the real Property or based on aerial photographs, or other information available to the lender, including stained or discolored soil or other materials in the ground and including soil or materials in the ground in areas with dead or distressed vegetation. The collection and analysis shall identify contaminants in the soil or other materials in the ground and shall quantify concentrations.
  - i. The collection and analysis of representative samples of unknown wastes or potentially hazardous substances found on the real Property and the determination of concentrations of hazardous waste and hazardous substances found in tanks, drums or other containers or in piles or lagoons on the real Property.

"Representative" liability exemption clarification (e.g. trustees, receivers, etc.) - s. 292.21, Wis. Stats. [686]

❖ **Include a fee of \$700.**

Provide the following documentation:

- (1) ownership status of the Property;
- (2) the date of Property acquisition by the representative;
- (3) the means by which the Property was acquired;
- (4) documentation that the representative has no beneficial interest in any entity that owns, possesses, or controls the Property;
- (5) documentation that the representative has not caused any discharge of a hazardous substance on the Property; and
- (6) a copy of the Property deed with the correct legal description.

Clarification of local governmental unit (LGU) liability exemption at sites with: (select all that apply)

- hazardous substances spills - s. 292.11(9)(e), Wis. Stats. [649];
- Perceived environmental contamination - [649];
- hazardous waste - s. 292.24 (2), Wis. Stats. [649]; and/or
- solid waste - s. 292.23 (2), Wis. Stats. [649].

❖ **Include a fee of \$700, a summary of the environmental liability clarification being requested, and the following:**

- (1) clear supporting documentation showing the acquisition method used, and the steps followed under the appropriate state statute(s).
- (2) current and proposed ownership status of the Property;
- (3) date and means by which the Property was acquired by the LGU, where applicable;
- (4) a map and the ¼, ¼ section location of the Property;
- (5) summary of current uses of the Property;
- (6) intended or potential use(s) of the Property;
- (7) descriptions of other investigations that have taken place on the Property; and
- (8) (for solid waste clarifications) a summary of the license history of the facility.



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### Section 4. Request for Liability Clarification (cont.)

Lease liability clarification - s. 292.55, Wis. Stats. [646]

❖ **Include a fee of \$700 for a single Property, or \$1400 for multiple Properties and the information listed below:**

- (1) a copy of the proposed lease;
- (2) the name of the current owner of the Property and the person who will lease the Property;
- (3) a description of the lease holder's association with any persons who have possession, control, or caused a discharge of a hazardous substance on the Property;
- (4) map(s) showing the Property location and any suspected or known sources of contamination detected on the Property;
- (5) a description of the intended use of the Property by the lease holder, with reference to the maps to indicate which areas will be used. Explain how the use will not interfere with any future investigation or cleanup at the Property; and
- (6) all reports or investigations (e.g. Phase I and Phase II Environmental Assessments and/or Site Investigation Reports conducted under s. NR 716, Wis. Adm. Code) that identify areas of the Property where a discharge has occurred.

General or other environmental liability clarification - s. 292.55, Wis. Stats. [682] - Explain your request below.

❖ **Include a fee of \$700 and an adequate summary of relevant environmental work to date.**

No Action Required (NAR) - NR 716.05, [682]

❖ **Include a fee of \$700.**

Use where an environmental discharge has or has not occurred, and applicant wants a DNR determination that no further assessment or clean-up work is required. Usually this is requested after a Phase I and Phase II environmental assessment has been conducted; the assessment reports should be submitted with this form. This is not a closure letter.

Clarify the liability associated with a "closed" Property - s. 292.55, Wis. Stats. [682]

❖ **Include a fee of \$700.**

- Include a copy of any closure documents if a state agency other than DNR approved the closure.

Use this space or attach additional sheets to provide necessary information, explanations or specific questions to be answered by the DNR.

### Section 5. Request for a Specialized Agreement

Select the type of agreement needed. Include the appropriate draft agreements and supporting materials. Complete Sections 6 and 7 of this form. More information and model draft agreements are available at: [dnr.wi.gov/topic/Brownfields/Igu.html#tabx4](http://dnr.wi.gov/topic/Brownfields/Igu.html#tabx4).

Tax cancellation agreement - s. 75.105(2)(d), Wis. Stats. [654]

❖ **Include a fee of \$700, and the information listed below:**

- (1) Phase I and II Environmental Site Assessment Reports,
- (2) a copy of the Property deed with the correct legal description.

Agreement for assignment of tax foreclosure judgement - s.75.106, Wis. Stats. [666]

❖ **Include a fee of \$700, and the information listed below:**

- (1) Phase I and II Environmental Site Assessment Reports,
- (2) a copy of the Property deed with the correct legal description.

Negotiated agreement - Enforceable contract for non-emergency remediation - s. 292.11(7)(d) and (e), Wis. Stats. [630]

❖ **Include a fee of \$1400, and the information listed below:**

- (1) a draft schedule for remediation; and,
- (2) the name, mailing address, phone and email for each party to the agreement.

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**Section 6. Other Information Submitted**

Identify all materials that are included with this request.

Send both a paper copy of the signed form and all reports and supporting materials, and an electronic copy of the form and all reports, including Environmental Site Assessment Reports, and supporting materials on a compact disk.

Include one copy of any document from any state agency files that you want the Department to review as part of this request. The person submitting this request is responsible for contacting other state agencies to obtain appropriate reports or information.

- Phase I Environmental Site Assessment Report - Date: \_\_\_\_\_
- Phase II Environmental Site Assessment Report - Date: \_\_\_\_\_
- Legal Description of Property (required for all liability requests and specialized agreements)
- Map of the Property (required for all liability requests and specialized agreements)

Analytical results of the following sampled media: Select all that apply and include date of collection.

- Groundwater
- Soil
- Sediment
- Other medium - Describe: \_\_\_\_\_

Date of Collection: \_\_\_\_\_

- A copy of the closure letter and submittal materials
- Draft tax cancellation agreement
- Draft agreement for assignment of tax foreclosure judgment
- Other report(s) or information - Describe: \_\_\_\_\_

For Property with newly identified discharges of hazardous substances only: Has a notification of a discharge of a hazardous substance been sent to the DNR as required by s. NR 706.05(1)(b), Wis. Adm. Code?

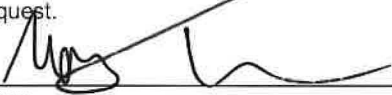
- Yes - Date (if known): \_\_\_\_\_
- No

Note: The Notification for Hazardous Substance Discharge (non-emergency) form is available at:  
[dnr.wi.gov/files/PDF/forms/4400/4400-225.pdf](http://dnr.wi.gov/files/PDF/forms/4400/4400-225.pdf).

**Section 7. Certification by the Person who completed this form**

- I am the person submitting this request (requester)
- I prepared this request for: \_\_\_\_\_  
Requester Name

I certify that I am familiar with the information submitted on this request, and that the information on and included with this request is true, accurate and complete to the best of my knowledge. I also certify I have the legal authority and the applicant's permission to make this request.

  
\_\_\_\_\_  
Signature

2-28-20  
\_\_\_\_\_  
Date Signed

Environmental Technologist  
\_\_\_\_\_  
Title

715-969-4873  
\_\_\_\_\_  
Telephone Number (include area code)

# Technical Assistance, Environmental Liability Clarification or Post-Closure Modification Request

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## Section 8. DNR Contacts and Addresses for Request Submittals

Send or deliver one paper copy and one electronic copy on a compact disk of the completed request, supporting materials, and fee to the region where the property is located to the address below. Contact a [DNR regional brownfields specialist](#) with any questions about this form or a specific situation involving a contaminated property. For electronic document submittal requirements see: <http://dnr.wi.gov/files/PDF/pubs/rr/RR690.pdf>.

### DNR NORTHERN REGION

Attn: RR Program Assistant  
Department of Natural Resources  
223 E Steinfest Rd Antigo, WI 54409

### DNR NORTHEAST REGION

Attn: RR Program Assistant  
Department of Natural Resources  
2984 Shawano Avenue  
Green Bay WI 54313

### DNR SOUTH CENTRAL REGION

Attn: RR Program Assistant  
Department of Natural Resources  
3911 Fish Hatchery Road  
Fitchburg WI 53711

### DNR SOUTHEAST REGION

Attn: RR Program Assistant  
Department of Natural Resources  
2300 North Martin Luther King Drive  
Milwaukee WI 53212

### DNR WEST CENTRAL REGION

Attn: RR Program Assistant  
Department of Natural Resources  
1300 Clairemont Ave.  
Eau Claire WI 54702



*Note: These are the Remediation and Redevelopment Program's designated regions. Other DNR program regional boundaries may be different.*

DNR Use Only			
Date Received	Date Assigned	BRRTS Activity Code	BRRTS No. (if used)
DNR Reviewer		Comments	
Fee Enclosed? <input type="radio"/> Yes <input type="radio"/> No	Fee Amount \$	Date Additional Information Requested	Date Requested for DNR Response Letter
Date Approved	Final Determination		



# Site Investigation Report

*Superior Refinery April 26, 2018 Incident*  
**BRRTs Number: 02-16-581317**

Prepared for  
Superior Refining Company LLC



February 2020

# Site Investigation Report

February 2020

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## Certifications

"I, Lynette M. Carney, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03(1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code; and that, to the best of my knowledge, all of the information contained in this document is correct, and the document was prepared in compliance with all applicable requirements in Chapters NR 700 to 726, Wis. Adm. Code."



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Lynette M. Carney, PG  
Reg #: 1138

2/28/2020

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Date

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## Executive Summary

This report summarizes the results of a site investigation completed by Barr Engineering Co. (Barr) on behalf of Superior Refining Company LLC (SRC) following a release of asphalt, Therminol<sup>®</sup>, and # 6 fuel oil as the result of an incident at the Superior Refinery (Site) on April 26, 2018. The purpose of this investigation was to determine if residual impacts to shallow soil remain following the immediate and interim actions completed by SRC after the incident. The investigation focused on characterizing soil conditions in pervious surface areas located within the release area boundary. Investigation results will be used to determine the need for additional interim, investigation or response actions.

The estimated extent of the petroleum hydrocarbon release (asphalt, Therminol<sup>®</sup>, and #6 fuel oil) to pervious surfaces included portions of the asphalt tank farm, refinery process areas, and Stinson Avenue ditch. The bulk of the material released remained on SRC property with only a small amount of residual material leaving the site. Released asphalt, Therminol<sup>®</sup>, and #6 fuel oil was initially recovered by vacuum truck, then by excavation. Stormwater that came in contact with the released products was contained and treated through the on-site wastewater treatment plant prior to discharge from the facility.

The Site is relatively flat and surface water flow is toward Newton Creek located immediately to the east. The creek flows east approximately 1.5 miles and discharges to Superior Bay. Surficial geology in the region consists of glacial-lacustrine clay deposits estimated to be over 100 feet thick. Depth to groundwater at the facility ranges from approximately 1.0 to 6.0 feet below ground surface (bgs). The direction of shallow groundwater flow below the refinery is to the east toward Superior Bay with a velocity of 0.4 centimeters per year (cm/yr.).

As outlined in the *Site Investigation Work Plan* (Work Plan; Barr, 2019), shallow soil borings and hand augers were used to collect soil samples from within 4 feet of the ground surface in the investigation area. The number of borings and some boring locations were modified due to removal of soil from the tank farm area during refinery rebuild construction activities and prior to initiating the investigation work. In addition, as a result of concurrent utility work, two of the borings were converted to test pits and several locations were moved or adjusted due to surface obstructions. Soil samples were collected for laboratory analysis of petroleum volatile organic compounds (PVOCs) and polynuclear aromatic hydrocarbons (PAHs). Low concentrations of petroleum compounds were detected in soil samples from three locations in the affected area with concentrations greater than their Wisconsin Department of Natural Resources (WDNR) Groundwater Residual Contaminant Level (RCL). There were no detections above the WDNR Direct Contract Industrial RCL.

The isolated petroleum concentrations appear to be associated with field-observed residual surficial asphalt from the April 26, 2018 incident and a known historical release. Based on current and historical groundwater data for the facility, the native clay soil has a hydraulic conductivity of  $10^{-7}$  cm/sec and groundwater has an estimated flow velocity of 0.4 cm/year which, within this industrial setting, results in low risk to human health and the environment. In addition, with groundwater being monitored annually on a facility-wide basis, any groundwater leaching associated with remaining residual petroleum

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contaminated soil would be monitored as part of the ongoing facility-wide groundwater monitoring program. As a result, no additional phases of petroleum hydrocarbon investigation are recommended.

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# 1 Project Objectives

This Site Investigation Report presents initial site investigation activities at the Superior Refinery located in Superior, Wisconsin. The site investigation activities were initiated in response to a release of asphalt, Thermanol®, and # 6 fuel oil following an incident at the Site on April 26, 2018. Immediate and interim actions in response to the release were initiated by SRC and are ongoing. The purpose of the site investigation was to review and investigate potential petroleum impacts to soils that remain after the release under the requirements of NR 716 and, in particular, the site investigation scoping requirements in NR 716.07.

Since the Site has been in operation for decades and has historical and ongoing monitoring (unrelated to the incident), this site investigation was performed as an initial phase in a strategy that would allow for collection and evaluation of investigation data in the context of the larger Site setting to determine if additional actions are required. This phase of the investigation included the following:

- Assess and characterize the condition of shallow soil beneath pervious surfaces within the affected petroleum hydrocarbon release area(s);
- Determine the need for additional investigation, interim action, and/or remedial action; and
- Collect information necessary to select additional interim and/or remedial action.

This report summarizes the Site background, investigation activities, results, and conclusions and provides recommendations for next steps.

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## 2 General Information

Figure 1 provides a location map showing the Superior Refinery and the surrounding area using the USGS 7.5-minute topographic map (NR 716.15(2) (c) 5). Figure 2 provides an aerial image of the Site and property boundaries in relation to the surrounding features along with area private water supply wells located within 1,200 feet of the Site boundary (NR 716.15 (2)(c)6). Figure 3A and Figure 3B provide Site features and refining operational process area details (NR 716.15 (2) (c) 6).

**Site Information:** BRRTs Number: 02-16-581317  
Facility Identification Numbers: 816009590  
Superior Refining Company LLC  
2407 Stinson Avenue  
Superior, Wisconsin  
Douglas County, Wisconsin  
NW ¼, NW ¼ of Section 36, T49N, R14W  
Latitude / Longitude: 46.690927 / 92.07179 (Site Center)  
WTM91 Coordinates: X: 361511, Y: 692726 (Site Center)

**Responsible Party:** Superior Refining Company LLC  
Attn: Matt Turner, Environmental Technologist  
2407 Stinson Avenue  
Superior, WI 54880  
Phone: (403) 298-6050  
Email: matthew.turner@huskyenergy.com

**Environmental Consultant:** Barr Engineering Co.  
Attn: Lynette Carney, Project Manager  
325 South Lake Avenue, Suite 700  
Duluth, MN 55802  
Phone: (218) 529-7141  
Email: lcarney@barr.com



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## 3 Background

### 3.1 Physical Setting

The information provided in this section outlines the physiographical and geological setting of the Site as summarized from the *Site Investigation Work Plan* (Barr, 2019).

The topography at the Site slopes gently to the east. Surface elevations range from approximately 650 to 660 feet above mean sea level (MSL). The closest natural surface water body is Newton Creek, whose headwaters are located at the Newton Creek Impoundment shown on Figure 1. The creek flows about 1.5 miles to Hog Island Inlet, which connects to Superior Bay. Stormwater retention and firewater ponds, along with two artificial wetlands for wastewater treatment plant discharge polishing, are located northwest of the Newton Creek headwaters, near the intersection of Stinson Avenue and Bardon Avenue (Figure 2). Other than the process areas, which have concrete cover, most of the refinery property is unpaved.

Surficial geology in the region consists of glacial-lacustrine clay deposits estimated to be over 100 feet thick. Soil boring data previously collected at the Site indicates this homogenous layer of red-brown lean to fat clay till is present across the Site. No sand or silt lenses were reported to have been encountered within this clay layer. Desiccation and/or freeze/thaw fractures were described to be commonly encountered in the approximately upper 7 feet of the clay till (Gannett Fleming, 2014). This clay unit overlies sandy glacial till interbedded with sand and gravel. The regional bedrock geology consists of sandstone of the Precambrian-age Bayfield Formation. Depth to bedrock in the refinery area is greater than 150 feet.

Data from previous groundwater monitoring at the facility indicate the depth to groundwater in the network monitoring wells ranges from approximately 1.0 to 6.0 feet below ground surface (bgs) (Gannett Fleming, 2018). The direction of shallow groundwater flow below the refinery is to the east toward Superior Bay. The median hydraulic conductivity of the clay is reported to be  $2.4 \times 10^{-7}$  centimeters per second (cm/sec), and the estimated groundwater velocity at the Site was reported at approximately 0.4 centimeters per year (cm/yr.) (Gannett Fleming, 2014).

### 3.2 History of Previous Releases

As required by NR 716.15 (2) (d) this section provides a summary of the previous historical releases at the facility. Reportable releases of petroleum hydrocarbon to pervious surfaces at the refinery have been reported to the WDNR. These sites have either received closure from WDNR or require ongoing monitoring and/or cleanup. More details regarding individual historical release sites can be found in previously submitted correspondence to the WDNR (Gannett Fleming, 2014). Additional details related to these releases are summarized in the *Site Investigation Work Plan* (Work Plan; Barr, 2019).

Past interim actions, site investigations and closures have followed the requirements of NR 708 and NR 716. To increase efficiency and streamline reporting for refinery release sites, a WDNR approved facility-wide *Site Investigation / Response Action Plan* (SI/RAP) (Gannett Fleming, 2014) was developed and

became effective April 4, 2018. This SI/RAP was also used as the basis for the Negotiated Agreement between SRC and the WDNR. In conjunction with the Negotiated Agreement, a network of 23 wells and 8 piezometers for monitoring overall groundwater quality was established (Figure 4). Twice a year, starting in 2015, all wells and piezometers in the network are gauged (to check for non-aqueous phase liquids (NAPL), track seasonal changes in water levels, and prepare groundwater contour maps) and the perimeter wells and piezometers are purged and sampled for petroleum volatile organic compounds (PVOCs) plus naphthalene. Following approval of the SI/RAP and associated Negotiated Agreement, the WDNR created a single, new refinery-wide site designation (BRRTs Number 02-16-559511) that covers most releases that occur within the facility boundary.

### 3.3 April 2018 Incident

An incident occurred at the Superior Refinery on April 26, 2018 while shutting down for a refinery-wide maintenance turnaround. Debris from the initial incident punctured asphalt storage Tank 101 resulting in a release of asphalt that later ignited, causing significant damage in the asphalt tank farm and multiple process units. The fire subsequently caused damage to piping that contained Therminol® and #6 fuel oil in the asphalt tank farm, some of which was released at the approximate locations shown on Figure 5. The fire was extinguished later that day using a combination of water and firefighting foam.

The estimated extent of the petroleum hydrocarbon release (asphalt, Therminol®, and #6 fuel oil) to pervious surfaces, including residual material, has been identified as the affected area on Figure 5. The estimated total combined release volumes to pervious and impervious surfaces of each substance is summarized in the table below.

Substance Released	Source	Estimated Release Volume	Potential Contaminants of Concern
Asphalt	Damage to Tank 101	17,000 bbls	Petroleum Hydrocarbons
Therminol®	Damaged Piping	42 bbls	Petroleum Hydrocarbons
#6 Fuel Oil	Damaged Piping	11 bbls	Petroleum Hydrocarbons

bbls = barrels (1 bbl = 42 gallons)

Some of the water used for firefighting efforts flowed to the north ditch along Stinson Avenue. This firefighting water was in contact with the asphalt, Therminol®, and #6 fuel oil and may have transported residual hydrocarbons to the Stinson Avenue ditch.

During the incident, aqueous film forming foam (AFFF) was used to combat the fire and was also mobilized by firefighting water. Some of the AFFF used contained per- and polyfluoroalkyl substances (PFAS). PFAS impacts to the site have been, and continue to be addressed by treating the impounded firefighting water and subsequent stormwater from the impacted areas with both granular activated carbon and ion-exchange resin treatment technologies.

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### 3.4 Excavations Associated with Re-build Efforts

As part of the refinery rebuild efforts at the Site, several excavations were completed to accommodate the engineered fill required to support new/replacement infrastructure. These areas included a large portion of the asphalt tank farm, Fluidized Catalytic Cracking Unit (FCCU) and Crude Unit as shown on Figure 6A. The construction excavations were completed in late summer of 2019, prior to initiating this investigation. In preparation for coordinating proper soil management during construction, SRC hired Insight Environmental (Insight) to install soil borings and collect soil samples for disposal characterization and permitting. The pre-excavation soil characterization field work was completed by Insight in January, June, August and November 2019 and those results are summarized in this report. The documentation and management of soil removed during the construction excavation will be provided in a separate report to the WDNR in accordance with NR 708.15.

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## 4 Methods

On June 14, 2019, Barr submitted the Work Plan to WDNR, which included rationale for boring placement, a sampling and analysis plan, standard operating procedures and additional investigation details. The Work Plan was approved by WDNR on August 26, 2019. A summary of the investigation approach and sampling methods along with deviations from the Work Plan scope are provided below.

### 4.1 Soil Characterization

A combination of soil borings, tests pits and hand augers were used to evaluate shallow soil in pervious areas located within affected area (Figure 6A and Figure 6B). Soil conditions were evaluated within the upper four feet of the ground surface to characterize soil which was directly in contact with the released products and located within the direct contact zone as defined by the WDNR. The sample locations were chosen to provide representative coverage of the pervious surface inside the process area that was in contact with the released products.

Soil borings were advanced using a push probe, test pits were completed using a small backhoe, and hand augers were completed using a 3-inch diameter bucket auger in areas not accessible by a drill rig or backhoe and from the north side of the Stinson Avenue ditch. Sample collection followed applicable Barr SOPs as per the Work Plan.

Some sample locations varied from the Work Plan due to soil removal in tank farm area for construction excavation, utility locations, accessibility in the field, and surface obstructions.

Soil samples were collected at continuous vertical intervals from all locations. These samples were described in the field in accordance with the Universal Soil Classification System and with ASTM-2488, *Standard Soil Practice for Description and Identification of Soils (Visual/Manual Method)*. Boreholes were backfilled according to WDNR NR 141 requirements.

### 4.2 Soil Field Screening

Soil samples were inspected for evidence of contamination such as staining, distinguishable odor, discoloration, and/or sheen, with observations documented on a soil boring log prepared for each boring, test pit or hand auger location (Appendix A).

A photoionization detector (PID) with a 10.6 eV lamp was used to perform soil headspace screening. The PID was calibrated or checked against a known concentration of a calibration gas standard prior to collection of field measurements. Field screening notations and measurements were recorded in a project-dedicated field logbook.

### 4.3 Soil Sample Collection and Analysis

Soil samples were collected from each of the locations as described in the soil boring logs (Appendix A). Up to two representative soil samples from each of the process area soil borings / hand auger / test pits, were submitted for PVOC and PAH laboratory analysis. Ideally, from the soil borings / hand augers / test

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pits in the process area, one sample was collected from 0-1.5 feet bgs and one was collected from 3-4 feet bgs and one sample from each of the three hand auger borings located in the Stinson Avenue ditch were analyzed for PAH and PVOCs.

Laboratory analyses were performed by Pace Analytical in Minneapolis, Minnesota (Pace). Appropriate sample handling and documentation procedures, as described in the Work Plan were followed.

#### 4.4 Deviations from Work Plan Scope

Deviations from the Work Plan were determined with SRC personnel. Adjustments to the original scope consisted of the items are listed below per NR716.15 (2) (e).

- Excavations were being completed near proposed borings SB-1 and SB-2, therefore these samples were collected from test pits and were offset approximately 100 southwest and 150 feet west, respectively.
- Borings SB-3, SB-4, SB-6, SB-8, SB-9, SB-10, SB-12, SB-13 and hand auger HA-3 were offset approximately 10 to 15 feet from locations identified in the Work Plan to avoid public and private utilities or construction activities within the Site.
- The five proposed borings within the tank farm near Tanks 99 and 101 were not completed because rebuild activities had already excavated soils at these locations. Insight completed pre-excavation soil borings at 12 locations and analyzed for VOCs and DRO compounds.
- At hand auger HA-1 and HA-2 boring depths were only to 3.9 feet bgs and 3.0 feet bgs, respectively, due to ponded surface water and perched groundwater entering the borehole making it difficult to collect samples in the clay. Sample intervals were adjusted for both borings based on soil conditions.
- At test pits SB-1 and SB-2 soil samples were collected at intervals of 0-2 feet bgs and 2-4 feet bgs which deviated from the Work Plan of samples collected at 0-1.5 feet bgs and 3-4 feet bgs. The use of a small excavator to collect these samples from test pits which were already opened for other rebuild work did not allow for a more discrete interval approach.

## 5 Results

Site investigation activities occurred on September 7, 10 & 28, October 4 & 10, and November 15, 2019. Soil sample analytical results were compared to the WDNR Remediation & Redevelopment Program RCLs according to the procedures in NR 720.10 and NR 720.12, Wisconsin Administrative Code. Logs of each soil boring are included as Appendix A. Representative photographs of the boring locations and soil encountered at each location are included as Appendix B. Per NR716.15 (3)(a) a summary of the results collected during the investigation are provided below.

### 5.1 Actual Sample Locations

Due to construction excavation activities in the asphalt tank farm to support rebuild efforts, five of the 18 original borings were eliminated from this investigation. However, this area was pre-characterized prior to excavation through the installation of 12 soil borings completed by Insight (Figure 6A). Data from these additional borings has been reviewed and referenced below.

Concurrent excavation work was occurring in the vicinity of SB-1 and SB-2 at the beginning of this investigation. To reduce the need for additional ground disturbance clearing, these borings were moved to the locations of the excavations and converted to test pits (Figure 6A). As planned, two hand auger samples were collected from below the pipe rack located south of Tanks 86 and 87 (Figure 6B). Three hand augers samples were collected from the north Stinson Avenue ditch to evaluate potential off-site petroleum hydrocarbon impacts (Figure 6B). Samples were collected from the north side of the ditch above the water line.

### 5.2 Geology and Hydrogeology

Boring stratigraphy generally consisted of zero to two feet of clay with sand and gravel (fill) overlying fat clay. The clay was typically of high plasticity, stiff consistency, moist, red-brown in color, and of glaciolacustrine origin. The Site is located adjacent to wetlands on the northwest and northeast and shallow groundwater was expected. However, because of the shallow depth of borings (4 feet) and the encountered clay formation, groundwater did not readily enter the boreholes, with the exception of the hand auger borings. Hand augers were located adjacent to drainage ditches with standing surface water. At these locations the clay was saturated and water was encountered at very shallow depths.

### 5.3 Field Screening

At each boring, soil was continuously screened for signs of contamination (odor, discoloration, sheen, and PID headspace measurements). Observations and field headspace screening results are summarized on Table 1 and included on soil boring logs (Appendix A). The following presents a summary of field observations where contamination was encountered:

- Hand auger HA-1 – residual (semi-solid) asphalt from the April 26, 2018 release was present at the ground surface to a depth of 0.7 feet bgs. Although an attempt was made to remove the asphalt from the surface prior to installation of the hand auger boring, it is likely some of the



asphalt was carried down into the borehole in the process of inserting and removing the tooling from the borehole multiple times with each lower soil sample collection attempt.

- It is believed this is the reason for moderate to light petroleum odor and black staining observed in soil from this location and PID readings ranging from 62.9 ppm (0.7'-1.5') to 20.9 ppm (1.5'-3').
- Boring SB-5 – a moderate to strong petroleum odor and black streaking was observed at this boring from 0 to 5 feet bgs. PID readings were 0.2 ppm (0'-2') to 370.6 ppm (2'-5').

## 5.4 Soil Analytical Summary

There were numerous low-level detections of petroleum compounds in the soil analytical samples. Table 2 summarizes the soil samples that exceeded the WDNR criteria (exceedances only); Table 3 summarizes all soil samples and analyses performed by Barr during this investigation with analytical results compared to WDNR criteria; and Table 4 summarizes the soil samples and analyses performed by Insight during the pre-excavation characterization sampling in the tank farm area with analytical results compared to WDNR criteria. Table 5 summarizes the soil samples and analyses performed by Insight during pre-excavation characterization sampling in the FCCU and Crude area with analytical results compared to WDNR criteria.

Low concentrations of petroleum compounds were detected in soil samples from three of the sample locations with concentrations greater than their WDNR Groundwater RCL (Figure 7). There were no detections above the WDNR Direct Contract Industrial RCL. Detections included the following:

- PAH compounds at HA-1 (0.7'-1.5'), SB-3 (0'-1.5'), and SB-5 (0'-1.5'); and
- BTEX compounds at SB-3 (3'-4').

The documented soil conditions at the time of sample collection from HA-1 included the presence of residual spilled asphalt (semi-solid) from the April 26, 2018 release at the surface from 0 to 0.7 feet. Due to the aboveground piping infrastructure at this location, this area could not be accessed by the push probe and was collected using a hand auger. The presence of this aboveground piping is also the reason this area had not yet been fully remediated following the incident and why residual asphalt remained near the surface in the vicinity of the sample location.

The pre-excavation samples collected by Insight for VOC and DRO compounds within the tank farm area are summarized on Table 4. The DRO compound analysis was collected at the request of the landfill for pre-disposal characterization. There are no WDNR comparison criteria for DRO compounds in soil, however, DRO compound detections were reported at the following locations: 1-B, 3-A, 4-A, 4-B, 7-A, 7-B, 8-A, 8-B, 10-A, 11-A, and 12-A. There were no corresponding VOC compound detections. Soil in the excavation limits of the tank farm area, as shown on Figure 6A, was excavated and hauled off site for landfill disposal as part of the refinery rebuild project.

The location of SB-3 and SB-5 are located on the edge of one or more nearby known historical release sites: Murphy Oil (previous owner of refinery) Tank #81 (BRRTs Site No: 02-16-221988) and Murphy Oil Crude Unit Processing Area (02-16-222638) which have been closed with residual contamination in place.

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Detections at these locations, particularly the deeper sample from SB-3 (3-4') are likely attributed to one of these adjacent known historical release sites. Pre-excavation samples were collected by Insight for VOC GRO and DRO compounds within the Crude and FCCU areas are summarized on Table 5. The data from these non-pervious areas to the north further supports the presence of residual contamination from known historical releases to the north and suggests the potential for this historical release to be the source of contaminant concentrations at soil boring SB-3 and SB-5.

Copies of the laboratory analytical reports for soil samples are included in Appendix C.

## 5.5 Quality Assurance / Quality Control (QA/QC) Review

Barr completed a quality control review of data collected as part of this investigation. The review was conducted to assess the validity of the analytical results from Pace Analytical (Pace) reports 10490781, 10490851, 10493478, 10494298, 10495123, and 10499826. Pace is certified in the State of Wisconsin by the Wisconsin Department of Natural Resources (WDNR) for the PAH and PVOC analyses reported. This review was performed in accordance with Barr's SOPs for data evaluation, which are based on National Functional Guidelines for Organic Data Review. Both field sampling and laboratory analytical procedures were examined in the review. Barr-defined qualifiers, based on USEPA-defined qualifiers, were assigned in the data summary tables for this project during the evaluation process. The sample data were reported to the limit of detection (LOD) and detections between the LOD and limit of quantitation (LOQ) were qualified (j) as estimated results.

### 5.5.1 Field Sampling Procedures

Field sampling procedures were evaluated using analysis of trip blank samples. No PVOC were detected above the LOD in the trip blank samples.

### 5.5.2 Laboratory Quality Control

Laboratory procedures were evaluated utilizing technical holding times, preservation, method blank samples, accuracy data, precision data, and data package completeness. The technical holding times and preservation were within recommendations for the analyses. The method blank, accuracy data, and precision data met the applicable laboratory quality control acceptance criteria, were not specific to this project and were not addressed, or had no significant deviations that would impact final data use, with the following exceptions: the matrix spike percent recovery, matrix spike duplicate percent recovery, and/or relative percent precision (RPD) of seven PAHs for sample SB-5\_0-1.5 and two PAHs for sample SB-8\_3.4 were outside laboratory acceptance criteria and qualified '\*' as estimated within the data summary tables.

Data completeness was evaluated by comparing the analyses requested with the data packages as received. The samples were reported as specified on the chains of custody.

### 5.5.3 Data QA/QC Conclusions

The data are deemed acceptable for the purposes of this project with the qualifications assigned during the data evaluation process.

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## 6 Discussion

### 6.1 Immediate Actions

Immediate actions were initiated in response to this combined asphalt, Therminol<sup>®</sup>, and #6 fuel oil release. Following the explosion, SRC closed the underflow weir located in the Stinson Avenue ditch. Once the fire was extinguished on April 26, 2018 and deemed safe to do so, SRC installed sand berms to prevent any additional hydrocarbons from leaving the facility and six (6) diesel powered pumps were placed adjacent to the Stinson Avenue weir which pumped the ditch flow material into the on-site stormwater and firewater containment ponds (SRC, 2018).

Recovery of the combined asphalt, Therminol<sup>®</sup>, and #6 fuel oil release was initiated shortly after the release event once the site was deemed safe for entry. Therminol<sup>®</sup> and #6 fuel oil was first removed by vacuum truck prior to asphalt removal. Recovered liquid hydrocarbons were re-inserted into the refining process and contaminated water was routed to the on-site wastewater treatment plant for recovery and treatment prior to discharge.

### 6.2 Interim Actions

Following containment, interim actions were initiated to address each of the released substances listed above. Interim action reports documenting the recovery, assessment, treatment and/or disposal of contaminated materials will be submitted separately to the WDNR as required by NR 708.15.

Following removal of surface liquids, the comingled asphalt, residual Therminol<sup>®</sup> and #6 fuel oil was excavated, collected, characterized and disposed of at an appropriately permitted off-site disposal facility. The asphalt recovery efforts included some amount of soil removal from the pervious areas resulting in some remediation of the underlying soils. Major asphalt recovery efforts were completed on March 27, 2019 and will be documented in a separate interim action report to the WDNR in accordance with NR 708.15. Minor asphalt recovery will continue if or when it is encountered during rebuild activities.

In addition, SRC continues to contain and treat storm water that accumulates in the areas impacted by the incident/release through the on-site wastewater treatment plant prior to discharge as authorized by the Superior Refinery's Waste Water Treatment Plant (WWTP) Permit No WI-0003085-09-0 with additional authorization provided under the WDNR general permit for petroleum contaminated water (Wisconsin Pollutant Discharge Elimination System (WPDES) Permit No. WI-0046531-06-0). Efforts associated with the immediate actions were documented in the SRC *Immediate Action Report* to the WDNR dated June 8, 2018 (SRC, 2018). Additional details regarding these efforts will be further documented in a separate report to the WDNR in accordance with NR 708.15.

### 6.3 Migration Pathways

The potential exposure pathways for petroleum hydrocarbon products in soil and groundwater are determined by the properties of the petroleum product and the characteristics of the media. Because of the relatively impermeable surficial clay at the refinery, releases tend to migrate horizontally along the

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ground surface. As stated in the Work Plan and outlined in the SI/RAP for this facility some vertical migration of petroleum hydrocarbon is possible in the surficial air-filled desiccation fractures within the clay. However, once the contamination reaches the saturated conditions at the shallow groundwater table, it is not expected to penetrate the unfractured clay because of the high entry pressure (Bradbury et al., 1985). As a result, lateral subsurface migration of petroleum contamination is not considered a significant transport pathway.

Human exposure through direct or indirect contact with soil, groundwater, or vapor is also low. The low permeability of the clay significantly impedes the potential vapor migration of contaminants in the unsaturated zone. Additionally, the refinery has internal controls in place that further minimize potential direct contact exposure to impacted soil and groundwater. The refinery is surrounded by a 24-hour per day, 7-day per week security system that includes a barbed-wire chain-linked fence, video surveillance system, and security guards. These safeguards prevent the general public from accessing any refinery area. The refinery also has an internal safe work permit program that requires any employees or contractors to obtain a work permit prior to working in any refinery area. This permit system also includes a separate work instruction for soil excavation projects and defines the minimum project requirements, safe work practices, and control measures that are to be utilized for all trenching and excavation operations at the refinery.

According to information summarized in the facility wide SI/RAP, the soil vapor exposure pathway has not been evaluated at any of the previously closed or currently active petroleum release locations. This decision was approved by the WDNR since these releases are located within, or adjacent to, the refinery's tank farm and the only structures in these release areas are the aboveground storage tanks. No structures designed for human occupancy are present within 30 feet of known areas of petroleum-contaminated soil or groundwater (Gannett Fleming, 2014).

## 6.4 Investigation Derived Waste

Waste generated by this investigation was disposed of in accordance with federal, state and local regulations and Barr's SOP: *Investigative Derived Waste*. Soil cuttings were placed in the on-site contaminated soil containment building (3-Sided Building) prior to disposal off-site.

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## 7 Conclusions and Recommendations

Soils generally consisted of lean, red, glaciolacustrine clay overlain by zero to two feet of clay with sand and gravel (fill). Groundwater is shallow, but slow to recharge in the underlying clay formation and was only encountered in the hand auger borings which were placed adjacent perched water and/or standing water in nearby drainage ditches.

Soil sampling identified elevated petroleum hydrocarbon impacts at three of the boring locations: SB-3, SB-5 and HA-1, which were above the WDNR groundwater RCL. There were no PVOOC or PAH compounds detected at concentrations greater than the WDNR Industrial Direct Contract RCL. On this basis, there does not appear to be direct contact or vapor potential risks associated with the identified residual soil impacts.

Soil impacts greater than WDNR groundwater RCLs were limited to three locations. Impacts at one location may have been due to residual asphalt from the release present at the ground surface while the other two locations were on the edge of known historical impacts. It appears these detections are not specifically attributed to direct residual impacts to the soil in the affected areas as a result of this release. In the case of the boring where semi-solid asphalt and perched water was present at the ground surface during the time of sample collection, some cross-contamination of the lower sample intervals may have occurred. In the case of the two locations on the edge of known historical impacts, detections in soil are likely attributed to an older release.

As stated in Section 3.1 above, groundwater velocities in the clay are extremely slow and the Site is located within the boundaries of WDNR approved facility-wide site (BRRTs Number 02-16-559511). This facility-wide site includes a network of 23 water table wells and 8 piezometers for monitoring overall groundwater quality at the facility. The perimeter wells and piezometers are purged and sampled annually for petroleum volatile organic compounds (PVOOCs) plus naphthalene. In the event documented residual petroleum contamination in soils enters a dissolved-phase in groundwater, transport will be with the flow of groundwater and detected and monitored as part of the facility-wide efforts.

Since isolated petroleum compound concentrations are less than the WDNR direct contact RCL and appear to be associated with residual asphalt (HA-1) and a known historical release (SB-3 and SB-5), and because groundwater will be monitored on a facility-wide basis, the residual petroleum hydrocarbon contamination does not present a risk for human health and the environment in this industrial setting. In addition, soil with DRO concentrations was removed during the tank farm construction excavation as well as surficial soil in direct contact with the asphalt release during the asphalt removal interim action. On this basis, additional phases of petroleum hydrocarbon investigation are not recommended. However, it is recommended that the area around HA-1, where residual spilled asphalt remains at the surface, be targeted for cleanup as part of ongoing response actions completed in conjunction with refinery rebuild activities.

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## 8 References

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- Gannett Fleming, Inc. (Gannett Fleming), 2014. Final Site Investigation and Remedial Action Plan, Calumet Superior LLC Refinery, Superior, WI. Prepared for Calumet Superior LLC. April 30, 2014.
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- WDNR, 2019. *Site Investigation Report Preparation Checklist*, WDNR Remediation and Redevelopment Program NR 700 Process Document Form 4400-317. April 2019.



## Tables

**Table 1**  
**Field Screening Observations - (PID Headspace Readings)**  
**Husky Post-Fire Site Investigation**  
**Superior, WI**

Location	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	SB-7	SB-8	SB-9	SB-10	SB-11	SB-12	SB-13	HA-1	HA-2	HA-3	HA-4	HA-5
Depth (feet)																		
0 - 1	0.2 <sup>3</sup>	0.1	1.1 <sup>1,2</sup>	0.0 <sup>3</sup>	0.2 <sup>1,3</sup>	0.2 <sup>2</sup>	0.6 <sup>1,3</sup>	0.5 <sup>3</sup>	1.6 <sup>2</sup>	2.8 <sup>1,2</sup>	0.4 <sup>3</sup>	0.1	0.0 <sup>2</sup>	40.2 <sup>1,2,4</sup>	2.1 <sup>1,3</sup>	1.1	0.6 <sup>3</sup>	0.2
1 - 2														62.1 <sup>1,3</sup>				
2 - 3	3.9 <sup>1,3</sup>	4.2 <sup>1,3</sup>	0.1 <sup>3</sup>	0.3	370.6 <sup>1,3</sup>	0.1 <sup>3</sup>	0.3	0.2 <sup>3</sup>	2.6 <sup>3</sup>	0.1	0.5	0.2	0.1	20.9 <sup>1,3</sup>	4.4 <sup>1,3</sup>			
3 - 4														24.3 <sup>1,3</sup>				
4 - 5			0.0 <sup>1,3</sup>	0.0		0.1	0.3	0.2 <sup>3</sup>	0.5 <sup>3</sup>	0.2	0.2	0.2	0.1					
5 - 6																		
6 - 7																		
7 - 8																		
Completion Depth (feet)	5	8	5	5	5	5	5	5	5	5	5	5	5	3.9	3	1.9	1.7	1.8

Soil borings were completed September 7, 10, and 28; October 4 and 10; November 15

All readings in parts per million (ppm) as isobutylene equivalents

**Bold** headspace readings were positive or above the WDNR soil screening criterion (typically >10 ppm). All other headspace readings <10 ppm were considered below "background".

**Field observations:**

<sup>1</sup>Petroleum odor.

<sup>2</sup>Black discoloration.

<sup>3</sup>Black streaking.

<sup>4</sup>Residual asphalt.

Table 2  
Soil Analytical Data Summary - Exceedances Only  
Husky Post - Fire Site Investigation  
Superior, WI

Parameter	Units	Location		HA-1	HA-1	HA-2	HA-2	HA-3	HA-4	HA-5	SB-1	SB-1	SB-2	SB-2	SB-3	SB-3	SB-4	SB-4	SB-5	SB-5	SB-6	SB-6
		Date	Depth	10/04/2019	10/04/2019	10/04/2019	10/04/2019	10/10/2019	10/10/2019	10/10/2019	9/10/2019	9/10/2019	9/07/2019	9/07/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019
		06/01/2018	06/01/2018	0.7 - 1.5 ft	3 - 3.9 ft	0 - 1 ft	2.5 - 3 ft	0 - 1.5 ft	0 - 1.5 ft	0 - 1.5 ft	0 - 2 ft	2 - 4 ft	0 - 2 ft	2 - 4 ft	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft
Effective Date		06/01/2018	06/01/2018																			
Exceedance Key		Shade	No Exceedances																			
Semivolatile Organic Compounds																						
Benzo(a)pyrene	mg/kg	0.47	2.11	<b>0.27</b>	<b>0.031</b>	<b>0.013</b>	<b>0.013</b>	<b>0.00097 J</b>	<b>0.022</b>	<b>0.091</b>	<b>0.0068</b>	<b>0.018</b>	< 0.00042 U	<b>0.0072</b>	<b>0.81</b>	<b>0.0099</b>	<b>0.012</b>	< 0.00051 U	<b>0.15</b>	<b>0.00094 J</b>	<b>0.0032</b>	< 0.00053 U
Benzo(b)fluoranthene	mg/kg	0.4781	21.1	<b>0.26</b>	<b>0.028</b>	<b>0.0092</b>	<b>0.0094</b>	<b>0.0017</b>	<b>0.033</b>	<b>0.12</b>	<b>0.0080</b>	<b>0.022</b>	< 0.00021 U	<b>0.0091</b>	<b>1.1</b>	<b>0.013</b>	<b>0.016</b>	< 0.00025 U	<b>0.18</b>	<b>0.0015</b>	<b>0.0055</b>	< 0.00027 U
Chrysene	mg/kg	0.1442	2110	<b>0.38</b>	<b>0.089</b>	<b>0.015</b>	<b>0.0064</b>	<b>0.0021</b>	<b>0.090</b>	<b>0.13</b>	<b>0.0087</b>	<b>0.022</b>	<b>0.00073 J</b>	<b>0.0078</b>	<b>1.0</b>	<b>0.012</b>	<b>0.018</b>	< 0.00052 U	<b>0.18</b>	<b>0.0014 J</b>	<b>0.0041</b>	< 0.00054 U
Volatile Organic Compounds																						
1,2,4-Trimethylbenzene	mg/kg	1.3787 (1)	219	< 0.014 U	< 0.013 U	< 0.014 U	< 0.014 U	< 0.016 U	< 0.014 U	< 0.014 U	< 0.013 U	< 0.013 U	< 0.011 U	< 0.014 U	< 0.012 U	< 0.014 U	< 0.015 U	< 0.012 U	< 0.011 U	<b>13.8</b>	< 0.011 U	< 0.013 U
1,3,5-Trimethylbenzene	mg/kg	1.3787 (1)	182	< 0.011 U	< 0.010 U	< 0.011 U	< 0.011 U	< 0.013 U	< 0.012 U	< 0.011 U	< 0.011 U	< 0.010 U	< 0.0086 U	< 0.011 U	< 0.0092 U	< 0.011 U	< 0.012 U	< 0.0099 U	< 0.0090 U	<b>3.7</b>	< 0.0089 U	< 0.011 U
Benzene	mg/kg	0.0051	7.07	< 0.0039 U	< 0.0037 U	< 0.0039 U	< 0.0039 U	< 0.0044 U	< 0.0041 U	< 0.0039 U	< 0.0037 U	< 0.0035 U	< 0.0030 U	< 0.0039 U	< 0.0033 U	< 0.0039 U	< 0.0043 U	< 0.0035 U	< 0.0032 U	<b>1.0</b>	< 0.0031 U	< 0.0038 U
Ethyl benzene	mg/kg	1.57	35.4	< 0.0038 U	< 0.0035 U	< 0.0037 U	< 0.0038 U	< 0.0043 U	< 0.0039 U	< 0.0038 U	< 0.0036 U	< 0.0034 U	< 0.0029 U	< 0.0038 U	< 0.0032 U	< 0.0038 U	< 0.0042 U	< 0.0034 U	< 0.0031 U	<b>3.9</b>	< 0.0030 U	< 0.0037 U
Xylene, total	mg/kg	3.96	260	< 0.016 U	< 0.015 U	< 0.016 U	< 0.016 U	< 0.018 U	< 0.017 U	< 0.016 U	< 0.015 U	< 0.015 U	< 0.013 U	< 0.016 U	< 0.013 U	< 0.016 U	< 0.018 U	< 0.014 U	< 0.013 U	<b>14.5</b>	< 0.013 U	< 0.016 U

(1) Representing the criteria for combined Trimethylbenzenes.  
 J Estimated detected value. Either certain QC criteria were not met or the concentration is between the laboratory's detection and quantitation limits.  
 U The analyte was analyzed for, but was not detected.  
 Detections are presented in bold.

Table 2  
Soil Analytical Data Summary - Exceedances Only  
Husky Post - Fire Site Investigation  
Superior, WI

Parameter	Units	Location		SB-7	SB-7	SB-8	SB-8	SB-9	SB-9	SB-10	SB-10	SB-11	SB-11	SB-12	SB-12	SB-13	SB-13	
		Date	Date	9/28/2019	9/28/2019	11/15/2019	11/15/2019	11/15/2019	11/15/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019
		Depth	Depth	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft	
		Wisconsin Groundwater RCLs, DF=2	Wisconsin Not to Exceed Direct Contact Industrial RCLs															
<b>Effective Date</b>		06/01/2018	06/01/2018															
<b>Exceedance Key</b>		Shade	No Exceedances															
Semivolatile Organic Compounds																		
Benzo(a)pyrene	mg/kg	0.47	2.11	<b>0.027</b>	<b>0.0010 J</b>	< 0.0021 U	< 0.00044 U	<b>0.049</b>	< 0.00051 U	<b>0.046</b>	< 0.00054 U	<b>0.0012 J</b>	< 0.00053 U	<b>0.014</b>	< 0.00053 U	< 0.00051 U	< 0.00051 U	
Benzo(b)fluoranthene	mg/kg	0.4781	21.1	<b>0.031</b>	<b>0.0015</b>	< 0.0011 U	<b>0.034</b>	<b>0.053</b>	<b>0.00077 J</b>	<b>0.059</b>	< 0.00027 U	< 0.00021 U	< 0.00027 U	<b>0.015</b>	< 0.00027 U	< 0.00025 U	< 0.00025 U	
Chrysene	mg/kg	0.1442	2110	<b>0.040</b>	< 0.00052 U	<b>0.059</b>	<b>0.036</b>	<b>0.042</b>	<b>0.00084 J</b>	<b>0.065</b>	< 0.00055 U	< 0.00042 U	< 0.00054 U	<b>0.025</b>	< 0.00054 U	< 0.00051 U	< 0.00051 U	
Volatile Organic Compounds																		
1,2,4-Trimethylbenzene	mg/kg	1.3787 (1)	219	< 0.012 U	< 0.013 U	< 0.010 U	< 0.011 U	< 0.014 U	< 0.013 U	< 0.011 U	< 0.013 U	< 0.010 U	< 0.014 U	< 0.012 U	< 0.013 U	< 0.013 U	< 0.012 U	
1,3,5-Trimethylbenzene	mg/kg	1.3787 (1)	182	< 0.0093 U	< 0.010 U	< 0.0082 U	< 0.0090 U	< 0.011 U	< 0.011 U	< 0.0087 U	< 0.010 U	< 0.0082 U	< 0.011 U	< 0.0097 U	< 0.010 U	< 0.010 U	< 0.010 U	
Benzene	mg/kg	0.0051	7.07	< 0.0033 U	< 0.0036 U	< 0.0029 U	< 0.0032 U	< 0.0039 U	< 0.0038 U	< 0.0031 U	< 0.0037 U	< 0.0029 U	< 0.0038 U	< 0.0034 U	< 0.0037 U	< 0.0036 U	< 0.0035 U	
Ethyl benzene	mg/kg	1.57	35.4	< 0.0032 U	< 0.0035 U	< 0.0028 U	< 0.0031 U	< 0.0037 U	< 0.0036 U	< 0.0030 U	< 0.0036 U	< 0.0028 U	< 0.0037 U	< 0.0033 U	< 0.0035 U	< 0.0035 U	< 0.0034 U	
Xylene, total	mg/kg	3.96	260	< 0.013 U	< 0.015 U	< 0.012 U	< 0.013 U	< 0.016 U	< 0.016 U	< 0.013 U	< 0.015 U	< 0.012 U	< 0.016 U	< 0.014 U	< 0.015 U	< 0.015 U	< 0.014 U	

(1) Representing the criteria for combined Trimethylbenzenes.  
J Estimated detected value. Either certain QC criteria were not met or the concentration is between the laboratory's detection and quantitation limits.  
U The analyte was analyzed for, but was not detected.  
Detections are presented in bold.

Table 3  
Soil Analytical Data Summary - All Results  
Husky Post-Fire Site Investigation  
Superior, WI

Parameter	Units	Wisconsin Groundwater RCLs, DF=2	Wisconsin Not to Exceed Direct Contact Industrial RCLs	Location		HA-1	HA-1	HA-2	HA-2	HA-3	HA-4	HA-5	SB-1	SB-1	SB-2	SB-2	SB-3	SB-3	SB-4	SB-4	SB-5	SB-5	SB-6	SB-6		
				Date	Date	10/04/2019	10/04/2019	10/04/2019	10/04/2019	10/10/2019	10/10/2019	10/10/2019	9/10/2019	9/10/2019	9/07/2019	9/07/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019
				Depth	Depth	0.7 - 1.5 ft	3 - 3.9 ft	0 - 1 ft	2.5 - 3 ft	0 - 1.5 ft	0 - 1.5 ft	0 - 1.5 ft	0 - 2 ft	2 - 4 ft	0 - 2 ft	2 - 4 ft	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft
Effective Date		06/01/2018	06/01/2018																							
Exceedance Key		Shade	No Exceedances																							
General Parameters																										
Moisture	%					27.5	24.6	25.2	27.4	30.9	29.0	29.3	23.0	20.6	6.1	24.4	15.9	28.9	33.9	22.8	9.5	20.0	14.0	26.0		
Semivolatile Organic Compounds																										
1-Methylnaphthalene	mg/kg		72.7	14.5	1.4	0.036	0.028	0.0010 J	0.0024	0.011	0.0024	0.0028	< 0.00051 U	0.0020 J	0.0063	0.0038	0.0025	< 0.00062 U	0.0066	0.0063	0.00063 J	< 0.00065 U				
2-Methylnaphthalene	mg/kg		3010	5.6	0.33	0.011	0.022	0.00099 J	0.0029	0.015	0.0037	0.0045	< 0.00050 U	0.0022	0.0095	0.0041	0.0030	< 0.00061 U	0.011	0.0078	0.0010 J	< 0.00064 U				
Acenaphthene	mg/kg		45200	5.4	0.50	0.013	< 0.00056 U	0.0052	0.0011 J	0.011	< 0.00053 U	< 0.00051 U	< 0.00044 U	0.0019	0.082	0.0014 J	0.0010 J	< 0.00053 U	0.023	0.00087 J	< 0.00047 U	< 0.00055 U				
Acenaphthylene	mg/kg			< 0.11 U	0.11	0.0051	< 0.0011 U	< 0.0012 U	0.0015 J	0.0048	0.0014 J	0.0028 J	< 0.00085 U	< 0.0011 U	0.0020 J	< 0.0011 U	< 0.0012 U	< 0.0010 U	0.0069 *	< 0.0010 U	< 0.00093 U	< 0.0011 U				
Anthracene	mg/kg	196.9492	100000	< 0.039 U	0.11	< 0.00038 U	< 0.00039 U	0.0010 J	0.041	0.031	< 0.00037 U	< 0.00036 U	< 0.00030 U	< 0.00037 U	0.30	0.0036	0.0022	< 0.00037 U	0.060 *	< 0.00035 U	< 0.00033 U	< 0.00038 U				
Benz(a)anthracene	mg/kg		20.8	0.20	0.018	0.024	0.023	0.0012 J	0.033	0.093	0.0064	0.017	0.00078 J	0.0079	1.2	0.0096	0.0091	< 0.00043 U	0.15	0.0012 J	0.0020	0.00053 J				
Benzo(a)pyrene	mg/kg	0.47	2.11	0.27	0.031	0.013	0.013	0.00097 J	0.022	0.091	0.0068	0.018	< 0.00042 U	0.0072	0.81	0.0099	0.012	< 0.00051 U	0.15	0.00094 J	0.0032	< 0.00053 U				
Benzo(b)fluoranthene	mg/kg	0.4781	21.1	0.26	0.028	0.0092	0.0094	0.0017	0.033	0.12	0.0080	0.022	< 0.00021 U	0.0091	1.1	0.013	0.016	< 0.00025 U	0.18	0.0015	0.0055	< 0.00027 U				
Benzo(g,h,i)perylene	mg/kg			< 0.038 U	< 0.0036 U	0.017	0.014	0.0019	0.018	0.080	0.0068	0.016	< 0.00029 U	0.0044	0.37	0.0064	0.018	< 0.00035 U	0.14	< 0.00034 U	0.0067	< 0.00037 U				
Benzo(k)fluoranthene	mg/kg		211	< 0.035 U	< 0.0033 U	< 0.00034 U	< 0.00035 U	0.00084 J	0.016	0.039	0.0037	0.010	< 0.00027 U	0.0040	0.53	0.0061	0.0064	< 0.00033 U	0.090 *	0.00067 J	0.0013	< 0.00034 U				
Chrysene	mg/kg	0.1442	2110	0.38	0.089	0.015	0.0064	0.0021	0.090	0.13	0.0087	0.022	0.00073 J	0.0078	1.0	0.012	0.018	< 0.00052 U	0.18	0.0014 J	0.0041	< 0.00054 U				
Dibenz(a,h)anthracene	mg/kg		2.11	< 0.055 U	< 0.0052 U	< 0.00053 U	< 0.00054 U	< 0.00057 U	< 0.00056 U	0.023	< 0.00051 U	0.0037	< 0.00042 U	< 0.00052 U	0.19	0.0021	< 0.00060 U	< 0.00051 U	0.030 *	< 0.00049 U	< 0.00046 U	< 0.00054 U				
Fluoranthene	mg/kg	88.8778	30100	0.26	0.028	0.011	< 0.00045 U	0.0039	0.021	0.16	0.0098	0.030	0.00086 J	0.015	2.1	0.024	0.015	< 0.00043 U	0.30	0.0025	0.0024	< 0.00044 U				
Fluorene	mg/kg	14.8299	30100	6.2	0.58	0.019	0.033	0.0027	0.0015	0.011	< 0.00038 U	0.0019	< 0.00031 U	0.0029	0.069	0.0019	0.0018	< 0.00038 U	0.026 *	0.0011 J	< 0.00034 U	< 0.00040 U				
Indeno(1,2,3-cd)pyrene	mg/kg		21.1	< 0.028 U	< 0.0027 U	< 0.00027 U	< 0.00028 U	< 0.00029 U	0.013	0.051	0.0043	0.010	< 0.00022 U	0.0036	0.33	0.0057	0.0084	< 0.00026 U	0.084 *	< 0.00025 U	0.0029	< 0.00027 U				
Naphthalene	mg/kg	0.6582	24.1	0.32	0.030	0.0016 J	0.027	0.0020 J	0.0021 J	0.011	0.0014 J	0.0024	< 0.00049 U	0.0020	0.0077	0.0030	0.0018 J	< 0.00059 U	0.022 *	0.0086	< 0.00053 U	< 0.00062 U				
Phenanthrene	mg/kg			6.4	0.59	0.017	< 0.00034 U	0.0050	0.013	0.11	0.0055	0.013	0.00085 J	0.013	0.98	0.018	0.011	< 0.00032 U	0.21	0.0032	0.0028	< 0.00034 U				
Pyrene	mg/kg	54.5455	22600	0.39	0.053	0.032	0.045	0.0029	0.019	0.15	0.012	0.032	0.00093 J	0.013	1.7	0.018	0.015	0.00053 J	0.23	0.0024	0.0028	0.00050 J				
Volatile Organic Compounds																										
1,2,4-Trimethylbenzene	mg/kg	1.3787 (1)	219	< 0.014 U	< 0.013 U	< 0.014 U	< 0.014 U	< 0.016 U	< 0.014 U	< 0.014 U	< 0.013 U	< 0.013 U	< 0.011 U	< 0.014 U	< 0.012 U	< 0.014 U	< 0.015 U	< 0.012 U	< 0.011 U	13.8	< 0.011 U	< 0.013 U				
1,3,5-Trimethylbenzene	mg/kg	1.3787 (1)	182	< 0.011 U	< 0.010 U	< 0.011 U	< 0.011 U	< 0.013 U	< 0.012 U	< 0.011 U	< 0.011 U	< 0.010 U	< 0.0086 U	< 0.011 U	< 0.0092 U	< 0.011 U	< 0.012 U	< 0.0099 U	< 0.0090 U	3.7	< 0.0089 U	< 0.011 U				
Benzene	mg/kg	0.0051	7.07	< 0.0039 U	< 0.0037 U	< 0.0039 U	< 0.0039 U	< 0.0044 U	< 0.0041 U	< 0.0039 U	< 0.0037 U	< 0.0035 U	< 0.0030 U	< 0.0039 U	< 0.0033 U	< 0.0039 U	< 0.0043 U	< 0.0035 U	< 0.0032 U	1.0	< 0.0031 U	< 0.0038 U				
Ethyl benzene	mg/kg	1.57	35.4	< 0.0038 U	< 0.0035 U	< 0.0037 U	< 0.0038 U	< 0.0043 U	< 0.0039 U	< 0.0038 U	< 0.0036 U	< 0.0034 U	< 0.0029 U	< 0.0038 U	< 0.0032 U	< 0.0038 U	< 0.0042 U	< 0.0034 U	< 0.0031 U	3.9	< 0.0030 U	< 0.0037 U				
Methyl tertiary butyl ether (MTBE)	mg/kg	0.027	282	< 0.0083 U	< 0.0077 U	< 0.0081 U	< 0.0083 U	< 0.0094 U	< 0.0086 U	< 0.0083 U	< 0.0079 U	< 0.0075 U	< 0.0064 U	< 0.0083 U	< 0.0069 U	< 0.0082 U	< 0.0091 U	< 0.0074 U	< 0.0067 U	< 0.0074 U	< 0.0066 U	< 0.0080 U				
Toluene	mg/kg	1.1072	818	< 0.017 U	< 0.016 U	< 0.017 U	< 0.017 U	< 0.019 U	< 0.018 U	< 0.017 U	< 0.016 U	< 0.015 U	< 0.013 U	< 0.017 U	< 0.014 U	< 0.017 U	< 0.019 U	< 0.015 U	0.023 J	< 0.015 U	< 0.014 U	< 0.016 U				
Xylene, total	mg/kg	3.96	260	< 0.016 U	< 0.015 U	< 0.016 U	< 0.016 U	< 0.018 U	< 0.017 U	< 0.016 U	< 0.015 U	< 0.015 U	< 0.013 U	< 0.016 U	< 0.016 U	< 0.018 U	< 0.014 U	< 0.013 U	14.5	< 0.013 U	< 0.016 U					
Barr Calculated Comparison - Industrial																										
Exceedance Count	no unit		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Hazard Index	no unit		≤ 1.0	0.0041	0.00037	0.000090	0.00012	0.000034	0.00013	0.00046	0.000056	0.00011	0.000021	0.000060	0.0038	0.000074	0.000084	0.000023	0.00075	0.013	0.000034	0.000026				
Cumulative Cancer Risk	no unit		≤ 1E-05	3.90E-07	4.10E-08	9.30E-09	1.00E-08	1.80E-09	1.50E-08	6.80E-08	5.10E-09	1.30E-08	1.00E-09	5.50E-09	6.00E-07	7.90E-09	8.50E-09	1.20E-09	1.10E-07	2.50E-07	2.80E-09	1.30E-09				

(1) Representing the criteria for combined Trimethylbenzenes.  
 \* Estimated value, QA/QC criteria not met.  
 J Estimated detected value. Either certain QC criteria were not met or the concentration is between the laboratory's detection and quantitation limits.  
 U The analyte was analyzed for, but was not detected.  
 Detections are presented in bold.

Table 3  
Soil Analytical Data Summary - All Results  
Husky Post-Fire Site Investigation  
Superior, WI

Parameter	Units	Wisconsin Groundwater RCLs, DF=2	Wisconsin Not to Exceed Direct Contact Industrial RCLs	Location		SB-7	SB-7	SB-8	SB-8	SB-9	SB-9	SB-10	SB-10	SB-11	SB-11	SB-12	SB-12	SB-13	SB-13		
				Date	Date	9/28/2019	9/28/2019	11/15/2019	11/15/2019	11/15/2019	11/15/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019	9/28/2019
				Depth	Depth	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft	0 - 1.5 ft	3 - 4 ft
Effective Date		06/01/2018	06/01/2018																		
Exceedance Key		Shade	No Exceedances																		
General Parameters																					
Moisture	%			17.1	23.4	7.0	10.5	3.9	22.4	7.9	26.9	5.3	26.2	16.1	26.4	22.3	22.3				
Semivolatile Organic Compounds																					
1-Methylnaphthalene	mg/kg		72.7	<b>0.0032</b>	< 0.00063 U	<b>0.013</b>	<b>0.016</b>	<b>0.011</b>	< 0.00062 U	<b>0.014</b>	< 0.00066 U	< 0.00051 U	< 0.00065 U	<b>0.0018 J</b>	< 0.00065 U	< 0.00062 U	< 0.00062 U	< 0.00062 U			
2-Methylnaphthalene	mg/kg		3010	<b>0.0044</b>	< 0.00062 U	<b>0.016</b>	<b>0.023</b>	<b>0.016</b>	< 0.00061 U	<b>0.0060 J</b>	< 0.00065 U	< 0.00050 U	< 0.00064 U	<b>0.0027</b>	< 0.00064 U	< 0.00061 U	< 0.00061 U	< 0.00061 U			
Acenaphthene	mg/kg		45200	<b>0.0011 J</b>	< 0.00053 U	<b>0.0037 J</b>	<b>0.0030</b>	<b>0.0024</b>	< 0.00053 U	<b>0.0040 J</b>	< 0.00056 U	< 0.00043 U	< 0.00055 U	<b>0.00063 J</b>	< 0.00055 U	< 0.00052 U	< 0.00053 U	< 0.00053 U			
Acenaphthylene	mg/kg			<b>0.0038</b>	< 0.0010 U	< 0.0043 U	<b>0.0014 J</b>	<b>0.0011 J</b>	<b>0.0012 J</b>	< 0.0044 U	< 0.0011 U	< 0.00085 U	< 0.0011 U	< 0.00095 U	< 0.0011 U	< 0.0010 U	< 0.0010 U	< 0.0010 U			
Anthracene	mg/kg	196.9492	100000	<b>0.0088</b>	< 0.00037 U	< 0.0015 U	<b>0.0058</b>	< 0.00029 U	< 0.00037 U	< 0.0015 U	< 0.00039 U	< 0.00030 U	< 0.00038 U	< 0.00034 U	< 0.00038 U	< 0.00036 U	< 0.00037 U	< 0.00037 U			
Benz(a)anthracene	mg/kg		20.8	<b>0.015</b>	<b>0.00054 J</b>	<b>0.083</b>	<b>0.053 *</b>	<b>0.092</b>	<b>0.0010 J</b>	<b>0.060</b>	< 0.00045 U	< 0.00035 U	< 0.00045 U	< 0.00039 U	< 0.00045 U	< 0.00042 U	< 0.00042 U	< 0.00042 U			
Benzo(a)pyrene	mg/kg	0.47	2.11	<b>0.027</b>	<b>0.0010 J</b>	< 0.0021 U	< 0.00044 U	<b>0.049</b>	< 0.00051 U	<b>0.046</b>	< 0.00054 U	<b>0.0012 J</b>	< 0.00053 U	<b>0.014</b>	< 0.00053 U	< 0.00051 U	< 0.00051 U	< 0.00051 U			
Benzo(b)fluoranthene	mg/kg	0.4781	21.1	<b>0.031</b>	<b>0.0015</b>	< 0.0011 U	<b>0.034</b>	<b>0.053</b>	<b>0.00077 J</b>	<b>0.059</b>	< 0.00027 U	< 0.00021 U	< 0.00027 U	<b>0.015</b>	< 0.00027 U	< 0.00025 U	< 0.00025 U	< 0.00025 U			
Benzo(g,h,i)perylene	mg/kg			<b>0.034</b>	< 0.00035 U	< 0.0015 U	<b>0.044 *</b>	<b>0.064</b>	<b>0.00037 J</b>	<b>0.064</b>	< 0.00037 U	<b>0.0023</b>	< 0.00037 U	<b>0.029</b>	< 0.00037 U	< 0.00035 U	< 0.00035 U	< 0.00035 U			
Benzo(k)fluoranthene	mg/kg		211	<b>0.014</b>	< 0.00033 U	< 0.0014 U	< 0.00028 U	< 0.00026 U	<b>0.00041 J</b>	<b>0.016</b>	< 0.00034 U	< 0.00027 U	< 0.00034 U	<b>0.0062</b>	< 0.00034 U	< 0.00032 U	< 0.00032 U	< 0.00032 U			
Chrysene	mg/kg	0.1442	2110	<b>0.040</b>	< 0.00052 U	<b>0.059</b>	<b>0.036</b>	<b>0.042</b>	<b>0.00084 J</b>	<b>0.065</b>	< 0.00055 U	< 0.00042 U	< 0.00054 U	<b>0.025</b>	< 0.00054 U	< 0.00051 U	< 0.00051 U	< 0.00051 U			
Dibenz(a,h)anthracene	mg/kg		2.11	< 0.00048 U	< 0.00052 U	< 0.0021 U	< 0.00044 U	< 0.00041 U	< 0.00051 U	<b>0.021</b>	< 0.00054 U	< 0.00042 U	< 0.00054 U	< 0.00047 U	< 0.00054 U	< 0.00051 U	< 0.00051 U	< 0.00051 U			
Fluoranthene	mg/kg	88.8778	30100	<b>0.013</b>	<b>0.00086 J</b>	< 0.0018 U	<b>0.020</b>	<b>0.015</b>	<b>0.00090 J</b>	<b>0.041</b>	< 0.00045 U	<b>0.00083 J</b>	< 0.00045 U	< 0.00039 U	<b>0.00065 J</b>	<b>0.00065 J</b>	< 0.00042 U	< 0.00042 U			
Fluorene	mg/kg	14.8299	30100	<b>0.0033</b>	< 0.00038 U	<b>0.010</b>	<b>0.0063</b>	<b>0.0082</b>	< 0.00038 U	<b>0.011</b>	< 0.00040 U	< 0.00031 U	< 0.00040 U	< 0.00035 U	< 0.00040 U	< 0.00038 U	< 0.00038 U	< 0.00038 U			
Indeno(1,2,3-cd)pyrene	mg/kg		21.1	< 0.00024 U	< 0.00026 U	< 0.0011 U	< 0.00023 U	< 0.00021 U	<b>0.00028 J</b>	<b>0.028</b>	< 0.00028 U	< 0.00021 U	< 0.00028 U	<b>0.0086</b>	< 0.00028 U	< 0.00026 U	< 0.00026 U	< 0.00026 U			
Naphthalene	mg/kg	0.6582	24.1	<b>0.0018 J</b>	< 0.00060 U	< 0.0025 U	<b>0.0067</b>	<b>0.0018</b>	< 0.00059 U	< 0.0025 U	< 0.00063 U	< 0.00048 U	< 0.00062 U	< 0.00055 U	< 0.00062 U	< 0.00059 U	< 0.00059 U	< 0.00059 U			
Phenanthrene	mg/kg			<b>0.014</b>	< 0.00033 U	<b>0.038</b>	<b>0.039</b>	<b>0.033</b>	<b>0.00098 J</b>	<b>0.075</b>	< 0.00034 U	< 0.00026 U	< 0.00034 U	<b>0.0043</b>	< 0.00034 U	< 0.00032 U	< 0.00032 U	< 0.00032 U			
Pyrene	mg/kg	54.5455	22600	<b>0.035</b>	<b>0.0014</b>	<b>0.039</b>	<b>0.044 *</b>	<b>0.041</b>	<b>0.00073 J</b>	<b>0.083</b>	<b>0.0012 J</b>	<b>0.0015</b>	<b>0.00088 J</b>	<b>0.024</b>	<b>0.00055 J</b>	<b>0.00047 J</b>	< 0.00041 U	< 0.00041 U			
Volatile Organic Compounds																					
1,2,4-Trimethylbenzene	mg/kg	1.3787 (1)	219	< 0.012 U	< 0.013 U	< 0.010 U	< 0.011 U	< 0.014 U	< 0.013 U	< 0.011 U	< 0.013 U	< 0.010 U	< 0.014 U	< 0.012 U	< 0.013 U	< 0.013 U	< 0.012 U	< 0.012 U			
1,3,5-Trimethylbenzene	mg/kg	1.3787 (1)	182	< 0.0093 U	< 0.010 U	< 0.0082 U	< 0.0090 U	< 0.011 U	< 0.011 U	< 0.0087 U	< 0.010 U	< 0.0082 U	< 0.011 U	< 0.0097 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U			
Benzene	mg/kg	0.0051	7.07	< 0.0033 U	< 0.0036 U	< 0.0029 U	< 0.0032 U	< 0.0039 U	< 0.0038 U	< 0.0031 U	< 0.0037 U	< 0.0029 U	< 0.0038 U	< 0.0034 U	< 0.0037 U	< 0.0036 U	< 0.0035 U	< 0.0035 U			
Ethyl benzene	mg/kg	1.57	35.4	< 0.0032 U	< 0.0035 U	< 0.0028 U	< 0.0031 U	< 0.0037 U	< 0.0036 U	< 0.0030 U	< 0.0036 U	< 0.0028 U	< 0.0037 U	< 0.0033 U	< 0.0035 U	< 0.0035 U	< 0.0034 U	< 0.0034 U			
Methyl tertiary butyl ether (MTBE)	mg/kg	0.027	282	< 0.0069 U	< 0.0077 U	< 0.0061 U	< 0.0067 U	< 0.0082 U	< 0.0080 U	< 0.0065 U	< 0.0078 U	< 0.0061 U	< 0.0081 U	< 0.0072 U	< 0.0078 U	< 0.0076 U	< 0.0074 U	< 0.0074 U			
Toluene	mg/kg	1.1072	818	<b>0.62</b>	< 0.016 U	<b>0.014 J</b>	<b>0.026 J</b>	< 0.017 U	< 0.016 U	< 0.013 U	< 0.016 U	< 0.013 U	< 0.017 U	< 0.015 U	< 0.016 U	< 0.016 U	< 0.015 U	< 0.015 U			
Xylene, total	mg/kg	3.96	260	< 0.013 U	< 0.015 U	< 0.012 U	< 0.013 U	< 0.016 U	< 0.016 U	< 0.013 U	< 0.015 U	< 0.012 U	< 0.016 U	< 0.014 U	< 0.015 U	< 0.015 U	< 0.015 U	< 0.014 U			
Barr Calculated Comparison - Industrial																					
Exceedance Count	no unit		0	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>			
Hazard Index	no unit		≤ 1.0	<b>0.00016</b>	<b>0.000027</b>	<b>0.000037</b>	<b>0.000040</b>	<b>0.00025</b>	<b>0.000026</b>	<b>0.00024</b>	<b>0.000025</b>	<b>0.000023</b>	<b>0.000026</b>	<b>0.000086</b>	<b>0.000025</b>	<b>0.000024</b>	<b>0.000024</b>	<b>0.000024</b>			
Cumulative Cancer Risk	no unit		≤ 1E-05	<b>1.60E-08</b>	<b>1.50E-09</b>	<b>6.90E-09</b>	<b>5.70E-09</b>	<b>3.10E-08</b>	<b>1.30E-09</b>	<b>4.00E-08</b>	<b>1.20E-09</b>	<b>1.30E-09</b>	<b>1.30E-09</b>	<b>8.70E-09</b>	<b>1.20E-09</b>	<b>1.20E-09</b>	<b>1.20E-09</b>	<b>1.20E-09</b>			

(1) Representing the criteria for combined Trimethylbenzenes.  
\* Estimated value, QA/QC criteria not met.  
J Estimated detected value. Either certain QC criteria were not met or the concentration is between the laboratory's detection and quantitation limits.  
U The analyte was analyzed for, but was not detected.  
Detections are presented in bold.

Table 4  
Soil Analytical Data Summary  
Tank Farm Pre-Excavation Characterization (Insight Data Results)  
Husky Post-Fire Site Investigation  
Superior, WI

Parameter	Units	Location		1-A	1-B	2-A	2-B	3-A	3-B	4-A	4-B	5-A	5-B	6-A	6-B	7-A	7-B	8-A	8-B	9-A	9-B	
		Date	Date	6/13/2019	6/13/2019	6/13/2019	6/13/2019	6/13/2019	6/13/2019	6/13/2019	6/13/2019	6/13/2019	6/13/2019	6/13/2019	6/13/2019	6/13/2019	6/13/2019	6/13/2019	6/13/2019	6/13/2019	6/13/2019	6/13/2019
		Data Status	Data Status	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource
		Wisconsin Groundwater RCLs, DF=2	Wisconsin Not to Exceed Direct Contact Industrial RCLs																			
Effective Date		12/01/2018	12/01/2018																			
Exceedance Key		No Exceedances	No Exceedances																			
General Parameters																						
Moisture	%			26.2	36.2	26.3	26.9	41.6	39.6	25.3	18.9	25.2	30.2	28.1	31.1	26.2	24.6	18.8	25.8	24.3	29.6	
Volatile Organic Compounds																						
1,2,4-Trimethylbenzene	mg/kg	1.3787 (1)	219	< 0.0134 U	< 0.0158 U	< 0.0138 U	< 0.0116 U	< 0.0172 U	< 0.0166 U	< 0.0136 U	< 0.0125 U	< 0.0134 U	< 0.0144 U	< 0.0136 U	< 0.0144 U	< 0.0140 U	< 0.0133 U	< 0.0121 U	< 0.0135 U	< 0.0132 U	< 0.0141 U	
1,2-Dibromoethane (EDB)	mg/kg	0.0000282	0.221	< 0.0070 U	< 0.0083 U	< 0.0073 U	< 0.0061 U	< 0.0090 U	< 0.0087 U	< 0.0072 U	< 0.0066 U	< 0.0070 U	< 0.0076 U	< 0.0072 U	< 0.0076 U	< 0.0074 U	< 0.0070 U	< 0.0064 U	< 0.0071 U	< 0.0069 U	< 0.0074 U	
1,2-Dichloroethane	mg/kg	0.0028	2.87	< 0.0073 U	< 0.0087 U	< 0.0076 U	< 0.0064 U	< 0.0095 U	< 0.0091 U	< 0.0075 U	< 0.0069 U	< 0.0074 U	< 0.0079 U	< 0.0075 U	< 0.0079 U	< 0.0077 U	< 0.0073 U	< 0.0067 U	< 0.0074 U	< 0.0072 U	< 0.0078 U	
1,3,5-Trimethylbenzene	mg/kg	1.3787 (1)	182	< 0.0106 U	< 0.0126 U	< 0.0110 U	< 0.0092 U	< 0.0137 U	< 0.0132 U	< 0.0109 U	< 0.01 U	< 0.0107 U	< 0.0115 U	< 0.0109 U	< 0.0114 U	< 0.0112 U	< 0.0106 U	< 0.0097 U	< 0.0107 U	< 0.0105 U	< 0.0112 U	
2-Methylnaphthalene	mg/kg		3010	< 0.1 U	< 0.119 U	< 0.104 U	< 0.0869 U	< 0.129 U	< 0.125 U	< 0.102 U	<b>0.712</b>	< 0.101 U	< 0.108 U	< 0.103 U	< 0.108 U	< 0.106 U	< 0.1 U	< 0.0912 U	<b>0.146 J</b>	< 0.0991 U	< 0.106 U	
Benzene	mg/kg	0.0051	7.07	< 0.0038 U	< 0.0045 U	< 0.0039 U	< 0.0033 U	< 0.0048 U	< 0.0047 U	< 0.0038 U	< 0.0035 U	< 0.0038 U	< 0.0041 U	< 0.0038 U	< 0.0040 U	< 0.0040 U	< 0.0038 U	< 0.0034 U	< 0.0038 U	< 0.0037 U	< 0.0040 U	
Ethyl benzene	mg/kg	1.57	35.4	< 0.0036 U	< 0.0043 U	< 0.0038 U	< 0.0031 U	< 0.0047 U	< 0.0045 U	< 0.0037 U	< 0.0034 U	< 0.0036 U	< 0.0039 U	< 0.0037 U	< 0.0039 U	< 0.0038 U	< 0.0036 U	< 0.0033 U	< 0.0037 U	< 0.0036 U	< 0.0038 U	
Methyl tertiary butyl ether (MTBE)	mg/kg	0.027	282	< 0.0079 U	< 0.0094 U	< 0.0082 U	< 0.0069 U	< 0.0102 U	< 0.0099 U	< 0.0081 U	< 0.0074 U	< 0.0080 U	< 0.0086 U	< 0.0081 U	< 0.0085 U	< 0.0084 U	< 0.0079 U	< 0.0072 U	< 0.0080 U	< 0.0078 U	< 0.0084 U	
Naphthalene	mg/kg	0.6582	24.1	< 0.0625 U	< 0.0740 U	< 0.0647 U	< 0.0541 U	< 0.0804 U	< 0.0776 U	< 0.0637 U	<b>0.484</b>	< 0.0626 U	< 0.0675 U	< 0.0638 U	< 0.0672 U	< 0.0657 U	< 0.0624 U	< 0.0568 U	<b>0.0920 J</b>	< 0.0617 U	< 0.0660 U	
Toluene	mg/kg	1.1072	818	< 0.0163 U	< 0.0193 U	< 0.0169 U	< 0.0141 U	< 0.0210 U	< 0.0202 U	< 0.0166 U	< 0.0152 U	< 0.0163 U	< 0.0176 U	< 0.0166 U	< 0.0175 U	< 0.0171 U	< 0.0163 U	< 0.0148 U	< 0.0164 U	< 0.0161 U	< 0.0172 U	
Xylene, total	mg/kg	3.96	260	< 0.0155 U	< 0.0183 U	< 0.0160 U	< 0.0134 U	< 0.0199 U	< 0.0192 U	< 0.0158 U	< 0.0145 U	< 0.0155 U	< 0.0167 U	< 0.0158 U	< 0.0167 U	< 0.0163 U	< 0.0155 U	< 0.0141 U	< 0.0156 U	< 0.0153 U	< 0.0164 U	
Total Petroleum Hydrocarbons																						
Diesel Range Organics, C10-C28	mg/kg			< 4.0 U	<b>10.0 J</b>	< 4.2 U	< 4.1 U	<b>49.6</b>	< 5.1 U	<b>2370</b>	<b>11.3 J</b>	< 4.3 U	< 4.4 U	< 4.4 U	< 4.7 U	<b>69.3</b>	<b>7.5 J</b>	<b>25.2 J</b>	<b>11.7 J</b>	< 3.8 U	< 4.3 U	
Gasoline Range Organics, C6-C10	mg/kg			< 1.7 U	< 2.1 U	< 1.7 U	< 1.5 U	< 2.2 U	< 2.1 U	< 1.7 U	<b>18.7</b>	< 1.7 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.7 U	< 1.6 U	<b>34.2</b>	< 1.7 U	< 1.8 U	
Barr Calculated Comparison - Industrial																						
Exceedance Count	no unit		0	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
Hazard Index	no unit		≤ 1.0	<b>0.00018</b>	<b>0.00022</b>	<b>0.00019</b>	<b>0.00016</b>	<b>0.00024</b>	<b>0.00023</b>	<b>0.00019</b>	<b>0.00089</b>	<b>0.00018</b>	<b>0.0002</b>	<b>0.00019</b>	<b>0.0002</b>	<b>0.00019</b>	<b>0.00018</b>	<b>0.00017</b>	<b>0.00023</b>	<b>0.00018</b>	<b>0.00019</b>	
Cumulative Cancer Risk	no unit		≤ 1E-05	<b>3.7E-08</b>	<b>4.4E-08</b>	<b>3.9E-08</b>	<b>3.3E-08</b>	<b>4.8E-08</b>	<b>4.7E-08</b>	<b>3.9E-08</b>	<b>5.3E-08</b>	<b>3.8E-08</b>	<b>4.1E-08</b>	<b>3.9E-08</b>	<b>4.1E-08</b>	<b>4.0E-08</b>	<b>3.7E-08</b>	<b>3.4E-08</b>	<b>3.9E-08</b>	<b>3.7E-08</b>	<b>4.0E-08</b>	

(1) Representing the criteria for combined Trimethylbenzenes.  
 -- Not analyzed/not sampled.  
 J Estimated detected value. Either certain QC criteria were not met or the concentration is  
 U The analyte was analyzed for, but was not detected.  
 Detections are presented in bold.  
 SSource: Laboratory and/or field data obtained from a secondary source external to  
 Barr. Second source QA/QC evaluation procedures may or may not have been performed  
 beyond the original data generator.

Table 4  
Soil Analytical Data Summary  
Tank Farm Pre-Excavation Characterization (Insight Data Results)  
Husky Post-Fire Site Investigation  
Superior, WI

Parameter	Units	Wisconsin Groundwater RCLs, DF=2	Wisconsin Not to Exceed Direct Contact Industrial RCLs	Location	10-A	10-B	11-A	11-B	12-A	12-B	13-A	13-B	14-A	14-B
				Date	6/13/2019	6/13/2019	6/13/2019	6/13/2019	6/13/2019	6/13/2019	8/01/2019	8/01/2019	8/01/2019	8/01/2019
Data Status				SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource
Effective Date		12/01/2018	12/01/2018											
Exceedance Key		No Exceedances	No Exceedances											
General Parameters														
Moisture	%				15.2	25.4	15.9	25.4	23.7	22.3	16.6	24.6	7.8	25.4
Volatile Organic Compounds														
1,2,4-Trimethylbenzene	mg/kg	1.3787 (1)	219	< 0.0119 U	< 0.0132 U	< 0.0119 U	< 0.0131 U	< 0.0132 U	< 0.0126 U	< 0.0250 U	< 0.0263 U	< 0.0250 U	< 0.0250 U	< 0.0250 U
1,2-Dibromoethane (EDB)	mg/kg	0.000282	0.221	< 0.0062 U	< 0.0069 U	< 0.0063 U	< 0.0069 U	< 0.0070 U	< 0.0066 U	--	--	--	--	--
1,2-Dichloroethane	mg/kg	0.0028	2.87	< 0.0065 U	< 0.0073 U	< 0.0065 U	< 0.0072 U	< 0.0073 U	< 0.0069 U	--	--	--	--	--
1,3,5-Trimethylbenzene	mg/kg	1.3787 (1)	182	< 0.0094 U	< 0.0105 U	< 0.0095 U	< 0.0105 U	< 0.0105 U	< 0.0100 U	< 0.0250 U	< 0.0263 U	< 0.0250 U	< 0.0250 U	< 0.0250 U
2-Methylnaphthalene	mg/kg		3010	< 0.0891 U	< 0.0992 U	< 0.0895 U	< 0.0987 U	< 0.0995 U	< 0.0947 U	--	--	--	--	--
Benzene	mg/kg	0.0051	7.07	< 0.0033 U	< 0.0037 U	< 0.0034 U	< 0.0037 U	< 0.0037 U	< 0.0036 U	< 0.0250 U	< 0.0263 U	< 0.0250 U	< 0.0250 U	< 0.0250 U
Ethyl benzene	mg/kg	1.57	35.4	< 0.0032 U	< 0.0036 U	< 0.0032 U	< 0.0036 U	< 0.0036 U	< 0.0034 U	< 0.0250 U	< 0.0263 U	< 0.0250 U	< 0.0250 U	< 0.0250 U
Methyl tertiary butyl ether (MTBE)	mg/kg	0.027	282	< 0.0071 U	< 0.0078 U	< 0.0071 U	< 0.0078 U	< 0.0079 U	< 0.0075 U	< 0.0250 U	< 0.0263 U	< 0.0250 U	< 0.0250 U	< 0.0250 U
Naphthalene	mg/kg	0.6582	24.1	< 0.0555 U	< 0.0617 U	< 0.0557 U	< 0.0614 U	< 0.0619 U	< 0.0589 U	--	--	--	--	--
Toluene	mg/kg	1.1072	818	< 0.0145 U	< 0.0161 U	< 0.0145 U	< 0.0160 U	< 0.0161 U	< 0.0154 U	< 0.0250 U	< 0.0263 U	< 0.0250 U	< 0.0250 U	< 0.0250 U
Xylene, total	mg/kg	3.96	260	< 0.0137 U	< 0.0153 U	< 0.0138 U	< 0.0152 U	< 0.0154 U	< 0.0146 U	< 0.0750 U	< 0.0789 U	< 0.0750 U	< 0.0750 U	< 0.0750 U
Total Petroleum Hydrocarbons														
Diesel Range Organics, C10-C28	mg/kg				61.8	< 4.0 U	30.4	< 3.8 U	53.5	< 3.6 U	3.1 J	3.0 J	15.0	7.8
Gasoline Range Organics, C6-C10	mg/kg				< 1.5 U	< 1.7 U	< 1.5 U	< 1.7 U	< 1.7 U	< 1.5 U	< 3.0 U	< 3.5 U	4.4 J	< 3.4 U
Barr Calculated Comparison - Industrial														
Exceedance Count	no unit		0	0	0	0	0	0	0	0				
Hazard Index	no unit		≤ 1.0	0.00016	0.00018	0.00016	0.00018	0.00018	0.00018	0.00017				
Cumulative Cancer Risk	no unit		≤ 1E-05	3.3E-08	3.7E-08	3.4E-08	3.7E-08	3.7E-08	3.7E-08	3.5E-08				

(1) Representing the criteria for combined Trimethylbenzenes.  
 -- Not analyzed/not sampled.  
 J Estimated detected value. Either certain QC criteria were not met or the concentration is  
 U The analyte was analyzed for, but was not detected.  
 Detections are presented in bold.  
 SSource: Laboratory and/or field data obtained from a secondary source external to  
 Barr. Second source QA/QC evaluation procedures may or may not have been performed  
 beyond the original data generator.



Table 5  
Soil Analytical Data Summary  
FCCU and Crude Unit Pre-Excavation Characterization (Insight Data Results)  
Husky Post-Fire Site Investigation  
Superior, WI

Parameter	Units	Wisconsin Groundwater RCLs, DF=2	Wisconsin Not to Exceed Direct Contact Industrial RCLs	Location																				
				S1-A	S1-B	S2-A	S2-B	S3-A	S3-B	S4-A	S4-B	S5-A	S5-B	S6-A	S6-B	S7-A	S7-B	S8-A	S8-B	1-A (FCCU)	1-B (FCCU)	2-A (FCCU)	2-B (FCCU)	3-A (FCCU)
Effective Date		06/01/2018	06/01/2018	5/05/2019	5/05/2019	5/05/2019	5/05/2019	5/05/2019	5/05/2019	5/05/2019	5/05/2019	5/05/2019	5/05/2019	5/05/2019	5/05/2019	5/05/2019	5/05/2019	5/05/2019	5/05/2019	5/05/2019	5/05/2019	5/05/2019	5/05/2019	
Exceedance Key		Shade	No Exceedances	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	
General Parameters																								
Moisture	%			14.3	21.4	15.9	17.2	20.3	23.3	12.4	25.0	25.0	26.9	25.2	26.3	13.4	29.7	16.0	15.5	27.1	32.0	29.4	35.6	13.0
Volatile Organic Compounds																								
1,2,4-Trimethylbenzene	mg/kg	1.3787 (1)	219	< 0.0119 U	< 0.0128 U	<b>0.0199 J</b>	<b>0.253</b>	< 0.0131 U	< 0.0135 U	<b>0.121</b>	< 0.0139 U	< 0.0136 U	< 0.0152 U	< 0.0160 U	< 0.0136 U	< 0.0112 U	< 0.0147 U	< 0.0123 U	< 0.0120 U	< 0.0137 U	< 0.0149 U	< 0.0142 U	< 0.0157 U	<b>0.0862</b>
1,2-Dibromoethane (EDB)	mg/kg	0.0000282	0.221	< 0.0063 U	< 0.0068 U	< 0.0062 U	< 0.0347 U	< 0.0069 U	< 0.0071 U	< 0.0061 U	< 0.0073 U	< 0.0071 U	< 0.0080 U	< 0.0084 U	< 0.0071 U	< 0.0059 U	< 0.0077 U	< 0.0065 U	< 0.0063 U	< 0.0072 U	< 0.0078 U	< 0.0074 U	< 0.0082 U	< 0.0060 U
1,2-Dichloroethane	mg/kg	0.0028	2.87	< 0.0066 U	< 0.0071 U	< 0.0065 U	< 0.0362 U	< 0.0072 U	< 0.0074 U	< 0.0064 U	< 0.0076 U	< 0.0075 U	< 0.0083 U	< 0.0088 U	< 0.0075 U	< 0.0062 U	< 0.0081 U	< 0.0068 U	< 0.0066 U	< 0.0075 U	< 0.0082 U	< 0.0078 U	< 0.0086 U	< 0.0063 U
1,3,5-Trimethylbenzene	mg/kg	1.3787 (1)	182	< 0.0095 U	< 0.0102 U	< 0.0094 U	<b>0.144 J</b>	< 0.0105 U	< 0.0108 U	<b>0.0388</b>	< 0.0111 U	< 0.0108 U	< 0.0121 U	< 0.0127 U	< 0.0108 U	< 0.0090 U	< 0.0117 U	< 0.0098 U	< 0.0095 U	< 0.0109 U	< 0.0119 U	< 0.0113 U	< 0.0125 U	< 0.0091 U
2-Methylnaphthalene	mg/kg		3010	< 0.0897 U	< 0.0966 U	<b>0.187 J</b>	<b>0.556 J</b>	< 0.0988 U	< 0.102 U	< 0.0879 U	< 0.104 U	< 0.102 U	< 0.114 U	< 0.12 U	< 0.102 U	< 0.0845 U	< 0.11 U	< 0.0923 U	< 0.0901 U	<b>6.1</b>	< 0.112 U	< 0.106 U	< 0.118 U	< 0.0857 U
Benzene	mg/kg	0.0051	7.07	< 0.0034 U	< 0.0036 U	<b>0.0576</b>	< 0.0186 U	< 0.0037 U	< 0.0038 U	<b>0.0328</b>	< 0.0039 U	< 0.0038 U	< 0.0043 U	< 0.0045 U	< 0.0038 U	< 0.0032 U	< 0.0041 U	< 0.0035 U	< 0.0034 U	< 0.0039 U	< 0.0042 U	< 0.0040 U	< 0.0044 U	< 0.0032 U
Ethyl benzene	mg/kg	1.57	35.4	< 0.0032 U	< 0.0035 U	< 0.0032 U	< 0.0179 U	< 0.0036 U	< 0.0037 U	<b>0.0106</b>	< 0.0038 U	< 0.0037 U	< 0.0041 U	< 0.0043 U	< 0.0037 U	< 0.0031 U	< 0.0040 U	< 0.0033 U	< 0.0033 U	< 0.0037 U	< 0.0041 U	< 0.0038 U	< 0.0043 U	<b>0.0143</b>
Methyl tertiary butyl ether (MTBE)	mg/kg	0.027	282	< 0.0071 U	< 0.0076 U	< 0.0070 U	< 0.0392 U	< 0.0078 U	< 0.0080 U	< 0.0070 U	< 0.0083 U	< 0.0081 U	< 0.0090 U	< 0.0095 U	< 0.0081 U	< 0.0067 U	< 0.0087 U	< 0.0073 U	< 0.0071 U	< 0.0082 U	< 0.0089 U	< 0.0084 U	< 0.0093 U	< 0.0068 U
Naphthalene	mg/kg	0.6582	24.1	< 0.0558 U	< 0.0601 U	< 0.0554 U	<b>0.329 J</b>	< 0.0615 U	< 0.0633 U	< 0.0547 U	< 0.0649 U	< 0.0636 U	< 0.0710 U	< 0.0747 U	< 0.0635 U	< 0.0526 U	< 0.0686 U	< 0.0575 U	< 0.0561 U	< 0.0642 U	< 0.0697 U	< 0.0662 U	< 0.0734 U	< 0.0534 U
Toluene	mg/kg	1.1072	818	< 0.0146 U	< 0.0157 U	< 0.0144 U	<b>0.0936 J</b>	< 0.0160 U	< 0.0165 U	< 0.0143 U	< 0.0169 U	< 0.0166 U	< 0.0185 U	< 0.0195 U	< 0.0165 U	< 0.0137 U	< 0.0179 U	< 0.0150 U	< 0.0146 U	< 0.0167 U	< 0.0182 U	< 0.0173 U	< 0.0191 U	< 0.0139 U
Xylene, total	mg/kg	3.96	260	< 0.0138 U	< 0.0149 U	< 0.0137 U	< 0.0764 U	< 0.0152 U	< 0.0157 U	< 0.0136 U	< 0.0161 U	< 0.0158 U	< 0.0176 U	< 0.0185 U	< 0.0157 U	< 0.0130 U	< 0.0170 U	< 0.0142 U	< 0.0139 U	< 0.0159 U	< 0.0173 U	< 0.0164 U	< 0.0182 U	< 0.0132 U
Total Petroleum Hydrocarbons																								
Diesel Range Organics, C10-C28	mg/kg			< 4.5 U	<b>31.5</b>	<b>371</b>	<b>3010</b>	<b>5.5 J</b>	< 5.1 U	<b>72.2</b>	<b>10.6 J</b>	< 5.2 U	< 5.3 U	< 5.2 U	< 5.3 U	< 4.5 U	< 5.5 U	< 4.6 U	< 4.6 U	<b>1500</b>	<b>17.8</b>	<b>124</b>	<b>8.6 J</b>	<b>93.4</b>
Gasoline Range Organics, C6-C10	mg/kg			<b>2.1 J</b>	<b>1.8 J</b>	<b>301</b>	<b>2870</b>	<b>2.1 J</b>	<b>2.9 J</b>	<b>62.3</b>	<b>5.9 J</b>	<b>3.3 J</b>	<b>118</b>	<b>15.0</b>	<b>4.1 J</b>	<b>2.5 J</b>	<b>2.8 J</b>	<b>2.5 J</b>	<b>2.6 J</b>	<b>3.6 J</b>	< 1.9 U	< 1.8 U	< 2.0 U	< 1.5 U
Barr Calculated Comparison - Industrial																								
Exceedance Count	no unit		0																					
Hazard Index	no unit		≤ 1.0																					
Cumulative Cancer Risk	no unit		≤ 1E-05																					

(1) Representing the criteria for combined Trimethylbenzenes.  
 -- Not analyzed/not sampled.  
 J Estimated detected value. Either certain QC criteria were not met or the  
 U The analyte was analyzed for, but was not detected.  
 Detections are presented in bold.  
 SSource: Laboratory and/or field data obtained from a secondary source external  
 to Barr. Second source QA/QC evaluation procedures may or may not have been  
 performed beyond the original data generator.

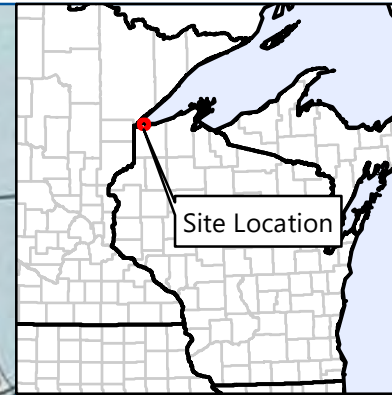
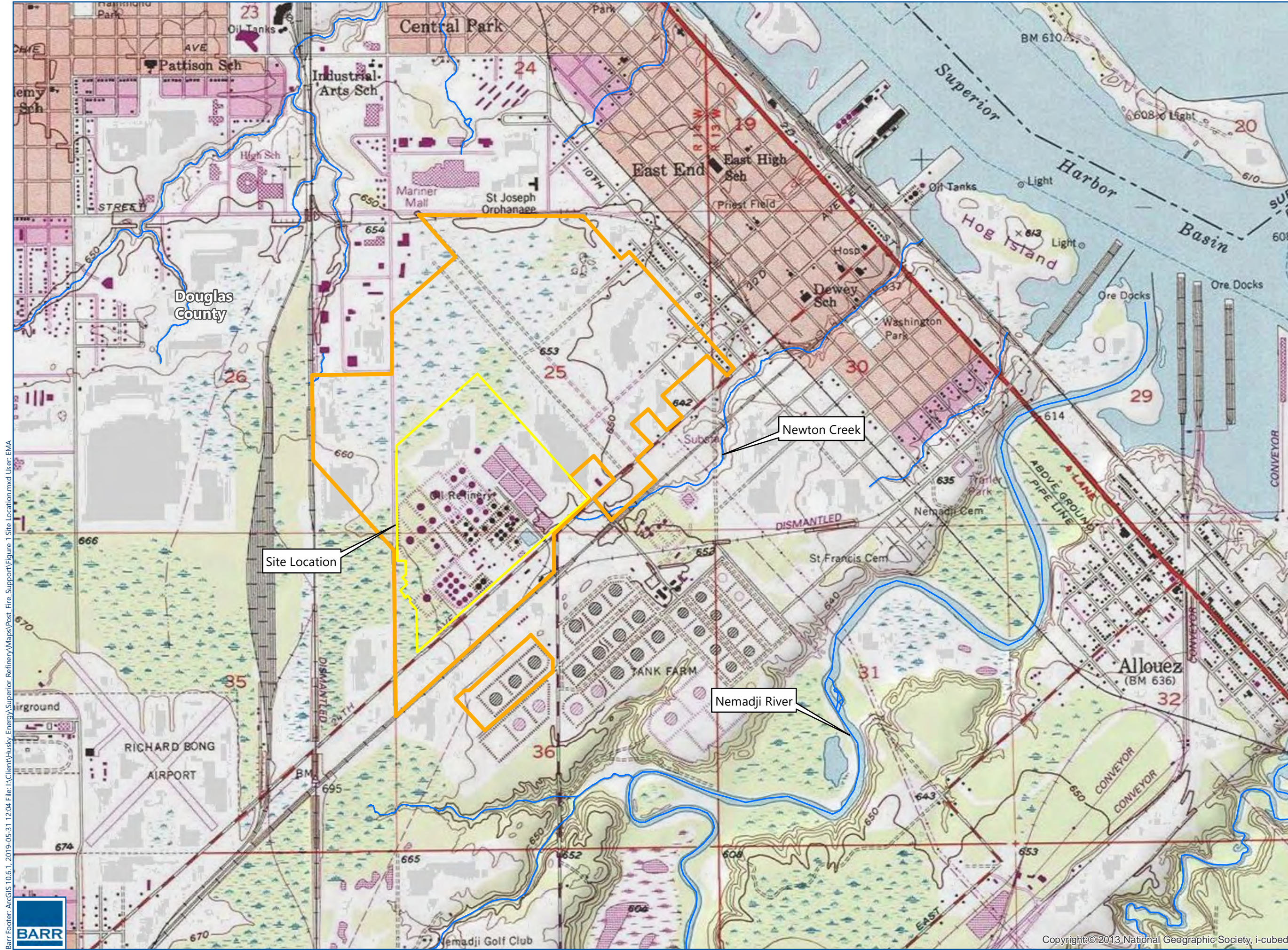
Table 5  
Soil Analytical Data Summary  
FCCU and Crude Unit Pre-Excavation Characterization (Insight Data Results)  
Husky Post-Fire Site Investigation  
Superior, WI

Parameter	Units	Wisconsin Groundwater RCLs, DF=2	Wisconsin Not to Exceed Direct Contact Industrial RCLs	Location	3-B (FCCU)	4-A (FCCU)	4-B (FCCU)	5-A (FCCU)	5-B (FCCU)	1-A	1-B	2-A	2-B	3-A	3-B
				Date	6/13/2019	6/13/2019	6/13/2019	6/13/2019	6/13/2019	11/19/2019	11/19/2019	11/19/2019	11/19/2019	11/19/2019	11/19/2019
Data Status				SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource	SSource
Effective Date		06/01/2018	06/01/2018												
Exceedance Key		Shade	No Exceedances												
General Parameters															
Moisture	%				28.5	26.2	29.4	19.0	29.6	7.1	25.7	7.3	33.8	21.5	24.7
Volatile Organic Compounds															
1,2,4-Trimethylbenzene	mg/kg	1.3787 (1)	219	< 0.0142 U	< 0.0136 U	< 0.0143 U	<b>0.13</b>	< 0.0141 U	<b>0.27</b>	< 0.0284 U	<b>0.12</b>	<b>0.471</b>	<b>0.0509 J</b>	< 0.0253 U	< 0.0253 U
1,2-Dibromoethane (EDB)	mg/kg	0.0000282	0.221	< 0.0075 U	< 0.0072 U	< 0.0075 U	< 0.0065 U	< 0.0074 U	--	--	--	--	--	--	--
1,2-Dichloroethane	mg/kg	0.0028	2.87	< 0.0078 U	< 0.0075 U	< 0.0079 U	< 0.0068 U	< 0.0078 U	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	mg/kg	1.3787 (1)	182	< 0.0113 U	< 0.0109 U	< 0.0114 U	<b>0.0943</b>	< 0.0113 U	<b>0.146</b>	< 0.0284 U	<b>0.0446 J</b>	<b>0.0671 J</b>	< 0.0253 U	< 0.0253 U	< 0.0253 U
2-Methylnaphthalene	mg/kg		3010	< 0.107 U	< 0.103 U	< 0.108 U	< 0.0931 U	< 0.106 U	--	--	--	--	--	--	--
Benzene	mg/kg	0.0051	7.07	< 0.0040 U	< 0.0038 U	< 0.0040 U	< 0.0035 U	< 0.0040 U	< 0.0500 U	< 0.0284 U	< 0.0263 U	< 0.0439 U	< 0.0253 U	< 0.0253 U	< 0.0253 U
Ethyl benzene	mg/kg	1.57	35.4	< 0.0039 U	< 0.0037 U	< 0.0039 U	< 0.0034 U	< 0.0038 U	< 0.0500 U	< 0.0284 U	< 0.0263 U	< 0.0439 U	< 0.0253 U	< 0.0253 U	< 0.0253 U
Methyl tertiary butyl ether (MTBE)	mg/kg	0.027	282	< 0.0084 U	< 0.0081 U	< 0.0085 U	< 0.0074 U	< 0.0084 U	< 0.0500 U	< 0.0284 U	< 0.0263 U	< 0.0439 U	< 0.0253 U	< 0.0253 U	< 0.0253 U
Naphthalene	mg/kg	0.6582	24.1	< 0.0664 U	< 0.0638 U	< 0.0670 U	<b>0.148 J</b>	< 0.0662 U	--	--	--	--	--	--	--
Toluene	mg/kg	1.1072	818	< 0.0173 U	< 0.0166 U	< 0.0175 U	< 0.0151 U	< 0.0173 U	< 0.0500 U	< 0.0284 U	<b>0.0710</b>	< 0.0439 U	< 0.0253 U	< 0.0253 U	< 0.0253 U
Xylene, total	mg/kg	3.96	260	< 0.0165 U	< 0.0158 U	< 0.0166 U	< 0.0144 U	< 0.0164 U	< 0.15 U	< 0.0852 U	<b>0.162 J</b>	< 0.132 U	< 0.0758 U	< 0.0758 U	< 0.0758 U
Total Petroleum Hydrocarbons															
Diesel Range Organics, C10-C28	mg/kg			< 3.7 U	< 3.7 U	<b>4.7 J</b>	< 3.7 U	< 4.5 U	<b>1880</b>	<b>1960</b>	<b>2930</b>	<b>2450</b>	<b>38.8</b>	<b>3.8 J</b>	
Gasoline Range Organics, C6-C10	mg/kg			< 1.7 U	< 1.7 U	< 1.9 U	< 1.6 U	< 1.8 U	<b>64.7</b>	< 3.4 U	<b>4.2 J</b>	<b>15.5</b>	<b>4.7 J</b>	< 3.4 U	
Barr Calculated Comparison - Industrial															
Exceedance Count	no unit		0												
Hazard Index	no unit		≤ 1.0												
Cumulative Cancer Risk	no unit		≤ 1E-05												

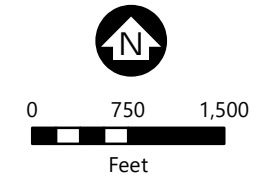
(1) Representing the criteria for combined Trimethylbenzenes.  
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 Detections are presented in bold.  
 SSource: Laboratory and/or field data obtained from a secondary source external  
 to Barr. Second source QA/QC evaluation procedures may or may not have been  
 performed beyond the original data generator.

## Figures





- Approximate SRC Property Boundaries for Contiguous Operations
- Approximate Fenceline Boundaries for Refining-Related Activities



**SITE LOCATION**  
 Superior Refining Company, LLC (SRC)  
 Superior, WI  
**FIGURE 1**





Barr Footer: ArcGIS 10.6.1, 2019-05-31 12:04 File: I:\Client\Husky Energy\Superior Refinery\Maps\Post\_Fire\_Support\Figure 1 Site Location.mxd User: EMA



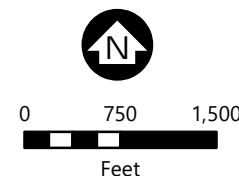
Copyright © 2013 National Geographic Society, i-cubed





-  Approximate Fence Line Boundaries for Refining-Related Activities
-  Surficial Water
-  Private Water Supply Well (Historical)
-  Private Water Supply Well (Post-1989)

Note: Private water supply well locations were obtained from WDNR (post-1989) and the Wisconsin Geological Survey database (pre-1989). Creek/River data from USGS.





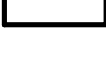
PROPERTY BOUNDARY  
Superior Refining  
Company, LLC (SRC)  
Superior, WI

FIGURE 2







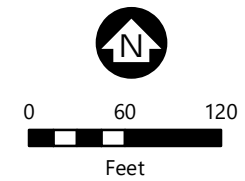
-  Approximate Fenceline Boundaries for Refining-Related Activities
-  Process Area
-  Process Unit Battery Limits

**SITE FEATURES**  
**REFINING-RELATED ACTIVITIES**  
 Superior Refining Company, LLC (SRC)  
 Superior, WI  
**FIGURE 3A**





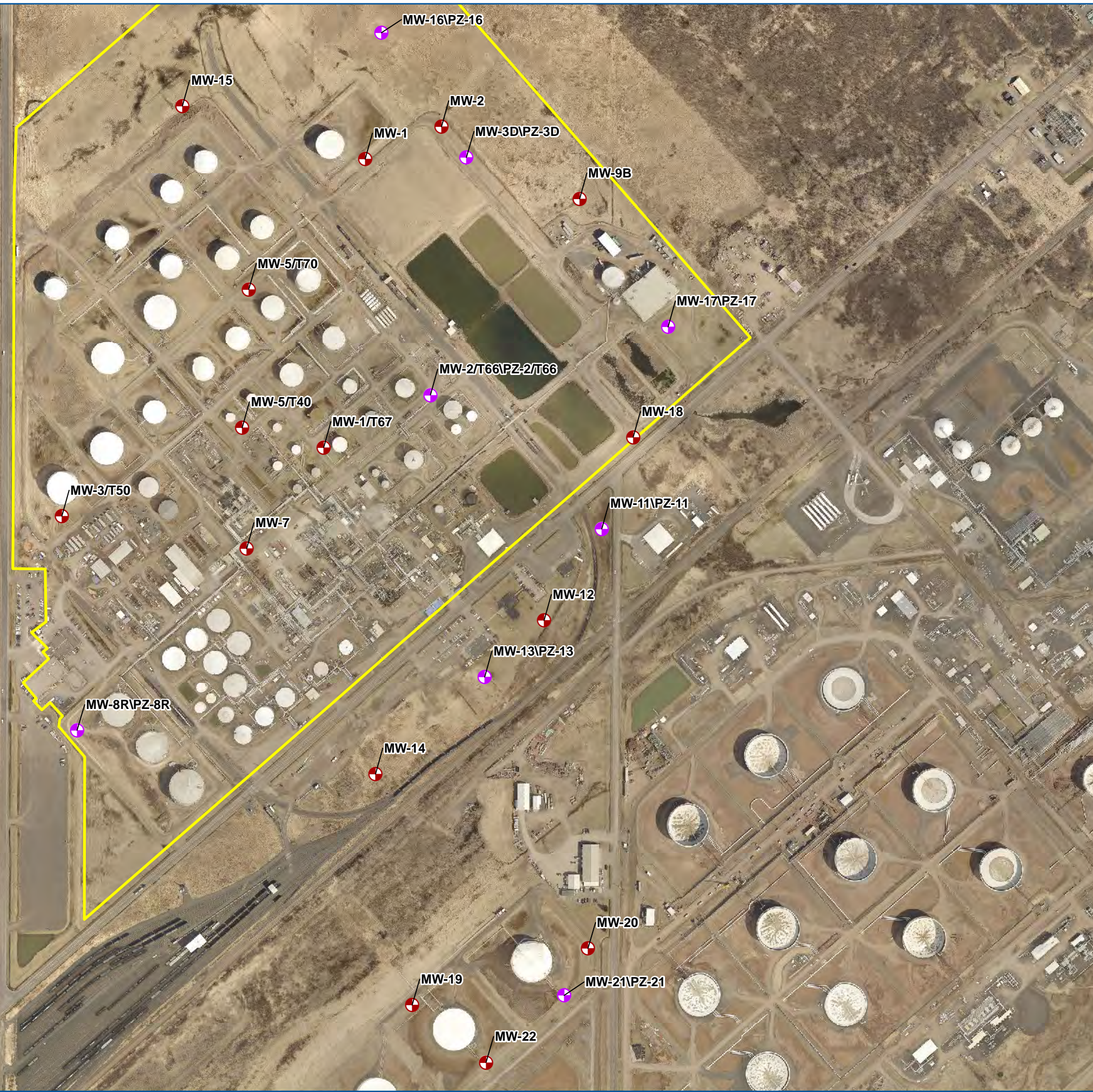
- Process Area
- Process Unit Battery Limits



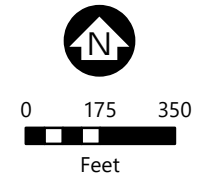
**SITE FEATURES**  
**PROCESS AREA DETAIL**  
 Superior Refining  
 Company, LLC (SRC)  
 Superior, WI  
**FIGURE 3B**







- Approximate Fence Line Boundaries for Refining-Related Activities
- Existing Monitoring Well
- Existing Monitoring Well & Piezometer Pair

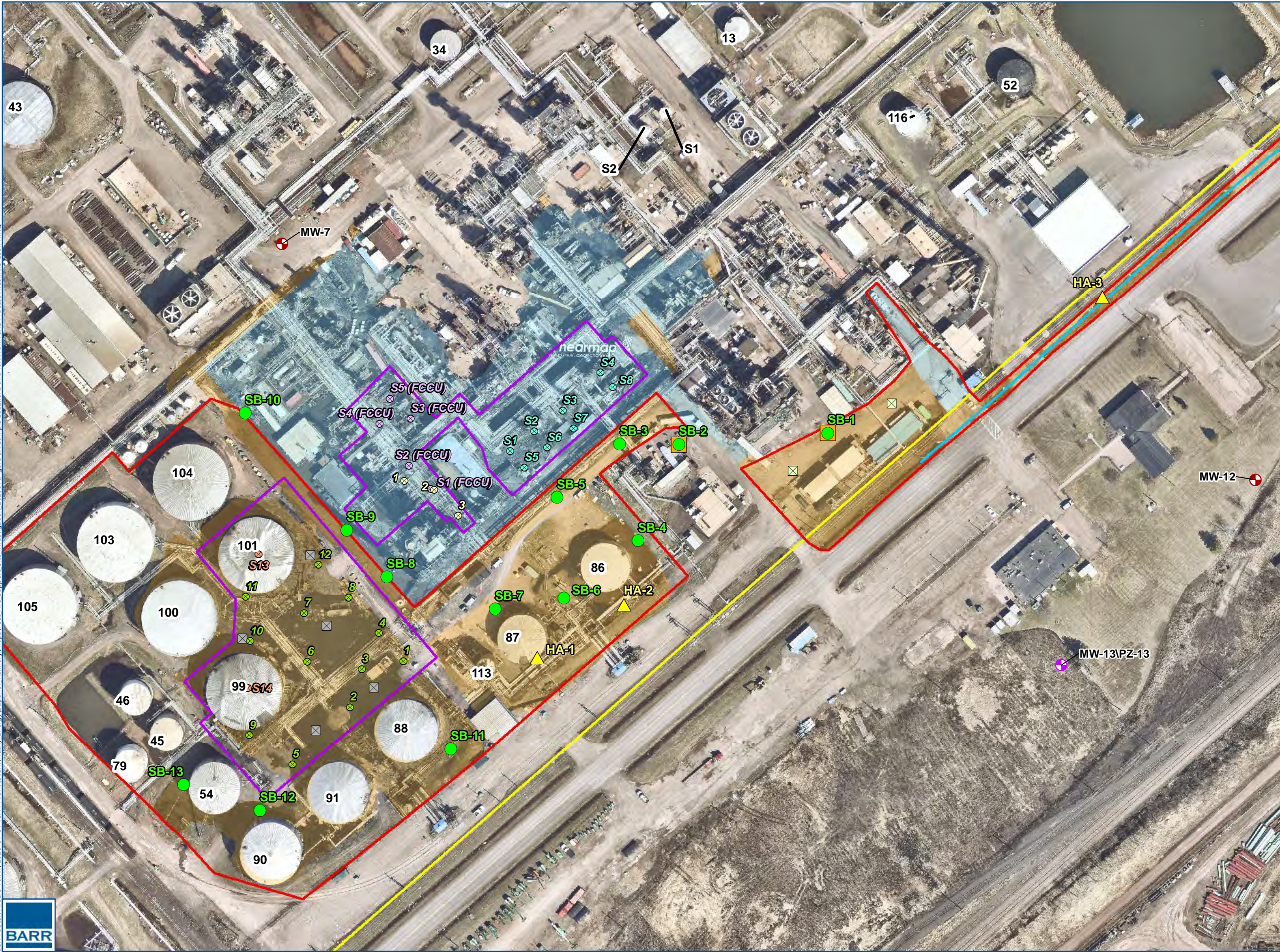


SITE MONITORING WELL LOCATIONS  
Superior Refining Company, LLC (SRC)  
Superior, WI  
FIGURE 4









Approximate Fenceline Boundaries for Refining-Related Activities

Potentially Affected Pervious Surface

Affected Paved (Impervious) Surface

Affected Unpaved (Pervious) Surface

Existing Monitoring Well

Existing Monitoring Well & Piezometer Pair

Stinson Ave Ditch

Approximate Location of Refinery Construction Excavation

Soil Boring Location

Hand Auger Location

Test Pit Location

Previously Proposed Boring Locations (Removed)

Previously Proposed Boring Location (moved)

Insight Soil Characterization Sample Locations

- Crude Unit, 5/5/2019
- FCCU Unit, 6/13/2019
- Tank Farm Unit, 6/13/2019
- Tank Farm Unit, 8/1/2019
- FCCU Unit, 11/19/2019

Note:  
Release extent based on information provided to Barr by SRC.  
Bathtub excavation limits are based on information provided to Barr by SRC.













0 60 120  
Feet

**SAMPLE LOCATIONS  
TANK FARM &  
PROCESS AREA  
Superior Refining  
Company, LLC (SRC)  
Superior, WI**

**FIGURE 6A**

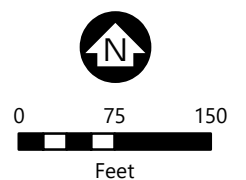




-  Approximate Fenceline Boundaries for Refining-Related Activities
-  Potentially Affected Pervious Surface
-  Affected Paved (Impervious) Surface
-  Affected Unpaved (Pervious) Surface
-  Existing Monitoring Well
-  Existing Monitoring Well & Piezometer Pair
-  Culvert
-  Stinson Ave Ditch
-  Hand Auger Location
-  Soil Boring Location
-  Test Pit Location
-  Previously Proposed Boring Location (moved)

Note: Release extent based on information provided to Barr by SRC.

Bathtub excavation limits are based on information provided to Barr by SRC.



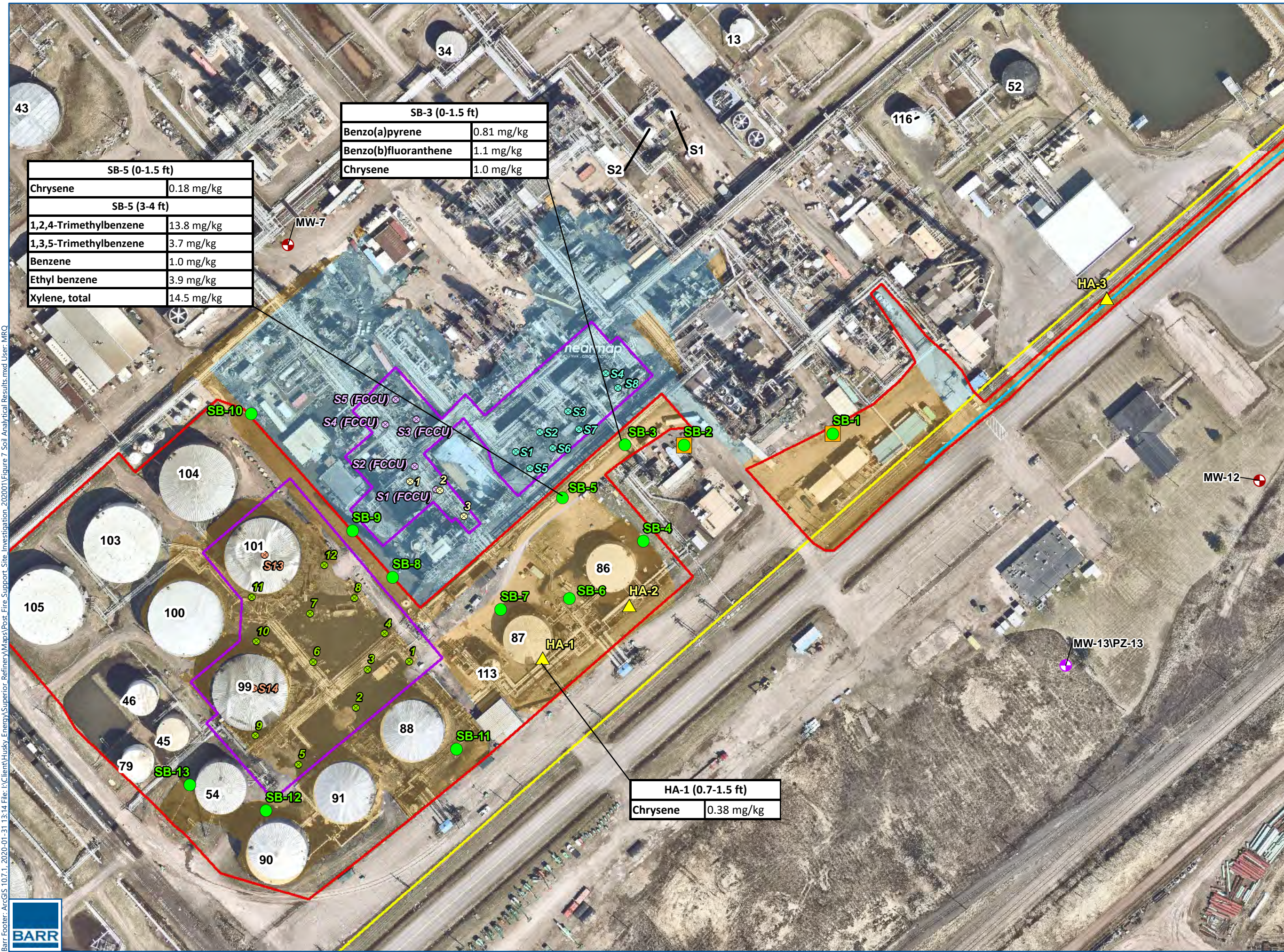
**SAMPLE LOCATIONS**  
**STINSON AVENUE DITCH**  
 Superior Refining  
 Company, LLC (SRC)  
 Superior, WI

**FIGURE 6B**





Barr Footer: ArcGIS 10.7.1, 2020-01-31 13:14 File: I:\Client\Husky Energy\Superior Refinery\Maps\Post\_Fire\_Support\_Site\_Investigation\_202001\Figure 7 Soil Analytical Results.mxd User: MRC



SB-3 (0-1.5 ft)	
Benzo(a)pyrene	0.81 mg/kg
Benzo(b)fluoranthene	1.1 mg/kg
Chrysene	1.0 mg/kg

SB-5 (0-1.5 ft)	
Chrysene	0.18 mg/kg
SB-5 (3-4 ft)	
1,2,4-Trimethylbenzene	13.8 mg/kg
1,3,5-Trimethylbenzene	3.7 mg/kg
Benzene	1.0 mg/kg
Ethyl benzene	3.9 mg/kg
Xylene, total	14.5 mg/kg

HA-1 (0.7-1.5 ft)	
Chrysene	0.38 mg/kg

- Approximate Fenceline Boundaries for Refining-Related Activities
  - Potentially Affected Pervious Surface
  - Affected Paved (Impervious) Surface
  - Affected Unpaved (Pervious) Surface
  - Existing Monitoring Well
  - Existing Monitoring Well & Piezometer Pair
  - Stinson Ave Ditch
  - Approximate Location of Refinery Construction Excavation
  - Soil Boring Location
  - Hand Auger Location
  - Test Pit Location
- Insight Soil Characterization Sample Locations

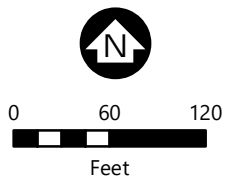
- Crude Unit, 5/5/2019
- FCCU Unit, 6/13/2019
- Tank Farm Unit, 6/13/2019
- Tank Farm Unit, 8/1/2019
- FCCU Unit, 11/19/2019

**Key:**  
 mg/kg = milligrams per kilogram  
 ppm = parts per million  
 PID = Photoionization Detector

**Note:**  
 Release extent based on information provided to Barr by SRC.

Bathtub excavation limits are based on information provided to Barr by SRC.

Analytical results are presented for those compounds detected above soil groundwater RCL Criteria. No other compounds were detected above WDNR criteria.





## Appendices

**Appendix A**  
**Soil Boring Logs**

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Husky Post-Fire Site Investigation</b>		License/Permit/Monitoring Number <b>NA</b>		Boring Number <b>HA-1</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Kaitlin Johnson Barr Engineering Co.</b>		Date Drilling Started <b>10/4/2019</b>		Date Drilling Completed <b>10/4/2019</b>	
WI Unique Well No.		DNR Well ID No.		Common Well Name	
				Final Static Water Level	
				Surface Elevation <b>666.5 Feet</b>	
				Borehole Diameter <b>3.0 inches</b>	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/>		State Plane <b>N, E S/C/N</b>		Local Grid Location	
1/4 of <b>NW</b> 1/4 of Section <b>36,</b> T <b>49</b> N, R <b>14</b> W		Lat <b>46° 41' 20.3"</b>		<input type="checkbox"/> N <input type="checkbox"/> E	
		Long <b>-92° 4' 17.2"</b>		<input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID <b>816009590</b>		County <b>Douglas</b>		County Code <b>16</b>	
				Civil Town/City/ or Village <b>Superior</b>	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID (ppm)	Soil Properties					RQD/ Comments	
									Compressive Strength	Moisture Content	G/S/F %	Color	Plasticity Index		
				RESIDUAL ASPHALT: some wood present											
				WELL GRADED SAND WITH CLAY: (SW-SC) black discoloration; moist; fine-coarse, subrounded-rounder sand; moderate petroleum odor	SW-SC			40.2							
			2	FAT CLAY: (CH) red brown with black streaks; moist; hard; high plasticity; high toughness; some 0.5 cm thick black, medium-coarse sand seams throughout; rainbow sheen and moderate to light petroleum odor throughout	CH			62.1							
				End of boring 3.9 feet				20.9							
				Analytical Soil Samples Collected: HA-1_0.7-1.5 ft: PVOCs and PAHs HA-1_3-3.9 ft: PVOCs and PAHs				24.3							

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *Kaitlin Johnson* Firm **Barr Engineering Co** Tel: Fax:

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Husky Post-Fire Site Investigation</b>			License/Permit/Monitoring Number <b>NA</b>		Boring Number <b>HA-2</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Kaitlin Johnson Barr Engineering Co.</b>			Date Drilling Started <b>10/4/2019</b>		Date Drilling Completed <b>10/4/2019</b>	Drilling Method <b>hand auger</b>
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level		Surface Elevation <b>657.4 Feet</b>	Borehole Diameter <b>3.0 inches</b>
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/> State Plane <b>N, E S/C/N</b>			Lat <b>46° 41' 21.0"</b>		Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
<b>1/4 of NW 1/4 of Section 36, T 49 N, R 14 W</b>			Long <b>-92° 4' 15.5"</b>		Feet <input type="checkbox"/> S Feet <input type="checkbox"/> W	
Facility ID <b>816009590</b>		County <b>Douglas</b>	County Code <b>16</b>	Civil Town/City/ or Village <b>Superior</b>		

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID (ppm)	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	G/S/F %	Color	Plasticity Index	
				SANDY FAT CLAY: (CH) red brown with black streaks; moist; medium stiff; high plasticity; medium to coarse, subangular to angular sand; faint petroleum odor throughout	CH			2.1						
			2	FAT CLAY WITH SAND: (CH) red brown with black streaks; moist; medium stiff; high plasticity; fine to medium, subangular sand; trace petroleum odor throughout	CH			5.2						
				Refusal at 3.0 feet End of boring 3.0 feet Analytical Soil Samples Collected: HA-2_0-1 ft: PVOcs and PAHs HA-2_2.5-3 ft: PVOcs and PAHs				4.4						


I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *Kaitlin Johnson* Firm **Barr Engineering Co** Tel:   
Fax:




Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Husky Post-Fire Site Investigation</b>		License/Permit/Monitoring Number <b>NA</b>		Boring Number <b>HA-3</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Kaitlin Johnson Barr Engineering Co.</b>		Date Drilling Started <b>10/10/2019</b>		Date Drilling Completed <b>10/10/2019</b>	
WI Unique Well No.		DNR Well ID No.		Common Well Name	
				Final Static Water Level	
				Surface Elevation <b>652.1 Feet</b>	
				Borehole Diameter <b>3.0 inches</b>	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/>		State Plane <b>N, E S/C/N</b>		Local Grid Location	
<b>1/4 of NW 1/4 of Section 36, T 49 N, R 14 W</b>		Lat <b>46° 41' 25.1"</b>		<input type="checkbox"/> N <input type="checkbox"/> E	
		Long <b>-92° 4' 6.4"</b>		<input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID <b>816009590</b>		County <b>Douglas</b>		County Code <b>16</b>	
				Civil Town/City/ or Village <b>Superior</b>	


Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID (ppm)	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	G/S/F %	Color	Plasticity Index	
				FAT CLAY (CH): medium stiff; high plasticity Red brown with light gray/white streaks 0-1 feet	CH			1.1						
				Red brown with light gray/black streaks 1-1.9 feet				0.2						
				End of boring 1.9 feet Analytical Soil Samples Collected: HA-3_0-1.5 ft: PVOCS and PAHs										

I hereby certify that the information on this form is true and correct to the best of my knowledge.


Signature 	Firm <b>Barr Engineering Co</b>	Tel: Fax:
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Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Husky Post-Fire Site Investigation</b>		License/Permit/Monitoring Number <b>NA</b>		Boring Number <b>HA-4</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Kaitlin Johnson Barr Engineering Co.</b>		Date Drilling Started <b>10/10/2019</b>		Date Drilling Completed <b>10/10/2019</b>	
WI Unique Well No.		DNR Well ID No.		Common Well Name	
				Final Static Water Level	
				Surface Elevation <b>650.0 Feet</b>	
				Borehole Diameter <b>3.0 inches</b>	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/>		State Plane <b>N, E S/C/N</b>		Local Grid Location	
<b>1/4 of NW 1/4 of Section 36, T 49 N, R 14 W</b>		Lat <b>46° 41' 27.8"</b>		<input type="checkbox"/> N <input type="checkbox"/> E	
		Long <b>-92° 4' 1.9"</b>		<input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID <b>816009590</b>		County <b>Douglas</b>		County Code <b>16</b>	
				Civil Town/City/ or Village <b>Superior</b>	


Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID (ppm)	Soil Properties					RQD/ Comments	
									Compressive Strength	Moisture Content	G/S/F %	Color	Plasticity Index		
				FAT CLAY: (CH) red brown with black streaks; moist; medium stiff; high plasticity; high toughness; trace angular gravel	CH			0.6							
				End of boring 1.7 feet				0.4							
				Analytical Soil Samples Collected: HA-4_0-1.5 ft: PVOCS and PAHs											

I hereby certify that the information on this form is true and correct to the best of my knowledge.


Signature 	Firm <b>Barr Engineering Co</b>	Tel: Fax:
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Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Husky Post-Fire Site Investigation</b>			License/Permit/Monitoring Number <b>NA</b>		Boring Number <b>HA-5</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Kaitlin Johnson Barr Engineering Co.</b>			Date Drilling Started <b>10/10/2019</b>		Date Drilling Completed <b>10/10/2019</b>	
WI Unique Well No.		DNR Well ID No.	Common Well Name		Final Static Water Level	
					Surface Elevation <b>648.3 Feet</b>	
					Borehole Diameter <b>3.0 inches</b>	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/> State Plane <b>N, E S/C/N</b>			Lat <b>46° 41' 30.6"</b>		Local Grid Location	
<b>1/4 of NW 1/4 of Section 36, T 49 N, R 14 W</b>			Long <b>-92° 3' 57.3"</b>		<input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID <b>816009590</b>		County <b>Douglas</b>		County Code <b>16</b>		Civil Town/City/ or Village <b>Superior</b>



Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID (ppm)	Soil Properties					RQD/ Comments	
									Compressive Strength	Moisture Content	G/S/F %	Color	Plasticity Index		
				FAT CLAY: (CH) red brown; moist; medium stiff; high plasticity; high toughness; few coarse grained, subangular sand	CH			0.2							
				End of boring 1.8 feet Analytical Soil Samples Collected: HA-5_0-1.5 ft: PVOcs and PAHs				0.3							

I hereby certify that the information on this form is true and correct to the best of my knowledge.


Signature 	Firm <b>Barr Engineering Co</b>	Tel: Fax:
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Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Husky Post-Fire Site Investigation</b>			License/Permit/Monitoring Number <b>NA</b>		Boring Number <b>SB-1</b>		
Boring Drilled By: Name of crew chief (first, last) and Firm <b>J.R. Jensen</b>			Date Drilling Started <b>9/10/2019</b>		Date Drilling Completed <b>9/10/2019</b>		
Drilling Method <b>test pit</b>			WI Unique Well No.		DNR Well ID No.		
Common Well Name			Final Static Water Level		Surface Elevation <b>665.9 Feet</b>		
Borehole Diameter <b>inches</b>			Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/>		Local Grid Location		
State Plane <b>N, E S/C/N</b>			Lat <b>46° 41' 23.3"</b>		<input type="checkbox"/> N <input type="checkbox"/> E		
<b>1/4 of NW 1/4 of Section 36, T 49 N, R 14 W</b>			Long <b>-92° 4' 11.7"</b>		<input type="checkbox"/> S <input type="checkbox"/> W		
Facility ID <b>816009590</b>		County <b>Douglas</b>		County Code <b>16</b>		Civil Town/City/ or Village <b>Superior</b>	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID (ppm)	Soil Properties					RQD/ Comments	
									Compressive Strength	Moisture Content	G/S/F %	Color	Plasticity Index		
			0	CLAYEY GRAVEL WITH SAND: (GC) red brown with black streaks; moist; angular to subangular gravel	GC										
			2	FAT CLAY WITH GRAVEL: (CH) red brown with black streaks; moist; hard; high plasticity; high toughness; light petroleum odor from 2-4 ft	CH			0.2							
			4					3.9							
			5.0	End of test pit 5.0 feet											
				Analytical Soil Samples Collected: SB-1_0-2 ft: PVOCs and PAHs SB-1_2-4 ft: PVOCs and PAHs											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature  Firm **Barr Engineering Co** Tel: \_\_\_\_\_ Fax: \_\_\_\_\_

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Husky Post-Fire Site Investigation</b>			License/Permit/Monitoring Number <b>NA</b>		Boring Number <b>SB-2</b>		
Boring Drilled By: Name of crew chief (first, last) and Firm <b>J.R. Jensen</b>			Date Drilling Started <b>9/7/2019</b>		Date Drilling Completed <b>9/7/2019</b>		
WI Unique Well No.			DNR Well ID No.		Common Well Name		
Final Static Water Level			Surface Elevation <b>657.8 Feet</b>		Borehole Diameter <b>inches</b>		
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/> State Plane <b>N, E S/C/N</b>			Lat <b>46° 41' 23.1"</b>		Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		
1/4 of <b>NW</b> 1/4 of Section <b>36</b> , T <b>49</b> N, R <b>14</b> W			Long <b>-92° 4' 14.5"</b>		Feet <input type="checkbox"/> S Feet <input type="checkbox"/> W		
Facility ID <b>816009590</b>		County <b>Douglas</b>		County Code <b>16</b>		Civil Town/City/ or Village <b>Superior</b>	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID (ppm)	Soil Properties					RQD/ Comments	
									Compressive Strength	Moisture Content	G/S/F %	Color	Plasticity Index		
			0-2	CLAYEY GRAVEL WITH SAND: (GC) red brown; moist; coarse to medium sand; angular to subangular sand and gravel	GC			0.1							
			2-4	FAT CLAY: (CH) red brown with black streaks; moist; hard; high plasticity; high toughness; trace petroleum odor from 2-4 feet	CH			4.2							
			8	End of test pit 8.0 feet Analytical Soil Samples Collected: SB-2_0-2 ft: PVOCs and PAHs SB-2_2-4 ft: PVOCs and PAHs											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm <b>Barr Engineering Co</b>	Tel: Fax:
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Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Husky Post-Fire Site Investigation</b>		License/Permit/Monitoring Number <b>NA</b>		Boring Number <b>SB-3</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Brett Carlson Twin Ports Testing</b>		Date Drilling Started <b>9/28/2019</b>		Date Drilling Completed <b>9/28/2019</b>	
WI Unique Well No.		DNR Well ID No.		Common Well Name	
Final Static Water Level		Surface Elevation <b>664.5 Feet</b>		Borehole Diameter <b>3.3 inches</b>	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/> State Plane <b>N, E S/C/N</b>		Lat <b>46° 41' 23.1"</b> Long <b>-92° 4' 15.6"</b>		Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
1/4 of <b>NW</b> 1/4 of Section <b>36,</b> T <b>49</b> N, R <b>14</b> W		Facility ID <b>816009590</b>		County <b>Douglas</b>	
County Code <b>16</b>		Civil Town/City/ or Village <b>Superior</b>			

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID (ppm)	Soil Properties					RQD/ Comments	
									Compressive Strength	Moisture Content	G/S/F %	Color	Plasticity Index		
GEOPROBE	60 40.8		-2  -4	CLAYEY GRAVEL WITH SAND: (GC) black/brown discoloration; moist; fine to coarse sand; angular to subangular gravel; light petroleum odor 0-2 ft	GC			1.1							
				FAT CLAY: (CH) red brown with black streaks; moist; hard; high plasticity; high toughness; light petroleum odor from 4-5 ft	CH			0.1							
				End of boring 5.0 feet				0.0							
				Analytical Soil Samples Collected: SB-3_0-1.5 ft: PVOcs and PAHs SB-3_3-4 ft: PVOcs and PAHs											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *Kaitlin Johnson* Firm **Barr Engineering Co** Tel:   
Fax:

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Husky Post-Fire Site Investigation</b>		License/Permit/Monitoring Number <b>NA</b>		Boring Number <b>SB-4</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Brett Carlson Twin Ports Testing</b>		Date Drilling Started <b>9/28/2019</b>		Date Drilling Completed <b>9/28/2019</b>	
WI Unique Well No.		DNR Well ID No.		Common Well Name	
Final Static Water Level		Surface Elevation <b>661.0 Feet</b>		Borehole Diameter <b>3.3 inches</b>	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/>		State Plane <b>N, E S/C/N</b>		Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
1/4 of <b>NW</b> 1/4 of Section <b>36,</b> T <b>49</b> N, R <b>14</b> W		Lat <b>46° 41' 21.9"</b>		Long <b>-92° 4' 15.3"</b>	
Facility ID <b>816009590</b>		County <b>Douglas</b>		County Code <b>16</b>	
				Civil Town/City/ or Village <b>Superior</b>	



Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID (ppm)	Soil Properties					RQD/ Comments	
									Compressive Strength	Moisture Content	G/S/F %	Color	Plasticity Index		
GEOPROBE	60 56.4		0-2	Wood mat											
				WELL-GRADED GRAVEL WITH CLAY AND SAND: (GW-GC) black discoloration; moist; angular to subangular gravel Fat Clay: (CH) red brown; moist; hard; high plasticity; high toughness Black streaking from 0.5-1.5 feet	GW-GC			0.0							
			2-4		CH										
			5.0	End of boring 5.0 feet  Analytical Soil Samples Collected: SB-4_0-1.5 ft: PVOcs and PAHs SB-4_3-4 ft: PVOcs and PAHs											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm <b>Barr Engineering Co</b>	Tel: Fax:
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Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Husky Post-Fire Site Investigation</b>		License/Permit/Monitoring Number <b>NA</b>		Boring Number <b>SB-5</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Brett Carlson Twin Ports Testing</b>		Date Drilling Started <b>9/28/2019</b>		Date Drilling Completed <b>9/28/2019</b>	
WI Unique Well No.		DNR Well ID No.		Common Well Name	
Final Static Water Level		Surface Elevation <b>668.0 Feet</b>		Borehole Diameter <b>3.3 inches</b>	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/>		State Plane <b>N, E S/C/N</b>		Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
1/4 of <b>NW</b> 1/4 of Section <b>36</b> , T <b>49</b> N, R <b>14</b> W		Lat <b>46° 41' 22.4"</b>		Long <b>-92° 4' 16.8"</b>	
Facility ID <b>816009590</b>		County <b>Douglas</b>		County Code <b>16</b>	
				Civil Town/City/ or Village <b>Superior</b>	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID (ppm)	Soil Properties					RQD/ Comments	
									Compressive Strength	Moisture Content	G/S/F %	Color	Plasticity Index		
GEOPROBE	60 44.4		0	CLAYEY GRAVEL WITH SAND: (GC) red brown with black streaks in clay; moist; fine to coarse sand; angular to subangular gravel; moderate petroleum odor throughout	GC			0.2							
			2	FAT CLAY: (CH) red brown with black streaks; moist; hard; high plasticity; high toughness; strong petroleum odor throughout	CH			370.6							
			4	End of boring 5.0 feet											
				Analytical Soil Samples Collected: SB-5_0-1.5 ft: PVOcs and PAHs SB-5_3-4 ft: PVOcs and PAHs											




I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *Kaitlin Johnson* Firm **Barr Engineering Co** Tel:   
Fax:




Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Husky Post-Fire Site Investigation</b>			License/Permit/Monitoring Number <b>NA</b>		Boring Number <b>SB-6</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Brett Carlson Twin Ports Testing</b>			Date Drilling Started <b>9/28/2019</b>		Date Drilling Completed <b>9/28/2019</b>	
WI Unique Well No.		DNR Well ID No.	Common Well Name		Final Static Water Level	
					Surface Elevation <b>665.9 Feet</b>	
					Borehole Diameter <b>3.3 inches</b>	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/> State Plane <b>N, E S/C/N</b>			Lat <b>46° 41' 21.1"</b>		Local Grid Location	
1/4 of <b>NW</b> 1/4 of Section <b>36,</b> T <b>49</b> N, R <b>14</b> W			Long <b>-92° 4' 16.7"</b>		<input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID <b>816009590</b>		County <b>Douglas</b>		County Code <b>16</b>	Civil Town/City/ or Village <b>Superior</b>	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID (ppm)	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	G/S/F %	Color	Plasticity Index	
GEOPROBE	60 46.8		-2	GRAVELLY FAT CLAY WITH SAND: (CH) black/brown discoloration; moist; angular to subangular gravel	CH									
				CLAYEY SAND: (SC) Red brown with some black streaks; moist; coarse to medium sand	SC			0.2						
				FAT CLAY: (CH) red brown; moist; hard; high plasticity; high toughness Black streaking from 1.3-3 feet	CH			0.1						
			-4					0.1						
				End of boring 5.0 feet										
				Analytical Soil Samples Collected: SB-6_0-1.5 ft: PVOcs and PAHs SB-6_3-4 ft: PVOcs and PAHs										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature  Firm **Barr Engineering Co** Tel: \_\_\_\_\_ Fax: \_\_\_\_\_

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Husky Post-Fire Site Investigation</b>		License/Permit/Monitoring Number <b>NA</b>		Boring Number <b>SB-7</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Brett Carlson Twin Ports Testing</b>		Date Drilling Started <b>9/28/2019</b>		Date Drilling Completed <b>9/28/2019</b>	
WI Unique Well No.		DNR Well ID No.		Common Well Name	
		Final Static Water Level		Surface Elevation <b>655.1 Feet</b>	
				Borehole Diameter <b>3.3 inches</b>	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/>		State Plane <b>N, E S/C/N</b>		Local Grid Location	
<b>1/4 of NW 1/4 of Section 36, T 49 N, R 14 W</b>		Lat <b>46° 41' 21.0"</b>		<input type="checkbox"/> N <input type="checkbox"/> E	
		Long <b>-92° 4' 18.0"</b>		<input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID <b>816009590</b>		County <b>Douglas</b>		County Code <b>16</b>	
				Civil Town/City/ or Village <b>Superior</b>	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID (ppm)	Soil Properties					RQD/ Comments	
									Compressive Strength	Moisture Content	G/S/F %	Color	Plasticity Index		
GEOPROBE	0 45.6		0 2 4	WELL-GRADED GRAVEL WITH CLAY AND SAND: (GW-GC) brown; moist; fine sand; well graded angular gravel	GW-GC										
				FAT CLAY: (CH) red brown with black streaks until 1.6 ft; moist; hard; high; high; trace petroleum odor from 0-2 ft	CH			0.6							
				End of boring 5.0 feet				0.3							
				Analytical Soil Samples Collected: SB-7_0-1.5 ft: PVOcs and PAHs SB-7_3-4 ft: PVOcs and PAHs											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *Kaitlin Johnson* Firm **Barr Engineering Co** Tel:   
Fax:

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Husky Post-Fire Site Investigation</b>			License/Permit/Monitoring Number <b>NA</b>		Boring Number <b>SB-8</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Brett Carlson Twin Ports Testing</b>			Date Drilling Started <b>11/15/2019</b>		Date Drilling Completed <b>11/15/2019</b>	
WI Unique Well No.		DNR Well ID No.	Common Well Name		Final Static Water Level	
					Surface Elevation <b>658.0 Feet</b>	
					Borehole Diameter <b>3.3 inches</b>	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/> State Plane <b>N, E S/C/N</b>			Lat <b>46° 41' 21.4"</b>		Local Grid Location	
1/4 of <b>NW</b> 1/4 of Section <b>36,</b> T <b>49</b> N, R <b>14</b> W			Long <b>-92° 4' 20.0"</b>		<input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID <b>816009590</b>		County <b>Douglas</b>		County Code <b>16</b>	Civil Town/City/ or Village <b>Superior</b>	



Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID (ppm)	Soil Properties					RQD/ Comments	
									Compressive Strength	Moisture Content	G/S/F %	Color	Plasticity Index		
GEOPROBE	18 24			WELL GRADED GRAVEL WITH SAND: (GW) tan with black streaking throughout; moist; medium to coarse sand, subangular sand and gravel				0.5							
GEOPROBE	42 21.6		2	CLAYEY GRAVEL WITH SAND: (GC) tan with black streaking throughout; wet; medium to coarse sand, subangular sand and gravel	GW			0.2							
			4	CLAYEY GRAVEL WITH SAND: (GC) tan with black streaking throughout; wet; medium to coarse sand, subangular sand and gravel	GC			0.2							
				End of boring 5.0 feet  Analytical Soil Samples Collected: SB-8_0-1.5 ft: PVOcs and PAHs SB-8_3-4 ft: PVOcs and PAHs											

I hereby certify that the information on this form is true and correct to the best of my knowledge.


Signature 	Firm <b>Barr Engineering Co</b>	Tel: Fax:
---------------	------------------------------------	--------------

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Husky Post-Fire Site Investigation</b>			License/Permit/Monitoring Number <b>NA</b>		Boring Number <b>SB-9</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Brett Carlson Twin Ports Testing</b>			Date Drilling Started <b>11/15/2019</b>		Date Drilling Completed <b>11/15/2019</b>	
WI Unique Well No.		DNR Well ID No.	Common Well Name		Final Static Water Level	
					Surface Elevation <b>661.0 Feet</b>	
					Borehole Diameter <b>3.3 inches</b>	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/> State Plane <b>N, E S/C/N</b>			Lat <b>46° 41' 22.0"</b>		Local Grid Location	
<b>1/4 of NW 1/4 of Section 36, T 49 N, R 14 W</b>			Long <b>-92° 4' 20.8"</b>		<input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID <b>816009590</b>		County <b>Douglas</b>		County Code <b>16</b>		Civil Town/City/ or Village <b>Superior</b>

Sample	Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID (ppm)	Soil Properties					RQD/ Comments
										Compressive Strength	Moisture Content	G/S/F %	Color	Plasticity Index	
GEOPROBE		24 22.8			WELL-GRADED SAND WITH GRAVEL: (SW) black color throughout; moist; medium to coarse sand, subangular to angular sand and gravel with tan red coarse sand layer from 0.2-0.3 ft	SW			1.6						
GEOPROBE		36 31.6		2	Yellow gravel layer from 2.3-2.4 feet										
				4	FAT CLAY: (CH) red brown with black streaks; moist; hard; high plasticity; high toughness	CH			2.6						
					End of boring 5.0 feet				0.5						
					Analytical Soil Samples Collected: SB-9_0-1.5 ft: PVOcs and PAHs SB-9_3-4 ft: PVOcs and PAHs										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature  Firm **Barr Engineering Co** Tel:   
Fax:

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Husky Post-Fire Site Investigation</b>		License/Permit/Monitoring Number <b>NA</b>		Boring Number <b>SB-10</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Brett Carlson Twin Ports Testing</b>		Date Drilling Started <b>9/28/2019</b>		Date Drilling Completed <b>9/28/2019</b>	
WI Unique Well No.		DNR Well ID No.		Common Well Name	
Final Static Water Level		Surface Elevation <b>666.7 Feet</b>		Borehole Diameter <b>3.3 inches</b>	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/> State Plane <b>N, E S/C/N</b>		Lat <b>46° 41' 23.5"</b> Long <b>-92° 4' 22.7"</b>		Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
1/4 of <b>NW</b> 1/4 of Section <b>36</b> , T <b>49</b> N, R <b>14</b> W		Facility ID <b>816009590</b>		County <b>Douglas</b>	
County Code <b>16</b>		Civil Town/City/ or Village <b>Superior</b>			



Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID (ppm)	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	G/S/F %	Color	Plasticity Index	
GEOPROBE	60 49.2		0 2 4	WELL-GRADED GRAVEL WITH SAND: (GW) black and gray; moist; coarse to medium sand; angular to subangular gravel; trace petroleum odor	GW			2.8						
				CLAYEY SAND: (SC) black and gray; moist; coarse to fine sand	SC									
				FAT CLAY: (CH) red brown; moist; medium stiff; high plasticity; medium toughness Black discoloration from 1.8-2.1 feet	CH				0.1					
				End of boring 5.0 feet					0.2					
Analytical Soil Samples Collected: SB-10_0-1.5 ft: PVOcs and PAHs SB-10_3-4 ft: PVOcs and PAHs														

I hereby certify that the information on this form is true and correct to the best of my knowledge.


Signature *Kaitlin Johnson* Firm **Barr Engineering Co** Tel:   
Fax:

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Husky Post-Fire Site Investigation</b>			License/Permit/Monitoring Number <b>NA</b>		Boring Number <b>SB-11</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Brett Carlson Twin Ports Testing</b>			Date Drilling Started <b>9/28/2019</b>		Date Drilling Completed <b>9/28/2019</b>	
WI Unique Well No.		DNR Well ID No.	Common Well Name		Final Static Water Level	
					Surface Elevation <b>669.3 Feet</b>	
					Borehole Diameter <b>3.3 inches</b>	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/> State Plane <b>N, E S/C/N</b>			Lat <b>46° 41' 19.1"</b>		Local Grid Location	
1/4 of <b>NW</b> 1/4 of Section <b>36,</b> T <b>49</b> N, R <b>14</b> W			Long <b>-92° 4' 18.8"</b>		<input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID <b>816009590</b>		County <b>Douglas</b>		County Code <b>16</b>	Civil Town/City/ or Village <b>Superior</b>	

Sample	Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID (ppm)	Soil Properties					RQD/ Comments
										Compressive Strength	Moisture Content	G/S/F %	Color	Plasticity Index	
GEOPROBE		60 32.4			CLAYEY GRAVEL WITH SAND: (GC) gray; moist; fine to coarse sand; angular to subangular gravel and sand	GC			0.4						
				2	FAT CLAY: (CH) red brown; moist; hard; high plasticity; high toughness Black streaking from 1.1 to 1.8 feet	CH			0.5						
				4	Soft consistency and low toughness from 2.5-5.5 feet				0.2						
					End of boring 5.0 feet  Analytical Soil Samples Collected: SB-11_0-1.5 ft: PVOcs and PAHs SB-11_3-4 ft: PVOcs and PAHs										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature  Firm **Barr Engineering Co** Tel: \_\_\_\_\_ Fax: \_\_\_\_\_

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Husky Post-Fire Site Investigation</b>		License/Permit/Monitoring Number <b>NA</b>		Boring Number <b>SB-12</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Brett Carlson Twin Ports Testing</b>		Date Drilling Started <b>9/28/2019</b>		Date Drilling Completed <b>9/28/2019</b>	
WI Unique Well No.		DNR Well ID No.		Common Well Name	
Final Static Water Level		Surface Elevation <b>682.7 Feet</b>		Borehole Diameter <b>3.3 inches</b>	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/> State Plane <b>N, E S/C/N</b>		Lat <b>46° 41' 18.3"</b>		Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
1/4 of <b>NW</b> 1/4 of Section <b>36,</b> T <b>49</b> N, R <b>14</b> W		Long <b>-92° 4' 22.4"</b>		Feet <input type="checkbox"/> S Feet <input type="checkbox"/> W	
Facility ID <b>816009590</b>		County <b>Douglas</b>		County Code <b>16</b>	
				Civil Town/City/ or Village <b>Superior</b>	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID (ppm)	Soil Properties					RQD/ Comments	
									Compressive Strength	Moisture Content	G/S/F %	Color	Plasticity Index		
GEOPROBE	60 40.8		-2  -4	WELL-GRADED GRAVEL WITH CLAY AND SAND: (GW-GC) black/brown; moist; coarse to fine sand; angular to subangular gravel and sand	GW-GC			0.1							
				FAT CLAY: (CH) red brown; moist; hard; high plasticity; high toughness Black organic layer from 1-1.4 feet	CH										0.2
				End of boring 5.0 feet				0.2							
				Analytical Soil Samples Collected: SB-12_0-1.5 ft: PVOcs and PAHs SB-12_3-4 ft: PVOcs and PAHs											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm <b>Barr Engineering Co</b>	Tel: Fax:
---------------	------------------------------------	--------------

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>Husky Post-Fire Site Investigation</b>		License/Permit/Monitoring Number <b>NA</b>		Boring Number <b>SB-13</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Brett Carlson Twin Ports Testing</b>		Date Drilling Started <b>9/28/2019</b>		Date Drilling Completed <b>9/28/2019</b>	
WI Unique Well No.		DNR Well ID No.		Common Well Name	
Final Static Water Level		Surface Elevation <b>656.3 Feet</b>		Borehole Diameter <b>3.3 inches</b>	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/> State Plane <b>N, E S/C/N</b>		Lat <b>46° 41' 18.7"</b>		Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
1/4 of <b>NW</b> 1/4 of Section <b>36,</b> T <b>49</b> N, R <b>14</b> W		Long <b>-92° 4' 23.9"</b>		Feet <input type="checkbox"/> S Feet <input type="checkbox"/> W	
Facility ID <b>816009590</b>		County <b>Douglas</b>		County Code <b>16</b>	
				Civil Town/City/ or Village <b>Superior</b>	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID (ppm)	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	G/S/F %	Color	Plasticity Index	
GEOPROBE	60 50.4		0 2 4	FAT CLAY: (CH) red brown; moist; hard; high plasticity, high toughness	CH									
				WELL GRADED GRAVEL WITH CLAY AND SAND: (GW-GC) black discoloration; moist; angular gravel and sand	GW-GC									
				FAT CLAY: (CH) red brown; moist; hard; high plasticity, high toughness	CH									
				End of boring 5.0 feet										
				Analytical Soil Samples Collected: SB-13_0-1.5 ft: PVOcs and PAHs SB-13_3-4 ft: PVOcs and PAHs										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *Kaitlin Johnson* Firm **Barr Engineering Co** Tel:   
Fax:



## Appendix B

### Representative Photographs

**Appendix B**  
**Site Investigation Photograph Log**

Superior, Wisconsin  
September 7, 10, and 28; October 4 and 10; November 15

Photo #	Comments
1	Photo 1: SB-2; facing south.
2	Photo 2: SB-5; facing north.
3	Photo 3: HA-1; facing east.
4	Photo 4: Hand auger recovery from HA-1.
5.	Photo 5: HA-2; boring location adjacent to standing water; facing north
6	Photo 6: HA-5; Stinson Avenue ditch; facing southwest.
7	Photo 7: SB-9; tank farm excavation area in background; facing southwest.



Photo 1: SB-2; facing south.



Photo 2: SB-5; facing north.





Photo 3: HA-1; facing east.



Photo 4: Hand auger recovery from HA-1.





Photo 5: HA-2; boring location adjacent to standing water; facing north



Photo 6: HA-5; Stinson Avenue ditch; facing southwest.



Photo 7: SB-9; tank farm excavation area in background; facing southwest.

## Appendix C

### Soil Analytical Reports

September 20, 2019

Terri Olson  
Barr Engineering Company  
4300 MarketPointe Drive  
Suite 200  
Minneapolis, MN 55435

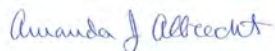
RE: Project: 49161427.16 100 102 Husky Post  
Pace Project No.: 10490781

Dear Terri Olson:

Enclosed are the analytical results for sample(s) received by the laboratory on September 09, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Amanda Albrecht  
amanda.albrecht@pacelabs.com  
(612)607-6382  
Project Manager

Enclosures

cc: BarrDM, Barr Engineering  
Accounts Payable, Barr Engineering



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.



## CERTIFICATIONS

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10490781

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### Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485

A2LA Certification #: 2926.01

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

CNMI Saipan Certification #: MP0003

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605

Georgia Certification #: 959

Guam EPA Certification #: MN00064

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: 03086

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064

Maryland Certification #: 322

Massachusetts Certification #: M-MN064

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137

Minnesota Dept of Ag Certification #: via MN 027-053-137

Minnesota Petrofund Certification #: 1240

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081

New Jersey Certification #: MN002

New York Certification #: 11647

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification #: MN00064

South Carolina Certification #:74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Vermont Certification #: VT-027053137

Virginia Certification #: 460163

Washington Certification #: C486

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10490781

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10490781001	SB-2_0-2	Solid	09/07/19 07:30	09/09/19 19:10
10490781002	SB-2_2-4	Solid	09/07/19 07:45	09/09/19 19:10
10490781003	Trip Blank	Solid	09/07/19 00:00	09/09/19 19:10

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10490781

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10490781001	SB-2_0-2	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	ML4	10	PASI-M
10490781002	SB-2_2-4	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	ML4	10	PASI-M
10490781003	Trip Blank	EPA 8260B	ML4	10	PASI-M

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10490781

Sample: **SB-2\_0-2** Lab ID: **10490781001** Collected: 09/07/19 07:30 Received: 09/09/19 19:10 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	6.1	%	0.10	0.10	1		09/19/19 15:17		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	<0.00051	mg/kg	0.0017	0.00051	1	09/11/19 13:59	09/12/19 17:33	90-12-0	
2-Methylnaphthalene	<0.00050	mg/kg	0.0017	0.00050	1	09/11/19 13:59	09/12/19 17:33	91-57-6	
Acenaphthene	<0.00044	mg/kg	0.0014	0.00044	1	09/11/19 13:59	09/12/19 17:33	83-32-9	
Acenaphthylene	<0.00085	mg/kg	0.0028	0.00085	1	09/11/19 13:59	09/12/19 17:33	208-96-8	
Anthracene	<0.00030	mg/kg	0.0010	0.00030	1	09/11/19 13:59	09/12/19 17:33	120-12-7	
Benzo(a)anthracene	0.00078J	mg/kg	0.0012	0.00035	1	09/11/19 13:59	09/12/19 17:33	56-55-3	
Benzo(a)pyrene	<0.00042	mg/kg	0.0014	0.00042	1	09/11/19 13:59	09/12/19 17:33	50-32-8	
Benzo(b)fluoranthene	<0.00021	mg/kg	0.00069	0.00021	1	09/11/19 13:59	09/12/19 17:33	205-99-2	
Benzo(g,h,i)perylene	<0.00029	mg/kg	0.00096	0.00029	1	09/11/19 13:59	09/12/19 17:33	191-24-2	
Benzo(k)fluoranthene	<0.00027	mg/kg	0.00089	0.00027	1	09/11/19 13:59	09/12/19 17:33	207-08-9	
Chrysene	0.00073J	mg/kg	0.0014	0.00043	1	09/11/19 13:59	09/12/19 17:33	218-01-9	
Dibenz(a,h)anthracene	<0.00042	mg/kg	0.0014	0.00042	1	09/11/19 13:59	09/12/19 17:33	53-70-3	
Fluoranthene	0.00086J	mg/kg	0.0012	0.00035	1	09/11/19 13:59	09/12/19 17:33	206-44-0	
Fluorene	<0.00031	mg/kg	0.0010	0.00031	1	09/11/19 13:59	09/12/19 17:33	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.00022	mg/kg	0.00072	0.00022	1	09/11/19 13:59	09/12/19 17:33	193-39-5	
Naphthalene	<0.00049	mg/kg	0.0016	0.00049	1	09/11/19 13:59	09/12/19 17:33	91-20-3	
Phenanthrene	0.00085J	mg/kg	0.00089	0.00027	1	09/11/19 13:59	09/12/19 17:33	85-01-8	
Pyrene	0.00093J	mg/kg	0.0011	0.00034	1	09/11/19 13:59	09/12/19 17:33	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	68	%	30-125		1	09/11/19 13:59	09/12/19 17:33	321-60-8	
p-Terphenyl-d14 (S)	75	%	30-125		1	09/11/19 13:59	09/12/19 17:33	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0030	mg/kg	0.010	0.0030	1	09/16/19 10:22	09/16/19 14:54	71-43-2	
Ethylbenzene	<0.0029	mg/kg	0.0098	0.0029	1	09/16/19 10:22	09/16/19 14:54	100-41-4	
Methyl-tert-butyl ether	<0.0064	mg/kg	0.021	0.0064	1	09/16/19 10:22	09/16/19 14:54	1634-04-4	
Toluene	<0.013	mg/kg	0.044	0.013	1	09/16/19 10:22	09/16/19 14:54	108-88-3	
1,2,4-Trimethylbenzene	<0.011	mg/kg	0.036	0.011	1	09/16/19 10:22	09/16/19 14:54	95-63-6	
1,3,5-Trimethylbenzene	<0.0086	mg/kg	0.029	0.0086	1	09/16/19 10:22	09/16/19 14:54	108-67-8	
Xylene (Total)	<0.013	mg/kg	0.042	0.013	1	09/16/19 10:22	09/16/19 14:54	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	96	%	75-125		1	09/16/19 10:22	09/16/19 14:54	17060-07-0	
Toluene-d8 (S)	97	%	75-125		1	09/16/19 10:22	09/16/19 14:54	2037-26-5	
4-Bromofluorobenzene (S)	98	%	75-125		1	09/16/19 10:22	09/16/19 14:54	460-00-4	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10490781

Sample: **SB-2\_2-4** Lab ID: **10490781002** Collected: 09/07/19 07:45 Received: 09/09/19 19:10 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>24.4</b>	%	0.10	0.10	1		09/19/19 15:17		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	<b>0.0020J</b>	mg/kg	0.0021	0.00063	1	09/11/19 13:59	09/12/19 17:55	90-12-0	
2-Methylnaphthalene	<b>0.0022</b>	mg/kg	0.0021	0.00062	1	09/11/19 13:59	09/12/19 17:55	91-57-6	
Acenaphthene	<b>0.0019</b>	mg/kg	0.0018	0.00054	1	09/11/19 13:59	09/12/19 17:55	83-32-9	
Acenaphthylene	<b>&lt;0.0011</b>	mg/kg	0.0035	0.0011	1	09/11/19 13:59	09/12/19 17:55	208-96-8	
Anthracene	<b>&lt;0.00037</b>	mg/kg	0.0012	0.00037	1	09/11/19 13:59	09/12/19 17:55	120-12-7	
Benzo(a)anthracene	<b>0.0079</b>	mg/kg	0.0014	0.00044	1	09/11/19 13:59	09/12/19 17:55	56-55-3	
Benzo(a)pyrene	<b>0.0072</b>	mg/kg	0.0017	0.00052	1	09/11/19 13:59	09/12/19 17:55	50-32-8	
Benzo(b)fluoranthene	<b>0.0091</b>	mg/kg	0.00086	0.00026	1	09/11/19 13:59	09/12/19 17:55	205-99-2	
Benzo(g,h,i)perylene	<b>0.0044</b>	mg/kg	0.0012	0.00036	1	09/11/19 13:59	09/12/19 17:55	191-24-2	
Benzo(k)fluoranthene	<b>0.0040</b>	mg/kg	0.0011	0.00033	1	09/11/19 13:59	09/12/19 17:55	207-08-9	
Chrysene	<b>0.0078</b>	mg/kg	0.0018	0.00053	1	09/11/19 13:59	09/12/19 17:55	218-01-9	
Dibenz(a,h)anthracene	<b>&lt;0.00052</b>	mg/kg	0.0017	0.00052	1	09/11/19 13:59	09/12/19 17:55	53-70-3	
Fluoranthene	<b>0.015</b>	mg/kg	0.0014	0.00043	1	09/11/19 13:59	09/12/19 17:55	206-44-0	
Fluorene	<b>0.0029</b>	mg/kg	0.0013	0.00039	1	09/11/19 13:59	09/12/19 17:55	86-73-7	
Indeno(1,2,3-cd)pyrene	<b>0.0036</b>	mg/kg	0.00089	0.00027	1	09/11/19 13:59	09/12/19 17:55	193-39-5	
Naphthalene	<b>0.0020</b>	mg/kg	0.0020	0.00061	1	09/11/19 13:59	09/12/19 17:55	91-20-3	
Phenanthrene	<b>0.013</b>	mg/kg	0.0011	0.00033	1	09/11/19 13:59	09/12/19 17:55	85-01-8	
Pyrene	<b>0.013</b>	mg/kg	0.0014	0.00042	1	09/11/19 13:59	09/12/19 17:55	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	62	%	30-125		1	09/11/19 13:59	09/12/19 17:55	321-60-8	
p-Terphenyl-d14 (S)	59	%	30-125		1	09/11/19 13:59	09/12/19 17:55	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;0.0039</b>	mg/kg	0.013	0.0039	1	09/16/19 10:22	09/16/19 15:12	71-43-2	
Ethylbenzene	<b>&lt;0.0038</b>	mg/kg	0.013	0.0038	1	09/16/19 10:22	09/16/19 15:12	100-41-4	
Methyl-tert-butyl ether	<b>&lt;0.0083</b>	mg/kg	0.028	0.0083	1	09/16/19 10:22	09/16/19 15:12	1634-04-4	
Toluene	<b>&lt;0.017</b>	mg/kg	0.057	0.017	1	09/16/19 10:22	09/16/19 15:12	108-88-3	
1,2,4-Trimethylbenzene	<b>&lt;0.014</b>	mg/kg	0.046	0.014	1	09/16/19 10:22	09/16/19 15:12	95-63-6	
1,3,5-Trimethylbenzene	<b>&lt;0.011</b>	mg/kg	0.037	0.011	1	09/16/19 10:22	09/16/19 15:12	108-67-8	
Xylene (Total)	<b>&lt;0.016</b>	mg/kg	0.054	0.016	1	09/16/19 10:22	09/16/19 15:12	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	93	%	75-125		1	09/16/19 10:22	09/16/19 15:12	17060-07-0	
Toluene-d8 (S)	97	%	75-125		1	09/16/19 10:22	09/16/19 15:12	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125		1	09/16/19 10:22	09/16/19 15:12	460-00-4	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10490781

**Sample: Trip Blank**      **Lab ID: 10490781003**      Collected: 09/07/19 00:00      Received: 09/09/19 19:10      Matrix: Solid

**Results reported on a "wet-weight" basis**

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B    Preparation Method: EPA 5035/5030B									
Benzene	<0.0028	mg/kg	0.0094	0.0028	1	09/16/19 10:22	09/16/19 13:42	71-43-2	
Ethylbenzene	<0.0027	mg/kg	0.0091	0.0027	1	09/16/19 10:22	09/16/19 13:42	100-41-4	
Methyl-tert-butyl ether	<0.0060	mg/kg	0.020	0.0060	1	09/16/19 10:22	09/16/19 13:42	1634-04-4	
Toluene	<0.012	mg/kg	0.041	0.012	1	09/16/19 10:22	09/16/19 13:42	108-88-3	
1,2,4-Trimethylbenzene	<0.010	mg/kg	0.033	0.010	1	09/16/19 10:22	09/16/19 13:42	95-63-6	
1,3,5-Trimethylbenzene	<0.0080	mg/kg	0.027	0.0080	1	09/16/19 10:22	09/16/19 13:42	108-67-8	
Xylene (Total)	<0.012	mg/kg	0.039	0.012	1	09/16/19 10:22	09/16/19 13:42	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	95	%	75-125		1	09/16/19 10:22	09/16/19 13:42	17060-07-0	
Toluene-d8 (S)	98	%	75-125		1	09/16/19 10:22	09/16/19 13:42	2037-26-5	
4-Bromofluorobenzene (S)	99	%	75-125		1	09/16/19 10:22	09/16/19 13:42	460-00-4	

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10490781

QC Batch: 633153

Analysis Method: ASTM D2974

QC Batch Method: ASTM D2974

Analysis Description: Dry Weight / %M by ASTM D2974

Associated Lab Samples: 10490781001, 10490781002

SAMPLE DUPLICATE: 3413641

Parameter	Units	10490745001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	56.9	57.3	1	30	

SAMPLE DUPLICATE: 3414605

Parameter	Units	10490721005 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	43.5	43.0	1	30	

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post  
Pace Project No.: 10490781

QC Batch: 632356 Analysis Method: EPA 8260B  
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV UST  
Associated Lab Samples: 10490781001, 10490781002, 10490781003

METHOD BLANK: 3409759 Matrix: Solid  
Associated Lab Samples: 10490781001, 10490781002, 10490781003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	<0.010	0.033	09/16/19 13:24	
1,3,5-Trimethylbenzene	mg/kg	<0.0080	0.027	09/16/19 13:24	
Benzene	mg/kg	<0.0028	0.0094	09/16/19 13:24	
Ethylbenzene	mg/kg	<0.0027	0.0091	09/16/19 13:24	
Methyl-tert-butyl ether	mg/kg	<0.0060	0.020	09/16/19 13:24	
Toluene	mg/kg	<0.012	0.041	09/16/19 13:24	
Xylene (Total)	mg/kg	<0.012	0.039	09/16/19 13:24	
1,2-Dichloroethane-d4 (S)	%	94	75-125	09/16/19 13:24	
4-Bromofluorobenzene (S)	%	101	75-125	09/16/19 13:24	
Toluene-d8 (S)	%	97	75-125	09/16/19 13:24	

LABORATORY CONTROL SAMPLE: 3409760

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	1	0.87	87	51-126	
1,3,5-Trimethylbenzene	mg/kg	1	0.85	85	52-127	
Benzene	mg/kg	1	0.86	86	48-125	
Ethylbenzene	mg/kg	1	0.86	86	51-125	
Methyl-tert-butyl ether	mg/kg	1	0.86	86	53-125	
Toluene	mg/kg	1	0.83	83	51-125	
Xylene (Total)	mg/kg	3	2.7	89	52-125	
1,2-Dichloroethane-d4 (S)	%			95	75-125	
4-Bromofluorobenzene (S)	%			96	75-125	
Toluene-d8 (S)	%			97	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3409761 3409762

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10491162002 Result	Spike Conc.	Spike Conc.	Result						
1,2,4-Trimethylbenzene	mg/kg	ND	1.2	1.1	1.0	1.1	85	92	65-145	6	30
1,3,5-Trimethylbenzene	mg/kg	ND	1.2	1.1	1.0	1.1	85	91	66-148	5	30
Benzene	mg/kg	ND	1.2	1.1	0.98	1.1	82	91	63-136	8	30
Ethylbenzene	mg/kg	ND	1.2	1.1	0.99	1.1	83	90	64-142	6	30
Methyl-tert-butyl ether	mg/kg	ND	1.2	1.1	0.98	1.1	82	90	69-134	8	30
Toluene	mg/kg	ND	1.2	1.1	0.94	1.0	79	87	61-141	8	30
Xylene (Total)	mg/kg	ND	3.6	3.5	3.1	3.3	87	94	67-145	5	30
1,2-Dichloroethane-d4 (S)	%						90	90	75-125		
4-Bromofluorobenzene (S)	%						96	98	75-125		

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10490781

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3409761 3409762												
Parameter	Units	10491162002 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
Toluene-d8 (S)	%						99	98	75-125			

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post  
Pace Project No.: 10490781

QC Batch: 631533 Analysis Method: EPA 8270D by SIM  
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid PAH by SIM MSSV  
Associated Lab Samples: 10490781001, 10490781002

METHOD BLANK: 3405217 Matrix: Solid  
Associated Lab Samples: 10490781001, 10490781002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	mg/kg	<0.00048	0.0016	09/12/19 10:18	
2-Methylnaphthalene	mg/kg	<0.00047	0.0016	09/12/19 10:18	
Acenaphthene	mg/kg	<0.00041	0.0014	09/12/19 10:18	
Acenaphthylene	mg/kg	<0.00080	0.0027	09/12/19 10:18	
Anthracene	mg/kg	<0.00028	0.00095	09/12/19 10:18	
Benzo(a)anthracene	mg/kg	<0.00033	0.0011	09/12/19 10:18	
Benzo(a)pyrene	mg/kg	<0.00039	0.0013	09/12/19 10:18	
Benzo(b)fluoranthene	mg/kg	<0.00020	0.00065	09/12/19 10:18	
Benzo(g,h,i)perylene	mg/kg	<0.00027	0.00091	09/12/19 10:18	
Benzo(k)fluoranthene	mg/kg	<0.00025	0.00084	09/12/19 10:18	
Chrysene	mg/kg	<0.00040	0.0013	09/12/19 10:18	
Dibenz(a,h)anthracene	mg/kg	<0.00040	0.0013	09/12/19 10:18	
Fluoranthene	mg/kg	<0.00033	0.0011	09/12/19 10:18	
Fluorene	mg/kg	<0.00030	0.00098	09/12/19 10:18	
Indeno(1,2,3-cd)pyrene	mg/kg	<0.00020	0.00068	09/12/19 10:18	
Naphthalene	mg/kg	<0.00046	0.0015	09/12/19 10:18	
Phenanthrene	mg/kg	<0.00025	0.00083	09/12/19 10:18	
Pyrene	mg/kg	<0.00032	0.0011	09/12/19 10:18	
2-Fluorobiphenyl (S)	%	70	30-125	09/12/19 10:18	
p-Terphenyl-d14 (S)	%	78	30-125	09/12/19 10:18	

LABORATORY CONTROL SAMPLE: 3405218

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	mg/kg	0.033	0.026	77	33-125	
2-Methylnaphthalene	mg/kg	0.033	0.026	77	49-125	
Acenaphthene	mg/kg	0.033	0.025	76	46-125	
Acenaphthylene	mg/kg	0.033	0.027	82	44-125	
Anthracene	mg/kg	0.033	0.029	86	62-125	
Benzo(a)anthracene	mg/kg	0.033	0.030	89	53-125	
Benzo(a)pyrene	mg/kg	0.033	0.029	86	62-125	
Benzo(b)fluoranthene	mg/kg	0.033	0.030	89	51-125	
Benzo(g,h,i)perylene	mg/kg	0.033	0.028	85	58-125	
Benzo(k)fluoranthene	mg/kg	0.033	0.026	79	59-125	
Chrysene	mg/kg	0.033	0.027	80	59-125	
Dibenz(a,h)anthracene	mg/kg	0.033	0.028	85	60-125	
Fluoranthene	mg/kg	0.033	0.029	88	67-125	
Fluorene	mg/kg	0.033	0.026	79	51-125	
Indeno(1,2,3-cd)pyrene	mg/kg	0.033	0.028	84	59-125	
Naphthalene	mg/kg	0.033	0.027	80	47-125	

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10490781

LABORATORY CONTROL SAMPLE: 3405218

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenanthrene	mg/kg	0.033	0.027	80	61-125	
Pyrene	mg/kg	0.033	0.029	87	52-125	
2-Fluorobiphenyl (S)	%			70	30-125	
p-Terphenyl-d14 (S)	%			77	30-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3405219 3405220

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		10490489001 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
1-Methylnaphthalene	mg/kg	ND	0.038	0.038	0.029	0.027	74	70	30-125	6	30	
2-Methylnaphthalene	mg/kg	ND	0.038	0.038	0.029	0.027	74	69	30-125	8	30	
Acenaphthene	mg/kg	ND	0.038	0.038	0.030	0.027	78	71	30-125	9	30	
Acenaphthylene	mg/kg	ND	0.038	0.038	0.032	0.029	83	76	30-125	8	30	
Anthracene	mg/kg	ND	0.038	0.038	0.032	0.030	82	78	30-131	5	30	
Benzo(a)anthracene	mg/kg	ND	0.038	0.038	0.042	0.047	109	123	30-126	12	30	
Benzo(a)pyrene	mg/kg	0.015	0.038	0.038	0.043	0.048	74	87	30-150	11	30	
Benzo(b)fluoranthene	mg/kg	0.022	0.038	0.038	0.045	0.062	59	104	30-150	32	30	R1
Benzo(g,h,i)perylene	mg/kg	0.013	0.038	0.038	0.039	0.043	67	77	30-150	10	30	
Benzo(k)fluoranthene	mg/kg	ND	0.038	0.038	0.041	0.039	107	101	30-150	5	30	
Chrysene	mg/kg	0.016	0.038	0.038	0.043	0.050	71	90	30-150	16	30	
Dibenz(a,h)anthracene	mg/kg	ND	0.038	0.038	0.030	0.029	78	75	30-143	4	30	
Fluoranthene	mg/kg	0.028	0.038	0.038	0.057	0.075	75	123	30-143	28	30	
Fluorene	mg/kg	ND	0.038	0.038	0.030	0.028	78	73	30-138	7	30	
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.038	0.038	0.035	0.038	66	73	30-150	7	30	
Naphthalene	mg/kg	ND	0.038	0.038	0.028	0.027	72	70	30-125	2	30	
Phenanthrene	mg/kg	ND	0.038	0.038	0.035	0.039	91	102	30-142	12	30	
Pyrene	mg/kg	0.024	0.038	0.038	0.051	0.065	72	108	30-149	24	30	
2-Fluorobiphenyl (S)	%						71	70	30-125			
p-Terphenyl-d14 (S)	%						71	68	30-125			

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## QUALIFIERS

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10490781

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

### ANALYTE QUALIFIERS

R1 RPD value was outside control limits.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10490781

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10490781001	SB-2_0-2	ASTM D2974	633153		
10490781002	SB-2_2-4	ASTM D2974	633153		
10490781001	SB-2_0-2	EPA 3550	631533	EPA 8270D by SIM	631710
10490781002	SB-2_2-4	EPA 3550	631533	EPA 8270D by SIM	631710
10490781001	SB-2_0-2	EPA 5035/5030B	632356	EPA 8260B	632409
10490781002	SB-2_2-4	EPA 5035/5030B	632356	EPA 8260B	632409
10490781003	Trip Blank	EPA 5035/5030B	632356	EPA 8260B	632409

### REPORT OF LABORATORY ANALYSIS

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**Sample Condition Upon Receipt**      **Client Name:** Barr Engineering      **Project #:** **WO#: 10490781**

**Courier:**       Fed Ex       UPS       USPS       Client  
 Pace       Speedee       Commercial       See Exceptions

**Tracking Number:** \_\_\_\_\_

**Custody Seal on Cooler/Box Present?**     Yes     No      **Seals Intact?**     Yes     No      **Biological Tissue Frozen?**     Yes     No     N/A

**Packing Material:**     Bubble Wrap     Bubble Bags     None     Other: \_\_\_\_\_      **Temp Blank?**     Yes     No

**Thermometer:**     T1(0461)     T2(1336)     T3(0459)  
 T4(0254)     T5(0489)      **Type of Ice:**     Wet     Blue     None     Dry     Melted

**Note: Each West Virginia Sample must have temp taken (no temp blanks)**

Temp should be above freezing to 6°C	<b>Cooler Temp Read w/temp blank:</b> <u>5.1</u> °C	<b>Average Corrected Temp (no temp blank only):</b> <input type="checkbox"/> See Exceptions
<b>Correction Factor:</b> <u>True</u>	<b>Cooler Temp Corrected w/temp blank:</b> <u>5.1</u> °C	<input type="checkbox"/> 1 Container

**USDA Regulated Soil:** (  N/A, water sample/Other: \_\_\_\_\_ )      **Date/Initials of Person Examining Contents:** MKZ 9-10-19

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)?     Yes     No      Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?     Yes     No

**If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.**

		COMMENTS:
Chain of Custody Present and Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	11. If no, write ID/ Date/Time on Container Below: <input type="checkbox"/> See Exception
Matrix: <input type="checkbox"/> Water <input checked="" type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other		
All containers needing acid/base preservation have been checked?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Sulfide, NaOH >12 Cyanide)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<input type="checkbox"/> NaOH <input type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Positive for Res. Chlorine? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> See Exception
		pH Paper Lot# <input type="checkbox"/>
		Res. Chlorine    0-6 Roll    0-6 Strip    0-14 Strip
Headspace in VOA Vials (greater than 6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> See Exception
Trip Blank Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Pace Trip Blank Lot # (if purchased): _____

**CLIENT NOTIFICATION/RESOLUTION**      **Field Data Required?**     Yes     No

Person Contacted: \_\_\_\_\_      Date/Time: \_\_\_\_\_

Comments/Resolution: \_\_\_\_\_

**Project Manager Review:** Amanda J. Albrecht      **Date:** 9/19/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office ( i.e. out of hold, incorrect preservative, out of temp, incorrect containers).



September 25, 2019

Terri Olson  
Barr Engineering Company  
4300 MarketPointe Drive  
Suite 200  
Minneapolis, MN 55435

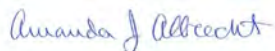
RE: Project: 49161427.16 100 102 Husky Post  
Pace Project No.: 10490851

Dear Terri Olson:

Enclosed are the analytical results for sample(s) received by the laboratory on September 10, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Amanda Albrecht  
amanda.albrecht@pacelabs.com  
(612)607-6382  
Project Manager

Enclosures

cc: BarrDM, Barr Engineering  
Accounts Payable, Barr Engineering



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10490851

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### Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485

A2LA Certification #: 2926.01

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

CNMI Saipan Certification #: MP0003

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605

Georgia Certification #: 959

Guam EPA Certification #: MN00064

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: 03086

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064

Maryland Certification #: 322

Massachusetts Certification #: M-MN064

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137

Minnesota Dept of Ag Certification #: via MN 027-053-137

Minnesota Petrofund Certification #: 1240

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081

New Jersey Certification #: MN002

New York Certification #: 11647

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification #: MN00064

South Carolina Certification #:74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Vermont Certification #: VT-027053137

Virginia Certification #: 460163

Washington Certification #: C486

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10490851

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10490851001	SB-1_0-2	Solid	09/10/19 09:30	09/10/19 18:00
10490851002	SB-1_2-4	Solid	09/10/19 09:45	09/10/19 18:00
10490851003	Trip Blank-2	Solid	09/10/19 00:00	09/10/19 18:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10490851

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10490851001	SB-1_0-2	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	DS2	10	PASI-M
10490851002	SB-1_2-4	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	DS2	10	PASI-M
10490851003	Trip Blank-2	EPA 8260B	DS2	10	PASI-M

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Sample Project No.: 10490851

Sample: **SB-1\_0-2** Lab ID: **10490851001** Collected: 09/10/19 09:30 Received: 09/10/19 18:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>23.0</b>	%	0.10	0.10	1		09/20/19 11:57		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	<b>0.0024</b>	mg/kg	0.0021	0.00062	1	09/11/19 13:59	09/12/19 18:17	90-12-0	
2-Methylnaphthalene	<b>0.0037</b>	mg/kg	0.0020	0.00061	1	09/11/19 13:59	09/12/19 18:17	91-57-6	
Acenaphthene	<b>&lt;0.00053</b>	mg/kg	0.0018	0.00053	1	09/11/19 13:59	09/12/19 18:17	83-32-9	
Acenaphthylene	<b>0.0014J</b>	mg/kg	0.0035	0.0010	1	09/11/19 13:59	09/12/19 18:17	208-96-8	
Anthracene	<b>&lt;0.00037</b>	mg/kg	0.0012	0.00037	1	09/11/19 13:59	09/12/19 18:17	120-12-7	
Benzo(a)anthracene	<b>0.0064</b>	mg/kg	0.0014	0.00043	1	09/11/19 13:59	09/12/19 18:17	56-55-3	
Benzo(a)pyrene	<b>0.0068</b>	mg/kg	0.0017	0.00051	1	09/11/19 13:59	09/12/19 18:17	50-32-8	
Benzo(b)fluoranthene	<b>0.0080</b>	mg/kg	0.00085	0.00025	1	09/11/19 13:59	09/12/19 18:17	205-99-2	
Benzo(g,h,i)perylene	<b>0.0068</b>	mg/kg	0.0012	0.00035	1	09/11/19 13:59	09/12/19 18:17	191-24-2	
Benzo(k)fluoranthene	<b>0.0037</b>	mg/kg	0.0011	0.00033	1	09/11/19 13:59	09/12/19 18:17	207-08-9	
Chrysene	<b>0.0087</b>	mg/kg	0.0017	0.00052	1	09/11/19 13:59	09/12/19 18:17	218-01-9	
Dibenz(a,h)anthracene	<b>&lt;0.00051</b>	mg/kg	0.0017	0.00051	1	09/11/19 13:59	09/12/19 18:17	53-70-3	
Fluoranthene	<b>0.0098</b>	mg/kg	0.0014	0.00043	1	09/11/19 13:59	09/12/19 18:17	206-44-0	
Fluorene	<b>&lt;0.00038</b>	mg/kg	0.0013	0.00038	1	09/11/19 13:59	09/12/19 18:17	86-73-7	
Indeno(1,2,3-cd)pyrene	<b>0.0043</b>	mg/kg	0.00088	0.00026	1	09/11/19 13:59	09/12/19 18:17	193-39-5	
Naphthalene	<b>0.0014J</b>	mg/kg	0.0020	0.00059	1	09/11/19 13:59	09/12/19 18:17	91-20-3	
Phenanthrene	<b>0.0055</b>	mg/kg	0.0011	0.00032	1	09/11/19 13:59	09/12/19 18:17	85-01-8	
Pyrene	<b>0.012</b>	mg/kg	0.0014	0.00041	1	09/11/19 13:59	09/12/19 18:17	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	55	%	30-125		1	09/11/19 13:59	09/12/19 18:17	321-60-8	
p-Terphenyl-d14 (S)	54	%	30-125		1	09/11/19 13:59	09/12/19 18:17	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;0.0037</b>	mg/kg	0.012	0.0037	1	09/19/19 09:11	09/19/19 18:38	71-43-2	
Ethylbenzene	<b>&lt;0.0036</b>	mg/kg	0.012	0.0036	1	09/19/19 09:11	09/19/19 18:38	100-41-4	
Methyl-tert-butyl ether	<b>&lt;0.0079</b>	mg/kg	0.026	0.0079	1	09/19/19 09:11	09/19/19 18:38	1634-04-4	
Toluene	<b>&lt;0.016</b>	mg/kg	0.054	0.016	1	09/19/19 09:11	09/19/19 18:38	108-88-3	
1,2,4-Trimethylbenzene	<b>&lt;0.013</b>	mg/kg	0.044	0.013	1	09/19/19 09:11	09/19/19 18:38	95-63-6	
1,3,5-Trimethylbenzene	<b>&lt;0.011</b>	mg/kg	0.035	0.011	1	09/19/19 09:11	09/19/19 18:38	108-67-8	
Xylene (Total)	<b>&lt;0.015</b>	mg/kg	0.051	0.015	1	09/19/19 09:11	09/19/19 18:38	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	101	%	75-125		1	09/19/19 09:11	09/19/19 18:38	17060-07-0	
Toluene-d8 (S)	97	%	75-125		1	09/19/19 09:11	09/19/19 18:38	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125		1	09/19/19 09:11	09/19/19 18:38	460-00-4	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10490851

Sample: **SB-1\_2-4** Lab ID: **10490851002** Collected: 09/10/19 09:45 Received: 09/10/19 18:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>20.6</b>	%	0.10	0.10	1		09/20/19 11:57		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	<b>0.0028</b>	mg/kg	0.0020	0.00060	1	09/11/19 13:59	09/12/19 18:39	90-12-0	
2-Methylnaphthalene	<b>0.0045</b>	mg/kg	0.0020	0.00059	1	09/11/19 13:59	09/12/19 18:39	91-57-6	
Acenaphthene	<b>&lt;0.00051</b>	mg/kg	0.0017	0.00051	1	09/11/19 13:59	09/12/19 18:39	83-32-9	
Acenaphthylene	<b>0.0028J</b>	mg/kg	0.0033	0.0010	1	09/11/19 13:59	09/12/19 18:39	208-96-8	
Anthracene	<b>&lt;0.00036</b>	mg/kg	0.0012	0.00036	1	09/11/19 13:59	09/12/19 18:39	120-12-7	
Benzo(a)anthracene	<b>0.017</b>	mg/kg	0.0014	0.00041	1	09/11/19 13:59	09/12/19 18:39	56-55-3	
Benzo(a)pyrene	<b>0.018</b>	mg/kg	0.0016	0.00049	1	09/11/19 13:59	09/12/19 18:39	50-32-8	
Benzo(b)fluoranthene	<b>0.022</b>	mg/kg	0.00082	0.00025	1	09/11/19 13:59	09/12/19 18:39	205-99-2	
Benzo(g,h,i)perylene	<b>0.016</b>	mg/kg	0.0011	0.00034	1	09/11/19 13:59	09/12/19 18:39	191-24-2	
Benzo(k)fluoranthene	<b>0.010</b>	mg/kg	0.0011	0.00032	1	09/11/19 13:59	09/12/19 18:39	207-08-9	
Chrysene	<b>0.022</b>	mg/kg	0.0017	0.00050	1	09/11/19 13:59	09/12/19 18:39	218-01-9	
Dibenz(a,h)anthracene	<b>0.0037</b>	mg/kg	0.0017	0.00050	1	09/11/19 13:59	09/12/19 18:39	53-70-3	
Fluoranthene	<b>0.030</b>	mg/kg	0.0014	0.00041	1	09/11/19 13:59	09/12/19 18:39	206-44-0	
Fluorene	<b>0.0019</b>	mg/kg	0.0012	0.00037	1	09/11/19 13:59	09/12/19 18:39	86-73-7	
Indeno(1,2,3-cd)pyrene	<b>0.010</b>	mg/kg	0.00085	0.00025	1	09/11/19 13:59	09/12/19 18:39	193-39-5	
Naphthalene	<b>0.0024</b>	mg/kg	0.0019	0.00057	1	09/11/19 13:59	09/12/19 18:39	91-20-3	
Phenanthrene	<b>0.013</b>	mg/kg	0.0010	0.00031	1	09/11/19 13:59	09/12/19 18:39	85-01-8	
Pyrene	<b>0.032</b>	mg/kg	0.0013	0.00040	1	09/11/19 13:59	09/12/19 18:39	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	60	%	30-125		1	09/11/19 13:59	09/12/19 18:39	321-60-8	
p-Terphenyl-d14 (S)	60	%	30-125		1	09/11/19 13:59	09/12/19 18:39	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;0.0035</b>	mg/kg	0.012	0.0035	1	09/19/19 09:11	09/19/19 18:57	71-43-2	
Ethylbenzene	<b>&lt;0.0034</b>	mg/kg	0.011	0.0034	1	09/19/19 09:11	09/19/19 18:57	100-41-4	
Methyl-tert-butyl ether	<b>&lt;0.0075</b>	mg/kg	0.025	0.0075	1	09/19/19 09:11	09/19/19 18:57	1634-04-4	
Toluene	<b>&lt;0.015</b>	mg/kg	0.051	0.015	1	09/19/19 09:11	09/19/19 18:57	108-88-3	
1,2,4-Trimethylbenzene	<b>&lt;0.013</b>	mg/kg	0.042	0.013	1	09/19/19 09:11	09/19/19 18:57	95-63-6	
1,3,5-Trimethylbenzene	<b>&lt;0.010</b>	mg/kg	0.033	0.010	1	09/19/19 09:11	09/19/19 18:57	108-67-8	
Xylene (Total)	<b>&lt;0.015</b>	mg/kg	0.049	0.015	1	09/19/19 09:11	09/19/19 18:57	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	102	%	75-125		1	09/19/19 09:11	09/19/19 18:57	17060-07-0	
Toluene-d8 (S)	96	%	75-125		1	09/19/19 09:11	09/19/19 18:57	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125		1	09/19/19 09:11	09/19/19 18:57	460-00-4	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10490851

**Sample: Trip Blank-2**      **Lab ID: 10490851003**      Collected: 09/10/19 00:00      Received: 09/10/19 18:00      Matrix: Solid

**Results reported on a "wet-weight" basis**

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0028	mg/kg	0.0094	0.0028	1	09/19/19 09:11	09/19/19 17:08	71-43-2	
Ethylbenzene	<0.0027	mg/kg	0.0091	0.0027	1	09/19/19 09:11	09/19/19 17:08	100-41-4	
Methyl-tert-butyl ether	<0.0060	mg/kg	0.020	0.0060	1	09/19/19 09:11	09/19/19 17:08	1634-04-4	
Toluene	<0.012	mg/kg	0.041	0.012	1	09/19/19 09:11	09/19/19 17:08	108-88-3	
1,2,4-Trimethylbenzene	<0.010	mg/kg	0.033	0.010	1	09/19/19 09:11	09/19/19 17:08	95-63-6	
1,3,5-Trimethylbenzene	<0.0080	mg/kg	0.027	0.0080	1	09/19/19 09:11	09/19/19 17:08	108-67-8	
Xylene (Total)	<0.012	mg/kg	0.039	0.012	1	09/19/19 09:11	09/19/19 17:08	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	103	%	75-125		1	09/19/19 09:11	09/19/19 17:08	17060-07-0	
Toluene-d8 (S)	97	%	75-125		1	09/19/19 09:11	09/19/19 17:08	2037-26-5	
4-Bromofluorobenzene (S)	96	%	75-125		1	09/19/19 09:11	09/19/19 17:08	460-00-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10490851

QC Batch: 633102 Analysis Method: EPA 8260B  
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV UST  
Associated Lab Samples: 10490851001, 10490851002, 10490851003

METHOD BLANK: 3413437 Matrix: Solid

Associated Lab Samples: 10490851001, 10490851002, 10490851003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	<0.010	0.033	09/19/19 16:50	
1,3,5-Trimethylbenzene	mg/kg	<0.0080	0.027	09/19/19 16:50	
Benzene	mg/kg	<0.0028	0.0094	09/19/19 16:50	
Ethylbenzene	mg/kg	<0.0027	0.0091	09/19/19 16:50	
Methyl-tert-butyl ether	mg/kg	<0.0060	0.020	09/19/19 16:50	
Toluene	mg/kg	<0.012	0.041	09/19/19 16:50	
Xylene (Total)	mg/kg	<0.012	0.039	09/19/19 16:50	
1,2-Dichloroethane-d4 (S)	%	99	75-125	09/19/19 16:50	
4-Bromofluorobenzene (S)	%	97	75-125	09/19/19 16:50	
Toluene-d8 (S)	%	99	75-125	09/19/19 16:50	

LABORATORY CONTROL SAMPLE: 3413438

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	1	0.95	95	51-126	
1,3,5-Trimethylbenzene	mg/kg	1	0.91	91	52-127	
Benzene	mg/kg	1	0.86	86	48-125	
Ethylbenzene	mg/kg	1	0.90	90	51-125	
Methyl-tert-butyl ether	mg/kg	1	0.89	89	53-125	
Toluene	mg/kg	1	0.89	89	51-125	
Xylene (Total)	mg/kg	3	2.8	92	52-125	
1,2-Dichloroethane-d4 (S)	%			100	75-125	
4-Bromofluorobenzene (S)	%			101	75-125	
Toluene-d8 (S)	%			101	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3413439 3413440

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10491022001 Result	Spike Conc.	Spike Conc.	Result						
1,2,4-Trimethylbenzene	mg/kg	ND	1.4	1.4	1.3	1.3	93	96	65-145	1	30
1,3,5-Trimethylbenzene	mg/kg	ND	1.4	1.4	1.3	1.3	90	93	66-148	2	30
Benzene	mg/kg	ND	1.4	1.4	1.2	1.2	85	90	63-136	0	30
Ethylbenzene	mg/kg	ND	1.4	1.4	1.3	1.3	90	92	64-142	3	30
Methyl-tert-butyl ether	mg/kg	ND	1.4	1.4	1.3	1.3	92	93	69-134	4	30
Toluene	mg/kg	ND	1.4	1.4	1.2	1.2	87	90	61-141	2	30
Xylene (Total)	mg/kg	ND	4.3	4	3.9	3.8	90	94	67-145	2	30
1,2-Dichloroethane-d4 (S)	%						99	100	75-125		
4-Bromofluorobenzene (S)	%						101	100	75-125		

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10490851

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3413439 3413440												
Parameter	Units	10491022001 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
Toluene-d8 (S)	%						100	101	75-125			

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post  
Pace Project No.: 10490851

QC Batch: 631533 Analysis Method: EPA 8270D by SIM  
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid PAH by SIM MSSV  
Associated Lab Samples: 10490851001, 10490851002

METHOD BLANK: 3405217 Matrix: Solid  
Associated Lab Samples: 10490851001, 10490851002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	mg/kg	<0.00048	0.0016	09/12/19 10:18	
2-Methylnaphthalene	mg/kg	<0.00047	0.0016	09/12/19 10:18	
Acenaphthene	mg/kg	<0.00041	0.0014	09/12/19 10:18	
Acenaphthylene	mg/kg	<0.00080	0.0027	09/12/19 10:18	
Anthracene	mg/kg	<0.00028	0.00095	09/12/19 10:18	
Benzo(a)anthracene	mg/kg	<0.00033	0.0011	09/12/19 10:18	
Benzo(a)pyrene	mg/kg	<0.00039	0.0013	09/12/19 10:18	
Benzo(b)fluoranthene	mg/kg	<0.00020	0.00065	09/12/19 10:18	
Benzo(g,h,i)perylene	mg/kg	<0.00027	0.00091	09/12/19 10:18	
Benzo(k)fluoranthene	mg/kg	<0.00025	0.00084	09/12/19 10:18	
Chrysene	mg/kg	<0.00040	0.0013	09/12/19 10:18	
Dibenz(a,h)anthracene	mg/kg	<0.00040	0.0013	09/12/19 10:18	
Fluoranthene	mg/kg	<0.00033	0.0011	09/12/19 10:18	
Fluorene	mg/kg	<0.00030	0.00098	09/12/19 10:18	
Indeno(1,2,3-cd)pyrene	mg/kg	<0.00020	0.00068	09/12/19 10:18	
Naphthalene	mg/kg	<0.00046	0.0015	09/12/19 10:18	
Phenanthrene	mg/kg	<0.00025	0.00083	09/12/19 10:18	
Pyrene	mg/kg	<0.00032	0.0011	09/12/19 10:18	
2-Fluorobiphenyl (S)	%	70	30-125	09/12/19 10:18	
p-Terphenyl-d14 (S)	%	78	30-125	09/12/19 10:18	

LABORATORY CONTROL SAMPLE: 3405218

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	mg/kg	0.033	0.026	77	33-125	
2-Methylnaphthalene	mg/kg	0.033	0.026	77	49-125	
Acenaphthene	mg/kg	0.033	0.025	76	46-125	
Acenaphthylene	mg/kg	0.033	0.027	82	44-125	
Anthracene	mg/kg	0.033	0.029	86	62-125	
Benzo(a)anthracene	mg/kg	0.033	0.030	89	53-125	
Benzo(a)pyrene	mg/kg	0.033	0.029	86	62-125	
Benzo(b)fluoranthene	mg/kg	0.033	0.030	89	51-125	
Benzo(g,h,i)perylene	mg/kg	0.033	0.028	85	58-125	
Benzo(k)fluoranthene	mg/kg	0.033	0.026	79	59-125	
Chrysene	mg/kg	0.033	0.027	80	59-125	
Dibenz(a,h)anthracene	mg/kg	0.033	0.028	85	60-125	
Fluoranthene	mg/kg	0.033	0.029	88	67-125	
Fluorene	mg/kg	0.033	0.026	79	51-125	
Indeno(1,2,3-cd)pyrene	mg/kg	0.033	0.028	84	59-125	
Naphthalene	mg/kg	0.033	0.027	80	47-125	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10490851

LABORATORY CONTROL SAMPLE: 3405218

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenanthrene	mg/kg	0.033	0.027	80	61-125	
Pyrene	mg/kg	0.033	0.029	87	52-125	
2-Fluorobiphenyl (S)	%			70	30-125	
p-Terphenyl-d14 (S)	%			77	30-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3405219 3405220

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		10490489001 Result	Spike Conc.	Spike Conc.	Result							Result
1-Methylnaphthalene	mg/kg	ND	0.038	0.038	0.029	0.027	74	70	30-125	6	30	
2-Methylnaphthalene	mg/kg	ND	0.038	0.038	0.029	0.027	74	69	30-125	8	30	
Acenaphthene	mg/kg	ND	0.038	0.038	0.030	0.027	78	71	30-125	9	30	
Acenaphthylene	mg/kg	ND	0.038	0.038	0.032	0.029	83	76	30-125	8	30	
Anthracene	mg/kg	ND	0.038	0.038	0.032	0.030	82	78	30-131	5	30	
Benzo(a)anthracene	mg/kg	ND	0.038	0.038	0.042	0.047	109	123	30-126	12	30	
Benzo(a)pyrene	mg/kg	0.015	0.038	0.038	0.043	0.048	74	87	30-150	11	30	
Benzo(b)fluoranthene	mg/kg	0.022	0.038	0.038	0.045	0.062	59	104	30-150	32	30	R1
Benzo(g,h,i)perylene	mg/kg	0.013	0.038	0.038	0.039	0.043	67	77	30-150	10	30	
Benzo(k)fluoranthene	mg/kg	ND	0.038	0.038	0.041	0.039	107	101	30-150	5	30	
Chrysene	mg/kg	0.016	0.038	0.038	0.043	0.050	71	90	30-150	16	30	
Dibenz(a,h)anthracene	mg/kg	ND	0.038	0.038	0.030	0.029	78	75	30-143	4	30	
Fluoranthene	mg/kg	0.028	0.038	0.038	0.057	0.075	75	123	30-143	28	30	
Fluorene	mg/kg	ND	0.038	0.038	0.030	0.028	78	73	30-138	7	30	
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.038	0.038	0.035	0.038	66	73	30-150	7	30	
Naphthalene	mg/kg	ND	0.038	0.038	0.028	0.027	72	70	30-125	2	30	
Phenanthrene	mg/kg	ND	0.038	0.038	0.035	0.039	91	102	30-142	12	30	
Pyrene	mg/kg	0.024	0.038	0.038	0.051	0.065	72	108	30-149	24	30	
2-Fluorobiphenyl (S)	%						71	70	30-125			
p-Terphenyl-d14 (S)	%						71	68	30-125			

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## QUALIFIERS

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10490851

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

### ANALYTE QUALIFIERS

R1 RPD value was outside control limits.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10490851

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10490851001	SB-1_0-2	ASTM D2974	633477		
10490851002	SB-1_2-4	ASTM D2974	633477		
10490851001	SB-1_0-2	EPA 3550	631533	EPA 8270D by SIM	631710
10490851002	SB-1_2-4	EPA 3550	631533	EPA 8270D by SIM	631710
10490851001	SB-1_0-2	EPA 5035/5030B	633102	EPA 8260B	633244
10490851002	SB-1_2-4	EPA 5035/5030B	633102	EPA 8260B	633244
10490851003	Trip Blank-2	EPA 5035/5030B	633102	EPA 8260B	633244

### REPORT OF LABORATORY ANALYSIS

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# Barr Engineering Co. Chain of Custody

Ann Arbor  Duluth  Hibbing  Minneapolis  Bismarck  Grand Rapids  Jefferson City  Salt Lake City

Sample Origination State:  
 KS  MO  UT  
 MI  ND  WI  
 MN  SD Other: \_\_\_\_\_

Analysis Requested		Water	Soil	% Solids
Perform	Total Number Of Containers			
MS	MSD			
Y	Y			
MS	MSD			
Y	Y			

COC Number: **56852**  
 COC 1 of 1

**Matrix Code:**  
 GW = Groundwater  
 SW = Surface Water  
 WW = Waste Water  
 DW = Drinking Water  
 S = Soil/Solid  
 SD = Sediment  
 O = Other

**Preservative Code:**  
 A = None  
 B = HCl  
 C = HNO<sub>3</sub>  
 D = H<sub>2</sub>SO<sub>4</sub>  
 E = NaOH  
 F = MeOH  
 G = NaHSO<sub>4</sub>  
 H = Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>  
 I = Ascorbic Acid  
 J = NH<sub>4</sub>Cl  
 K = Zn Acetate  
 O = Other

REPORT TO	INVOICE TO
Company: <u>Barr Engineering</u>	Company: <u>Barr</u>
Address: <u>325 S. Lake Ave Duluth, MN</u>	Address: _____
Name: <u>Lynette Carney</u>	Name: _____
email: <u>lcarney@barr.com</u>	email: _____
Copy to: <u>datamgt@barr.com</u>	P.O. _____
Project Name: <u>Hurry Post Fire Investigation</u>	Barr Project No: <u>4916427.16 100 102</u>

Location	Sample Depth			Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix Code	Perform	Total Number Of Containers	Water	Soil	% Solids	Preservative Code	Field Filtered Y/N
	Start	Stop	Unit (m./ft. or in.)										
1. <u>SB-1</u>	<u>0</u>	<u>2</u>	<u>ft</u>	<u>09/10/19</u>	<u>0930</u>	<u>S</u>	<u>N</u>	<u>5</u>				<u>A</u>	
2. <u>SB-1</u>	<u>2</u>	<u>4</u>	<u>ft</u>	<u>↓</u>	<u>0945</u>	<u>S</u>	<u>N</u>	<u>5</u>				<u>A</u>	
3. <u>Trip Blank - 2</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>09/10/19</u>	<u>-</u>	<u>-</u>	<u>N</u>	<u>1</u>				<u>A</u>	
4.													
5.													
6.													
7.													
8.													
9.													
10.													

**WO#: 10490851**



BARR USE ONLY		Relinquished by:	On Ice?	Date	Time	Received by:	Date	Time
Sampled by:	<u>kmjjs</u>	<u>[Signature]</u>	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<u>9/10/19</u>	<u>1227</u>	<u>[Signature]</u>	<u>9/10/19</u>	<u>1227 8.6</u>
Barr Proj. Manager:	<u>LMC</u>	<u>[Signature]</u>	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	<u>9/10/19</u>	<u>1800</u>	<u>[Signature]</u>	<u>9/10/19</u>	<u>1800</u>
Barr DQ Manager:	<u>TAD</u>	Samples Shipped VIA: <input type="checkbox"/> Courier <input type="checkbox"/> Federal Express <input type="checkbox"/> Sampler <input type="checkbox"/> Other: _____			Air Bill Number: _____		<b>Requested Due Date:</b>	
Lab Name:	<u>Pace</u>	Lab WO: _____			Temperature on Receipt (°C): <u>0.5</u>		<input checked="" type="checkbox"/> Standard Turn Around Time <input type="checkbox"/> Rush _____ (mm/dd/yyyy)	
Lab Location:	<u>Minneapolis</u>	Custody Seal Intact? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> None						

Distribution - White-Original: Accompanies Shipment to Laboratory; Yellow Copy: Include in Field Documents; Pink Copy: Send to Data Management Administrators.

H:\R\G\T\FORMS\Chain of Custody Form 2015 RLG Rev. 01/02/18

**Sample Condition Upon Receipt**

Client Name: Barr

Project #: **WO# : 10490851**

**PM: AA1 Due Date: 09/25/19**

**CLIENT: BARR**

Courier:  FedEx  UPS  USPS  Client  
 Pace  Speedee  Commercial  See Exceptions

Tracking Number: \_\_\_\_\_  
 Custody Seal on Cooler/Box Present?  Yes  No      Seals Intact?  Yes  No      Biological Tissue Frozen?  Yes  No  N/A  
 Packing Material:  Bubble Wrap  Bubble Bags  None  Other: \_\_\_\_\_      Temp Blank?  Yes  No  
 Thermometer:  T1(0461)  T2(1336)  T3(0459)      Type of Ice:  Wet  Blue  None  Dry  Melted  
 T4(0254)  T5(0489)

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C	Cooler Temp Read w/temp blank: <u>0.4</u> °C	Average Corrected Temp (no temp blank only): <input type="checkbox"/> See Exceptions <input type="checkbox"/> 1 Container
Correction Factor: <u>+0.1</u>	Cooler Temp Corrected w/temp blank: <u>0.5</u> °C	

USDA Regulated Soil: (  N/A, water sample/Other: \_\_\_\_\_ )      Date/Initials of Person Examining Contents: SS 9/11/19  
 Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)?  Yes  No      Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?  Yes  No  
 If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

		COMMENTS:
Chain of Custody Present and Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC?	<input type="checkbox"/> Yes <input type="checkbox"/> No	11. If no, write ID/ Date/Time on Container Below: <input type="checkbox"/> See Exception
Matrix: <input checked="" type="checkbox"/> Water <input type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other		
All containers needing acid/base preservation have been checked?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Sulfide, NaOH >12 Cyanide)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<input type="checkbox"/> NaOH <input type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> Zinc Acetate
Exceptions: <input checked="" type="checkbox"/> VOA Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Positive for Res. Chlorine? <input type="checkbox"/> Yes <input type="checkbox"/> No      pH Paper Lot#
	<u>AAI</u> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Res Chlorine      0-6 Roll      0-6 Strip      0-14 Strip
	<u>9/11/19</u>	
Headspace in VOA Vials (greater than 6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> See Exception
Trip Blank Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Pace Trip Blank Lot # (if purchased): <u>NA</u>

**CLIENT NOTIFICATION/RESOLUTION**

Field Data Required?  Yes  No

Person Contacted: \_\_\_\_\_  
 Comments/Resolution: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Project Manager Review: Amanda J Albrecht

Date: 9/11/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office ( i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: SJ (2)

October 16, 2019

Terri Olson  
Barr Engineering Company  
4300 MarketPointe Drive  
Suite 200  
Minneapolis, MN 55435

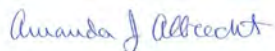
RE: Project: 49161427.16 100 102 Husky Post  
Pace Project No.: 10493478

Dear Terri Olson:

Enclosed are the analytical results for sample(s) received by the laboratory on September 30, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Amanda Albrecht  
amanda.albrecht@pacelabs.com  
(612)607-6382  
Project Manager

Enclosures

cc: BarrDM, Barr Engineering  
Accounts Payable, Barr Engineering



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10493478

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### Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485

A2LA Certification #: 2926.01

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

CNMI Saipan Certification #: MP0003

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605

Georgia Certification #: 959

Guam EPA Certification #: MN00064

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: 03086

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064

Maryland Certification #: 322

Massachusetts Certification #: M-MN064

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137

Minnesota Dept of Ag Certification #: via MN 027-053-137

Minnesota Petrofund Certification #: 1240

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081

New Jersey Certification #: MN002

New York Certification #: 11647

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification #: MN00064

South Carolina Certification #:74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Vermont Certification #: VT-027053137

Virginia Certification #: 460163

Washington Certification #: C486

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

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## REPORT OF LABORATORY ANALYSIS

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### SAMPLE SUMMARY

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10493478

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10493478001	SB-5_0-1.5	Solid	09/28/19 08:15	09/30/19 18:30
10493478002	SB-5_3-4	Solid	09/28/19 08:20	09/30/19 18:30
10493478003	SB-3_0-1.5	Solid	09/28/19 09:00	09/30/19 18:30
10493478004	SB-3_3-4	Solid	09/28/19 09:05	09/30/19 18:30
10493478005	SB-4_0-1.5	Solid	09/28/19 09:25	09/30/19 18:30
10493478006	SB-4_3-4	Solid	09/28/19 09:30	09/30/19 18:30
10493478007	SB-6_0-1.5	Solid	09/28/19 09:55	09/30/19 18:30
10493478008	SB-6_3-4	Solid	09/28/19 10:00	09/30/19 18:30
10493478009	SB-7_0-1.5	Solid	09/28/19 10:25	09/30/19 18:30
10493478010	SB-7_3-4	Solid	09/28/19 10:30	09/30/19 18:30
10493478011	SB-11_0-1.5	Solid	09/28/19 10:50	09/30/19 18:30
10493478012	SB-11_3-4	Solid	09/28/19 10:55	09/30/19 18:30
10493478013	SB-12_0-1.5	Solid	09/28/19 11:40	09/30/19 18:30
10493478014	SB-12_3-4	Solid	09/28/19 11:55	09/30/19 18:30
10493478015	SB-13_0-1.5	Solid	09/28/19 12:30	09/30/19 18:30
10493478016	SB-13_3-4	Solid	09/28/19 12:35	09/30/19 18:30
10493478017	SB-10_0-1.5	Solid	09/28/19 13:20	09/30/19 18:30
10493478018	SB-10_3-4	Solid	09/28/19 13:25	09/30/19 18:30
10493478019	Trip Blank_3	Solid	09/28/19 00:00	09/30/19 18:30

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10493478

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10493478001	SB-5_0-1.5	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10493478002	SB-5_3-4	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10493478003	SB-3_0-1.5	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10493478004	SB-3_3-4	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10493478005	SB-4_0-1.5	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10493478006	SB-4_3-4	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10493478007	SB-6_0-1.5	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10493478008	SB-6_3-4	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10493478009	SB-7_0-1.5	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10493478010	SB-7_3-4	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10493478011	SB-11_0-1.5	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10493478012	SB-11_3-4	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10493478013	SB-12_0-1.5	ASTM D2974	JDL	1	PASI-M

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10493478

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10493478014	SB-12_3-4	EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
10493478015	SB-13_0-1.5	EPA 8260B	CD2	10	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
10493478016	SB-13_3-4	EPA 8260B	CD2	10	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
10493478017	SB-10_0-1.5	EPA 8260B	CD2	10	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
10493478018	SB-10_3-4	EPA 8260B	CD2	10	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
10493478019	Trip Blank_3	EPA 8260B	CD2	10	PASI-M
		EPA 8260B	CD2	10	PASI-M

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10493478

Sample: **SB-5\_0-1.5** Lab ID: **10493478001** Collected: 09/28/19 08:15 Received: 09/30/19 18:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	9.5	%	0.10	0.10	1		10/10/19 17:17		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	0.0066	mg/kg	0.0018	0.00053	1	10/04/19 08:34	10/11/19 17:10	90-12-0	
2-Methylnaphthalene	0.011	mg/kg	0.0017	0.00052	1	10/04/19 08:34	10/11/19 17:10	91-57-6	R1
Acenaphthene	0.023	mg/kg	0.0015	0.00045	1	10/04/19 08:34	10/11/19 17:10	83-32-9	M1,R1
Acenaphthylene	0.0069	mg/kg	0.0029	0.00088	1	10/04/19 08:34	10/11/19 17:10	208-96-8	
Anthracene	0.060	mg/kg	0.0010	0.00031	1	10/04/19 08:34	10/11/19 17:10	120-12-7	M1,R1
Benzo(a)anthracene	0.15	mg/kg	0.0012	0.00036	1	10/04/19 08:34	10/11/19 17:10	56-55-3	M1,R1
Benzo(a)pyrene	0.15	mg/kg	0.0014	0.00043	1	10/04/19 08:34	10/11/19 17:10	50-32-8	M1,R1
Benzo(b)fluoranthene	0.18	mg/kg	0.00072	0.00022	1	10/04/19 08:34	10/11/19 17:10	205-99-2	M1,R1
Benzo(g,h,i)perylene	0.14	mg/kg	0.0010	0.00030	1	10/04/19 08:34	10/11/19 17:10	191-24-2	M1,R1
Benzo(k)fluoranthene	0.090	mg/kg	0.00092	0.00028	1	10/04/19 08:34	10/11/19 17:10	207-08-9	M1,R1
Chrysene	0.18	mg/kg	0.0015	0.00044	1	10/04/19 08:34	10/11/19 17:10	218-01-9	M1,R1
Dibenz(a,h)anthracene	0.030	mg/kg	0.0015	0.00044	1	10/04/19 08:34	10/11/19 17:10	53-70-3	M1,R1
Fluoranthene	0.30	mg/kg	0.0012	0.00036	1	10/04/19 08:34	10/11/19 17:10	206-44-0	M1,R1
Fluorene	0.026	mg/kg	0.0011	0.00033	1	10/04/19 08:34	10/11/19 17:10	86-73-7	M1,R1
Indeno(1,2,3-cd)pyrene	0.084	mg/kg	0.00074	0.00022	1	10/04/19 08:34	10/11/19 17:10	193-39-5	M1,R1
Naphthalene	0.022	mg/kg	0.0017	0.00051	1	10/04/19 08:34	10/11/19 17:10	91-20-3	M1,R1
Phenanthrene	0.21	mg/kg	0.00092	0.00028	1	10/04/19 08:34	10/11/19 17:10	85-01-8	M1,R1
Pyrene	0.23	mg/kg	0.0012	0.00035	1	10/04/19 08:34	10/11/19 17:10	129-00-0	M1,R1
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	68	%	30-125		1	10/04/19 08:34	10/11/19 17:10	321-60-8	
p-Terphenyl-d14 (S)	68	%	30-125		1	10/04/19 08:34	10/11/19 17:10	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0032	mg/kg	0.011	0.0032	1	10/08/19 13:24	10/08/19 19:31	71-43-2	
Ethylbenzene	<0.0031	mg/kg	0.010	0.0031	1	10/08/19 13:24	10/08/19 19:31	100-41-4	
Methyl-tert-butyl ether	<0.0067	mg/kg	0.022	0.0067	1	10/08/19 13:24	10/08/19 19:31	1634-04-4	
Toluene	0.023J	mg/kg	0.046	0.014	1	10/08/19 13:24	10/08/19 19:31	108-88-3	
1,2,4-Trimethylbenzene	<0.011	mg/kg	0.038	0.011	1	10/08/19 13:24	10/08/19 19:31	95-63-6	
1,3,5-Trimethylbenzene	<0.0090	mg/kg	0.030	0.0090	1	10/08/19 13:24	10/08/19 19:31	108-67-8	
Xylene (Total)	<0.013	mg/kg	0.044	0.013	1	10/08/19 13:24	10/08/19 19:31	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	99	%	75-125		1	10/08/19 13:24	10/08/19 19:31	17060-07-0	
Toluene-d8 (S)	97	%	75-125		1	10/08/19 13:24	10/08/19 19:31	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125		1	10/08/19 13:24	10/08/19 19:31	460-00-4	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10493478

Sample: **SB-5\_3-4** Lab ID: **10493478002** Collected: 09/28/19 08:20 Received: 09/30/19 18:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>20.0</b>	%	0.10	0.10	1		10/10/19 17:17		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	<b>0.0063</b>	mg/kg	0.0020	0.00060	1	10/04/19 08:34	10/05/19 14:43	90-12-0	
2-Methylnaphthalene	<b>0.0078</b>	mg/kg	0.0020	0.00059	1	10/04/19 08:34	10/05/19 14:43	91-57-6	
Acenaphthene	<b>0.00087J</b>	mg/kg	0.0017	0.00051	1	10/04/19 08:34	10/05/19 14:43	83-32-9	
Acenaphthylene	<b>&lt;0.0010</b>	mg/kg	0.0033	0.0010	1	10/04/19 08:34	10/05/19 14:43	208-96-8	
Anthracene	<b>&lt;0.00035</b>	mg/kg	0.0012	0.00035	1	10/04/19 08:34	10/05/19 14:43	120-12-7	
Benzo(a)anthracene	<b>0.0012J</b>	mg/kg	0.0014	0.00041	1	10/04/19 08:34	10/05/19 14:43	56-55-3	
Benzo(a)pyrene	<b>0.00094J</b>	mg/kg	0.0016	0.00049	1	10/04/19 08:34	10/05/19 14:43	50-32-8	
Benzo(b)fluoranthene	<b>0.0015</b>	mg/kg	0.00081	0.00024	1	10/04/19 08:34	10/05/19 14:43	205-99-2	
Benzo(g,h,i)perylene	<b>&lt;0.00034</b>	mg/kg	0.0011	0.00034	1	10/04/19 08:34	10/05/19 14:43	191-24-2	
Benzo(k)fluoranthene	<b>0.00067J</b>	mg/kg	0.0010	0.00031	1	10/04/19 08:34	10/05/19 14:43	207-08-9	
Chrysene	<b>0.0014J</b>	mg/kg	0.0017	0.00050	1	10/04/19 08:34	10/05/19 14:43	218-01-9	
Dibenz(a,h)anthracene	<b>&lt;0.00049</b>	mg/kg	0.0016	0.00049	1	10/04/19 08:34	10/05/19 14:43	53-70-3	
Fluoranthene	<b>0.0025</b>	mg/kg	0.0014	0.00041	1	10/04/19 08:34	10/05/19 14:43	206-44-0	
Fluorene	<b>0.0011J</b>	mg/kg	0.0012	0.00037	1	10/04/19 08:34	10/05/19 14:43	86-73-7	
Indeno(1,2,3-cd)pyrene	<b>&lt;0.00025</b>	mg/kg	0.00084	0.00025	1	10/04/19 08:34	10/05/19 14:43	193-39-5	
Naphthalene	<b>0.0086</b>	mg/kg	0.0019	0.00057	1	10/04/19 08:34	10/05/19 14:43	91-20-3	
Phenanthrene	<b>0.0032</b>	mg/kg	0.0010	0.00031	1	10/04/19 08:34	10/05/19 14:43	85-01-8	
Pyrene	<b>0.0024</b>	mg/kg	0.0013	0.00040	1	10/04/19 08:34	10/05/19 14:43	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	73	%	30-125		1	10/04/19 08:34	10/05/19 14:43	321-60-8	
p-Terphenyl-d14 (S)	68	%	30-125		1	10/04/19 08:34	10/05/19 14:43	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<b>1.0</b>	mg/kg	0.012	0.0035	1	10/08/19 13:24	10/08/19 19:49	71-43-2	
Ethylbenzene	<b>3.9</b>	mg/kg	0.011	0.0034	1	10/08/19 13:24	10/08/19 19:49	100-41-4	
Methyl-tert-butyl ether	<b>&lt;0.0074</b>	mg/kg	0.025	0.0074	1	10/08/19 13:24	10/08/19 19:49	1634-04-4	
Toluene	<b>&lt;0.015</b>	mg/kg	0.051	0.015	1	10/08/19 13:24	10/08/19 19:49	108-88-3	
1,2,4-Trimethylbenzene	<b>13.8</b>	mg/kg	0.042	0.013	1	10/08/19 13:24	10/08/19 19:49	95-63-6	
1,3,5-Trimethylbenzene	<b>3.7</b>	mg/kg	0.033	0.010	1	10/08/19 13:24	10/08/19 19:49	108-67-8	
Xylene (Total)	<b>14.5</b>	mg/kg	0.048	0.015	1	10/08/19 13:24	10/08/19 19:49	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	92	%	75-125		1	10/08/19 13:24	10/08/19 19:49	17060-07-0	
Toluene-d8 (S)	109	%	75-125		1	10/08/19 13:24	10/08/19 19:49	2037-26-5	
4-Bromofluorobenzene (S)	139	%	75-125		1	10/08/19 13:24	10/08/19 19:49	460-00-4	S2

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10493478

Sample: **SB-3\_0-1.5** Lab ID: **10493478003** Collected: 09/28/19 09:00 Received: 09/30/19 18:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	15.9	%	0.10	0.10	1		10/10/19 17:17		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	0.0063	mg/kg	0.0019	0.00057	1	10/04/19 08:34	10/11/19 18:15	90-12-0	
2-Methylnaphthalene	0.0095	mg/kg	0.0019	0.00056	1	10/04/19 08:34	10/11/19 18:15	91-57-6	
Acenaphthene	0.082	mg/kg	0.0016	0.00048	1	10/04/19 08:34	10/11/19 18:15	83-32-9	
Acenaphthylene	0.0020J	mg/kg	0.0032	0.00095	1	10/04/19 08:34	10/11/19 18:15	208-96-8	
Anthracene	0.30	mg/kg	0.0011	0.00034	1	10/04/19 08:34	10/11/19 18:15	120-12-7	
Benzo(a)anthracene	1.2	mg/kg	0.013	0.0039	10	10/04/19 08:34	10/13/19 18:23	56-55-3	
Benzo(a)pyrene	0.81	mg/kg	0.016	0.0047	10	10/04/19 08:34	10/13/19 18:23	50-32-8	
Benzo(b)fluoranthene	1.1	mg/kg	0.0077	0.0023	10	10/04/19 08:34	10/13/19 18:23	205-99-2	
Benzo(g,h,i)perylene	0.37	mg/kg	0.0011	0.00032	1	10/04/19 08:34	10/11/19 18:15	191-24-2	
Benzo(k)fluoranthene	0.53	mg/kg	0.0099	0.0030	10	10/04/19 08:34	10/13/19 18:23	207-08-9	
Chrysene	1.0	mg/kg	0.016	0.0047	10	10/04/19 08:34	10/13/19 18:23	218-01-9	
Dibenz(a,h)anthracene	0.19	mg/kg	0.0016	0.00047	1	10/04/19 08:34	10/11/19 18:15	53-70-3	
Fluoranthene	2.1	mg/kg	0.013	0.0039	10	10/04/19 08:34	10/13/19 18:23	206-44-0	
Fluorene	0.069	mg/kg	0.0012	0.00035	1	10/04/19 08:34	10/11/19 18:15	86-73-7	
Indeno(1,2,3-cd)pyrene	0.33	mg/kg	0.00080	0.00024	1	10/04/19 08:34	10/11/19 18:15	193-39-5	
Naphthalene	0.0077	mg/kg	0.0018	0.00054	1	10/04/19 08:34	10/11/19 18:15	91-20-3	
Phenanthrene	0.98	mg/kg	0.0099	0.0030	10	10/04/19 08:34	10/13/19 18:23	85-01-8	
Pyrene	1.7	mg/kg	0.013	0.0038	10	10/04/19 08:34	10/13/19 18:23	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	75	%	30-125		1	10/04/19 08:34	10/11/19 18:15	321-60-8	
p-Terphenyl-d14 (S)	73	%	30-125		1	10/04/19 08:34	10/11/19 18:15	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0033	mg/kg	0.011	0.0033	1	10/08/19 13:24	10/10/19 14:18	71-43-2	
Ethylbenzene	<0.0032	mg/kg	0.011	0.0032	1	10/08/19 13:24	10/10/19 14:18	100-41-4	
Methyl-tert-butyl ether	<0.0069	mg/kg	0.023	0.0069	1	10/08/19 13:24	10/10/19 14:18	1634-04-4	
Toluene	<0.014	mg/kg	0.047	0.014	1	10/08/19 13:24	10/10/19 14:18	108-88-3	
1,2,4-Trimethylbenzene	<0.012	mg/kg	0.039	0.012	1	10/08/19 13:24	10/10/19 14:18	95-63-6	
1,3,5-Trimethylbenzene	<0.0092	mg/kg	0.031	0.0092	1	10/08/19 13:24	10/10/19 14:18	108-67-8	
Xylene (Total)	<0.013	mg/kg	0.045	0.013	1	10/08/19 13:24	10/10/19 14:18	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	107	%	75-125		1	10/08/19 13:24	10/10/19 14:18	17060-07-0	
Toluene-d8 (S)	99	%	75-125		1	10/08/19 13:24	10/10/19 14:18	2037-26-5	
4-Bromofluorobenzene (S)	98	%	75-125		1	10/08/19 13:24	10/10/19 14:18	460-00-4	

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10493478

Sample: **SB-3\_3-4** Lab ID: **10493478004** Collected: 09/28/19 09:05 Received: 09/30/19 18:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b>									
Analytical Method: ASTM D2974									
Percent Moisture	<b>28.9</b>	%	0.10	0.10	1		10/10/19 17:17		
<b>8270D MSSV PAH by SIM</b>									
Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	<b>0.0038</b>	mg/kg	0.0022	0.00067	1	10/04/19 08:34	10/05/19 15:08	90-12-0	
2-Methylnaphthalene	<b>0.0041</b>	mg/kg	0.0022	0.00066	1	10/04/19 08:34	10/05/19 15:08	91-57-6	
Acenaphthene	<b>0.0014J</b>	mg/kg	0.0019	0.00057	1	10/04/19 08:34	10/05/19 15:08	83-32-9	
Acenaphthylene	<b>&lt;0.0011</b>	mg/kg	0.0038	0.0011	1	10/04/19 08:34	10/05/19 15:08	208-96-8	
Anthracene	<b>0.0036</b>	mg/kg	0.0013	0.00040	1	10/04/19 08:34	10/05/19 15:08	120-12-7	
Benzo(a)anthracene	<b>0.0096</b>	mg/kg	0.0015	0.00046	1	10/04/19 08:34	10/05/19 15:08	56-55-3	
Benzo(a)pyrene	<b>0.0099</b>	mg/kg	0.0018	0.00055	1	10/04/19 08:34	10/05/19 15:08	50-32-8	
Benzo(b)fluoranthene	<b>0.013</b>	mg/kg	0.00092	0.00028	1	10/04/19 08:34	10/05/19 15:08	205-99-2	
Benzo(g,h,i)perylene	<b>0.0064</b>	mg/kg	0.0013	0.00038	1	10/04/19 08:34	10/05/19 15:08	191-24-2	
Benzo(k)fluoranthene	<b>0.0061</b>	mg/kg	0.0012	0.00035	1	10/04/19 08:34	10/05/19 15:08	207-08-9	
Chrysene	<b>0.012</b>	mg/kg	0.0019	0.00056	1	10/04/19 08:34	10/05/19 15:08	218-01-9	
Dibenz(a,h)anthracene	<b>0.0021</b>	mg/kg	0.0019	0.00056	1	10/04/19 08:34	10/05/19 15:08	53-70-3	
Fluoranthene	<b>0.024</b>	mg/kg	0.0015	0.00046	1	10/04/19 08:34	10/05/19 15:08	206-44-0	
Fluorene	<b>0.0019</b>	mg/kg	0.0014	0.00041	1	10/04/19 08:34	10/05/19 15:08	86-73-7	
Indeno(1,2,3-cd)pyrene	<b>0.0057</b>	mg/kg	0.00095	0.00029	1	10/04/19 08:34	10/05/19 15:08	193-39-5	
Naphthalene	<b>0.0030</b>	mg/kg	0.0021	0.00064	1	10/04/19 08:34	10/05/19 15:08	91-20-3	
Phenanthrene	<b>0.018</b>	mg/kg	0.0012	0.00035	1	10/04/19 08:34	10/05/19 15:08	85-01-8	
Pyrene	<b>0.018</b>	mg/kg	0.0015	0.00045	1	10/04/19 08:34	10/05/19 15:08	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	71	%	30-125		1	10/04/19 08:34	10/05/19 15:08	321-60-8	
p-Terphenyl-d14 (S)	58	%	30-125		1	10/04/19 08:34	10/05/19 15:08	1718-51-0	
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;0.0039</b>	mg/kg	0.013	0.0039	1	10/09/19 09:27	10/09/19 14:59	71-43-2	
Ethylbenzene	<b>&lt;0.0038</b>	mg/kg	0.013	0.0038	1	10/09/19 09:27	10/09/19 14:59	100-41-4	
Methyl-tert-butyl ether	<b>&lt;0.0082</b>	mg/kg	0.027	0.0082	1	10/09/19 09:27	10/09/19 14:59	1634-04-4	
Toluene	<b>&lt;0.017</b>	mg/kg	0.056	0.017	1	10/09/19 09:27	10/09/19 14:59	108-88-3	
1,2,4-Trimethylbenzene	<b>&lt;0.014</b>	mg/kg	0.046	0.014	1	10/09/19 09:27	10/09/19 14:59	95-63-6	
1,3,5-Trimethylbenzene	<b>&lt;0.011</b>	mg/kg	0.037	0.011	1	10/09/19 09:27	10/09/19 14:59	108-67-8	
Xylene (Total)	<b>&lt;0.016</b>	mg/kg	0.053	0.016	1	10/09/19 09:27	10/09/19 14:59	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	100	%	75-125		1	10/09/19 09:27	10/09/19 14:59	17060-07-0	
Toluene-d8 (S)	102	%	75-125		1	10/09/19 09:27	10/09/19 14:59	2037-26-5	
4-Bromofluorobenzene (S)	102	%	75-125		1	10/09/19 09:27	10/09/19 14:59	460-00-4	

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10493478

Sample: **SB-4\_0-1.5** Lab ID: **10493478005** Collected: 09/28/19 09:25 Received: 09/30/19 18:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>33.9</b>	%	0.10	0.10	1		10/10/19 17:17		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	<b>0.0025</b>	mg/kg	0.0024	0.00073	1	10/04/19 08:34	10/11/19 18:37	90-12-0	
2-Methylnaphthalene	<b>0.0030</b>	mg/kg	0.0024	0.00071	1	10/04/19 08:34	10/11/19 18:37	91-57-6	
Acenaphthene	<b>0.0010J</b>	mg/kg	0.0021	0.00062	1	10/04/19 08:34	10/11/19 18:37	83-32-9	
Acenaphthylene	<b>&lt;0.0012</b>	mg/kg	0.0040	0.0012	1	10/04/19 08:34	10/11/19 18:37	208-96-8	
Anthracene	<b>0.0022</b>	mg/kg	0.0014	0.00043	1	10/04/19 08:34	10/11/19 18:37	120-12-7	
Benzo(a)anthracene	<b>0.0091</b>	mg/kg	0.0017	0.00050	1	10/04/19 08:34	10/11/19 18:37	56-55-3	
Benzo(a)pyrene	<b>0.012</b>	mg/kg	0.0020	0.00060	1	10/04/19 08:34	10/11/19 18:37	50-32-8	
Benzo(b)fluoranthene	<b>0.016</b>	mg/kg	0.00099	0.00030	1	10/04/19 08:34	10/11/19 18:37	205-99-2	
Benzo(g,h,i)perylene	<b>0.018</b>	mg/kg	0.0014	0.00041	1	10/04/19 08:34	10/11/19 18:37	191-24-2	
Benzo(k)fluoranthene	<b>0.0064</b>	mg/kg	0.0013	0.00038	1	10/04/19 08:34	10/11/19 18:37	207-08-9	
Chrysene	<b>0.018</b>	mg/kg	0.0020	0.00061	1	10/04/19 08:34	10/11/19 18:37	218-01-9	
Dibenz(a,h)anthracene	<b>&lt;0.00060</b>	mg/kg	0.0020	0.00060	1	10/04/19 08:34	10/11/19 18:37	53-70-3	
Fluoranthene	<b>0.015</b>	mg/kg	0.0017	0.00050	1	10/04/19 08:34	10/11/19 18:37	206-44-0	
Fluorene	<b>0.0018</b>	mg/kg	0.0015	0.00045	1	10/04/19 08:34	10/11/19 18:37	86-73-7	
Indeno(1,2,3-cd)pyrene	<b>0.0084</b>	mg/kg	0.0010	0.00031	1	10/04/19 08:34	10/11/19 18:37	193-39-5	
Naphthalene	<b>0.0018J</b>	mg/kg	0.0023	0.00069	1	10/04/19 08:34	10/11/19 18:37	91-20-3	
Phenanthrene	<b>0.011</b>	mg/kg	0.0013	0.00038	1	10/04/19 08:34	10/11/19 18:37	85-01-8	
Pyrene	<b>0.015</b>	mg/kg	0.0016	0.00048	1	10/04/19 08:34	10/11/19 18:37	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	74	%	30-125		1	10/04/19 08:34	10/11/19 18:37	321-60-8	
p-Terphenyl-d14 (S)	66	%	30-125		1	10/04/19 08:34	10/11/19 18:37	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;0.0043</b>	mg/kg	0.014	0.0043	1	10/09/19 09:27	10/09/19 15:18	71-43-2	
Ethylbenzene	<b>&lt;0.0042</b>	mg/kg	0.014	0.0042	1	10/09/19 09:27	10/09/19 15:18	100-41-4	
Methyl-tert-butyl ether	<b>&lt;0.0091</b>	mg/kg	0.030	0.0091	1	10/09/19 09:27	10/09/19 15:18	1634-04-4	
Toluene	<b>&lt;0.019</b>	mg/kg	0.062	0.019	1	10/09/19 09:27	10/09/19 15:18	108-88-3	
1,2,4-Trimethylbenzene	<b>&lt;0.015</b>	mg/kg	0.051	0.015	1	10/09/19 09:27	10/09/19 15:18	95-63-6	
1,3,5-Trimethylbenzene	<b>&lt;0.012</b>	mg/kg	0.041	0.012	1	10/09/19 09:27	10/09/19 15:18	108-67-8	
Xylene (Total)	<b>&lt;0.018</b>	mg/kg	0.059	0.018	1	10/09/19 09:27	10/09/19 15:18	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	99	%	75-125		1	10/09/19 09:27	10/09/19 15:18	17060-07-0	
Toluene-d8 (S)	102	%	75-125		1	10/09/19 09:27	10/09/19 15:18	2037-26-5	
4-Bromofluorobenzene (S)	104	%	75-125		1	10/09/19 09:27	10/09/19 15:18	460-00-4	

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10493478

Sample: **SB-4\_3-4** Lab ID: **10493478006** Collected: 09/28/19 09:30 Received: 09/30/19 18:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>22.8</b>	%	0.10	0.10	1		10/10/19 17:18		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	<0.00062	mg/kg	0.0021	0.00062	1	10/04/19 08:34	10/05/19 15:33	90-12-0	
2-Methylnaphthalene	<0.00061	mg/kg	0.0020	0.00061	1	10/04/19 08:34	10/05/19 15:33	91-57-6	
Acenaphthene	<0.00053	mg/kg	0.0018	0.00053	1	10/04/19 08:34	10/05/19 15:33	83-32-9	
Acenaphthylene	<0.0010	mg/kg	0.0035	0.0010	1	10/04/19 08:34	10/05/19 15:33	208-96-8	
Anthracene	<0.00037	mg/kg	0.0012	0.00037	1	10/04/19 08:34	10/05/19 15:33	120-12-7	
Benzo(a)anthracene	<0.00043	mg/kg	0.0014	0.00043	1	10/04/19 08:34	10/05/19 15:33	56-55-3	
Benzo(a)pyrene	<0.00051	mg/kg	0.0017	0.00051	1	10/04/19 08:34	10/05/19 15:33	50-32-8	
Benzo(b)fluoranthene	<0.00025	mg/kg	0.00084	0.00025	1	10/04/19 08:34	10/05/19 15:33	205-99-2	
Benzo(g,h,i)perylene	<0.00035	mg/kg	0.0012	0.00035	1	10/04/19 08:34	10/05/19 15:33	191-24-2	
Benzo(k)fluoranthene	<0.00033	mg/kg	0.0011	0.00033	1	10/04/19 08:34	10/05/19 15:33	207-08-9	
Chrysene	<0.00052	mg/kg	0.0017	0.00052	1	10/04/19 08:34	10/05/19 15:33	218-01-9	
Dibenz(a,h)anthracene	<0.00051	mg/kg	0.0017	0.00051	1	10/04/19 08:34	10/05/19 15:33	53-70-3	
Fluoranthene	<0.00043	mg/kg	0.0014	0.00043	1	10/04/19 08:34	10/05/19 15:33	206-44-0	
Fluorene	<0.00038	mg/kg	0.0013	0.00038	1	10/04/19 08:34	10/05/19 15:33	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.00026	mg/kg	0.00087	0.00026	1	10/04/19 08:34	10/05/19 15:33	193-39-5	
Naphthalene	<0.00059	mg/kg	0.0020	0.00059	1	10/04/19 08:34	10/05/19 15:33	91-20-3	
Phenanthrene	<0.00032	mg/kg	0.0011	0.00032	1	10/04/19 08:34	10/05/19 15:33	85-01-8	
Pyrene	<b>0.00053J</b>	mg/kg	0.0014	0.00041	1	10/04/19 08:34	10/05/19 15:33	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	83	%	30-125		1	10/04/19 08:34	10/05/19 15:33	321-60-8	
p-Terphenyl-d14 (S)	82	%	30-125		1	10/04/19 08:34	10/05/19 15:33	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0035	mg/kg	0.012	0.0035	1	10/09/19 09:27	10/09/19 15:37	71-43-2	
Ethylbenzene	<0.0034	mg/kg	0.011	0.0034	1	10/09/19 09:27	10/09/19 15:37	100-41-4	
Methyl-tert-butyl ether	<0.0074	mg/kg	0.025	0.0074	1	10/09/19 09:27	10/09/19 15:37	1634-04-4	
Toluene	<0.015	mg/kg	0.051	0.015	1	10/09/19 09:27	10/09/19 15:37	108-88-3	
1,2,4-Trimethylbenzene	<0.012	mg/kg	0.041	0.012	1	10/09/19 09:27	10/09/19 15:37	95-63-6	
1,3,5-Trimethylbenzene	<0.0099	mg/kg	0.033	0.0099	1	10/09/19 09:27	10/09/19 15:37	108-67-8	
Xylene (Total)	<0.014	mg/kg	0.048	0.014	1	10/09/19 09:27	10/09/19 15:37	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	101	%	75-125		1	10/09/19 09:27	10/09/19 15:37	17060-07-0	
Toluene-d8 (S)	101	%	75-125		1	10/09/19 09:27	10/09/19 15:37	2037-26-5	
4-Bromofluorobenzene (S)	105	%	75-125		1	10/09/19 09:27	10/09/19 15:37	460-00-4	

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10493478

Sample: **SB-6\_0-1.5** Lab ID: **10493478007** Collected: 09/28/19 09:55 Received: 09/30/19 18:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>14.0</b>	%	0.10	0.10	1		10/10/19 17:18		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	<b>0.00063J</b>	mg/kg	0.0019	0.00056	1	10/04/19 08:34	10/11/19 18:59	90-12-0	
2-Methylnaphthalene	<b>0.0010J</b>	mg/kg	0.0018	0.00055	1	10/04/19 08:34	10/11/19 18:59	91-57-6	
Acenaphthene	<b>&lt;0.00047</b>	mg/kg	0.0016	0.00047	1	10/04/19 08:34	10/11/19 18:59	83-32-9	
Acenaphthylene	<b>&lt;0.00093</b>	mg/kg	0.0031	0.00093	1	10/04/19 08:34	10/11/19 18:59	208-96-8	
Anthracene	<b>&lt;0.00033</b>	mg/kg	0.0011	0.00033	1	10/04/19 08:34	10/11/19 18:59	120-12-7	
Benzo(a)anthracene	<b>0.0020</b>	mg/kg	0.0013	0.00038	1	10/04/19 08:34	10/11/19 18:59	56-55-3	
Benzo(a)pyrene	<b>0.0032</b>	mg/kg	0.0015	0.00046	1	10/04/19 08:34	10/11/19 18:59	50-32-8	
Benzo(b)fluoranthene	<b>0.0055</b>	mg/kg	0.00076	0.00023	1	10/04/19 08:34	10/11/19 18:59	205-99-2	
Benzo(g,h,i)perylene	<b>0.0067</b>	mg/kg	0.0011	0.00032	1	10/04/19 08:34	10/11/19 18:59	191-24-2	
Benzo(k)fluoranthene	<b>0.0013</b>	mg/kg	0.00097	0.00029	1	10/04/19 08:34	10/11/19 18:59	207-08-9	
Chrysene	<b>0.0041</b>	mg/kg	0.0015	0.00046	1	10/04/19 08:34	10/11/19 18:59	218-01-9	
Dibenz(a,h)anthracene	<b>&lt;0.00046</b>	mg/kg	0.0015	0.00046	1	10/04/19 08:34	10/11/19 18:59	53-70-3	
Fluoranthene	<b>0.0024</b>	mg/kg	0.0013	0.00038	1	10/04/19 08:34	10/11/19 18:59	206-44-0	
Fluorene	<b>&lt;0.00034</b>	mg/kg	0.0011	0.00034	1	10/04/19 08:34	10/11/19 18:59	86-73-7	
Indeno(1,2,3-cd)pyrene	<b>0.0029</b>	mg/kg	0.00078	0.00024	1	10/04/19 08:34	10/11/19 18:59	193-39-5	
Naphthalene	<b>&lt;0.00053</b>	mg/kg	0.0018	0.00053	1	10/04/19 08:34	10/11/19 18:59	91-20-3	
Phenanthrene	<b>0.0028</b>	mg/kg	0.00097	0.00029	1	10/04/19 08:34	10/11/19 18:59	85-01-8	
Pyrene	<b>0.0028</b>	mg/kg	0.0012	0.00037	1	10/04/19 08:34	10/11/19 18:59	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	67	%	30-125		1	10/04/19 08:34	10/11/19 18:59	321-60-8	
p-Terphenyl-d14 (S)	64	%	30-125		1	10/04/19 08:34	10/11/19 18:59	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;0.0031</b>	mg/kg	0.010	0.0031	1	10/09/19 09:27	10/09/19 15:56	71-43-2	
Ethylbenzene	<b>&lt;0.0030</b>	mg/kg	0.010	0.0030	1	10/09/19 09:27	10/09/19 15:56	100-41-4	
Methyl-tert-butyl ether	<b>&lt;0.0066</b>	mg/kg	0.022	0.0066	1	10/09/19 09:27	10/09/19 15:56	1634-04-4	
Toluene	<b>&lt;0.014</b>	mg/kg	0.045	0.014	1	10/09/19 09:27	10/09/19 15:56	108-88-3	
1,2,4-Trimethylbenzene	<b>&lt;0.011</b>	mg/kg	0.037	0.011	1	10/09/19 09:27	10/09/19 15:56	95-63-6	
1,3,5-Trimethylbenzene	<b>&lt;0.0089</b>	mg/kg	0.030	0.0089	1	10/09/19 09:27	10/09/19 15:56	108-67-8	
Xylene (Total)	<b>&lt;0.013</b>	mg/kg	0.043	0.013	1	10/09/19 09:27	10/09/19 15:56	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	100	%	75-125		1	10/09/19 09:27	10/09/19 15:56	17060-07-0	
Toluene-d8 (S)	99	%	75-125		1	10/09/19 09:27	10/09/19 15:56	2037-26-5	
4-Bromofluorobenzene (S)	104	%	75-125		1	10/09/19 09:27	10/09/19 15:56	460-00-4	

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10493478

Sample: **SB-6\_3-4** Lab ID: **10493478008** Collected: 09/28/19 10:00 Received: 09/30/19 18:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>26.0</b>	%	0.10	0.10	1		10/10/19 17:18		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	<0.00065	mg/kg	0.0022	0.00065	1	10/04/19 08:34	10/05/19 15:57	90-12-0	
2-Methylnaphthalene	<0.00064	mg/kg	0.0021	0.00064	1	10/04/19 08:34	10/05/19 15:57	91-57-6	
Acenaphthene	<0.00055	mg/kg	0.0018	0.00055	1	10/04/19 08:34	10/05/19 15:57	83-32-9	
Acenaphthylene	<0.0011	mg/kg	0.0036	0.0011	1	10/04/19 08:34	10/05/19 15:57	208-96-8	
Anthracene	<0.00038	mg/kg	0.0013	0.00038	1	10/04/19 08:34	10/05/19 15:57	120-12-7	
Benzo(a)anthracene	<b>0.00053J</b>	mg/kg	0.0015	0.00045	1	10/04/19 08:34	10/05/19 15:57	56-55-3	
Benzo(a)pyrene	<0.00053	mg/kg	0.0018	0.00053	1	10/04/19 08:34	10/05/19 15:57	50-32-8	
Benzo(b)fluoranthene	<0.00027	mg/kg	0.00088	0.00027	1	10/04/19 08:34	10/05/19 15:57	205-99-2	
Benzo(g,h,i)perylene	<0.00037	mg/kg	0.0012	0.00037	1	10/04/19 08:34	10/05/19 15:57	191-24-2	
Benzo(k)fluoranthene	<0.00034	mg/kg	0.0011	0.00034	1	10/04/19 08:34	10/05/19 15:57	207-08-9	
Chrysene	<0.00054	mg/kg	0.0018	0.00054	1	10/04/19 08:34	10/05/19 15:57	218-01-9	
Dibenz(a,h)anthracene	<0.00054	mg/kg	0.0018	0.00054	1	10/04/19 08:34	10/05/19 15:57	53-70-3	
Fluoranthene	<0.00044	mg/kg	0.0015	0.00044	1	10/04/19 08:34	10/05/19 15:57	206-44-0	
Fluorene	<0.00040	mg/kg	0.0013	0.00040	1	10/04/19 08:34	10/05/19 15:57	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.00027	mg/kg	0.00091	0.00027	1	10/04/19 08:34	10/05/19 15:57	193-39-5	
Naphthalene	<0.00062	mg/kg	0.0021	0.00062	1	10/04/19 08:34	10/05/19 15:57	91-20-3	
Phenanthrene	<0.00034	mg/kg	0.0011	0.00034	1	10/04/19 08:34	10/05/19 15:57	85-01-8	
Pyrene	<b>0.00050J</b>	mg/kg	0.0014	0.00043	1	10/04/19 08:34	10/05/19 15:57	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	84	%	30-125		1	10/04/19 08:34	10/05/19 15:57	321-60-8	
p-Terphenyl-d14 (S)	71	%	30-125		1	10/04/19 08:34	10/05/19 15:57	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0038	mg/kg	0.013	0.0038	1	10/09/19 09:27	10/09/19 16:15	71-43-2	
Ethylbenzene	<0.0037	mg/kg	0.012	0.0037	1	10/09/19 09:27	10/09/19 16:15	100-41-4	
Methyl-tert-butyl ether	<0.0080	mg/kg	0.027	0.0080	1	10/09/19 09:27	10/09/19 16:15	1634-04-4	
Toluene	<0.016	mg/kg	0.055	0.016	1	10/09/19 09:27	10/09/19 16:15	108-88-3	
1,2,4-Trimethylbenzene	<0.013	mg/kg	0.045	0.013	1	10/09/19 09:27	10/09/19 16:15	95-63-6	
1,3,5-Trimethylbenzene	<0.011	mg/kg	0.036	0.011	1	10/09/19 09:27	10/09/19 16:15	108-67-8	
Xylene (Total)	<0.016	mg/kg	0.052	0.016	1	10/09/19 09:27	10/09/19 16:15	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	100	%	75-125		1	10/09/19 09:27	10/09/19 16:15	17060-07-0	
Toluene-d8 (S)	101	%	75-125		1	10/09/19 09:27	10/09/19 16:15	2037-26-5	
4-Bromofluorobenzene (S)	103	%	75-125		1	10/09/19 09:27	10/09/19 16:15	460-00-4	

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10493478

Sample: **SB-7\_0-1.5** Lab ID: **10493478009** Collected: 09/28/19 10:25 Received: 09/30/19 18:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	17.1	%	0.10	0.10	1		10/10/19 17:18		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	0.0032	mg/kg	0.0019	0.00058	1	10/04/19 08:34	10/11/19 19:21	90-12-0	
2-Methylnaphthalene	0.0044	mg/kg	0.0019	0.00057	1	10/04/19 08:34	10/11/19 19:21	91-57-6	
Acenaphthene	0.0011J	mg/kg	0.0016	0.00049	1	10/04/19 08:34	10/11/19 19:21	83-32-9	
Acenaphthylene	0.0038	mg/kg	0.0032	0.00097	1	10/04/19 08:34	10/11/19 19:21	208-96-8	
Anthracene	0.0088	mg/kg	0.0011	0.00034	1	10/04/19 08:34	10/11/19 19:21	120-12-7	
Benzo(a)anthracene	0.015	mg/kg	0.0013	0.00040	1	10/04/19 08:34	10/11/19 19:21	56-55-3	
Benzo(a)pyrene	0.027	mg/kg	0.0016	0.00047	1	10/04/19 08:34	10/11/19 19:21	50-32-8	
Benzo(b)fluoranthene	0.031	mg/kg	0.00079	0.00024	1	10/04/19 08:34	10/11/19 19:21	205-99-2	
Benzo(g,h,i)perylene	0.034	mg/kg	0.0011	0.00033	1	10/04/19 08:34	10/11/19 19:21	191-24-2	
Benzo(k)fluoranthene	0.014	mg/kg	0.0010	0.00030	1	10/04/19 08:34	10/11/19 19:21	207-08-9	
Chrysene	0.040	mg/kg	0.0016	0.00048	1	10/04/19 08:34	10/11/19 19:21	218-01-9	
Dibenz(a,h)anthracene	<0.00048	mg/kg	0.0016	0.00048	1	10/04/19 08:34	10/11/19 19:21	53-70-3	
Fluoranthene	0.013	mg/kg	0.0013	0.00040	1	10/04/19 08:34	10/11/19 19:21	206-44-0	
Fluorene	0.0033	mg/kg	0.0012	0.00036	1	10/04/19 08:34	10/11/19 19:21	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.00024	mg/kg	0.00081	0.00024	1	10/04/19 08:34	10/11/19 19:21	193-39-5	
Naphthalene	0.0018J	mg/kg	0.0018	0.00055	1	10/04/19 08:34	10/11/19 19:21	91-20-3	
Phenanthrene	0.014	mg/kg	0.0010	0.00030	1	10/04/19 08:34	10/11/19 19:21	85-01-8	
Pyrene	0.035	mg/kg	0.0013	0.00039	1	10/04/19 08:34	10/11/19 19:21	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	68	%	30-125		1	10/04/19 08:34	10/11/19 19:21	321-60-8	
p-Terphenyl-d14 (S)	64	%	30-125		1	10/04/19 08:34	10/11/19 19:21	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0033	mg/kg	0.011	0.0033	1	10/09/19 09:27	10/09/19 16:34	71-43-2	
Ethylbenzene	<0.0032	mg/kg	0.011	0.0032	1	10/09/19 09:27	10/09/19 16:34	100-41-4	
Methyl-tert-butyl ether	<0.0069	mg/kg	0.023	0.0069	1	10/09/19 09:27	10/09/19 16:34	1634-04-4	
Toluene	0.62	mg/kg	0.047	0.014	1	10/09/19 09:27	10/09/19 16:34	108-88-3	
1,2,4-Trimethylbenzene	<0.012	mg/kg	0.039	0.012	1	10/09/19 09:27	10/09/19 16:34	95-63-6	
1,3,5-Trimethylbenzene	<0.0093	mg/kg	0.031	0.0093	1	10/09/19 09:27	10/09/19 16:34	108-67-8	
Xylene (Total)	<0.013	mg/kg	0.045	0.013	1	10/09/19 09:27	10/09/19 16:34	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	100	%	75-125		1	10/09/19 09:27	10/09/19 16:34	17060-07-0	
Toluene-d8 (S)	99	%	75-125		1	10/09/19 09:27	10/09/19 16:34	2037-26-5	
4-Bromofluorobenzene (S)	101	%	75-125		1	10/09/19 09:27	10/09/19 16:34	460-00-4	

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10493478

Sample: **SB-7\_3-4** Lab ID: **10493478010** Collected: 09/28/19 10:30 Received: 09/30/19 18:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	23.4	%	0.10	0.10	1		10/10/19 17:18		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	<0.00063	mg/kg	0.0021	0.00063	1	10/04/19 08:34	10/05/19 16:22	90-12-0	
2-Methylnaphthalene	<0.00062	mg/kg	0.0020	0.00062	1	10/04/19 08:34	10/05/19 16:22	91-57-6	
Acenaphthene	<0.00053	mg/kg	0.0018	0.00053	1	10/04/19 08:34	10/05/19 16:22	83-32-9	
Acenaphthylene	<0.0010	mg/kg	0.0035	0.0010	1	10/04/19 08:34	10/05/19 16:22	208-96-8	
Anthracene	<0.00037	mg/kg	0.0012	0.00037	1	10/04/19 08:34	10/05/19 16:22	120-12-7	
Benzo(a)anthracene	0.00054J	mg/kg	0.0014	0.00043	1	10/04/19 08:34	10/05/19 16:22	56-55-3	
Benzo(a)pyrene	0.0010J	mg/kg	0.0017	0.00051	1	10/04/19 08:34	10/05/19 16:22	50-32-8	
Benzo(b)fluoranthene	0.0015	mg/kg	0.00085	0.00026	1	10/04/19 08:34	10/05/19 16:22	205-99-2	
Benzo(g,h,i)perylene	<0.00035	mg/kg	0.0012	0.00035	1	10/04/19 08:34	10/05/19 16:22	191-24-2	
Benzo(k)fluoranthene	<0.00033	mg/kg	0.0011	0.00033	1	10/04/19 08:34	10/05/19 16:22	207-08-9	
Chrysene	<0.00052	mg/kg	0.0017	0.00052	1	10/04/19 08:34	10/05/19 16:22	218-01-9	
Dibenz(a,h)anthracene	<0.00052	mg/kg	0.0017	0.00052	1	10/04/19 08:34	10/05/19 16:22	53-70-3	
Fluoranthene	0.00086J	mg/kg	0.0014	0.00043	1	10/04/19 08:34	10/05/19 16:22	206-44-0	
Fluorene	<0.00038	mg/kg	0.0013	0.00038	1	10/04/19 08:34	10/05/19 16:22	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.00026	mg/kg	0.00088	0.00026	1	10/04/19 08:34	10/05/19 16:22	193-39-5	
Naphthalene	<0.00060	mg/kg	0.0020	0.00060	1	10/04/19 08:34	10/05/19 16:22	91-20-3	
Phenanthrene	<0.00033	mg/kg	0.0011	0.00033	1	10/04/19 08:34	10/05/19 16:22	85-01-8	
Pyrene	0.0014	mg/kg	0.0014	0.00042	1	10/04/19 08:34	10/05/19 16:22	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	78	%	30-125		1	10/04/19 08:34	10/05/19 16:22	321-60-8	
p-Terphenyl-d14 (S)	67	%	30-125		1	10/04/19 08:34	10/05/19 16:22	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0036	mg/kg	0.012	0.0036	1	10/09/19 09:27	10/09/19 16:53	71-43-2	
Ethylbenzene	<0.0035	mg/kg	0.012	0.0035	1	10/09/19 09:27	10/09/19 16:53	100-41-4	
Methyl-tert-butyl ether	<0.0077	mg/kg	0.026	0.0077	1	10/09/19 09:27	10/09/19 16:53	1634-04-4	
Toluene	<0.016	mg/kg	0.052	0.016	1	10/09/19 09:27	10/09/19 16:53	108-88-3	
1,2,4-Trimethylbenzene	<0.013	mg/kg	0.043	0.013	1	10/09/19 09:27	10/09/19 16:53	95-63-6	
1,3,5-Trimethylbenzene	<0.010	mg/kg	0.034	0.010	1	10/09/19 09:27	10/09/19 16:53	108-67-8	
Xylene (Total)	<0.015	mg/kg	0.050	0.015	1	10/09/19 09:27	10/09/19 16:53	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	99	%	75-125		1	10/09/19 09:27	10/09/19 16:53	17060-07-0	
Toluene-d8 (S)	99	%	75-125		1	10/09/19 09:27	10/09/19 16:53	2037-26-5	
4-Bromofluorobenzene (S)	101	%	75-125		1	10/09/19 09:27	10/09/19 16:53	460-00-4	

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10493478

Sample: **SB-11\_0-1.5** Lab ID: **10493478011** Collected: 09/28/19 10:50 Received: 09/30/19 18:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	5.3	%	0.10	0.10	1		10/10/19 17:18		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	<0.00051	mg/kg	0.0017	0.00051	1	10/04/19 08:34	10/05/19 16:47	90-12-0	
2-Methylnaphthalene	<0.00050	mg/kg	0.0017	0.00050	1	10/04/19 08:34	10/05/19 16:47	91-57-6	
Acenaphthene	<0.00043	mg/kg	0.0014	0.00043	1	10/04/19 08:34	10/05/19 16:47	83-32-9	
Acenaphthylene	<0.00085	mg/kg	0.0028	0.00085	1	10/04/19 08:34	10/05/19 16:47	208-96-8	
Anthracene	<0.00030	mg/kg	0.0010	0.00030	1	10/04/19 08:34	10/05/19 16:47	120-12-7	
Benzo(a)anthracene	<0.00035	mg/kg	0.0012	0.00035	1	10/04/19 08:34	10/05/19 16:47	56-55-3	
Benzo(a)pyrene	0.0012J	mg/kg	0.0014	0.00042	1	10/04/19 08:34	10/05/19 16:47	50-32-8	
Benzo(b)fluoranthene	<0.00021	mg/kg	0.00069	0.00021	1	10/04/19 08:34	10/05/19 16:47	205-99-2	
Benzo(g,h,i)perylene	0.0023	mg/kg	0.00095	0.00029	1	10/04/19 08:34	10/05/19 16:47	191-24-2	
Benzo(k)fluoranthene	<0.00027	mg/kg	0.00088	0.00027	1	10/04/19 08:34	10/05/19 16:47	207-08-9	
Chrysene	<0.00042	mg/kg	0.0014	0.00042	1	10/04/19 08:34	10/05/19 16:47	218-01-9	
Dibenz(a,h)anthracene	<0.00042	mg/kg	0.0014	0.00042	1	10/04/19 08:34	10/05/19 16:47	53-70-3	
Fluoranthene	0.00083J	mg/kg	0.0012	0.00035	1	10/04/19 08:34	10/05/19 16:47	206-44-0	
Fluorene	<0.00031	mg/kg	0.0010	0.00031	1	10/04/19 08:34	10/05/19 16:47	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.00021	mg/kg	0.00071	0.00021	1	10/04/19 08:34	10/05/19 16:47	193-39-5	
Naphthalene	<0.00048	mg/kg	0.0016	0.00048	1	10/04/19 08:34	10/05/19 16:47	91-20-3	
Phenanthrene	<0.00026	mg/kg	0.00088	0.00026	1	10/04/19 08:34	10/05/19 16:47	85-01-8	
Pyrene	0.0015	mg/kg	0.0011	0.00034	1	10/04/19 08:34	10/05/19 16:47	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	73	%	30-125		1	10/04/19 08:34	10/05/19 16:47	321-60-8	
p-Terphenyl-d14 (S)	71	%	30-125		1	10/04/19 08:34	10/05/19 16:47	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0029	mg/kg	0.0097	0.0029	1	10/09/19 09:27	10/09/19 17:12	71-43-2	
Ethylbenzene	<0.0028	mg/kg	0.0094	0.0028	1	10/09/19 09:27	10/09/19 17:12	100-41-4	
Methyl-tert-butyl ether	<0.0061	mg/kg	0.020	0.0061	1	10/09/19 09:27	10/09/19 17:12	1634-04-4	
Toluene	<0.013	mg/kg	0.042	0.013	1	10/09/19 09:27	10/09/19 17:12	108-88-3	
1,2,4-Trimethylbenzene	<0.010	mg/kg	0.034	0.010	1	10/09/19 09:27	10/09/19 17:12	95-63-6	
1,3,5-Trimethylbenzene	<0.0082	mg/kg	0.027	0.0082	1	10/09/19 09:27	10/09/19 17:12	108-67-8	
Xylene (Total)	<0.012	mg/kg	0.040	0.012	1	10/09/19 09:27	10/09/19 17:12	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	105	%	75-125		1	10/09/19 09:27	10/09/19 17:12	17060-07-0	
Toluene-d8 (S)	100	%	75-125		1	10/09/19 09:27	10/09/19 17:12	2037-26-5	
4-Bromofluorobenzene (S)	104	%	75-125		1	10/09/19 09:27	10/09/19 17:12	460-00-4	

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10493478

Sample: **SB-11\_3-4** Lab ID: **10493478012** Collected: 09/28/19 10:55 Received: 09/30/19 18:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	26.2	%	0.10	0.10	1		10/10/19 17:19		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	<0.00065	mg/kg	0.0022	0.00065	1	10/04/19 08:34	10/05/19 17:12	90-12-0	
2-Methylnaphthalene	<0.00064	mg/kg	0.0021	0.00064	1	10/04/19 08:34	10/05/19 17:12	91-57-6	
Acenaphthene	<0.00055	mg/kg	0.0018	0.00055	1	10/04/19 08:34	10/05/19 17:12	83-32-9	
Acenaphthylene	<0.0011	mg/kg	0.0036	0.0011	1	10/04/19 08:34	10/05/19 17:12	208-96-8	
Anthracene	<0.00038	mg/kg	0.0013	0.00038	1	10/04/19 08:34	10/05/19 17:12	120-12-7	
Benzo(a)anthracene	<0.00045	mg/kg	0.0015	0.00045	1	10/04/19 08:34	10/05/19 17:12	56-55-3	
Benzo(a)pyrene	<0.00053	mg/kg	0.0018	0.00053	1	10/04/19 08:34	10/05/19 17:12	50-32-8	
Benzo(b)fluoranthene	<0.00027	mg/kg	0.00088	0.00027	1	10/04/19 08:34	10/05/19 17:12	205-99-2	
Benzo(g,h,i)perylene	<0.00037	mg/kg	0.0012	0.00037	1	10/04/19 08:34	10/05/19 17:12	191-24-2	
Benzo(k)fluoranthene	<0.00034	mg/kg	0.0011	0.00034	1	10/04/19 08:34	10/05/19 17:12	207-08-9	
Chrysene	<0.00054	mg/kg	0.0018	0.00054	1	10/04/19 08:34	10/05/19 17:12	218-01-9	
Dibenz(a,h)anthracene	<0.00054	mg/kg	0.0018	0.00054	1	10/04/19 08:34	10/05/19 17:12	53-70-3	
Fluoranthene	<0.00045	mg/kg	0.0015	0.00045	1	10/04/19 08:34	10/05/19 17:12	206-44-0	
Fluorene	<0.00040	mg/kg	0.0013	0.00040	1	10/04/19 08:34	10/05/19 17:12	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.00028	mg/kg	0.00092	0.00028	1	10/04/19 08:34	10/05/19 17:12	193-39-5	
Naphthalene	<0.00062	mg/kg	0.0021	0.00062	1	10/04/19 08:34	10/05/19 17:12	91-20-3	
Phenanthrene	<0.00034	mg/kg	0.0011	0.00034	1	10/04/19 08:34	10/05/19 17:12	85-01-8	
Pyrene	0.00088J	mg/kg	0.0014	0.00043	1	10/04/19 08:34	10/05/19 17:12	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	72	%	30-125		1	10/04/19 08:34	10/05/19 17:12	321-60-8	
p-Terphenyl-d14 (S)	69	%	30-125		1	10/04/19 08:34	10/05/19 17:12	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0038	mg/kg	0.013	0.0038	1	10/09/19 09:27	10/09/19 17:31	71-43-2	
Ethylbenzene	<0.0037	mg/kg	0.012	0.0037	1	10/09/19 09:27	10/09/19 17:31	100-41-4	
Methyl-tert-butyl ether	<0.0081	mg/kg	0.027	0.0081	1	10/09/19 09:27	10/09/19 17:31	1634-04-4	
Toluene	<0.017	mg/kg	0.055	0.017	1	10/09/19 09:27	10/09/19 17:31	108-88-3	
1,2,4-Trimethylbenzene	<0.014	mg/kg	0.045	0.014	1	10/09/19 09:27	10/09/19 17:31	95-63-6	
1,3,5-Trimethylbenzene	<0.011	mg/kg	0.036	0.011	1	10/09/19 09:27	10/09/19 17:31	108-67-8	
Xylene (Total)	<0.016	mg/kg	0.053	0.016	1	10/09/19 09:27	10/09/19 17:31	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	101	%	75-125		1	10/09/19 09:27	10/09/19 17:31	17060-07-0	
Toluene-d8 (S)	101	%	75-125		1	10/09/19 09:27	10/09/19 17:31	2037-26-5	
4-Bromofluorobenzene (S)	101	%	75-125		1	10/09/19 09:27	10/09/19 17:31	460-00-4	

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10493478

Sample: **SB-12\_0-1.5** Lab ID: **10493478013** Collected: 09/28/19 11:40 Received: 09/30/19 18:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	16.1	%	0.10	0.10	1		10/10/19 17:19		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	0.0018J	mg/kg	0.0019	0.00057	1	10/04/19 08:34	10/11/19 19:42	90-12-0	
2-Methylnaphthalene	0.0027	mg/kg	0.0019	0.00056	1	10/04/19 08:34	10/11/19 19:42	91-57-6	
Acenaphthene	0.00063J	mg/kg	0.0016	0.00049	1	10/04/19 08:34	10/11/19 19:42	83-32-9	
Acenaphthylene	<0.00095	mg/kg	0.0032	0.00095	1	10/04/19 08:34	10/11/19 19:42	208-96-8	
Anthracene	<0.00034	mg/kg	0.0011	0.00034	1	10/04/19 08:34	10/11/19 19:42	120-12-7	
Benzo(a)anthracene	<0.00039	mg/kg	0.0013	0.00039	1	10/04/19 08:34	10/11/19 19:42	56-55-3	
Benzo(a)pyrene	0.014	mg/kg	0.0016	0.00047	1	10/04/19 08:34	10/11/19 19:42	50-32-8	
Benzo(b)fluoranthene	0.015	mg/kg	0.00078	0.00023	1	10/04/19 08:34	10/11/19 19:42	205-99-2	
Benzo(g,h,i)perylene	0.029	mg/kg	0.0011	0.00032	1	10/04/19 08:34	10/11/19 19:42	191-24-2	
Benzo(k)fluoranthene	0.0062	mg/kg	0.0010	0.00030	1	10/04/19 08:34	10/11/19 19:42	207-08-9	
Chrysene	0.025	mg/kg	0.0016	0.00048	1	10/04/19 08:34	10/11/19 19:42	218-01-9	
Dibenz(a,h)anthracene	<0.00047	mg/kg	0.0016	0.00047	1	10/04/19 08:34	10/11/19 19:42	53-70-3	
Fluoranthene	<0.00039	mg/kg	0.0013	0.00039	1	10/04/19 08:34	10/11/19 19:42	206-44-0	
Fluorene	<0.00035	mg/kg	0.0012	0.00035	1	10/04/19 08:34	10/11/19 19:42	86-73-7	
Indeno(1,2,3-cd)pyrene	0.0086	mg/kg	0.00080	0.00024	1	10/04/19 08:34	10/11/19 19:42	193-39-5	
Naphthalene	<0.00055	mg/kg	0.0018	0.00055	1	10/04/19 08:34	10/11/19 19:42	91-20-3	
Phenanthrene	0.0043	mg/kg	0.00099	0.00030	1	10/04/19 08:34	10/11/19 19:42	85-01-8	
Pyrene	0.024	mg/kg	0.0013	0.00038	1	10/04/19 08:34	10/11/19 19:42	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	71	%	30-125		1	10/04/19 08:34	10/11/19 19:42	321-60-8	
p-Terphenyl-d14 (S)	65	%	30-125		1	10/04/19 08:34	10/11/19 19:42	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0034	mg/kg	0.011	0.0034	1	10/09/19 09:27	10/09/19 17:50	71-43-2	
Ethylbenzene	<0.0033	mg/kg	0.011	0.0033	1	10/09/19 09:27	10/09/19 17:50	100-41-4	
Methyl-tert-butyl ether	<0.0072	mg/kg	0.024	0.0072	1	10/09/19 09:27	10/09/19 17:50	1634-04-4	
Toluene	<0.015	mg/kg	0.049	0.015	1	10/09/19 09:27	10/09/19 17:50	108-88-3	
1,2,4-Trimethylbenzene	<0.012	mg/kg	0.040	0.012	1	10/09/19 09:27	10/09/19 17:50	95-63-6	
1,3,5-Trimethylbenzene	<0.0097	mg/kg	0.032	0.0097	1	10/09/19 09:27	10/09/19 17:50	108-67-8	
Xylene (Total)	<0.014	mg/kg	0.047	0.014	1	10/09/19 09:27	10/09/19 17:50	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	100	%	75-125		1	10/09/19 09:27	10/09/19 17:50	17060-07-0	
Toluene-d8 (S)	103	%	75-125		1	10/09/19 09:27	10/09/19 17:50	2037-26-5	
4-Bromofluorobenzene (S)	98	%	75-125		1	10/09/19 09:27	10/09/19 17:50	460-00-4	

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Sample Project No.: 10493478

Sample: **SB-12\_3-4** Lab ID: **10493478014** Collected: 09/28/19 11:55 Received: 09/30/19 18:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	26.4	%	0.10	0.10	1		10/10/19 17:19		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	<0.00065	mg/kg	0.0022	0.00065	1	10/04/19 08:34	10/05/19 17:36	90-12-0	
2-Methylnaphthalene	<0.00064	mg/kg	0.0021	0.00064	1	10/04/19 08:34	10/05/19 17:36	91-57-6	
Acenaphthene	<0.00055	mg/kg	0.0018	0.00055	1	10/04/19 08:34	10/05/19 17:36	83-32-9	
Acenaphthylene	<0.0011	mg/kg	0.0036	0.0011	1	10/04/19 08:34	10/05/19 17:36	208-96-8	
Anthracene	<0.00038	mg/kg	0.0013	0.00038	1	10/04/19 08:34	10/05/19 17:36	120-12-7	
Benzo(a)anthracene	<0.00045	mg/kg	0.0015	0.00045	1	10/04/19 08:34	10/05/19 17:36	56-55-3	
Benzo(a)pyrene	<0.00053	mg/kg	0.0018	0.00053	1	10/04/19 08:34	10/05/19 17:36	50-32-8	
Benzo(b)fluoranthene	<0.00027	mg/kg	0.00088	0.00027	1	10/04/19 08:34	10/05/19 17:36	205-99-2	
Benzo(g,h,i)perylene	<0.00037	mg/kg	0.0012	0.00037	1	10/04/19 08:34	10/05/19 17:36	191-24-2	
Benzo(k)fluoranthene	<0.00034	mg/kg	0.0011	0.00034	1	10/04/19 08:34	10/05/19 17:36	207-08-9	
Chrysene	<0.00054	mg/kg	0.0018	0.00054	1	10/04/19 08:34	10/05/19 17:36	218-01-9	
Dibenz(a,h)anthracene	<0.00054	mg/kg	0.0018	0.00054	1	10/04/19 08:34	10/05/19 17:36	53-70-3	
Fluoranthene	0.00065J	mg/kg	0.0015	0.00045	1	10/04/19 08:34	10/05/19 17:36	206-44-0	
Fluorene	<0.00040	mg/kg	0.0013	0.00040	1	10/04/19 08:34	10/05/19 17:36	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.00028	mg/kg	0.00092	0.00028	1	10/04/19 08:34	10/05/19 17:36	193-39-5	
Naphthalene	<0.00062	mg/kg	0.0021	0.00062	1	10/04/19 08:34	10/05/19 17:36	91-20-3	
Phenanthrene	<0.00034	mg/kg	0.0011	0.00034	1	10/04/19 08:34	10/05/19 17:36	85-01-8	
Pyrene	0.00055J	mg/kg	0.0014	0.00043	1	10/04/19 08:34	10/05/19 17:36	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	73	%	30-125		1	10/04/19 08:34	10/05/19 17:36	321-60-8	
p-Terphenyl-d14 (S)	60	%	30-125		1	10/04/19 08:34	10/05/19 17:36	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0037	mg/kg	0.012	0.0037	1	10/09/19 09:27	10/09/19 18:09	71-43-2	
Ethylbenzene	<0.0035	mg/kg	0.012	0.0035	1	10/09/19 09:27	10/09/19 18:09	100-41-4	
Methyl-tert-butyl ether	<0.0078	mg/kg	0.026	0.0078	1	10/09/19 09:27	10/09/19 18:09	1634-04-4	
Toluene	<0.016	mg/kg	0.053	0.016	1	10/09/19 09:27	10/09/19 18:09	108-88-3	
1,2,4-Trimethylbenzene	<0.013	mg/kg	0.043	0.013	1	10/09/19 09:27	10/09/19 18:09	95-63-6	
1,3,5-Trimethylbenzene	<0.010	mg/kg	0.035	0.010	1	10/09/19 09:27	10/09/19 18:09	108-67-8	
Xylene (Total)	<0.015	mg/kg	0.050	0.015	1	10/09/19 09:27	10/09/19 18:09	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	104	%	75-125		1	10/09/19 09:27	10/09/19 18:09	17060-07-0	
Toluene-d8 (S)	103	%	75-125		1	10/09/19 09:27	10/09/19 18:09	2037-26-5	
4-Bromofluorobenzene (S)	99	%	75-125		1	10/09/19 09:27	10/09/19 18:09	460-00-4	

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10493478

Sample: **SB-13\_0-1.5** Lab ID: **10493478015** Collected: 09/28/19 12:30 Received: 09/30/19 18:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	22.3	%	0.10	0.10	1		10/10/19 17:19		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	<0.00062	mg/kg	0.0020	0.00062	1	10/04/19 08:34	10/05/19 18:01	90-12-0	
2-Methylnaphthalene	<0.00061	mg/kg	0.0020	0.00061	1	10/04/19 08:34	10/05/19 18:01	91-57-6	
Acenaphthene	<0.00052	mg/kg	0.0017	0.00052	1	10/04/19 08:34	10/05/19 18:01	83-32-9	
Acenaphthylene	<0.0010	mg/kg	0.0034	0.0010	1	10/04/19 08:34	10/05/19 18:01	208-96-8	
Anthracene	<0.00036	mg/kg	0.0012	0.00036	1	10/04/19 08:34	10/05/19 18:01	120-12-7	
Benzo(a)anthracene	<0.00042	mg/kg	0.0014	0.00042	1	10/04/19 08:34	10/05/19 18:01	56-55-3	
Benzo(a)pyrene	<0.00051	mg/kg	0.0017	0.00051	1	10/04/19 08:34	10/05/19 18:01	50-32-8	
Benzo(b)fluoranthene	<0.00025	mg/kg	0.00084	0.00025	1	10/04/19 08:34	10/05/19 18:01	205-99-2	
Benzo(g,h,i)perylene	<0.00035	mg/kg	0.0012	0.00035	1	10/04/19 08:34	10/05/19 18:01	191-24-2	
Benzo(k)fluoranthene	<0.00032	mg/kg	0.0011	0.00032	1	10/04/19 08:34	10/05/19 18:01	207-08-9	
Chrysene	<0.00051	mg/kg	0.0017	0.00051	1	10/04/19 08:34	10/05/19 18:01	218-01-9	
Dibenz(a,h)anthracene	<0.00051	mg/kg	0.0017	0.00051	1	10/04/19 08:34	10/05/19 18:01	53-70-3	
Fluoranthene	0.00065J	mg/kg	0.0014	0.00042	1	10/04/19 08:34	10/05/19 18:01	206-44-0	
Fluorene	<0.00038	mg/kg	0.0013	0.00038	1	10/04/19 08:34	10/05/19 18:01	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.00026	mg/kg	0.00087	0.00026	1	10/04/19 08:34	10/05/19 18:01	193-39-5	
Naphthalene	<0.00059	mg/kg	0.0020	0.00059	1	10/04/19 08:34	10/05/19 18:01	91-20-3	
Phenanthrene	<0.00032	mg/kg	0.0011	0.00032	1	10/04/19 08:34	10/05/19 18:01	85-01-8	
Pyrene	0.00047J	mg/kg	0.0014	0.00041	1	10/04/19 08:34	10/05/19 18:01	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	82	%	30-125		1	10/04/19 08:34	10/05/19 18:01	321-60-8	
p-Terphenyl-d14 (S)	72	%	30-125		1	10/04/19 08:34	10/05/19 18:01	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0036	mg/kg	0.012	0.0036	1	10/09/19 09:27	10/09/19 18:28	71-43-2	
Ethylbenzene	<0.0035	mg/kg	0.012	0.0035	1	10/09/19 09:27	10/09/19 18:28	100-41-4	
Methyl-tert-butyl ether	<0.0076	mg/kg	0.025	0.0076	1	10/09/19 09:27	10/09/19 18:28	1634-04-4	
Toluene	<0.016	mg/kg	0.052	0.016	1	10/09/19 09:27	10/09/19 18:28	108-88-3	
1,2,4-Trimethylbenzene	<0.013	mg/kg	0.042	0.013	1	10/09/19 09:27	10/09/19 18:28	95-63-6	
1,3,5-Trimethylbenzene	<0.010	mg/kg	0.034	0.010	1	10/09/19 09:27	10/09/19 18:28	108-67-8	
Xylene (Total)	<0.015	mg/kg	0.049	0.015	1	10/09/19 09:27	10/09/19 18:28	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	100	%	75-125		1	10/09/19 09:27	10/09/19 18:28	17060-07-0	
Toluene-d8 (S)	101	%	75-125		1	10/09/19 09:27	10/09/19 18:28	2037-26-5	
4-Bromofluorobenzene (S)	100	%	75-125		1	10/09/19 09:27	10/09/19 18:28	460-00-4	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10493478

Sample: **SB-13\_3-4** Lab ID: **10493478016** Collected: 09/28/19 12:35 Received: 09/30/19 18:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	22.3	%	0.10	0.10	1		10/10/19 17:19		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	<0.00062	mg/kg	0.0021	0.00062	1	10/04/19 08:34	10/05/19 18:26	90-12-0	
2-Methylnaphthalene	<0.00061	mg/kg	0.0020	0.00061	1	10/04/19 08:34	10/05/19 18:26	91-57-6	
Acenaphthene	<0.00053	mg/kg	0.0018	0.00053	1	10/04/19 08:34	10/05/19 18:26	83-32-9	
Acenaphthylene	<0.0010	mg/kg	0.0034	0.0010	1	10/04/19 08:34	10/05/19 18:26	208-96-8	
Anthracene	<0.00037	mg/kg	0.0012	0.00037	1	10/04/19 08:34	10/05/19 18:26	120-12-7	
Benzo(a)anthracene	<0.00042	mg/kg	0.0014	0.00042	1	10/04/19 08:34	10/05/19 18:26	56-55-3	
Benzo(a)pyrene	<0.00051	mg/kg	0.0017	0.00051	1	10/04/19 08:34	10/05/19 18:26	50-32-8	
Benzo(b)fluoranthene	<0.00025	mg/kg	0.00084	0.00025	1	10/04/19 08:34	10/05/19 18:26	205-99-2	
Benzo(g,h,i)perylene	<0.00035	mg/kg	0.0012	0.00035	1	10/04/19 08:34	10/05/19 18:26	191-24-2	
Benzo(k)fluoranthene	<0.00032	mg/kg	0.0011	0.00032	1	10/04/19 08:34	10/05/19 18:26	207-08-9	
Chrysene	<0.00051	mg/kg	0.0017	0.00051	1	10/04/19 08:34	10/05/19 18:26	218-01-9	
Dibenz(a,h)anthracene	<0.00051	mg/kg	0.0017	0.00051	1	10/04/19 08:34	10/05/19 18:26	53-70-3	
Fluoranthene	<0.00042	mg/kg	0.0014	0.00042	1	10/04/19 08:34	10/05/19 18:26	206-44-0	
Fluorene	<0.00038	mg/kg	0.0013	0.00038	1	10/04/19 08:34	10/05/19 18:26	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.00026	mg/kg	0.00087	0.00026	1	10/04/19 08:34	10/05/19 18:26	193-39-5	
Naphthalene	<0.00059	mg/kg	0.0020	0.00059	1	10/04/19 08:34	10/05/19 18:26	91-20-3	
Phenanthrene	<0.00032	mg/kg	0.0011	0.00032	1	10/04/19 08:34	10/05/19 18:26	85-01-8	
Pyrene	<0.00041	mg/kg	0.0014	0.00041	1	10/04/19 08:34	10/05/19 18:26	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	84	%	30-125		1	10/04/19 08:34	10/05/19 18:26	321-60-8	
p-Terphenyl-d14 (S)	71	%	30-125		1	10/04/19 08:34	10/05/19 18:26	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0035	mg/kg	0.012	0.0035	1	10/09/19 09:27	10/09/19 18:47	71-43-2	
Ethylbenzene	<0.0034	mg/kg	0.011	0.0034	1	10/09/19 09:27	10/09/19 18:47	100-41-4	
Methyl-tert-butyl ether	<0.0074	mg/kg	0.025	0.0074	1	10/09/19 09:27	10/09/19 18:47	1634-04-4	
Toluene	<0.015	mg/kg	0.051	0.015	1	10/09/19 09:27	10/09/19 18:47	108-88-3	
1,2,4-Trimethylbenzene	<0.012	mg/kg	0.042	0.012	1	10/09/19 09:27	10/09/19 18:47	95-63-6	
1,3,5-Trimethylbenzene	<0.010	mg/kg	0.033	0.010	1	10/09/19 09:27	10/09/19 18:47	108-67-8	
Xylene (Total)	<0.014	mg/kg	0.048	0.014	1	10/09/19 09:27	10/09/19 18:47	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	103	%	75-125		1	10/09/19 09:27	10/09/19 18:47	17060-07-0	
Toluene-d8 (S)	101	%	75-125		1	10/09/19 09:27	10/09/19 18:47	2037-26-5	
4-Bromofluorobenzene (S)	101	%	75-125		1	10/09/19 09:27	10/09/19 18:47	460-00-4	

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10493478

Sample: **SB-10\_0-1.5** Lab ID: **10493478017** Collected: 09/28/19 13:20 Received: 09/30/19 18:30 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	7.9	%	0.10	0.10	1		10/10/19 17:19		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	0.014	mg/kg	0.0087	0.0026	1	10/04/19 08:34	10/05/19 18:51	90-12-0	
2-Methylnaphthalene	0.0060J	mg/kg	0.0085	0.0026	1	10/04/19 08:34	10/05/19 18:51	91-57-6	
Acenaphthene	0.0040J	mg/kg	0.0074	0.0022	1	10/04/19 08:34	10/05/19 18:51	83-32-9	
Acenaphthylene	<0.0044	mg/kg	0.014	0.0044	1	10/04/19 08:34	10/05/19 18:51	208-96-8	
Anthracene	<0.0015	mg/kg	0.0051	0.0015	1	10/04/19 08:34	10/05/19 18:51	120-12-7	
Benzo(a)anthracene	0.060	mg/kg	0.0060	0.0018	1	10/04/19 08:34	10/05/19 18:51	56-55-3	
Benzo(a)pyrene	0.046	mg/kg	0.0071	0.0021	1	10/04/19 08:34	10/05/19 18:51	50-32-8	
Benzo(b)fluoranthene	0.059	mg/kg	0.0035	0.0011	1	10/04/19 08:34	10/05/19 18:51	205-99-2	
Benzo(g,h,i)perylene	0.064	mg/kg	0.0049	0.0015	1	10/04/19 08:34	10/05/19 18:51	191-24-2	
Benzo(k)fluoranthene	0.016	mg/kg	0.0046	0.0014	1	10/04/19 08:34	10/05/19 18:51	207-08-9	
Chrysene	0.065	mg/kg	0.0072	0.0022	1	10/04/19 08:34	10/05/19 18:51	218-01-9	
Dibenz(a,h)anthracene	0.021	mg/kg	0.0072	0.0021	1	10/04/19 08:34	10/05/19 18:51	53-70-3	
Fluoranthene	0.041	mg/kg	0.0059	0.0018	1	10/04/19 08:34	10/05/19 18:51	206-44-0	
Fluorene	0.011	mg/kg	0.0053	0.0016	1	10/04/19 08:34	10/05/19 18:51	86-73-7	
Indeno(1,2,3-cd)pyrene	0.028	mg/kg	0.0037	0.0011	1	10/04/19 08:34	10/05/19 18:51	193-39-5	
Naphthalene	<0.0025	mg/kg	0.0083	0.0025	1	10/04/19 08:34	10/05/19 18:51	91-20-3	
Phenanthrene	0.075	mg/kg	0.0045	0.0014	1	10/04/19 08:34	10/05/19 18:51	85-01-8	
Pyrene	0.083	mg/kg	0.0058	0.0017	1	10/04/19 08:34	10/05/19 18:51	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	77	%	30-125		1	10/04/19 08:34	10/05/19 18:51	321-60-8	P3
p-Terphenyl-d14 (S)	85	%	30-125		1	10/04/19 08:34	10/05/19 18:51	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0031	mg/kg	0.010	0.0031	1	10/09/19 09:27	10/09/19 19:06	71-43-2	
Ethylbenzene	<0.0030	mg/kg	0.0098	0.0030	1	10/09/19 09:27	10/09/19 19:06	100-41-4	
Methyl-tert-butyl ether	<0.0065	mg/kg	0.022	0.0065	1	10/09/19 09:27	10/09/19 19:06	1634-04-4	
Toluene	<0.013	mg/kg	0.044	0.013	1	10/09/19 09:27	10/09/19 19:06	108-88-3	
1,2,4-Trimethylbenzene	<0.011	mg/kg	0.036	0.011	1	10/09/19 09:27	10/09/19 19:06	95-63-6	
1,3,5-Trimethylbenzene	<0.0087	mg/kg	0.029	0.0087	1	10/09/19 09:27	10/09/19 19:06	108-67-8	
Xylene (Total)	<0.013	mg/kg	0.042	0.013	1	10/09/19 09:27	10/09/19 19:06	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	100	%	75-125		1	10/09/19 09:27	10/09/19 19:06	17060-07-0	
Toluene-d8 (S)	101	%	75-125		1	10/09/19 09:27	10/09/19 19:06	2037-26-5	
4-Bromofluorobenzene (S)	101	%	75-125		1	10/09/19 09:27	10/09/19 19:06	460-00-4	

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### ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10493478

**Sample: SB-10\_3-4**      **Lab ID: 10493478018**      Collected: 09/28/19 13:25      Received: 09/30/19 18:30      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>26.9</b>	%	0.10	0.10	1		10/10/19 17:20		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM      Preparation Method: EPA 3550									
1-Methylnaphthalene	< <b>0.00066</b>	mg/kg	0.0022	0.00066	1	10/04/19 08:34	10/05/19 19:15	90-12-0	
2-Methylnaphthalene	< <b>0.00065</b>	mg/kg	0.0022	0.00065	1	10/04/19 08:34	10/05/19 19:15	91-57-6	
Acenaphthene	< <b>0.00056</b>	mg/kg	0.0019	0.00056	1	10/04/19 08:34	10/05/19 19:15	83-32-9	
Acenaphthylene	< <b>0.0011</b>	mg/kg	0.0037	0.0011	1	10/04/19 08:34	10/05/19 19:15	208-96-8	
Anthracene	< <b>0.00039</b>	mg/kg	0.0013	0.00039	1	10/04/19 08:34	10/05/19 19:15	120-12-7	
Benzo(a)anthracene	< <b>0.00045</b>	mg/kg	0.0015	0.00045	1	10/04/19 08:34	10/05/19 19:15	56-55-3	
Benzo(a)pyrene	< <b>0.00054</b>	mg/kg	0.0018	0.00054	1	10/04/19 08:34	10/05/19 19:15	50-32-8	
Benzo(b)fluoranthene	< <b>0.00027</b>	mg/kg	0.00089	0.00027	1	10/04/19 08:34	10/05/19 19:15	205-99-2	
Benzo(g,h,i)perylene	< <b>0.00037</b>	mg/kg	0.0012	0.00037	1	10/04/19 08:34	10/05/19 19:15	191-24-2	
Benzo(k)fluoranthene	< <b>0.00034</b>	mg/kg	0.0011	0.00034	1	10/04/19 08:34	10/05/19 19:15	207-08-9	
Chrysene	< <b>0.00055</b>	mg/kg	0.0018	0.00055	1	10/04/19 08:34	10/05/19 19:15	218-01-9	
Dibenz(a,h)anthracene	< <b>0.00054</b>	mg/kg	0.0018	0.00054	1	10/04/19 08:34	10/05/19 19:15	53-70-3	
Fluoranthene	< <b>0.00045</b>	mg/kg	0.0015	0.00045	1	10/04/19 08:34	10/05/19 19:15	206-44-0	
Fluorene	< <b>0.00040</b>	mg/kg	0.0013	0.00040	1	10/04/19 08:34	10/05/19 19:15	86-73-7	
Indeno(1,2,3-cd)pyrene	< <b>0.00028</b>	mg/kg	0.00092	0.00028	1	10/04/19 08:34	10/05/19 19:15	193-39-5	
Naphthalene	< <b>0.00063</b>	mg/kg	0.0021	0.00063	1	10/04/19 08:34	10/05/19 19:15	91-20-3	
Phenanthrene	< <b>0.00034</b>	mg/kg	0.0011	0.00034	1	10/04/19 08:34	10/05/19 19:15	85-01-8	
Pyrene	<b>0.0012J</b>	mg/kg	0.0015	0.00044	1	10/04/19 08:34	10/05/19 19:15	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	85	%	30-125		1	10/04/19 08:34	10/05/19 19:15	321-60-8	
p-Terphenyl-d14 (S)	81	%	30-125		1	10/04/19 08:34	10/05/19 19:15	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
Benzene	< <b>0.0037</b>	mg/kg	0.012	0.0037	1	10/09/19 09:27	10/09/19 19:25	71-43-2	
Ethylbenzene	< <b>0.0036</b>	mg/kg	0.012	0.0036	1	10/09/19 09:27	10/09/19 19:25	100-41-4	
Methyl-tert-butyl ether	< <b>0.0078</b>	mg/kg	0.026	0.0078	1	10/09/19 09:27	10/09/19 19:25	1634-04-4	
Toluene	< <b>0.016</b>	mg/kg	0.053	0.016	1	10/09/19 09:27	10/09/19 19:25	108-88-3	
1,2,4-Trimethylbenzene	< <b>0.013</b>	mg/kg	0.044	0.013	1	10/09/19 09:27	10/09/19 19:25	95-63-6	
1,3,5-Trimethylbenzene	< <b>0.010</b>	mg/kg	0.035	0.010	1	10/09/19 09:27	10/09/19 19:25	108-67-8	
Xylene (Total)	< <b>0.015</b>	mg/kg	0.051	0.015	1	10/09/19 09:27	10/09/19 19:25	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	107	%	75-125		1	10/09/19 09:27	10/09/19 19:25	17060-07-0	
Toluene-d8 (S)	100	%	75-125		1	10/09/19 09:27	10/09/19 19:25	2037-26-5	
4-Bromofluorobenzene (S)	102	%	75-125		1	10/09/19 09:27	10/09/19 19:25	460-00-4	

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### ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10493478

**Sample:** Trip Blank\_3      **Lab ID:** 10493478019      Collected: 09/28/19 00:00      Received: 09/30/19 18:30      Matrix: Solid

**Results reported on a "wet-weight" basis**

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0028	mg/kg	0.0094	0.0028	1	10/09/19 09:27	10/09/19 14:21	71-43-2	
Ethylbenzene	<0.0027	mg/kg	0.0091	0.0027	1	10/09/19 09:27	10/09/19 14:21	100-41-4	
Methyl-tert-butyl ether	<0.0060	mg/kg	0.020	0.0060	1	10/09/19 09:27	10/09/19 14:21	1634-04-4	
Toluene	<0.012	mg/kg	0.041	0.012	1	10/09/19 09:27	10/09/19 14:21	108-88-3	
1,2,4-Trimethylbenzene	<0.010	mg/kg	0.033	0.010	1	10/09/19 09:27	10/09/19 14:21	95-63-6	
1,3,5-Trimethylbenzene	<0.0080	mg/kg	0.027	0.0080	1	10/09/19 09:27	10/09/19 14:21	108-67-8	
Xylene (Total)	<0.012	mg/kg	0.039	0.012	1	10/09/19 09:27	10/09/19 14:21	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	95	%	75-125		1	10/09/19 09:27	10/09/19 14:21	17060-07-0	
Toluene-d8 (S)	101	%	75-125		1	10/09/19 09:27	10/09/19 14:21	2037-26-5	
4-Bromofluorobenzene (S)	102	%	75-125		1	10/09/19 09:27	10/09/19 14:21	460-00-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post  
Pace Project No.: 10493478

QC Batch: 636850 Analysis Method: EPA 8260B  
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV UST  
Associated Lab Samples: 10493478001, 10493478002, 10493478003

METHOD BLANK: 3432477 Matrix: Solid  
Associated Lab Samples: 10493478001, 10493478002, 10493478003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	<0.010	0.033	10/08/19 16:14	
1,3,5-Trimethylbenzene	mg/kg	<0.0080	0.027	10/08/19 16:14	
Benzene	mg/kg	<0.0028	0.0094	10/08/19 16:14	
Ethylbenzene	mg/kg	<0.0027	0.0091	10/08/19 16:14	
Methyl-tert-butyl ether	mg/kg	<0.0060	0.020	10/08/19 16:14	
Toluene	mg/kg	<0.012	0.041	10/08/19 16:14	
Xylene (Total)	mg/kg	<0.012	0.039	10/08/19 16:14	
1,2-Dichloroethane-d4 (S)	%	107	75-125	10/08/19 16:14	
4-Bromofluorobenzene (S)	%	104	75-125	10/08/19 16:14	
Toluene-d8 (S)	%	99	75-125	10/08/19 16:14	

LABORATORY CONTROL SAMPLE: 3432478

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	1	0.93	93	51-126	
1,3,5-Trimethylbenzene	mg/kg	1	0.96	96	52-127	
Benzene	mg/kg	1	0.82	82	48-125	
Ethylbenzene	mg/kg	1	0.87	87	51-125	
Methyl-tert-butyl ether	mg/kg	1	0.92	92	53-125	
Toluene	mg/kg	1	0.82	82	51-125	
Xylene (Total)	mg/kg	3	2.7	91	52-125	
1,2-Dichloroethane-d4 (S)	%			101	75-125	
4-Bromofluorobenzene (S)	%			104	75-125	
Toluene-d8 (S)	%			101	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3432479 3432480

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		10493314001 Result	Spike Conc.	Spike Conc.	Result							Result
1,2,4-Trimethylbenzene	mg/kg	ND	1.1	1.1	1.4	0.70	116	63	65-145	65	30	M1,R1
1,3,5-Trimethylbenzene	mg/kg	ND	1.1	1.1	1.4	0.72	116	65	66-148	62	30	M1,R1
Benzene	mg/kg	ND	1.1	1.1	1.2	0.63	99	57	63-136	60	30	M1,R1
Ethylbenzene	mg/kg	ND	1.1	1.1	1.3	0.68	108	61	64-142	61	30	M1,R1
Methyl-tert-butyl ether	mg/kg	ND	1.1	1.1	1.2	0.70	98	63	69-134	49	30	M1,R1
Toluene	mg/kg	ND	1.1	1.1	1.3	0.66	113	60	61-141	67	30	M1,R1
Xylene (Total)	mg/kg	ND	3.5	3.3	4.1	2.0	116	61	67-145	68	30	MS,RS
1,2-Dichloroethane-d4 (S)	%						95	104	75-125			
4-Bromofluorobenzene (S)	%						101	105	75-125			

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10493478

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3432479 3432480												
Parameter	Units	10493314001 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
Toluene-d8 (S)	%						102	99	75-125			

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post  
Pace Project No.: 10493478

QC Batch: 637165 Analysis Method: EPA 8260B  
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV UST  
Associated Lab Samples: 10493478004, 10493478005, 10493478006, 10493478007, 10493478008, 10493478009, 10493478010, 10493478011, 10493478012, 10493478013, 10493478014, 10493478015, 10493478016, 10493478017, 10493478018, 10493478019

METHOD BLANK: 3434128 Matrix: Solid  
Associated Lab Samples: 10493478004, 10493478005, 10493478006, 10493478007, 10493478008, 10493478009, 10493478010, 10493478011, 10493478012, 10493478013, 10493478014, 10493478015, 10493478016, 10493478017, 10493478018, 10493478019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	<0.010	0.033	10/09/19 14:01	
1,3,5-Trimethylbenzene	mg/kg	<0.0080	0.027	10/09/19 14:01	
Benzene	mg/kg	<0.0028	0.0094	10/09/19 14:01	
Ethylbenzene	mg/kg	<0.0027	0.0091	10/09/19 14:01	
Methyl-tert-butyl ether	mg/kg	<0.0060	0.020	10/09/19 14:01	
Toluene	mg/kg	<0.012	0.041	10/09/19 14:01	
Xylene (Total)	mg/kg	<0.012	0.039	10/09/19 14:01	
1,2-Dichloroethane-d4 (S)	%	98	75-125	10/09/19 14:01	
4-Bromofluorobenzene (S)	%	105	75-125	10/09/19 14:01	
Toluene-d8 (S)	%	102	75-125	10/09/19 14:01	

LABORATORY CONTROL SAMPLE: 3434129

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	1	1.0	103	51-126	
1,3,5-Trimethylbenzene	mg/kg	1	0.97	97	52-127	
Benzene	mg/kg	1	0.98	98	48-125	
Ethylbenzene	mg/kg	1	0.94	94	51-125	
Methyl-tert-butyl ether	mg/kg	1	0.92	92	53-125	
Toluene	mg/kg	1	0.97	97	51-125	
Xylene (Total)	mg/kg	3	2.8	94	52-125	
1,2-Dichloroethane-d4 (S)	%			90	75-125	
4-Bromofluorobenzene (S)	%			101	75-125	
Toluene-d8 (S)	%			99	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3434130 3434131

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10493808001	Spike Conc.	Spike Conc.	Result								
1,2,4-Trimethylbenzene	mg/kg	193 ug/kg	1.2	1.2	1.5	1.6	116	118	65-145	5	30		
1,3,5-Trimethylbenzene	mg/kg	ND	1.2	1.2	1.3	1.4	109	109	66-148	3	30		
Benzene	mg/kg	ND	1.2	1.2	1.2	1.3	106	109	63-136	7	30		
Ethylbenzene	mg/kg	ND	1.2	1.2	1.3	1.3	107	104	64-142	2	30		
Methyl-tert-butyl ether	mg/kg	ND	1.2	1.2	1.1	1.2	99	104	69-134	9	30		
Toluene	mg/kg	67.9 ug/kg	1.2	1.2	1.2	1.2	97	98	61-141	6	30		

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10493478

Parameter	Units	3434130		3434131		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		10493808001 Result	MS Spike Conc.	MSD Spike Conc.								
Xylene (Total)	mg/kg	ND	3.4	3.6	3.7	3.9	105	107	67-145	5	30	
1,2-Dichloroethane-d4 (S)	%						92	96	75-125			
4-Bromofluorobenzene (S)	%						107	103	75-125			
Toluene-d8 (S)	%						98	98	75-125			

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10493478

LABORATORY CONTROL SAMPLE: 3429255

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoranthene	mg/kg	0.033	0.030	90	67-125	
Fluorene	mg/kg	0.033	0.028	83	51-125	
Indeno(1,2,3-cd)pyrene	mg/kg	0.033	0.028	84	59-125	
Naphthalene	mg/kg	0.033	0.029	88	47-125	
Phenanthrene	mg/kg	0.033	0.029	88	61-125	
Pyrene	mg/kg	0.033	0.026	78	52-125	
2-Fluorobiphenyl (S)	%			80	30-125	
p-Terphenyl-d14 (S)	%			80	30-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3429354 3429355

Parameter	Units	MS 10493478001		MSD 3429354		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	MS Result								
1-Methylnaphthalene	mg/kg	0.0066	0.036	0.036	0.027	0.037	56	82	30-125	30	30		
2-Methylnaphthalene	mg/kg	0.011	0.036	0.036	0.029	0.044	49	91	30-125	42	30	R1	
Acenaphthene	mg/kg	0.023	0.036	0.036	0.030	0.072	19	131	30-125	81	30	M1,R1	
Acenaphthylene	mg/kg	0.0069	0.036	0.036	0.030	0.028	62	57	30-125	5	30		
Anthracene	mg/kg	0.060	0.036	0.036	0.041	0.12	-51	161	30-131	97	30	M1,R1	
Benzo(a)anthracene	mg/kg	0.15	0.036	0.036	0.087	0.22	-183	169	30-126	85	30	M1,R1	
Benzo(a)pyrene	mg/kg	0.15	0.036	0.036	0.095	0.21	-144	170	30-150	76	30	M1,R1	
Benzo(b)fluoranthene	mg/kg	0.18	0.036	0.036	0.12	0.25	-181	195	30-150	75	30	M1,R1	
Benzo(g,h,i)perylene	mg/kg	0.14	0.036	0.036	0.10	0.17	-114	66	30-150	49	30	M1,R1	
Benzo(k)fluoranthene	mg/kg	0.090	0.036	0.036	0.066	0.13	-67	120	30-150	69	30	M1,R1	
Chrysene	mg/kg	0.18	0.036	0.036	0.10	0.24	-208	169	30-150	81	30	M1,R1	
Dibenz(a,h)anthracene	mg/kg	0.030	0.036	0.036	0.038	0.067	22	100	30-143	55	30	M1,R1	
Fluoranthene	mg/kg	0.30	0.036	0.036	0.13	0.41	-469	296	30-143	105	30	E,M1,R1	
Fluorene	mg/kg	0.026	0.036	0.036	0.030	0.072	10	125	30-138	84	30	M1,R1	
Indeno(1,2,3-cd)pyrene	mg/kg	0.084	0.036	0.036	0.063	0.12	-56	109	30-150	65	30	M1,R1	
Naphthalene	mg/kg	0.022	0.036	0.036	0.029	0.071	18	133	30-125	84	30	M1,R1	
Phenanthrene	mg/kg	0.21	0.036	0.036	0.080	0.33	-344	335	30-142	122	30	M1,R1	
Pyrene	mg/kg	0.23	0.036	0.036	0.11	0.32	-332	228	30-149	96	30	M1,R1	
2-Fluorobiphenyl (S)	%						63	69	30-125				
p-Terphenyl-d14 (S)	%						59	68	30-125				

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### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10493478

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

### ANALYTE QUALIFIERS

E Analyte concentration exceeded the calibration range. The reported result is estimated.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

MS Analyte recovery in the matrix spike was outside QC limits for one or more of the constituent analytes used in the calculated result.

P3 Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.

R1 RPD value was outside control limits.

RS The RPD value in one of the constituent analytes was outside the control limits.

S2 Surrogate recovery outside laboratory control limits due to matrix interferences (confirmed by similar results from sample re-analysis).

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10493478

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10493478001	SB-5_0-1.5	ASTM D2974	637357		
10493478002	SB-5_3-4	ASTM D2974	637357		
10493478003	SB-3_0-1.5	ASTM D2974	637357		
10493478004	SB-3_3-4	ASTM D2974	637357		
10493478005	SB-4_0-1.5	ASTM D2974	637357		
10493478006	SB-4_3-4	ASTM D2974	637357		
10493478007	SB-6_0-1.5	ASTM D2974	637357		
10493478008	SB-6_3-4	ASTM D2974	637357		
10493478009	SB-7_0-1.5	ASTM D2974	637357		
10493478010	SB-7_3-4	ASTM D2974	637357		
10493478011	SB-11_0-1.5	ASTM D2974	637357		
10493478012	SB-11_3-4	ASTM D2974	637357		
10493478013	SB-12_0-1.5	ASTM D2974	637357		
10493478014	SB-12_3-4	ASTM D2974	637357		
10493478015	SB-13_0-1.5	ASTM D2974	637357		
10493478016	SB-13_3-4	ASTM D2974	637357		
10493478017	SB-10_0-1.5	ASTM D2974	637357		
10493478018	SB-10_3-4	ASTM D2974	637357		
10493478001	SB-5_0-1.5	EPA 3550	636293	EPA 8270D by SIM	636516
10493478002	SB-5_3-4	EPA 3550	636293	EPA 8270D by SIM	636516
10493478003	SB-3_0-1.5	EPA 3550	636293	EPA 8270D by SIM	636516
10493478004	SB-3_3-4	EPA 3550	636293	EPA 8270D by SIM	636516
10493478005	SB-4_0-1.5	EPA 3550	636293	EPA 8270D by SIM	636516
10493478006	SB-4_3-4	EPA 3550	636293	EPA 8270D by SIM	636516
10493478007	SB-6_0-1.5	EPA 3550	636293	EPA 8270D by SIM	636516
10493478008	SB-6_3-4	EPA 3550	636293	EPA 8270D by SIM	636516
10493478009	SB-7_0-1.5	EPA 3550	636293	EPA 8270D by SIM	636516
10493478010	SB-7_3-4	EPA 3550	636293	EPA 8270D by SIM	636516
10493478011	SB-11_0-1.5	EPA 3550	636293	EPA 8270D by SIM	636516
10493478012	SB-11_3-4	EPA 3550	636293	EPA 8270D by SIM	636516
10493478013	SB-12_0-1.5	EPA 3550	636293	EPA 8270D by SIM	636516
10493478014	SB-12_3-4	EPA 3550	636293	EPA 8270D by SIM	636516
10493478015	SB-13_0-1.5	EPA 3550	636293	EPA 8270D by SIM	636516
10493478016	SB-13_3-4	EPA 3550	636293	EPA 8270D by SIM	636516
10493478017	SB-10_0-1.5	EPA 3550	636293	EPA 8270D by SIM	636516
10493478018	SB-10_3-4	EPA 3550	636293	EPA 8270D by SIM	636516
10493478001	SB-5_0-1.5	EPA 5035/5030B	636850	EPA 8260B	637028
10493478002	SB-5_3-4	EPA 5035/5030B	636850	EPA 8260B	637028
10493478003	SB-3_0-1.5	EPA 5035/5030B	636850	EPA 8260B	637028
10493478004	SB-3_3-4	EPA 5035/5030B	637165	EPA 8260B	637183
10493478005	SB-4_0-1.5	EPA 5035/5030B	637165	EPA 8260B	637183
10493478006	SB-4_3-4	EPA 5035/5030B	637165	EPA 8260B	637183
10493478007	SB-6_0-1.5	EPA 5035/5030B	637165	EPA 8260B	637183
10493478008	SB-6_3-4	EPA 5035/5030B	637165	EPA 8260B	637183
10493478009	SB-7_0-1.5	EPA 5035/5030B	637165	EPA 8260B	637183
10493478010	SB-7_3-4	EPA 5035/5030B	637165	EPA 8260B	637183
10493478011	SB-11_0-1.5	EPA 5035/5030B	637165	EPA 8260B	637183

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10493478

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10493478012	SB-11_3-4	EPA 5035/5030B	637165	EPA 8260B	637183
10493478013	SB-12_0-1.5	EPA 5035/5030B	637165	EPA 8260B	637183
10493478014	SB-12_3-4	EPA 5035/5030B	637165	EPA 8260B	637183
10493478015	SB-13_0-1.5	EPA 5035/5030B	637165	EPA 8260B	637183
10493478016	SB-13_3-4	EPA 5035/5030B	637165	EPA 8260B	637183
10493478017	SB-10_0-1.5	EPA 5035/5030B	637165	EPA 8260B	637183
10493478018	SB-10_3-4	EPA 5035/5030B	637165	EPA 8260B	637183
10493478019	Trip Blank_3	EPA 5035/5030B	637165	EPA 8260B	637183

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# Barr Engineering Co. Chain of Custody

Ann Arbor 
  Duluth 
  Hibbing 
  Minneapolis 
  Bismarck 
  Grand Rapids 
  Jefferson City 
  Salt Lake City

Sample Origination State:

KS 
  MO 
  UT 
  MI 
  ND 
  WI 
  MN 
  SD 
 Other: \_\_\_\_\_

COC Number: **57841**

COC 2 of 2

**REPORT TO**  
 Company: Barr Engineering  
 Address: 325 S. Lake Ave Duluth MN  
 Name: Lynette Carney  
 email: lcarney@barr.com  
 Copy to: datamgt@barr.com  
 Project Name: Hurky Post Five Site Investigation

**INVOICE TO**  
 Company: Barr  
 Address: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 email: \_\_\_\_\_  
 P.O. \_\_\_\_\_  
 Barr Project No: 49161427, 16 100 102

Location	Sample Depth			Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix Code	Perform MS/MSD Y/N	Total Number Of Containers	Analysis Requested	% Solids	Preservative Code	Field Filtered Y/N
	Start	Stop	Unit (m./ft. or in.)									
1. SB-11	0	1.5	ft	09/28/19	1050	S	N	4	21	1	PVOC-8260; PAH-8270 SIM	011
2. SB-11	3	4	ft		1055			4	21	1		012
3. SB-12	0	1.5	ft		1140			4	21	1		013
4. SB-12	3	4	ft		1155			4	21	1		014
5. SB-13	0	1.5	ft		1230			4	21	1		015
6. SB-13	3	4	ft		1235			4	21	1		016
7. SB-10	0	1.5	ft		1320			4	21	1		017
8. SB-10	3	4	ft		1325			4	21	1		018
9. Trip Blank-3							N	1	1			019
10.												

Analysis Requested	
Water	Soil
	VOC Meth Vials
	400 dmbz

**Matrix Code:**  
 GW = Groundwater  
 SW = Surface Water  
 WW = Waste Water  
 DW = Drinking Water  
 S = Soil/Solid  
 SD = Sediment  
 O = Other

**Preservative Code:**  
 A = None  
 B = HCl  
 C = HNO<sub>3</sub>  
 D = H<sub>2</sub>SO<sub>4</sub>  
 E = NaOH  
 F = MeOH  
 G = NaHSO<sub>4</sub>  
 H = Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>  
 I = Ascorbic Acid  
 J = NH<sub>4</sub>Cl  
 K = Zn Acetate  
 O = Other

**BARR USE ONLY**  
 Sampled by: KMJ3  
 Barr Proj. Manager: LMC  
 Barr DQ Manager: TAO  
 Lab Name: Pace  
 Lab Location: Minneapolis

Relinquished by: [Signature]  
 Relinquished by: [Signature]  
 Samples Shipped VIA:  Courier  Federal Express  Sampler  
 Other: \_\_\_\_\_  
 Lab WO: \_\_\_\_\_

On Ice?  N  Y  
 Date: 9/30/19 Time: 0936  
 On Ice?  N  Y  
 Date: 9-30-19 Time: 1830

Received by: [Signature]  
 Received by: [Signature]  
 Air Bill Number: \_\_\_\_\_

Date: 9/30/19 Time: 09:36  
 Date: 9-30-19 Time: 1830  
**Requested Due Date:**  
 Standard Turn Around Time  
 Rush \_\_\_\_\_ (mm/dd/yyyy)



<b>Sample Condition Upon Receipt</b>	Client Name: <u>Barr Engineering</u>	Project #: _____	<b>WO#: 10493478</b> PM: AA1      Due Date: 10/15/19 <b>CLIENT: BARR</b>
Courier:	<input type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Client <input checked="" type="checkbox"/> Pace <input type="checkbox"/> Speedee <input type="checkbox"/> Commercial    See Exceptions		
Tracking Number:	_____		

Custody Seal on Cooler/Box Present?  Yes  No      Seals Intact?  Yes  No      Biological Tissue Frozen?  Yes  No  N/A  
 Packing Material:  Bubble Wrap     Bubble Bags     None     Other: \_\_\_\_\_      Temp Blank?  Yes  No  
 Thermometer:  T1(0461)  T2(1336)  T3(0459)      Type of Ice:  Wet     Blue     None     Dry     Melted  
 T4(0254)  T5(0489)

**Note: Each West Virginia Sample must have temp taken (no temp blanks)**

Temp should be above freezing to 6°C	Cooler Temp Read w/temp blank: <u>0.8, 2.4</u> °C	Average Corrected Temp (no temp blank only): <input type="checkbox"/> See Exceptions <input type="checkbox"/> 1 Container
Correction Factor: <u>10.1</u>	Cooler Temp Corrected w/temp blank: <u>0.9, 2.5</u> °C	

**USDA Regulated Soil:** (  N/A, water sample/Other: \_\_\_\_\_ )      Date/Initials of Person Examining Contents: GNZ 9.30.19  
 Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, HI, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)?  Yes  No  
 Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?  Yes  No 10/1/19  
**If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.**      AA1

	COMMENTS:
Chain of Custody Present and Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other _____
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No -Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Matrix: <input type="checkbox"/> Water <input checked="" type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other _____	11. If no, write ID/ Date/Time on Container Below: <input type="checkbox"/> See Exception <input type="checkbox"/>
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12. Sample # <input type="checkbox"/> NaOH <input type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> Zinc Acetate
All containers needing preservation are found to be in compliance with EPA recommendation? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Sulfide, NaOH >12 Cyanide)	Positive for Res. Chlorine? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No      pH Paper Lot# Res. Chlorine      0-6 Roll      0-6 Strip      0-14 Strip
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DIO/8015 (water) and Dioxin/PFAS <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	See Exception <input type="checkbox"/>
Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> See Exception <input type="checkbox"/>
Trip Blank Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Trip Blank Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14. Pace Trip Blank Lot # (if purchased): <u>081219-3</u>

**CLIENT NOTIFICATION/RESOLUTION**

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/Resolution: \_\_\_\_\_

Field Data Required?  Yes  No

October 18, 2019

Terri Olson  
Barr Engineering Company  
4300 MarketPointe Drive  
Suite 200  
Minneapolis, MN 55435

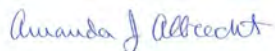
RE: Project: 49161427.16 100 102 Husky Post  
Pace Project No.: 10494298

Dear Terri Olson:

Enclosed are the analytical results for sample(s) received by the laboratory on October 04, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Amanda Albrecht  
amanda.albrecht@pacelabs.com  
(612)607-6382  
Project Manager

Enclosures

cc: BarrDM, Barr Engineering  
Accounts Payable, Barr Engineering



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10494298

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### Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485

A2LA Certification #: 2926.01

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

CNMI Saipan Certification #: MP0003

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605

Georgia Certification #: 959

Guam EPA Certification #: MN00064

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: 03086

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064

Maryland Certification #: 322

Massachusetts Certification #: M-MN064

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137

Minnesota Dept of Ag Certification #: via MN 027-053-137

Minnesota Petrofund Certification #: 1240

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081

New Jersey Certification #: MN002

New York Certification #: 11647

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification #: MN00064

South Carolina Certification #:74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Vermont Certification #: VT-027053137

Virginia Certification #: 460163

Washington Certification #: C486

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

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## SAMPLE SUMMARY

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10494298

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10494298001	HA-1_0.7-1.5	Solid	10/04/19 09:30	10/04/19 19:00
10494298002	HA-1_3-3.9	Solid	10/04/19 09:45	10/04/19 19:00
10494298003	HA-2_0-1	Solid	10/04/19 10:50	10/04/19 19:00
10494298004	HA-2_2.5-3	Solid	10/04/19 11:05	10/04/19 19:00
10494298005	Tripblank-4	Solid	10/04/19 00:00	10/04/19 19:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10494298

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10494298001	HA-1_0.7-1.5	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10494298002	HA-1_3-3.9	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10494298003	HA-2_0-1	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10494298004	HA-2_2.5-3	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10494298005	Tripblank-4	EPA 8260B	CD2	10	PASI-M

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10494298

Sample: HA-1\_0.7-1.5 Lab ID: 10494298001 Collected: 10/04/19 09:30 Received: 10/04/19 19:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	27.5	%	0.10	0.10	1		10/15/19 14:54		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	14.5	mg/kg	0.22	0.066	10	10/07/19 18:39	10/13/19 18:28	90-12-0	
2-Methylnaphthalene	5.6	mg/kg	0.22	0.065	10	10/07/19 18:39	10/13/19 18:28	91-57-6	
Acenaphthene	5.4	mg/kg	0.19	0.056	10	10/07/19 18:39	10/13/19 18:28	83-32-9	
Acenaphthylene	<0.11	mg/kg	0.37	0.11	10	10/07/19 18:39	10/13/19 18:28	208-96-8	
Anthracene	<0.039	mg/kg	0.13	0.039	10	10/07/19 18:39	10/13/19 18:28	120-12-7	
Benzo(a)anthracene	0.20	mg/kg	0.15	0.046	10	10/07/19 18:39	10/13/19 18:28	56-55-3	
Benzo(a)pyrene	0.27	mg/kg	0.18	0.054	10	10/07/19 18:39	10/13/19 18:28	50-32-8	
Benzo(b)fluoranthene	0.26	mg/kg	0.090	0.027	10	10/07/19 18:39	10/13/19 18:28	205-99-2	
Benzo(g,h,i)perylene	<0.038	mg/kg	0.12	0.038	10	10/07/19 18:39	10/13/19 18:28	191-24-2	
Benzo(k)fluoranthene	<0.035	mg/kg	0.12	0.035	10	10/07/19 18:39	10/13/19 18:28	207-08-9	
Chrysene	0.38	mg/kg	0.18	0.055	10	10/07/19 18:39	10/13/19 18:28	218-01-9	
Dibenz(a,h)anthracene	<0.055	mg/kg	0.18	0.055	10	10/07/19 18:39	10/13/19 18:28	53-70-3	
Fluoranthene	0.26	mg/kg	0.15	0.045	10	10/07/19 18:39	10/13/19 18:28	206-44-0	
Fluorene	6.2	mg/kg	0.14	0.041	10	10/07/19 18:39	10/13/19 18:28	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.028	mg/kg	0.093	0.028	10	10/07/19 18:39	10/13/19 18:28	193-39-5	
Naphthalene	0.32	mg/kg	0.21	0.063	10	10/07/19 18:39	10/13/19 18:28	91-20-3	
Phenanthrene	6.4	mg/kg	0.11	0.034	10	10/07/19 18:39	10/13/19 18:28	85-01-8	
Pyrene	0.39	mg/kg	0.15	0.044	10	10/07/19 18:39	10/13/19 18:28	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	0	%	30-125		10	10/07/19 18:39	10/13/19 18:28	321-60-8	D3,P3, S4
p-Terphenyl-d14 (S)	0	%	30-125		10	10/07/19 18:39	10/13/19 18:28	1718-51-0	S4
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0039	mg/kg	0.013	0.0039	1	10/16/19 16:26	10/16/19 20:30	71-43-2	
Ethylbenzene	<0.0038	mg/kg	0.013	0.0038	1	10/16/19 16:26	10/16/19 20:30	100-41-4	
Methyl-tert-butyl ether	<0.0083	mg/kg	0.028	0.0083	1	10/16/19 16:26	10/16/19 20:30	1634-04-4	
Toluene	<0.017	mg/kg	0.057	0.017	1	10/16/19 16:26	10/16/19 20:30	108-88-3	
1,2,4-Trimethylbenzene	<0.014	mg/kg	0.047	0.014	1	10/16/19 16:26	10/16/19 20:30	95-63-6	
1,3,5-Trimethylbenzene	<0.011	mg/kg	0.037	0.011	1	10/16/19 16:26	10/16/19 20:30	108-67-8	
Xylene (Total)	<0.016	mg/kg	0.054	0.016	1	10/16/19 16:26	10/16/19 20:30	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	107	%	75-125		1	10/16/19 16:26	10/16/19 20:30	17060-07-0	
Toluene-d8 (S)	96	%	75-125		1	10/16/19 16:26	10/16/19 20:30	2037-26-5	
4-Bromofluorobenzene (S)	102	%	75-125		1	10/16/19 16:26	10/16/19 20:30	460-00-4	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Lab Project No.: 10494298

Sample: HA-1\_3-3.9 Lab ID: 10494298002 Collected: 10/04/19 09:45 Received: 10/04/19 19:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b>									
Analytical Method: ASTM D2974									
Percent Moisture	24.6	%	0.10	0.10	1		10/15/19 14:54		
<b>8270D MSSV PAH by SIM</b>									
Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	1.4	mg/kg	0.021	0.0064	10	10/07/19 18:39	10/13/19 18:50	90-12-0	
2-Methylnaphthalene	0.33	mg/kg	0.021	0.0063	10	10/07/19 18:39	10/13/19 18:50	91-57-6	
Acenaphthene	0.50	mg/kg	0.018	0.0054	10	10/07/19 18:39	10/13/19 18:50	83-32-9	
Acenaphthylene	0.11	mg/kg	0.035	0.011	10	10/07/19 18:39	10/13/19 18:50	208-96-8	
Anthracene	0.11	mg/kg	0.013	0.0038	10	10/07/19 18:39	10/13/19 18:50	120-12-7	
Benzo(a)anthracene	0.018	mg/kg	0.015	0.0044	10	10/07/19 18:39	10/13/19 18:50	56-55-3	
Benzo(a)pyrene	0.031	mg/kg	0.017	0.0052	10	10/07/19 18:39	10/13/19 18:50	50-32-8	
Benzo(b)fluoranthene	0.028	mg/kg	0.0087	0.0026	10	10/07/19 18:39	10/13/19 18:50	205-99-2	
Benzo(g,h,i)perylene	<0.0036	mg/kg	0.012	0.0036	10	10/07/19 18:39	10/13/19 18:50	191-24-2	
Benzo(k)fluoranthene	<0.0033	mg/kg	0.011	0.0033	10	10/07/19 18:39	10/13/19 18:50	207-08-9	
Chrysene	0.089	mg/kg	0.018	0.0053	10	10/07/19 18:39	10/13/19 18:50	218-01-9	
Dibenz(a,h)anthracene	<0.0052	mg/kg	0.017	0.0052	10	10/07/19 18:39	10/13/19 18:50	53-70-3	
Fluoranthene	0.028	mg/kg	0.015	0.0044	10	10/07/19 18:39	10/13/19 18:50	206-44-0	
Fluorene	0.58	mg/kg	0.013	0.0039	10	10/07/19 18:39	10/13/19 18:50	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.0027	mg/kg	0.0090	0.0027	10	10/07/19 18:39	10/13/19 18:50	193-39-5	
Naphthalene	0.030	mg/kg	0.020	0.0061	10	10/07/19 18:39	10/13/19 18:50	91-20-3	
Phenanthrene	0.59	mg/kg	0.011	0.0033	10	10/07/19 18:39	10/13/19 18:50	85-01-8	
Pyrene	0.053	mg/kg	0.014	0.0042	10	10/07/19 18:39	10/13/19 18:50	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	0	%	30-125		10	10/07/19 18:39	10/13/19 18:50	321-60-8	D3,S4
p-Terphenyl-d14 (S)	0	%	30-125		10	10/07/19 18:39	10/13/19 18:50	1718-51-0	S4
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0037	mg/kg	0.012	0.0037	1	10/16/19 16:26	10/16/19 20:49	71-43-2	
Ethylbenzene	<0.0035	mg/kg	0.012	0.0035	1	10/16/19 16:26	10/16/19 20:49	100-41-4	
Methyl-tert-butyl ether	<0.0077	mg/kg	0.026	0.0077	1	10/16/19 16:26	10/16/19 20:49	1634-04-4	
Toluene	<0.016	mg/kg	0.053	0.016	1	10/16/19 16:26	10/16/19 20:49	108-88-3	
1,2,4-Trimethylbenzene	<0.013	mg/kg	0.043	0.013	1	10/16/19 16:26	10/16/19 20:49	95-63-6	
1,3,5-Trimethylbenzene	<0.010	mg/kg	0.035	0.010	1	10/16/19 16:26	10/16/19 20:49	108-67-8	
Xylene (Total)	<0.015	mg/kg	0.050	0.015	1	10/16/19 16:26	10/16/19 20:49	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	108	%	75-125		1	10/16/19 16:26	10/16/19 20:49	17060-07-0	
Toluene-d8 (S)	96	%	75-125		1	10/16/19 16:26	10/16/19 20:49	2037-26-5	
4-Bromofluorobenzene (S)	101	%	75-125		1	10/16/19 16:26	10/16/19 20:49	460-00-4	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10494298

Sample: HA-2\_0-1 Lab ID: 10494298003 Collected: 10/04/19 10:50 Received: 10/04/19 19:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	25.2	%	0.10	0.10	1		10/15/19 14:54		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	0.036	mg/kg	0.0021	0.00064	1	10/07/19 18:39	10/17/19 15:09	90-12-0	
2-Methylnaphthalene	0.011	mg/kg	0.0021	0.00063	1	10/07/19 18:39	10/17/19 15:09	91-57-6	
Acenaphthene	0.013	mg/kg	0.0018	0.00055	1	10/07/19 18:39	10/17/19 15:09	83-32-9	
Acenaphthylene	0.0051	mg/kg	0.0036	0.0011	1	10/07/19 18:39	10/17/19 15:09	208-96-8	
Anthracene	<0.00038	mg/kg	0.0013	0.00038	1	10/07/19 18:39	10/17/19 15:09	120-12-7	
Benzo(a)anthracene	0.024	mg/kg	0.0015	0.00044	1	10/07/19 18:39	10/17/19 15:09	56-55-3	
Benzo(a)pyrene	0.013	mg/kg	0.0018	0.00053	1	10/07/19 18:39	10/17/19 15:09	50-32-8	
Benzo(b)fluoranthene	0.0092	mg/kg	0.00087	0.00026	1	10/07/19 18:39	10/17/19 15:09	205-99-2	
Benzo(g,h,i)perylene	0.017	mg/kg	0.0012	0.00036	1	10/07/19 18:39	10/17/19 15:09	191-24-2	
Benzo(k)fluoranthene	<0.00034	mg/kg	0.0011	0.00034	1	10/07/19 18:39	10/17/19 15:09	207-08-9	
Chrysene	0.015	mg/kg	0.0018	0.00053	1	10/07/19 18:39	10/17/19 15:09	218-01-9	
Dibenz(a,h)anthracene	<0.00053	mg/kg	0.0018	0.00053	1	10/07/19 18:39	10/17/19 15:09	53-70-3	
Fluoranthene	0.011	mg/kg	0.0015	0.00044	1	10/07/19 18:39	10/17/19 15:09	206-44-0	
Fluorene	0.019	mg/kg	0.0013	0.00039	1	10/07/19 18:39	10/17/19 15:09	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.00027	mg/kg	0.00090	0.00027	1	10/07/19 18:39	10/17/19 15:09	193-39-5	
Naphthalene	0.0016J	mg/kg	0.0020	0.00061	1	10/07/19 18:39	10/17/19 15:09	91-20-3	
Phenanthrene	0.017	mg/kg	0.0011	0.00033	1	10/07/19 18:39	10/17/19 15:09	85-01-8	
Pyrene	0.032	mg/kg	0.0014	0.00043	1	10/07/19 18:39	10/17/19 15:09	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	84	%	30-125		1	10/07/19 18:39	10/17/19 15:09	321-60-8	
p-Terphenyl-d14 (S)	85	%	30-125		1	10/07/19 18:39	10/17/19 15:09	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0039	mg/kg	0.013	0.0039	1	10/16/19 16:26	10/16/19 21:08	71-43-2	
Ethylbenzene	<0.0037	mg/kg	0.012	0.0037	1	10/16/19 16:26	10/16/19 21:08	100-41-4	
Methyl-tert-butyl ether	<0.0081	mg/kg	0.027	0.0081	1	10/16/19 16:26	10/16/19 21:08	1634-04-4	
Toluene	<0.017	mg/kg	0.055	0.017	1	10/16/19 16:26	10/16/19 21:08	108-88-3	
1,2,4-Trimethylbenzene	<0.014	mg/kg	0.045	0.014	1	10/16/19 16:26	10/16/19 21:08	95-63-6	
1,3,5-Trimethylbenzene	<0.011	mg/kg	0.036	0.011	1	10/16/19 16:26	10/16/19 21:08	108-67-8	
Xylene (Total)	<0.016	mg/kg	0.053	0.016	1	10/16/19 16:26	10/16/19 21:08	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	101	%	75-125		1	10/16/19 16:26	10/16/19 21:08	17060-07-0	
Toluene-d8 (S)	95	%	75-125		1	10/16/19 16:26	10/16/19 21:08	2037-26-5	
4-Bromofluorobenzene (S)	103	%	75-125		1	10/16/19 16:26	10/16/19 21:08	460-00-4	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10494298

**Sample:** HA-2\_2.5-3      **Lab ID:** 10494298004      Collected: 10/04/19 11:05      Received: 10/04/19 19:00      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	27.4	%	0.10	0.10	1		10/15/19 14:54		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM      Preparation Method: EPA 3550									
1-Methylnaphthalene	0.028	mg/kg	0.0022	0.00066	1	10/07/19 18:39	10/13/19 19:32	90-12-0	
2-Methylnaphthalene	0.022	mg/kg	0.0022	0.00065	1	10/07/19 18:39	10/13/19 19:32	91-57-6	
Acenaphthene	<0.00056	mg/kg	0.0019	0.00056	1	10/07/19 18:39	10/13/19 19:32	83-32-9	
Acenaphthylene	<0.0011	mg/kg	0.0037	0.0011	1	10/07/19 18:39	10/13/19 19:32	208-96-8	
Anthracene	<0.00039	mg/kg	0.0013	0.00039	1	10/07/19 18:39	10/13/19 19:32	120-12-7	
Benzo(a)anthracene	0.023	mg/kg	0.0015	0.00045	1	10/07/19 18:39	10/13/19 19:32	56-55-3	
Benzo(a)pyrene	0.013	mg/kg	0.0018	0.00054	1	10/07/19 18:39	10/13/19 19:32	50-32-8	
Benzo(b)fluoranthene	0.0094	mg/kg	0.00090	0.00027	1	10/07/19 18:39	10/13/19 19:32	205-99-2	
Benzo(g,h,i)perylene	0.014	mg/kg	0.0012	0.00037	1	10/07/19 18:39	10/13/19 19:32	191-24-2	
Benzo(k)fluoranthene	<0.00035	mg/kg	0.0012	0.00035	1	10/07/19 18:39	10/13/19 19:32	207-08-9	
Chrysene	0.0064	mg/kg	0.0018	0.00055	1	10/07/19 18:39	10/13/19 19:32	218-01-9	
Dibenz(a,h)anthracene	<0.00054	mg/kg	0.0018	0.00054	1	10/07/19 18:39	10/13/19 19:32	53-70-3	
Fluoranthene	<0.00045	mg/kg	0.0015	0.00045	1	10/07/19 18:39	10/13/19 19:32	206-44-0	
Fluorene	0.033	mg/kg	0.0013	0.00041	1	10/07/19 18:39	10/13/19 19:32	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.00028	mg/kg	0.00093	0.00028	1	10/07/19 18:39	10/13/19 19:32	193-39-5	
Naphthalene	0.027	mg/kg	0.0021	0.00063	1	10/07/19 18:39	10/13/19 19:32	91-20-3	
Phenanthrene	<0.00034	mg/kg	0.0011	0.00034	1	10/07/19 18:39	10/13/19 19:32	85-01-8	
Pyrene	0.045	mg/kg	0.0015	0.00044	1	10/07/19 18:39	10/13/19 19:32	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	79	%	30-125		1	10/07/19 18:39	10/13/19 19:32	321-60-8	
p-Terphenyl-d14 (S)	75	%	30-125		1	10/07/19 18:39	10/13/19 19:32	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
Benzene	<0.0039	mg/kg	0.013	0.0039	1	10/16/19 16:26	10/16/19 21:27	71-43-2	
Ethylbenzene	<0.0038	mg/kg	0.013	0.0038	1	10/16/19 16:26	10/16/19 21:27	100-41-4	
Methyl-tert-butyl ether	<0.0083	mg/kg	0.027	0.0083	1	10/16/19 16:26	10/16/19 21:27	1634-04-4	
Toluene	<0.017	mg/kg	0.056	0.017	1	10/16/19 16:26	10/16/19 21:27	108-88-3	
1,2,4-Trimethylbenzene	<0.014	mg/kg	0.046	0.014	1	10/16/19 16:26	10/16/19 21:27	95-63-6	
1,3,5-Trimethylbenzene	<0.011	mg/kg	0.037	0.011	1	10/16/19 16:26	10/16/19 21:27	108-67-8	
Xylene (Total)	<0.016	mg/kg	0.054	0.016	1	10/16/19 16:26	10/16/19 21:27	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	107	%	75-125		1	10/16/19 16:26	10/16/19 21:27	17060-07-0	
Toluene-d8 (S)	91	%	75-125		1	10/16/19 16:26	10/16/19 21:27	2037-26-5	
4-Bromofluorobenzene (S)	106	%	75-125		1	10/16/19 16:26	10/16/19 21:27	460-00-4	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10494298

**Sample: Tripblank-4**      **Lab ID: 10494298005**      Collected: 10/04/19 00:00      Received: 10/04/19 19:00      Matrix: Solid

**Results reported on a "wet-weight" basis**

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B    Preparation Method: EPA 5035/5030B									
Benzene	<0.0028	mg/kg	0.0094	0.0028	1	10/16/19 16:26	10/16/19 19:32	71-43-2	
Ethylbenzene	<0.0027	mg/kg	0.0091	0.0027	1	10/16/19 16:26	10/16/19 19:32	100-41-4	
Methyl-tert-butyl ether	<0.0060	mg/kg	0.020	0.0060	1	10/16/19 16:26	10/16/19 19:32	1634-04-4	
Toluene	<0.012	mg/kg	0.041	0.012	1	10/16/19 16:26	10/16/19 19:32	108-88-3	
1,2,4-Trimethylbenzene	<0.010	mg/kg	0.033	0.010	1	10/16/19 16:26	10/16/19 19:32	95-63-6	
1,3,5-Trimethylbenzene	<0.0080	mg/kg	0.027	0.0080	1	10/16/19 16:26	10/16/19 19:32	108-67-8	
Xylene (Total)	<0.012	mg/kg	0.039	0.012	1	10/16/19 16:26	10/16/19 19:32	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	109	%	75-125		1	10/16/19 16:26	10/16/19 19:32	17060-07-0	
Toluene-d8 (S)	99	%	75-125		1	10/16/19 16:26	10/16/19 19:32	2037-26-5	
4-Bromofluorobenzene (S)	98	%	75-125		1	10/16/19 16:26	10/16/19 19:32	460-00-4	

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10494298

QC Batch: 638419

Analysis Method: ASTM D2974

QC Batch Method: ASTM D2974

Analysis Description: Dry Weight / %M by ASTM D2974

Associated Lab Samples: 10494298001, 10494298002, 10494298003, 10494298004

SAMPLE DUPLICATE: 3440695

Parameter	Units	10494457004 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	17.1	15.4	11	30	

SAMPLE DUPLICATE: 3441325

Parameter	Units	10495362003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	28.0	27.1	3	30	

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10494298

QC Batch: 638781 Analysis Method: EPA 8260B  
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV UST  
Associated Lab Samples: 10494298001, 10494298002, 10494298003, 10494298004, 10494298005

METHOD BLANK: 3442189 Matrix: Solid  
Associated Lab Samples: 10494298001, 10494298002, 10494298003, 10494298004, 10494298005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	<0.010	0.033	10/16/19 19:13	
1,3,5-Trimethylbenzene	mg/kg	<0.0080	0.027	10/16/19 19:13	
Benzene	mg/kg	<0.0028	0.0094	10/16/19 19:13	
Ethylbenzene	mg/kg	<0.0027	0.0091	10/16/19 19:13	
Methyl-tert-butyl ether	mg/kg	<0.0060	0.020	10/16/19 19:13	
Toluene	mg/kg	<0.012	0.041	10/16/19 19:13	
Xylene (Total)	mg/kg	<0.012	0.039	10/16/19 19:13	
1,2-Dichloroethane-d4 (S)	%	107	75-125	10/16/19 19:13	
4-Bromofluorobenzene (S)	%	100	75-125	10/16/19 19:13	
Toluene-d8 (S)	%	98	75-125	10/16/19 19:13	

LABORATORY CONTROL SAMPLE: 3442190

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	1	1.1	105	51-126	
1,3,5-Trimethylbenzene	mg/kg	1	0.99	99	52-127	
Benzene	mg/kg	1	1.1	106	48-125	
Ethylbenzene	mg/kg	1	1.1	106	51-125	
Methyl-tert-butyl ether	mg/kg	1	0.99	99	53-125	
Toluene	mg/kg	1	1.0	101	51-125	
Xylene (Total)	mg/kg	3	3.1	103	52-125	
1,2-Dichloroethane-d4 (S)	%			102	75-125	
4-Bromofluorobenzene (S)	%			101	75-125	
Toluene-d8 (S)	%			97	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3442191 3442192

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10494457001 Result	Spike Conc.	Spike Conc.	Result						
1,2,4-Trimethylbenzene	mg/kg	ND	1	1	1.0	1.1	104	109	65-145	8	30
1,3,5-Trimethylbenzene	mg/kg	ND	1	1	1.0	1.1	100	103	66-148	6	30
Benzene	mg/kg	ND	1	1	0.97	1.0	96	99	63-136	5	30
Ethylbenzene	mg/kg	ND	1	1	0.98	1.1	97	102	64-142	7	30
Methyl-tert-butyl ether	mg/kg	ND	1	1	0.93	1.1	92	102	69-134	13	30
Toluene	mg/kg	ND	1	1	0.96	0.99	95	95	61-141	2	30
Xylene (Total)	mg/kg	ND	3	3.1	3.0	3.1	98	98	67-145	3	30
1,2-Dichloroethane-d4 (S)	%						102	103	75-125		
4-Bromofluorobenzene (S)	%						101	101	75-125		

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**QUALITY CONTROL DATA**

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10494298

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3442191 3442192												
Parameter	Units	10494457001 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
Toluene-d8 (S)	%						93	95	75-125			

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10494298

QC Batch: 636665 Analysis Method: EPA 8270D by SIM  
 QC Batch Method: EPA 3550 Analysis Description: 8270D Solid PAH by SIM MSSV  
 Associated Lab Samples: 10494298001, 10494298002, 10494298003, 10494298004

METHOD BLANK: 3431431 Matrix: Solid  
 Associated Lab Samples: 10494298001, 10494298002, 10494298003, 10494298004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	mg/kg	<0.00048	0.0016	10/08/19 19:10	
2-Methylnaphthalene	mg/kg	<0.00047	0.0016	10/08/19 19:10	
Acenaphthene	mg/kg	<0.00041	0.0014	10/08/19 19:10	
Acenaphthylene	mg/kg	<0.00080	0.0027	10/08/19 19:10	
Anthracene	mg/kg	<0.00028	0.00095	10/08/19 19:10	
Benzo(a)anthracene	mg/kg	<0.00033	0.0011	10/08/19 19:10	
Benzo(a)pyrene	mg/kg	<0.00039	0.0013	10/08/19 19:10	
Benzo(b)fluoranthene	mg/kg	<0.00020	0.00065	10/08/19 19:10	
Benzo(g,h,i)perylene	mg/kg	<0.00027	0.00091	10/08/19 19:10	
Benzo(k)fluoranthene	mg/kg	<0.00025	0.00084	10/08/19 19:10	
Chrysene	mg/kg	<0.00040	0.0013	10/08/19 19:10	
Dibenz(a,h)anthracene	mg/kg	<0.00040	0.0013	10/08/19 19:10	
Fluoranthene	mg/kg	<0.00033	0.0011	10/08/19 19:10	
Fluorene	mg/kg	<0.00030	0.00098	10/08/19 19:10	
Indeno(1,2,3-cd)pyrene	mg/kg	<0.00020	0.00068	10/08/19 19:10	
Naphthalene	mg/kg	<0.00046	0.0015	10/08/19 19:10	
Phenanthrene	mg/kg	<0.00025	0.00083	10/08/19 19:10	
Pyrene	mg/kg	<0.00032	0.0011	10/08/19 19:10	
2-Fluorobiphenyl (S)	%	84	30-125	10/08/19 19:10	
p-Terphenyl-d14 (S)	%	90	30-125	10/08/19 19:10	

LABORATORY CONTROL SAMPLE: 3431432

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	mg/kg	0.033	0.028	83	33-125	
2-Methylnaphthalene	mg/kg	0.033	0.029	87	49-125	
Acenaphthene	mg/kg	0.033	0.028	83	46-125	
Acenaphthylene	mg/kg	0.033	0.027	82	44-125	
Anthracene	mg/kg	0.033	0.026	79	62-125	
Benzo(a)anthracene	mg/kg	0.033	0.026	79	53-125	
Benzo(a)pyrene	mg/kg	0.033	0.026	77	62-125	
Benzo(b)fluoranthene	mg/kg	0.033	0.024	73	51-125	
Benzo(g,h,i)perylene	mg/kg	0.033	0.027	81	58-125	
Benzo(k)fluoranthene	mg/kg	0.033	0.030	89	59-125	
Chrysene	mg/kg	0.033	0.029	88	59-125	
Dibenz(a,h)anthracene	mg/kg	0.033	0.030	89	60-125	
Fluoranthene	mg/kg	0.033	0.029	86	67-125	
Fluorene	mg/kg	0.033	0.028	84	51-125	
Indeno(1,2,3-cd)pyrene	mg/kg	0.033	0.027	82	59-125	
Naphthalene	mg/kg	0.033	0.028	84	47-125	

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10494298

LABORATORY CONTROL SAMPLE: 3431432

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenanthrene	mg/kg	0.033	0.028	83	61-125	
Pyrene	mg/kg	0.033	0.027	82	52-125	
2-Fluorobiphenyl (S)	%			89	30-125	
p-Terphenyl-d14 (S)	%			88	30-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3432137 3432138

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		10494051001 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
1-Methylnaphthalene	mg/kg	275 ug/kg	0.065	0.065	0.42	0.34	226	102	30-125	21	30	M1
2-Methylnaphthalene	mg/kg	532 ug/kg	0.065	0.065	0.73	0.60	294	98	30-125	20	30	M1
Acenaphthene	mg/kg	ND	0.065	0.065	0.10	0.089	86	67	30-125		30	
Acenaphthylene	mg/kg	ND	0.065	0.065	0.15	0.22	161	259	30-125	35	30	M1,R1
Anthracene	mg/kg	102 ug/kg	0.065	0.065	0.19	0.22	138	181	30-131	14	30	M1
Benzo(a)anthracene	mg/kg	178 ug/kg	0.065	0.065	0.43	0.61	387	652	30-126	34	30	M1,R1
Benzo(a)pyrene	mg/kg	158 ug/kg	0.065	0.065	0.38	0.55	342	605	30-150	37	30	M1,R1
Benzo(b)fluoranthene	mg/kg	270 ug/kg	0.065	0.065	0.57	0.77	458	769	30-150	30	30	M1
Benzo(g,h,i)perylene	mg/kg	170 ug/kg	0.065	0.065	0.31	0.43	212	395	30-150	33	30	M1,R1
Benzo(k)fluoranthene	mg/kg	128 ug/kg	0.065	0.065	0.25	0.37	185	366	30-150	39	30	M1,R1
Chrysene	mg/kg	222 ug/kg	0.065	0.065	0.45	0.59	353	566	30-150	27	30	M1
Dibenz(a,h)anthracene	mg/kg	ND	0.065	0.065	0.11	0.13	111	142	30-143	17	30	
Fluoranthene	mg/kg	255 ug/kg	0.065	0.065	0.60	0.78	521	792	30-143	26	30	M1
Fluorene	mg/kg	ND	0.065	0.065	0.11	0.098	79	56	30-138		30	
Indeno(1,2,3-cd)pyrene	mg/kg	117 ug/kg	0.065	0.065	0.24	0.34	183	333	30-150	34	30	M1,R1
Naphthalene	mg/kg	168 ug/kg	0.065	0.065	0.30	0.24	205	115	30-125	22	30	M1
Phenanthrene	mg/kg	291 ug/kg	0.065	0.065	0.37	0.30	115	20	30-142	19	30	M1
Pyrene	mg/kg	365 ug/kg	0.065	0.065	0.67	0.83	472	705	30-149	20	30	M1
2-Fluorobiphenyl (S)	%						73	70	30-125			D3
p-Terphenyl-d14 (S)	%						75	71	30-125			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10494298

---

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

### ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

P3 Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.

R1 RPD value was outside control limits.

S4 Surrogate recovery not evaluated against control limits due to sample dilution.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10494298

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10494298001	HA-1_0.7-1.5	ASTM D2974	638419		
10494298002	HA-1_3-3.9	ASTM D2974	638419		
10494298003	HA-2_0-1	ASTM D2974	638419		
10494298004	HA-2_2.5-3	ASTM D2974	638419		
10494298001	HA-1_0.7-1.5	EPA 3550	636665	EPA 8270D by SIM	637093
10494298002	HA-1_3-3.9	EPA 3550	636665	EPA 8270D by SIM	637093
10494298003	HA-2_0-1	EPA 3550	636665	EPA 8270D by SIM	637093
10494298004	HA-2_2.5-3	EPA 3550	636665	EPA 8270D by SIM	637093
10494298001	HA-1_0.7-1.5	EPA 5035/5030B	638781	EPA 8260B	638937
10494298002	HA-1_3-3.9	EPA 5035/5030B	638781	EPA 8260B	638937
10494298003	HA-2_0-1	EPA 5035/5030B	638781	EPA 8260B	638937
10494298004	HA-2_2.5-3	EPA 5035/5030B	638781	EPA 8260B	638937
10494298005	Tripblank-4	EPA 5035/5030B	638781	EPA 8260B	638937

### REPORT OF LABORATORY ANALYSIS

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# Barr Engineering Co. Chain of Custody

Sample Origination State:

- Ann Arbor  Duluth  Hibbing  Minneapolis  Salt Lake City
- Bismarck  Grand Rapids  Jefferson City

- KS  MO  UT
- MI  ND  WI
- MN  SD Other: \_\_\_\_\_

REPORT TO	INVOICE TO
Company: <u>Barr Engineering</u>	Company: <u>Barr</u>
Address: <u>325 S. Lake Ave. Duluth MN</u>	Address: _____
Name: <u>Lynette Carney</u>	Name: _____
email: <u>lcarney@barr.com</u>	email: _____
Copy to: <u>datamgt@barr.com</u>	P.O. _____
Project Name: <u>Husky Port five site inventory</u>	Barr Project No: <u>49161427.16 100 102</u>

Location	Sample Depth			Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix Code
	Start	Stop	Unit (m./ft. or in.)			
1. HA-1	0.7	1.5	ft	10/4/19	0930	S
2. HA-1	3	3.9	ft	↓	0945	S
3. HA-2	0	1	ft	↓	1050	S
4. HA-2	2.5	3	ft	↓	1105	S
5. Tripblank-4	_____			10/4/19	_____	-
6.						
7.						
8.						
9.						
10.						

Perform MS/MSD Y/N	Total Number of Containers	Water		Soil		% Solids
		1	2	1	2	

- COC \_\_\_\_\_ of \_\_\_\_\_
- Matrix Code:**  
 GW = Groundwater  
 SW = Surface Water  
 WW = Waste Water  
 DW = Drinking Water  
 S = Soil/Solid  
 SD = Sediment  
 O = Other
- Preservative Code:**  
 A = None  
 B = HCl  
 C = HNO<sub>3</sub>  
 D = H<sub>2</sub>SO<sub>4</sub>  
 E = NaOH  
 F = MeOH  
 G = NaHSO<sub>4</sub>  
 H = Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>  
 I = Ascorbic Acid  
 J = NH<sub>4</sub>Cl  
 K = Zn Acetate  
 O = Other

Preservative Code: \_\_\_\_\_

Field Filtered Y/N: \_\_\_\_\_

PWC-8260; PAH-8270 SIM

↓

WO#: 10494298



BARR USE ONLY		Relinquished by: <u>[Signature]</u>	On Ice? <input checked="" type="checkbox"/> N	Date: <u>10/4/19</u>	Time: <u>1330</u>	Received by: <u>[Signature]</u>	Date: <u>10/4/19</u>	Time: <u>13:30</u>
Sampled by: <u>KMSJ3</u>		Relinquished by: <u>[Signature]</u>	On Ice? <input type="checkbox"/> Y	Date: <u>10.4.19</u>	Time: <u>1900</u>	Received by: <u>[Signature]</u>	Date: <u>10/4/19</u>	Time: <u>1900</u>
Barr Proj. Manager: <u>LMC</u>		Samples Shipped VIA: <input type="checkbox"/> Courier <input type="checkbox"/> Federal Express <input checked="" type="checkbox"/> Sampler			Air Bill Number: _____		Requested Due Date: _____	
Barr DQ Manager: <u>TAO</u>		<input type="checkbox"/> Other: _____					<input checked="" type="checkbox"/> Standard Turn Around Time	
Lab Name: <u>Pace</u>		Lab WO: _____			Temperature on Receipt (°C): <u>2.5</u>		<input type="checkbox"/> Rush (mm/dd/yyyy)	
Lab Location: <u>minneapolis</u>		Custody Seal Intact? <input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> None						

HRLGSTDFORMS Chain of Custody Form 2015 RIG Rev. 01/02/18



Document Name:  
**Sample Condition Upon Receipt Form**

Document No.:  
**F-MN-L-213-rev.29**

Document Revised: 23Aug2019  
Page 1 of 1

Issuing Authority:  
Pace Minnesota Quality Office

Sample Condition  
Upon Receipt

Client Name:

Barr

Project #:

**WO# : 10494298**

PM: AA1

Due Date: 10/21/19

CLIENT: BARR

Courier:

Fed Ex     UPS     USPS     Client  
 Pace     SpeeDee     Commercial    See Exceptions

Tracking Number:

Custody Seal on Cooler/Box Present?

Yes  No

Seals Intact?

Yes  No

Biological Tissue Frozen?

Yes  No  N/A

Packing Material:

Bubble Wrap     Bubble Bags     None     Other: \_\_\_\_\_

Temp Blank?

Yes  No

Thermometer:

T1(0461)     T2(1336)     T3(0459)  
 T4(0254)     T5(0489)

Type of Ice:

Wet     Blue     None     Dry     Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C

Cooler Temp Read w/temp blank: 0.3 °C

Average Corrected Temp

(no temp blank only):  See Exceptions

Correction Factor: +0.1

Cooler Temp Corrected w/temp blank: 0.4 °C

°C

1 Container

USDA Regulated Soil: (  N/A, water sample/Other: \_\_\_\_\_ )

Date/Initials of Person Examining Contents: 10/19/19 JS

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)?  Yes  No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?  Yes  No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

		COMMENTS:
Chain of Custody Present and Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	11. If no, write ID/ Date/Time on Container Below: <input type="checkbox"/> See Exception
Matrix: <input type="checkbox"/> Water <input checked="" type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other		
All containers needing acid/base preservation have been checked?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Sulfide, NaOH >12 Cyanide)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<input type="checkbox"/> NaOH <input type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Positive for Res. <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Chlorine? <input type="checkbox"/> No <input type="checkbox"/> See Exception
		pH Paper Lot#
		Res. Chlorine    0-6 Roll    0-6 Strip    0-14 Strip
Headspace in VOA Vials (greater than 6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> See Exception
Trip Blank Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Pace Trip Blank Lot # (if purchased): <u>081219-3</u>

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Field Data Required?  Yes  No

Comments/Resolution: \_\_\_\_\_

Project Manager Review: Amanda J. Albrecht

Date: 10/7/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office ( i.e out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: WJ

October 28, 2019

Terri Olson  
Barr Engineering Company  
4300 MarketPointe Drive  
Suite 200  
Minneapolis, MN 55435

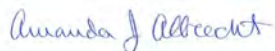
RE: Project: 49161427.16 100 102 Husky Post  
Pace Project No.: 10495123

Dear Terri Olson:

Enclosed are the analytical results for sample(s) received by the laboratory on October 10, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Amanda Albrecht  
amanda.albrecht@pacelabs.com  
(612)607-6382  
Project Manager

Enclosures

cc: BarrDM, Barr Engineering  
Accounts Payable, Barr Engineering



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10495123

---

### Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485

A2LA Certification #: 2926.01

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

CNMI Saipan Certification #: MP0003

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605

Georgia Certification #: 959

Guam EPA Certification #: MN00064

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: 03086

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064

Maryland Certification #: 322

Massachusetts Certification #: M-MN064

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137

Minnesota Dept of Ag Certification #: via MN 027-053-137

Minnesota Petrofund Certification #: 1240

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081

New Jersey Certification #: MN002

New York Certification #: 11647

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification #: MN00064

South Carolina Certification #:74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Vermont Certification #: VT-027053137

Virginia Certification #: 460163

Washington Certification #: C486

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10495123

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10495123001	HA-3_0-1.5	Solid	10/10/19 09:00	10/10/19 18:40
10495123002	HA-4_0-1.5	Solid	10/10/19 09:45	10/10/19 18:40
10495123003	HA-5_0-1.5	Solid	10/10/19 10:20	10/10/19 18:40
10495123004	Trip Blank - 5	Solid	10/10/19 00:00	10/10/19 18:40

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10495123

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10495123001	HA-3_0-1.5	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	DS2	10	PASI-M
10495123002	HA-4_0-1.5	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	DS2	10	PASI-M
10495123003	HA-5_0-1.5	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	DS2	10	PASI-M
10495123004	Trip Blank - 5	EPA 8260B	DS2	10	PASI-M

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10495123

Sample: HA-3\_0-1.5 Lab ID: 10495123001 Collected: 10/10/19 09:00 Received: 10/10/19 18:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b>									
Analytical Method: ASTM D2974									
Percent Moisture	30.9	%	0.10	0.10	1		10/24/19 10:42		
<b>8270D MSSV PAH by SIM</b>									
Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	0.0010J	mg/kg	0.0023	0.00069	1	10/11/19 16:29	10/16/19 16:21	90-12-0	
2-Methylnaphthalene	0.00099J	mg/kg	0.0023	0.00068	1	10/11/19 16:29	10/16/19 16:21	91-57-6	
Acenaphthene	0.0052	mg/kg	0.0020	0.00059	1	10/11/19 16:29	10/16/19 16:21	83-32-9	
Acenaphthylene	<0.0012	mg/kg	0.0039	0.0012	1	10/11/19 16:29	10/16/19 16:21	208-96-8	
Anthracene	0.0010J	mg/kg	0.0014	0.00041	1	10/11/19 16:29	10/16/19 16:21	120-12-7	
Benzo(a)anthracene	0.0012J	mg/kg	0.0016	0.00048	1	10/11/19 16:29	10/16/19 16:21	56-55-3	
Benzo(a)pyrene	0.00097J	mg/kg	0.0019	0.00057	1	10/11/19 16:29	10/16/19 16:21	50-32-8	
Benzo(b)fluoranthene	0.0017	mg/kg	0.00094	0.00028	1	10/11/19 16:29	10/16/19 16:21	205-99-2	
Benzo(g,h,i)perylene	0.0019	mg/kg	0.0013	0.00039	1	10/11/19 16:29	10/16/19 16:21	191-24-2	
Benzo(k)fluoranthene	0.00084J	mg/kg	0.0012	0.00036	1	10/11/19 16:29	10/16/19 16:21	207-08-9	
Chrysene	0.0021	mg/kg	0.0019	0.00058	1	10/11/19 16:29	10/16/19 16:21	218-01-9	
Dibenz(a,h)anthracene	<0.00057	mg/kg	0.0019	0.00057	1	10/11/19 16:29	10/16/19 16:21	53-70-3	
Fluoranthene	0.0039	mg/kg	0.0016	0.00047	1	10/11/19 16:29	10/16/19 16:21	206-44-0	
Fluorene	0.0027	mg/kg	0.0014	0.00043	1	10/11/19 16:29	10/16/19 16:21	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.00029	mg/kg	0.00097	0.00029	1	10/11/19 16:29	10/16/19 16:21	193-39-5	
Naphthalene	0.0020J	mg/kg	0.0022	0.00066	1	10/11/19 16:29	10/16/19 16:21	91-20-3	
Phenanthrene	0.0050	mg/kg	0.0012	0.00036	1	10/11/19 16:29	10/16/19 16:21	85-01-8	
Pyrene	0.0029	mg/kg	0.0015	0.00046	1	10/11/19 16:29	10/16/19 16:21	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	81	%	30-125		1	10/11/19 16:29	10/16/19 16:21	321-60-8	
p-Terphenyl-d14 (S)	79	%	30-125		1	10/11/19 16:29	10/16/19 16:21	1718-51-0	
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0044	mg/kg	0.015	0.0044	1	10/23/19 17:04	10/24/19 12:12	71-43-2	
Ethylbenzene	<0.0043	mg/kg	0.014	0.0043	1	10/23/19 17:04	10/24/19 12:12	100-41-4	
Methyl-tert-butyl ether	<0.0094	mg/kg	0.031	0.0094	1	10/23/19 17:04	10/24/19 12:12	1634-04-4	
Toluene	<0.019	mg/kg	0.064	0.019	1	10/23/19 17:04	10/24/19 12:12	108-88-3	
1,2,4-Trimethylbenzene	<0.016	mg/kg	0.052	0.016	1	10/23/19 17:04	10/24/19 12:12	95-63-6	
1,3,5-Trimethylbenzene	<0.013	mg/kg	0.042	0.013	1	10/23/19 17:04	10/24/19 12:12	108-67-8	
Xylene (Total)	<0.018	mg/kg	0.061	0.018	1	10/23/19 17:04	10/24/19 12:12	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	108	%	75-125		1	10/23/19 17:04	10/24/19 12:12	17060-07-0	
Toluene-d8 (S)	97	%	75-125		1	10/23/19 17:04	10/24/19 12:12	2037-26-5	
4-Bromofluorobenzene (S)	103	%	75-125		1	10/23/19 17:04	10/24/19 12:12	460-00-4	

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10495123

Sample: HA-4\_0-1.5 Lab ID: 10495123002 Collected: 10/10/19 09:45 Received: 10/10/19 18:40 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b>									
Analytical Method: ASTM D2974									
Percent Moisture	29.0	%	0.10	0.10	1		10/24/19 10:42		
<b>8270D MSSV PAH by SIM</b>									
Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	0.0024	mg/kg	0.0023	0.00068	1	10/11/19 16:29	10/16/19 16:42	90-12-0	
2-Methylnaphthalene	0.0029	mg/kg	0.0022	0.00067	1	10/11/19 16:29	10/16/19 16:42	91-57-6	
Acenaphthene	0.0011J	mg/kg	0.0019	0.00058	1	10/11/19 16:29	10/16/19 16:42	83-32-9	
Acenaphthylene	0.0015J	mg/kg	0.0038	0.0011	1	10/11/19 16:29	10/16/19 16:42	208-96-8	
Anthracene	0.041	mg/kg	0.0013	0.00040	1	10/11/19 16:29	10/16/19 16:42	120-12-7	
Benzo(a)anthracene	0.033	mg/kg	0.0015	0.00047	1	10/11/19 16:29	10/16/19 16:42	56-55-3	
Benzo(a)pyrene	0.022	mg/kg	0.0018	0.00056	1	10/11/19 16:29	10/16/19 16:42	50-32-8	
Benzo(b)fluoranthene	0.033	mg/kg	0.00092	0.00028	1	10/11/19 16:29	10/16/19 16:42	205-99-2	
Benzo(g,h,i)perylene	0.018	mg/kg	0.0013	0.00038	1	10/11/19 16:29	10/16/19 16:42	191-24-2	
Benzo(k)fluoranthene	0.016	mg/kg	0.0012	0.00036	1	10/11/19 16:29	10/16/19 16:42	207-08-9	
Chrysene	0.090	mg/kg	0.0019	0.00056	1	10/11/19 16:29	10/16/19 16:42	218-01-9	
Dibenz(a,h)anthracene	<0.00056	mg/kg	0.0019	0.00056	1	10/11/19 16:29	10/16/19 16:42	53-70-3	
Fluoranthene	0.021	mg/kg	0.0015	0.00046	1	10/11/19 16:29	10/16/19 16:42	206-44-0	
Fluorene	0.0015	mg/kg	0.0014	0.00042	1	10/11/19 16:29	10/16/19 16:42	86-73-7	
Indeno(1,2,3-cd)pyrene	0.013	mg/kg	0.00095	0.00029	1	10/11/19 16:29	10/16/19 16:42	193-39-5	
Naphthalene	0.0021J	mg/kg	0.0022	0.00065	1	10/11/19 16:29	10/16/19 16:42	91-20-3	
Phenanthrene	0.013	mg/kg	0.0012	0.00035	1	10/11/19 16:29	10/16/19 16:42	85-01-8	
Pyrene	0.019	mg/kg	0.0015	0.00045	1	10/11/19 16:29	10/16/19 16:42	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	81	%	30-125		1	10/11/19 16:29	10/16/19 16:42	321-60-8	
p-Terphenyl-d14 (S)	76	%	30-125		1	10/11/19 16:29	10/16/19 16:42	1718-51-0	
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0041	mg/kg	0.014	0.0041	1	10/23/19 17:04	10/24/19 12:30	71-43-2	
Ethylbenzene	<0.0039	mg/kg	0.013	0.0039	1	10/23/19 17:04	10/24/19 12:30	100-41-4	
Methyl-tert-butyl ether	<0.0086	mg/kg	0.029	0.0086	1	10/23/19 17:04	10/24/19 12:30	1634-04-4	
Toluene	<0.018	mg/kg	0.059	0.018	1	10/23/19 17:04	10/24/19 12:30	108-88-3	
1,2,4-Trimethylbenzene	<0.014	mg/kg	0.048	0.014	1	10/23/19 17:04	10/24/19 12:30	95-63-6	
1,3,5-Trimethylbenzene	<0.012	mg/kg	0.038	0.012	1	10/23/19 17:04	10/24/19 12:30	108-67-8	
Xylene (Total)	<0.017	mg/kg	0.056	0.017	1	10/23/19 17:04	10/24/19 12:30	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	109	%	75-125		1	10/23/19 17:04	10/24/19 12:30	17060-07-0	
Toluene-d8 (S)	100	%	75-125		1	10/23/19 17:04	10/24/19 12:30	2037-26-5	
4-Bromofluorobenzene (S)	99	%	75-125		1	10/23/19 17:04	10/24/19 12:30	460-00-4	

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Lab Project No.: 10495123

**Sample:** HA-5\_0-1.5      **Lab ID:** 10495123003      Collected: 10/10/19 10:20      Received: 10/10/19 18:40      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>29.3</b>	%	0.10	0.10	1		10/24/19 10:42		
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM      Preparation Method: EPA 3550									
1-Methylnaphthalene	<b>0.011</b>	mg/kg	0.0023	0.00068	1	10/11/19 16:29	10/16/19 17:04	90-12-0	
2-Methylnaphthalene	<b>0.015</b>	mg/kg	0.0022	0.00067	1	10/11/19 16:29	10/16/19 17:04	91-57-6	
Acenaphthene	<b>0.011</b>	mg/kg	0.0019	0.00058	1	10/11/19 16:29	10/16/19 17:04	83-32-9	
Acenaphthylene	<b>0.0048</b>	mg/kg	0.0038	0.0011	1	10/11/19 16:29	10/16/19 17:04	208-96-8	
Anthracene	<b>0.031</b>	mg/kg	0.0013	0.00040	1	10/11/19 16:29	10/16/19 17:04	120-12-7	
Benzo(a)anthracene	<b>0.093</b>	mg/kg	0.0016	0.00047	1	10/11/19 16:29	10/16/19 17:04	56-55-3	
Benzo(a)pyrene	<b>0.091</b>	mg/kg	0.0019	0.00056	1	10/11/19 16:29	10/16/19 17:04	50-32-8	
Benzo(b)fluoranthene	<b>0.12</b>	mg/kg	0.00092	0.00028	1	10/11/19 16:29	10/16/19 17:04	205-99-2	
Benzo(g,h,i)perylene	<b>0.080</b>	mg/kg	0.0013	0.00038	1	10/11/19 16:29	10/16/19 17:04	191-24-2	
Benzo(k)fluoranthene	<b>0.039</b>	mg/kg	0.0012	0.00036	1	10/11/19 16:29	10/16/19 17:04	207-08-9	
Chrysene	<b>0.13</b>	mg/kg	0.0019	0.00057	1	10/11/19 16:29	10/16/19 17:04	218-01-9	
Dibenz(a,h)anthracene	<b>0.023</b>	mg/kg	0.0019	0.00056	1	10/11/19 16:29	10/16/19 17:04	53-70-3	
Fluoranthene	<b>0.16</b>	mg/kg	0.0015	0.00047	1	10/11/19 16:29	10/16/19 17:04	206-44-0	
Fluorene	<b>0.011</b>	mg/kg	0.0014	0.00042	1	10/11/19 16:29	10/16/19 17:04	86-73-7	
Indeno(1,2,3-cd)pyrene	<b>0.051</b>	mg/kg	0.00096	0.00029	1	10/11/19 16:29	10/16/19 17:04	193-39-5	
Naphthalene	<b>0.011</b>	mg/kg	0.0022	0.00065	1	10/11/19 16:29	10/16/19 17:04	91-20-3	
Phenanthrene	<b>0.11</b>	mg/kg	0.0012	0.00035	1	10/11/19 16:29	10/16/19 17:04	85-01-8	
Pyrene	<b>0.15</b>	mg/kg	0.0015	0.00045	1	10/11/19 16:29	10/16/19 17:04	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	81	%	30-125		1	10/11/19 16:29	10/16/19 17:04	321-60-8	
p-Terphenyl-d14 (S)	77	%	30-125		1	10/11/19 16:29	10/16/19 17:04	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;0.0039</b>	mg/kg	0.013	0.0039	1	10/23/19 17:04	10/24/19 12:48	71-43-2	
Ethylbenzene	<b>&lt;0.0038</b>	mg/kg	0.013	0.0038	1	10/23/19 17:04	10/24/19 12:48	100-41-4	
Methyl-tert-butyl ether	<b>&lt;0.0083</b>	mg/kg	0.028	0.0083	1	10/23/19 17:04	10/24/19 12:48	1634-04-4	
Toluene	<b>&lt;0.017</b>	mg/kg	0.057	0.017	1	10/23/19 17:04	10/24/19 12:48	108-88-3	
1,2,4-Trimethylbenzene	<b>&lt;0.014</b>	mg/kg	0.047	0.014	1	10/23/19 17:04	10/24/19 12:48	95-63-6	
1,3,5-Trimethylbenzene	<b>&lt;0.011</b>	mg/kg	0.037	0.011	1	10/23/19 17:04	10/24/19 12:48	108-67-8	
Xylene (Total)	<b>&lt;0.016</b>	mg/kg	0.054	0.016	1	10/23/19 17:04	10/24/19 12:48	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	113	%	75-125		1	10/23/19 17:04	10/24/19 12:48	17060-07-0	
Toluene-d8 (S)	99	%	75-125		1	10/23/19 17:04	10/24/19 12:48	2037-26-5	
4-Bromofluorobenzene (S)	96	%	75-125		1	10/23/19 17:04	10/24/19 12:48	460-00-4	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10495123

**Sample: Trip Blank - 5**      **Lab ID: 10495123004**      Collected: 10/10/19 00:00      Received: 10/10/19 18:40      Matrix: Solid

**Results reported on a "wet-weight" basis**

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0028	mg/kg	0.0094	0.0028	1	10/23/19 17:04	10/24/19 11:54	71-43-2	
Ethylbenzene	<0.0027	mg/kg	0.0091	0.0027	1	10/23/19 17:04	10/24/19 11:54	100-41-4	
Methyl-tert-butyl ether	<0.0060	mg/kg	0.020	0.0060	1	10/23/19 17:04	10/24/19 11:54	1634-04-4	
Toluene	<0.012	mg/kg	0.041	0.012	1	10/23/19 17:04	10/24/19 11:54	108-88-3	
1,2,4-Trimethylbenzene	<0.010	mg/kg	0.033	0.010	1	10/23/19 17:04	10/24/19 11:54	95-63-6	
1,3,5-Trimethylbenzene	<0.0080	mg/kg	0.027	0.0080	1	10/23/19 17:04	10/24/19 11:54	108-67-8	
Xylene (Total)	<0.012	mg/kg	0.039	0.012	1	10/23/19 17:04	10/24/19 11:54	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	107	%	75-125		1	10/23/19 17:04	10/24/19 11:54	17060-07-0	
Toluene-d8 (S)	97	%	75-125		1	10/23/19 17:04	10/24/19 11:54	2037-26-5	
4-Bromofluorobenzene (S)	95	%	75-125		1	10/23/19 17:04	10/24/19 11:54	460-00-4	

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10495123

QC Batch: 640470

Analysis Method: ASTM D2974

QC Batch Method: ASTM D2974

Analysis Description: Dry Weight / %M by ASTM D2974

Associated Lab Samples: 10495123001, 10495123002, 10495123003

SAMPLE DUPLICATE: 3450242

Parameter	Units	10495123001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	30.9	29.4	5	30	

SAMPLE DUPLICATE: 3450266

Parameter	Units	10495234007 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	6.0	6.1	2	30	

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post  
Pace Project No.: 10495123

QC Batch: 640223 Analysis Method: EPA 8260B  
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV UST  
Associated Lab Samples: 10495123001, 10495123002, 10495123003, 10495123004

METHOD BLANK: 3449098 Matrix: Solid  
Associated Lab Samples: 10495123001, 10495123002, 10495123003, 10495123004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	<0.010	0.033	10/23/19 20:39	
1,3,5-Trimethylbenzene	mg/kg	<0.0080	0.027	10/23/19 20:39	
Benzene	mg/kg	<0.0028	0.0094	10/23/19 20:39	
Ethylbenzene	mg/kg	<0.0027	0.0091	10/23/19 20:39	
Methyl-tert-butyl ether	mg/kg	<0.0060	0.020	10/23/19 20:39	
Toluene	mg/kg	<0.012	0.041	10/23/19 20:39	
Xylene (Total)	mg/kg	<0.012	0.039	10/23/19 20:39	
1,2-Dichloroethane-d4 (S)	%	96	75-125	10/23/19 20:39	
4-Bromofluorobenzene (S)	%	101	75-125	10/23/19 20:39	
Toluene-d8 (S)	%	99	75-125	10/23/19 20:39	

LABORATORY CONTROL SAMPLE: 3449099

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	1	0.93	93	51-126	
1,3,5-Trimethylbenzene	mg/kg	1	0.94	94	52-127	
Benzene	mg/kg	1	0.94	94	48-125	
Ethylbenzene	mg/kg	1	0.89	89	51-125	
Methyl-tert-butyl ether	mg/kg	1	0.89	89	53-125	
Toluene	mg/kg	1	0.89	89	51-125	
Xylene (Total)	mg/kg	3	2.7	90	52-125	
1,2-Dichloroethane-d4 (S)	%			96	75-125	
4-Bromofluorobenzene (S)	%			103	75-125	
Toluene-d8 (S)	%			103	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3449100 3449101

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10496700001 Result	Spike Conc.	Spike Conc.	Result						
1,2,4-Trimethylbenzene	mg/kg	ND	1.2	0.95	1.3	1.1	109	116	65-145	14	30
1,3,5-Trimethylbenzene	mg/kg	ND	1.2	0.95	1.3	1.1	113	118	66-148	15	30
Benzene	mg/kg	ND	1.2	0.95	1.4	1.2	118	123	63-136	16	30
Ethylbenzene	mg/kg	ND	1.2	0.95	1.3	1.1	110	111	64-142	18	30
Methyl-tert-butyl ether	mg/kg	ND	1.2	0.95	1.3	1.1	115	119	69-134	16	30
Toluene	mg/kg	ND	1.2	0.95	1.3	1.1	110	113	61-141	17	30
Xylene (Total)	mg/kg	ND	3.5	2.9	3.8	3.3	108	114	67-145	15	30
1,2-Dichloroethane-d4 (S)	%						95	97	75-125		
4-Bromofluorobenzene (S)	%						95	99	75-125		

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**QUALITY CONTROL DATA**

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10495123

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3449100 3449101												
Parameter	Units	10496700001 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.								
Toluene-d8 (S)	%						101	99	75-125			

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10495123

QC Batch: 637739 Analysis Method: EPA 8270D by SIM  
 QC Batch Method: EPA 3550 Analysis Description: 8270D Solid PAH by SIM MSSV  
 Associated Lab Samples: 10495123001, 10495123002, 10495123003

METHOD BLANK: 3437613 Matrix: Solid

Associated Lab Samples: 10495123001, 10495123002, 10495123003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	mg/kg	<0.00048	0.0016	10/16/19 14:34	
2-Methylnaphthalene	mg/kg	<0.00047	0.0016	10/16/19 14:34	
Acenaphthene	mg/kg	<0.00041	0.0014	10/16/19 14:34	
Acenaphthylene	mg/kg	<0.00080	0.0027	10/16/19 14:34	
Anthracene	mg/kg	<0.00028	0.00095	10/16/19 14:34	
Benzo(a)anthracene	mg/kg	<0.00033	0.0011	10/16/19 14:34	
Benzo(a)pyrene	mg/kg	<0.00039	0.0013	10/16/19 14:34	
Benzo(b)fluoranthene	mg/kg	<0.00020	0.00065	10/16/19 14:34	
Benzo(g,h,i)perylene	mg/kg	<0.00027	0.00091	10/16/19 14:34	
Benzo(k)fluoranthene	mg/kg	<0.00025	0.00084	10/16/19 14:34	
Chrysene	mg/kg	<0.00040	0.0013	10/16/19 14:34	
Dibenz(a,h)anthracene	mg/kg	<0.00040	0.0013	10/16/19 14:34	
Fluoranthene	mg/kg	<0.00033	0.0011	10/16/19 14:34	
Fluorene	mg/kg	<0.00030	0.00098	10/16/19 14:34	
Indeno(1,2,3-cd)pyrene	mg/kg	<0.00020	0.00068	10/16/19 14:34	
Naphthalene	mg/kg	<0.00046	0.0015	10/16/19 14:34	
Phenanthrene	mg/kg	<0.00025	0.00083	10/16/19 14:34	
Pyrene	mg/kg	<0.00032	0.0011	10/16/19 14:34	
2-Fluorobiphenyl (S)	%	90	30-125	10/16/19 14:34	
p-Terphenyl-d14 (S)	%	89	30-125	10/16/19 14:34	

LABORATORY CONTROL SAMPLE: 3437614

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	mg/kg	0.033	0.032	96	33-125	
2-Methylnaphthalene	mg/kg	0.033	0.028	83	49-125	
Acenaphthene	mg/kg	0.033	0.030	90	46-125	
Acenaphthylene	mg/kg	0.033	0.028	83	44-125	
Anthracene	mg/kg	0.033	0.029	86	62-125	
Benzo(a)anthracene	mg/kg	0.033	0.028	85	53-125	
Benzo(a)pyrene	mg/kg	0.033	0.030	89	62-125	
Benzo(b)fluoranthene	mg/kg	0.033	0.030	90	51-125	
Benzo(g,h,i)perylene	mg/kg	0.033	0.030	91	58-125	
Benzo(k)fluoranthene	mg/kg	0.033	0.031	94	59-125	
Chrysene	mg/kg	0.033	0.032	96	59-125	
Dibenz(a,h)anthracene	mg/kg	0.033	0.032	95	60-125	
Fluoranthene	mg/kg	0.033	0.032	95	67-125	
Fluorene	mg/kg	0.033	0.030	91	51-125	
Indeno(1,2,3-cd)pyrene	mg/kg	0.033	0.031	93	59-125	
Naphthalene	mg/kg	0.033	0.029	86	47-125	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post  
Pace Project No.: 10495123

LABORATORY CONTROL SAMPLE: 3437614

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenanthrene	mg/kg	0.033	0.031	93	61-125	
Pyrene	mg/kg	0.033	0.030	89	52-125	
2-Fluorobiphenyl (S)	%			89	30-125	
p-Terphenyl-d14 (S)	%			82	30-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3437615 3437616

Parameter	Units	10495090001		MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec						
1-Methylnaphthalene	mg/kg	<11.3 ug/kg	0.037	0.037	0.032	0.034	85	90	30-125	6	30				
2-Methylnaphthalene	mg/kg	<11.3 ug/kg	0.037	0.037	0.028	0.030	75	80	30-125	7	30				
Acenaphthene	mg/kg	<11.3 ug/kg	0.037	0.037	0.032	0.034	85	89	30-125	5	30				
Acenaphthylene	mg/kg	<11.3 ug/kg	0.037	0.037	0.031	0.032	83	86	30-125	4	30				
Anthracene	mg/kg	<11.3 ug/kg	0.037	0.037	0.034	0.033	89	87	30-131	2	30				
Benzo(a)anthracene	mg/kg	<11.3 ug/kg	0.037	0.037	0.040	0.039	106	105	30-126	1	30				
Benzo(a)pyrene	mg/kg	<11.3 ug/kg	0.037	0.037	0.042	0.042	111	111	30-150	0	30				
Benzo(b)fluoranthene	mg/kg	12.6 ug/kg	0.037	0.037	0.043	0.045	80	85	30-150	4	30				
Benzo(g,h,i)perylene	mg/kg	<11.3 ug/kg	0.037	0.037	0.040	0.040	106	106	30-150	0	30				
Benzo(k)fluoranthene	mg/kg	<11.3 ug/kg	0.037	0.037	0.039	0.038	103	102	30-150	0	30				
Chrysene	mg/kg	<11.3 ug/kg	0.037	0.037	0.044	0.044	117	117	30-150	0	30				
Dibenz(a,h)anthracene	mg/kg	<11.3 ug/kg	0.037	0.037	0.036	0.035	95	93	30-143	2	30				
Fluoranthene	mg/kg	17.3 ug/kg	0.037	0.037	0.053	0.045	96	75	30-143	16	30				
Fluorene	mg/kg	<11.3 ug/kg	0.037	0.037	0.033	0.034	87	90	30-138	3	30				
Indeno(1,2,3-cd)pyrene	mg/kg	<11.3 ug/kg	0.037	0.037	0.039	0.039	104	104	30-150	0	30				
Naphthalene	mg/kg	<11.3 ug/kg	0.037	0.037	0.029	0.031	78	83	30-125	6	30				
Phenanthrene	mg/kg	<11.3 ug/kg	0.037	0.037	0.044	0.038	116	101	30-142	14	30				
Pyrene	mg/kg	15.0 ug/kg	0.037	0.037	0.049	0.043	91	76	30-149	12	30				
2-Fluorobiphenyl (S)	%						81	83	30-125						
p-Terphenyl-d14 (S)	%						78	80	30-125						

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## QUALIFIERS

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10495123

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

## REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10495123

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10495123001	HA-3_0-1.5	ASTM D2974	640470		
10495123002	HA-4_0-1.5	ASTM D2974	640470		
10495123003	HA-5_0-1.5	ASTM D2974	640470		
10495123001	HA-3_0-1.5	EPA 3550	637739	EPA 8270D by SIM	638219
10495123002	HA-4_0-1.5	EPA 3550	637739	EPA 8270D by SIM	638219
10495123003	HA-5_0-1.5	EPA 3550	637739	EPA 8270D by SIM	638219
10495123001	HA-3_0-1.5	EPA 5035/5030B	640223	EPA 8260B	640496
10495123002	HA-4_0-1.5	EPA 5035/5030B	640223	EPA 8260B	640496
10495123003	HA-5_0-1.5	EPA 5035/5030B	640223	EPA 8260B	640496
10495123004	Trip Blank - 5	EPA 5035/5030B	640223	EPA 8260B	640496

**REPORT OF LABORATORY ANALYSIS**

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# Barr Engineering Co. Chain of Custody

Sample Origination State:

Ann Arbor  Duluth  Hibbing  Minneapolis  
 Bismarck  Grand Rapids  Jefferson City  Salt Lake City

KS  MO  UT  
 MI  ND  WI  
 MN  SD Other: \_\_\_\_\_

COC Number: **56869**

COC **1** of **1**

<b>Matrix Code:</b>	<b>Preservative Code:</b>
GW = Groundwater	A = None
SW = Surface Water	B = HCl
WW = Waste Water	C = HNO <sub>3</sub>
DW = Drinking Water	D = H <sub>2</sub> SO <sub>4</sub>
S = Soil/Solid	E = NaOH
SD = Sediment	F = MeOH
O = Other	G = NaHSO <sub>4</sub>
	H = Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>
	I = Ascorbic Acid
	J = NH <sub>4</sub> Cl
	K = Zn Acetate
	O = Other

REPORT TO		INVOICE TO	
Company: <b>Barr Engineering</b>	Company: <b>Barr</b>	Company: <b>Barr</b>	Company: <b>Barr</b>
Address: <b>325 S. Lake Ave. Duluth MN</b>	Address:	Address:	Address:
Name: <b>Lynette Carney</b>	Name:	Name:	Name:
email: <b>lcarney@barr.com</b>	email:	email:	email:
Copy to: <b>datamgt@barr.com</b>	P.O.	P.O.	P.O.
Project Name: <b>Husky Post Fire Site Investigation</b>		Barr Project No: <b>49161427.16 100 102</b>	

Location	Sample Depth			Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix Code	Perform MS/MSD Y/N	Total Number Of Containers	Analysis Requested		% Solids
	Start	Stop	Unit (m./ft. or in.)						Water	Soil	
1. HA-3	0	1.5	ft	10/10/2019	0900	S	2	4	21	1	1
2. HA-4	0	1.5	ft		0945	S	2	4	21	1	1
3. HA-5	0	1.5	ft	↓	1020	S	2	4	21	1	1
4. Trip blank - 5				10/10/19	—	—	2	1	1		
5.											
6.											
7.											
8.											
9.											
10.											

Perform MS/MSD Y/N

**WO#: 10495123**



10495123

Preservative Code

Field Filtered Y/N

**BARR USE ONLY**

Sampled by: **VMSJ3**  
 Barr Proj. Manager: **LMC**  
 Barr DQ Manager: **TAO**  
 Lab Name: **Pace**  
 Lab Location: **Minneapolis**

Relinquished by: *[Signature]*  
 Relinquished by: *[Signature]*  
 Samples Shipped VIA:  Courier  Federal Express  Sampler  Other: \_\_\_\_\_  
 Lab WO: \_\_\_\_\_ Temperature on Receipt (°C): **10.6** Custody Seal Intact?  Y  N  None

Received by: *[Signature]*  
 Received by: *[Signature]*  
 Air Bill Number: \_\_\_\_\_

Date: **10/10/19** Time: **12:37**  
 Date: **10/10/19** Time: **1840**  
 Requested Due Date:  
 Standard Turn Around Time  
 Rush \_\_\_\_\_ (mm/dd/yyyy)

T= 2.3

**Sample Condition Upon Receipt**      **Client Name:** Barr Eng      **Project #:** **WO# : 10495123**  
**Courier:**       Fed Ex       UPS       USPS       Client  
 Pace       SpeeDee       Commercial      See Exceptions

**Tracking Number:** \_\_\_\_\_  
**Custody Seal on Cooler/Box Present?**     Yes     No      **Seals Intact?**     Yes     No      **Biological Tissue Frozen?**     Yes     No     N/A  
**Packing Material:**     Bubble Wrap     Bubble Bags     None     Other: \_\_\_\_\_      **Temp Blank?**     Yes     No  
**Thermometer:**     T1(0461)     T2(1336)     T3(0459)  
 T4(0254)     T5(0489)      **Type of Ice:**     Wet     Blue     None     Dry     Melted

**Note: Each West Virginia Sample must have temp taken (no temp blanks)**  
 Temp should be above freezing to 6°C      **Cooler Temp Read w/temp blank:** 2.3 °C      **Average Corrected Temp (no temp blank only):**  See Exceptions  
**Correction Factor:** True      **Cooler Temp Corrected w/temp blank :** 2.3 °C       1 Container

**USDA Regulated Soil:** (  N/A, water sample/Other: \_\_\_\_\_ )      **Date/Initials of Person Examining Contents:** CEG 10/10/19  
 Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)?     Yes     No      Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?     Yes     No  
**If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.**

	COMMENTS:
Chain of Custody Present and Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
-Pace Containers Used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Matrix: <input type="checkbox"/> Water <input checked="" type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other _____	11. If no, write ID/ Date/Time on Container Below: <input type="checkbox"/> See Exception
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12. Sample # <input type="checkbox"/> NaOH <input type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> Zinc Acetate
All containers needing preservation are found to be in compliance with EPA recommendation (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Sulfide, NaOH >12 Cyanide)	Positive for Res. <input type="checkbox"/> Yes <input type="checkbox"/> No      See Exception
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	Chlorine? <input type="checkbox"/> No      pH Paper Lot# <input type="checkbox"/> Res. Chlorine    0-6 Roll    0-6 Strip    0-14 Strip
Headspace in VOA Vials (greater than 6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> See Exception
Trip Blank Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Pace Trip Blank Lot # (if purchased): <u>N/A</u>

**CLIENT NOTIFICATION/RESOLUTION**      **Field Data Required?**  Yes  No  
 Person Contacted: \_\_\_\_\_      Date/Time: \_\_\_\_\_  
 Comments/Resolution: \_\_\_\_\_

**Project Manager Review:** Amanda J. Albrecht      **Date:** 10/11/19  
 Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office ( i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

December 03, 2019

Terri Olson  
Barr Engineering Company  
4300 MarketPointe Drive  
Suite 200  
Minneapolis, MN 55435

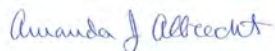
RE: Project: 49161427.16 100 102 Husky Post  
Pace Project No.: 10499826

Dear Terri Olson:

Enclosed are the analytical results for sample(s) received by the laboratory on November 18, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Amanda Albrecht  
amanda.albrecht@pacelabs.com  
(612)607-6382  
Project Manager

Enclosures

cc: BarrDM, Barr Engineering  
Barr Data Management, Barr Engineering Company  
Accounts Payable, Barr Engineering



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10499826

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### **Pace Analytical Services Minneapolis**

A2LA Certification #: 2926.01	Minnesota Dept of Ag Certification #: via MN 027-053-137
Alabama Certification #: 40770	Minnesota Petrofund Certification #: 1240
Alaska Contaminated Sites Certification #: 17-009	Mississippi Certification #: MN00064
Alaska DW Certification #: MN00064	Missouri Certification #: 10100
Arizona Certification #: AZ0014	Montana Certification #: CERT0092
Arkansas DW Certification #: MN00064	Nebraska Certification #: NE-OS-18-06
Arkansas WW Certification #: 88-0680	Nevada Certification #: MN00064
California Certification #: 2929	New Hampshire Certification #: 2081
CNMI Saipan Certification #: MP0003	New Jersey Certification #: MN002
Colorado Certification #: MN00064	New York Certification #: 11647
Connecticut Certification #: PH-0256	North Carolina DW Certification #: 27700
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137	North Carolina WW Certification #: 530
Florida Certification #: E87605	North Dakota Certification #: R-036
Georgia Certification #: 959	Ohio DW Certification #: 41244
Guam EPA Certification #: MN00064	Ohio VAP Certification #: CL101
Hawaii Certification #: MN00064	Oklahoma Certification #: 9507
Idaho Certification #: MN00064	Oregon Primary Certification #: MN300001
Illinois Certification #: 200011	Oregon Secondary Certification #: MN200001
Indiana Certification #: C-MN-01	Pennsylvania Certification #: 68-00563
Iowa Certification #: 368	Puerto Rico Certification #: MN00064
Kansas Certification #: E-10167	South Carolina Certification #: 74003001
Kentucky DW Certification #: 90062	Tennessee Certification #: TN02818
Kentucky WW Certification #: 90062	Texas Certification #: T104704192
Louisiana DEQ Certification #: 03086	Utah Certification #: MN00064
Louisiana DW Certification #: MN00064	Vermont Certification #: VT-027053137
Maine Certification #: MN00064	Virginia Certification #: 460163
Maryland Certification #: 322	Washington Certification #: C486
Massachusetts Certification #: M-MN064	West Virginia DEP Certification #: 382
Massachusetts DWP Certification #: via MN 027-053-137	West Virginia DW Certification #: 9952 C
Michigan Certification #: 9909	Wisconsin Certification #: 999407970
Minnesota Certification #: 027-053-137	Wyoming UST Certification #: via A2LA 2926.01

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10499826

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10499826001	SB-9_0-1.5	Solid	11/15/19 14:20	11/18/19 18:35
10499826002	SB-9_3-4	Solid	11/15/19 14:35	11/18/19 18:35
10499826003	SB-8_0-1.5	Solid	11/15/19 15:25	11/18/19 18:35
10499826004	SB-8_3-4	Solid	11/15/19 15:35	11/18/19 18:35
10499826005	Trip Blank-6	Solid	11/15/19 00:00	11/18/19 18:35

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### SAMPLE ANALYTE COUNT

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10499826

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10499826001	SB-9_0-1.5	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10499826002	SB-9_3-4	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10499826003	SB-8_0-1.5	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10499826004	SB-8_3-4	ASTM D2974	JDL	1	PASI-M
		EPA 8270D by SIM	SNG	20	PASI-M
		EPA 8260B	CD2	10	PASI-M
10499826005	Trip Blank-6	EPA 8260B	CD2	10	PASI-M

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10499826

Sample: **SB-9\_0-1.5** Lab ID: **10499826001** Collected: 11/15/19 14:20 Received: 11/18/19 18:35 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	3.9	%	0.10	0.10	1		12/02/19 14:51		N2
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	0.011	mg/kg	0.0017	0.00050	1	11/19/19 10:05	11/21/19 15:06	90-12-0	
2-Methylnaphthalene	0.016	mg/kg	0.0016	0.00049	1	11/19/19 10:05	11/21/19 15:06	91-57-6	
Acenaphthene	0.0024	mg/kg	0.0014	0.00042	1	11/19/19 10:05	11/21/19 15:06	83-32-9	
Acenaphthylene	0.0011J	mg/kg	0.0028	0.00083	1	11/19/19 10:05	11/21/19 15:06	208-96-8	
Anthracene	<0.00029	mg/kg	0.00098	0.00029	1	11/19/19 10:05	11/21/19 15:06	120-12-7	
Benzo(a)anthracene	0.092	mg/kg	0.0011	0.00034	1	11/19/19 10:05	11/21/19 15:06	56-55-3	
Benzo(a)pyrene	0.049	mg/kg	0.0014	0.00041	1	11/19/19 10:05	11/21/19 15:06	50-32-8	
Benzo(b)fluoranthene	0.053	mg/kg	0.00068	0.00020	1	11/19/19 10:05	11/21/19 15:06	205-99-2	
Benzo(g,h,i)perylene	0.064	mg/kg	0.00094	0.00028	1	11/19/19 10:05	11/21/19 15:06	191-24-2	
Benzo(k)fluoranthene	<0.00026	mg/kg	0.00087	0.00026	1	11/19/19 10:05	11/21/19 15:06	207-08-9	
Chrysene	0.042	mg/kg	0.0014	0.00042	1	11/19/19 10:05	11/21/19 15:06	218-01-9	
Dibenz(a,h)anthracene	<0.00041	mg/kg	0.0014	0.00041	1	11/19/19 10:05	11/21/19 15:06	53-70-3	
Fluoranthene	0.015	mg/kg	0.0011	0.00034	1	11/19/19 10:05	11/21/19 15:06	206-44-0	
Fluorene	0.0082	mg/kg	0.0010	0.00031	1	11/19/19 10:05	11/21/19 15:06	86-73-7	
Indeno(1,2,3-cd)pyrene	<0.00021	mg/kg	0.00070	0.00021	1	11/19/19 10:05	11/21/19 15:06	193-39-5	
Naphthalene	0.0018	mg/kg	0.0016	0.00048	1	11/19/19 10:05	11/21/19 15:06	91-20-3	
Phenanthrene	0.033	mg/kg	0.00086	0.00026	1	11/19/19 10:05	11/21/19 15:06	85-01-8	
Pyrene	0.041	mg/kg	0.0011	0.00033	1	11/19/19 10:05	11/21/19 15:06	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	51	%	30-125		1	11/19/19 10:05	11/21/19 15:06	321-60-8	
p-Terphenyl-d14 (S)	53	%	30-125		1	11/19/19 10:05	11/21/19 15:06	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0039	mg/kg	0.013	0.0039	1	11/26/19 16:51	11/27/19 02:40	71-43-2	
Ethylbenzene	<0.0037	mg/kg	0.012	0.0037	1	11/26/19 16:51	11/27/19 02:40	100-41-4	
Methyl-tert-butyl ether	<0.0082	mg/kg	0.027	0.0082	1	11/26/19 16:51	11/27/19 02:40	1634-04-4	
Toluene	<0.017	mg/kg	0.056	0.017	1	11/26/19 16:51	11/27/19 02:40	108-88-3	
1,2,4-Trimethylbenzene	<0.014	mg/kg	0.046	0.014	1	11/26/19 16:51	11/27/19 02:40	95-63-6	
1,3,5-Trimethylbenzene	<0.011	mg/kg	0.036	0.011	1	11/26/19 16:51	11/27/19 02:40	108-67-8	
Xylene (Total)	<0.016	mg/kg	0.053	0.016	1	11/26/19 16:51	11/27/19 02:40	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	112	%	75-125		1	11/26/19 16:51	11/27/19 02:40	17060-07-0	
Toluene-d8 (S)	101	%	75-125		1	11/26/19 16:51	11/27/19 02:40	2037-26-5	
4-Bromofluorobenzene (S)	103	%	75-125		1	11/26/19 16:51	11/27/19 02:40	460-00-4	

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10499826

Sample: **SB-9\_3-4** Lab ID: **10499826002** Collected: 11/15/19 14:35 Received: 11/18/19 18:35 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b>									
Analytical Method: ASTM D2974									
Percent Moisture	22.4	%	0.10	0.10	1		12/02/19 14:51		N2
<b>8270D MSSV PAH by SIM</b>									
Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	<0.00062	mg/kg	0.0021	0.00062	1	11/19/19 16:03	11/20/19 13:13	90-12-0	
2-Methylnaphthalene	<0.00061	mg/kg	0.0020	0.00061	1	11/19/19 16:03	11/20/19 13:13	91-57-6	
Acenaphthene	<0.00053	mg/kg	0.0018	0.00053	1	11/19/19 16:03	11/20/19 13:13	83-32-9	
Acenaphthylene	0.0012J	mg/kg	0.0034	0.0010	1	11/19/19 16:03	11/20/19 13:13	208-96-8	
Anthracene	<0.00037	mg/kg	0.0012	0.00037	1	11/19/19 16:03	11/20/19 13:13	120-12-7	
Benzo(a)anthracene	0.0010J	mg/kg	0.0014	0.00043	1	11/19/19 16:03	11/20/19 13:13	56-55-3	
Benzo(a)pyrene	<0.00051	mg/kg	0.0017	0.00051	1	11/19/19 16:03	11/20/19 13:13	50-32-8	
Benzo(b)fluoranthene	0.00077J	mg/kg	0.00084	0.00025	1	11/19/19 16:03	11/20/19 13:13	205-99-2	
Benzo(g,h,i)perylene	0.00037J	mg/kg	0.0012	0.00035	1	11/19/19 16:03	11/20/19 13:13	191-24-2	
Benzo(k)fluoranthene	0.00041J	mg/kg	0.0011	0.00032	1	11/19/19 16:03	11/20/19 13:13	207-08-9	
Chrysene	0.00084J	mg/kg	0.0017	0.00052	1	11/19/19 16:03	11/20/19 13:13	218-01-9	
Dibenz(a,h)anthracene	<0.00051	mg/kg	0.0017	0.00051	1	11/19/19 16:03	11/20/19 13:13	53-70-3	
Fluoranthene	0.00090J	mg/kg	0.0014	0.00042	1	11/19/19 16:03	11/20/19 13:13	206-44-0	
Fluorene	<0.00038	mg/kg	0.0013	0.00038	1	11/19/19 16:03	11/20/19 13:13	86-73-7	
Indeno(1,2,3-cd)pyrene	0.00028J	mg/kg	0.00087	0.00026	1	11/19/19 16:03	11/20/19 13:13	193-39-5	
Naphthalene	<0.00059	mg/kg	0.0020	0.00059	1	11/19/19 16:03	11/20/19 13:13	91-20-3	
Phenanthrene	0.00098J	mg/kg	0.0011	0.00032	1	11/19/19 16:03	11/20/19 13:13	85-01-8	
Pyrene	0.00073J	mg/kg	0.0014	0.00041	1	11/19/19 16:03	11/20/19 13:13	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	65	%	30-125		1	11/19/19 16:03	11/20/19 13:13	321-60-8	
p-Terphenyl-d14 (S)	76	%	30-125		1	11/19/19 16:03	11/20/19 13:13	1718-51-0	
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0038	mg/kg	0.013	0.0038	1	11/26/19 16:51	11/27/19 02:59	71-43-2	
Ethylbenzene	<0.0036	mg/kg	0.012	0.0036	1	11/26/19 16:51	11/27/19 02:59	100-41-4	
Methyl-tert-butyl ether	<0.0080	mg/kg	0.026	0.0080	1	11/26/19 16:51	11/27/19 02:59	1634-04-4	
Toluene	<0.016	mg/kg	0.054	0.016	1	11/26/19 16:51	11/27/19 02:59	108-88-3	
1,2,4-Trimethylbenzene	<0.013	mg/kg	0.045	0.013	1	11/26/19 16:51	11/27/19 02:59	95-63-6	
1,3,5-Trimethylbenzene	<0.011	mg/kg	0.035	0.011	1	11/26/19 16:51	11/27/19 02:59	108-67-8	
Xylene (Total)	<0.016	mg/kg	0.052	0.016	1	11/26/19 16:51	11/27/19 02:59	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	106	%	75-125		1	11/26/19 16:51	11/27/19 02:59	17060-07-0	
Toluene-d8 (S)	105	%	75-125		1	11/26/19 16:51	11/27/19 02:59	2037-26-5	
4-Bromofluorobenzene (S)	101	%	75-125		1	11/26/19 16:51	11/27/19 02:59	460-00-4	

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10499826

Sample: **SB-8\_0-1.5** Lab ID: **10499826003** Collected: 11/15/19 15:25 Received: 11/18/19 18:35 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b>									
Analytical Method: ASTM D2974									
Percent Moisture	<b>7.0</b>	%	0.10	0.10	1		12/02/19 14:51		N2
<b>8270D MSSV PAH by SIM</b>									
Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	<b>0.013</b>	mg/kg	0.0086	0.0026	5	11/19/19 16:03	11/21/19 15:28	90-12-0	
2-Methylnaphthalene	<b>0.016</b>	mg/kg	0.0084	0.0025	5	11/19/19 16:03	11/21/19 15:28	91-57-6	
Acenaphthene	<b>0.0037J</b>	mg/kg	0.0073	0.0022	5	11/19/19 16:03	11/21/19 15:28	83-32-9	
Acenaphthylene	<b>&lt;0.0043</b>	mg/kg	0.014	0.0043	5	11/19/19 16:03	11/21/19 15:28	208-96-8	
Anthracene	<b>&lt;0.0015</b>	mg/kg	0.0051	0.0015	5	11/19/19 16:03	11/21/19 15:28	120-12-7	
Benzo(a)anthracene	<b>0.083</b>	mg/kg	0.0059	0.0018	5	11/19/19 16:03	11/21/19 15:28	56-55-3	
Benzo(a)pyrene	<b>&lt;0.0021</b>	mg/kg	0.0070	0.0021	5	11/19/19 16:03	11/21/19 15:28	50-32-8	
Benzo(b)fluoranthene	<b>&lt;0.0011</b>	mg/kg	0.0035	0.0011	5	11/19/19 16:03	11/21/19 15:28	205-99-2	
Benzo(g,h,i)perylene	<b>&lt;0.0015</b>	mg/kg	0.0049	0.0015	5	11/19/19 16:03	11/21/19 15:28	191-24-2	
Benzo(k)fluoranthene	<b>&lt;0.0014</b>	mg/kg	0.0045	0.0014	5	11/19/19 16:03	11/21/19 15:28	207-08-9	
Chrysene	<b>0.059</b>	mg/kg	0.0072	0.0021	5	11/19/19 16:03	11/21/19 15:28	218-01-9	
Dibenz(a,h)anthracene	<b>&lt;0.0021</b>	mg/kg	0.0071	0.0021	5	11/19/19 16:03	11/21/19 15:28	53-70-3	
Fluoranthene	<b>&lt;0.0018</b>	mg/kg	0.0059	0.0018	5	11/19/19 16:03	11/21/19 15:28	206-44-0	
Fluorene	<b>0.010</b>	mg/kg	0.0053	0.0016	5	11/19/19 16:03	11/21/19 15:28	86-73-7	
Indeno(1,2,3-cd)pyrene	<b>&lt;0.0011</b>	mg/kg	0.0036	0.0011	5	11/19/19 16:03	11/21/19 15:28	193-39-5	
Naphthalene	<b>&lt;0.0025</b>	mg/kg	0.0082	0.0025	5	11/19/19 16:03	11/21/19 15:28	91-20-3	
Phenanthrene	<b>0.038</b>	mg/kg	0.0045	0.0013	5	11/19/19 16:03	11/21/19 15:28	85-01-8	
Pyrene	<b>0.039</b>	mg/kg	0.0057	0.0017	5	11/19/19 16:03	11/21/19 15:28	129-00-0	
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	56	%	30-125		5	11/19/19 16:03	11/21/19 15:28	321-60-8	D3
p-Terphenyl-d14 (S)	61	%	30-125		5	11/19/19 16:03	11/21/19 15:28	1718-51-0	
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;0.0029</b>	mg/kg	0.0097	0.0029	1	11/26/19 16:51	11/27/19 03:18	71-43-2	
Ethylbenzene	<b>&lt;0.0028</b>	mg/kg	0.0094	0.0028	1	11/26/19 16:51	11/27/19 03:18	100-41-4	
Methyl-tert-butyl ether	<b>&lt;0.0061</b>	mg/kg	0.020	0.0061	1	11/26/19 16:51	11/27/19 03:18	1634-04-4	
Toluene	<b>0.014J</b>	mg/kg	0.042	0.013	1	11/26/19 16:51	11/27/19 03:18	108-88-3	
1,2,4-Trimethylbenzene	<b>&lt;0.010</b>	mg/kg	0.034	0.010	1	11/26/19 16:51	11/27/19 03:18	95-63-6	
1,3,5-Trimethylbenzene	<b>&lt;0.0082</b>	mg/kg	0.027	0.0082	1	11/26/19 16:51	11/27/19 03:18	108-67-8	
Xylene (Total)	<b>&lt;0.012</b>	mg/kg	0.040	0.012	1	11/26/19 16:51	11/27/19 03:18	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	112	%	75-125		1	11/26/19 16:51	11/27/19 03:18	17060-07-0	
Toluene-d8 (S)	104	%	75-125		1	11/26/19 16:51	11/27/19 03:18	2037-26-5	
4-Bromofluorobenzene (S)	105	%	75-125		1	11/26/19 16:51	11/27/19 03:18	460-00-4	

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## ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Project No.: 10499826

Sample: **SB-8\_3-4** Lab ID: **10499826004** Collected: 11/15/19 15:35 Received: 11/18/19 18:35 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>10.5</b>	%	0.10	0.10	1		12/02/19 14:51		N2
<b>8270D MSSV PAH by SIM</b> Analytical Method: EPA 8270D by SIM Preparation Method: EPA 3550									
1-Methylnaphthalene	<b>0.016</b>	mg/kg	0.0018	0.00054	1	11/19/19 16:03	11/21/19 15:49	90-12-0	
2-Methylnaphthalene	<b>0.023</b>	mg/kg	0.0018	0.00053	1	11/19/19 16:03	11/21/19 15:49	91-57-6	
Acenaphthene	<b>0.0030</b>	mg/kg	0.0015	0.00046	1	11/19/19 16:03	11/21/19 15:49	83-32-9	
Acenaphthylene	<b>0.0014J</b>	mg/kg	0.0030	0.00090	1	11/19/19 16:03	11/21/19 15:49	208-96-8	
Anthracene	<b>0.0058</b>	mg/kg	0.0011	0.00032	1	11/19/19 16:03	11/21/19 15:49	120-12-7	
Benzo(a)anthracene	<b>0.053</b>	mg/kg	0.0012	0.00037	1	11/19/19 16:03	11/21/19 15:49	56-55-3	M1
Benzo(a)pyrene	<b>&lt;0.00044</b>	mg/kg	0.0015	0.00044	1	11/19/19 16:03	11/21/19 15:49	50-32-8	
Benzo(b)fluoranthene	<b>0.034</b>	mg/kg	0.00073	0.00022	1	11/19/19 16:03	11/21/19 15:49	205-99-2	
Benzo(g,h,i)perylene	<b>0.044</b>	mg/kg	0.0010	0.00030	1	11/19/19 16:03	11/21/19 15:49	191-24-2	M1
Benzo(k)fluoranthene	<b>&lt;0.00028</b>	mg/kg	0.00094	0.00028	1	11/19/19 16:03	11/21/19 15:49	207-08-9	
Chrysene	<b>0.036</b>	mg/kg	0.0015	0.00045	1	11/19/19 16:03	11/21/19 15:49	218-01-9	
Dibenz(a,h)anthracene	<b>&lt;0.00044</b>	mg/kg	0.0015	0.00044	1	11/19/19 16:03	11/21/19 15:49	53-70-3	
Fluoranthene	<b>0.020</b>	mg/kg	0.0012	0.00037	1	11/19/19 16:03	11/21/19 15:49	206-44-0	
Fluorene	<b>0.0063</b>	mg/kg	0.0011	0.00033	1	11/19/19 16:03	11/21/19 15:49	86-73-7	
Indeno(1,2,3-cd)pyrene	<b>&lt;0.00023</b>	mg/kg	0.00076	0.00023	1	11/19/19 16:03	11/21/19 15:49	193-39-5	
Naphthalene	<b>0.0067</b>	mg/kg	0.0017	0.00051	1	11/19/19 16:03	11/21/19 15:49	91-20-3	
Phenanthrene	<b>0.039</b>	mg/kg	0.00093	0.00028	1	11/19/19 16:03	11/21/19 15:49	85-01-8	
Pyrene	<b>0.044</b>	mg/kg	0.0012	0.00036	1	11/19/19 16:03	11/21/19 15:49	129-00-0	M1
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	70	%	30-125		1	11/19/19 16:03	11/21/19 15:49	321-60-8	
p-Terphenyl-d14 (S)	72	%	30-125		1	11/19/19 16:03	11/21/19 15:49	1718-51-0	
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;0.0032</b>	mg/kg	0.011	0.0032	1	11/26/19 16:51	11/27/19 03:37	71-43-2	
Ethylbenzene	<b>&lt;0.0031</b>	mg/kg	0.010	0.0031	1	11/26/19 16:51	11/27/19 03:37	100-41-4	
Methyl-tert-butyl ether	<b>&lt;0.0067</b>	mg/kg	0.022	0.0067	1	11/26/19 16:51	11/27/19 03:37	1634-04-4	
Toluene	<b>0.026J</b>	mg/kg	0.046	0.014	1	11/26/19 16:51	11/27/19 03:37	108-88-3	
1,2,4-Trimethylbenzene	<b>&lt;0.011</b>	mg/kg	0.038	0.011	1	11/26/19 16:51	11/27/19 03:37	95-63-6	
1,3,5-Trimethylbenzene	<b>&lt;0.0090</b>	mg/kg	0.030	0.0090	1	11/26/19 16:51	11/27/19 03:37	108-67-8	
Xylene (Total)	<b>&lt;0.013</b>	mg/kg	0.044	0.013	1	11/26/19 16:51	11/27/19 03:37	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	113	%	75-125		1	11/26/19 16:51	11/27/19 03:37	17060-07-0	
Toluene-d8 (S)	100	%	75-125		1	11/26/19 16:51	11/27/19 03:37	2037-26-5	
4-Bromofluorobenzene (S)	103	%	75-125		1	11/26/19 16:51	11/27/19 03:37	460-00-4	

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### ANALYTICAL RESULTS

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10499826

**Sample: Trip Blank-6**      **Lab ID: 10499826005**      Collected: 11/15/19 00:00      Received: 11/18/19 18:35      Matrix: Solid

**Results reported on a "wet-weight" basis**

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<0.0028	mg/kg	0.0094	0.0028	1	11/26/19 16:51	11/27/19 15:55	71-43-2	
Ethylbenzene	<0.0027	mg/kg	0.0091	0.0027	1	11/26/19 16:51	11/27/19 15:55	100-41-4	
Methyl-tert-butyl ether	<0.0060	mg/kg	0.020	0.0060	1	11/26/19 16:51	11/27/19 15:55	1634-04-4	
Toluene	<0.012	mg/kg	0.041	0.012	1	11/26/19 16:51	11/27/19 15:55	108-88-3	
1,2,4-Trimethylbenzene	<0.010	mg/kg	0.033	0.010	1	11/26/19 16:51	11/27/19 15:55	95-63-6	
1,3,5-Trimethylbenzene	<0.0080	mg/kg	0.027	0.0080	1	11/26/19 16:51	11/27/19 15:55	108-67-8	
Xylene (Total)	<0.012	mg/kg	0.039	0.012	1	11/26/19 16:51	11/27/19 15:55	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	110	%	75-125		1	11/26/19 16:51	11/27/19 15:55	17060-07-0	
Toluene-d8 (S)	99	%	75-125		1	11/26/19 16:51	11/27/19 15:55	2037-26-5	
4-Bromofluorobenzene (S)	100	%	75-125		1	11/26/19 16:51	11/27/19 15:55	460-00-4	

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10499826

QC Batch: 647586 Analysis Method: ASTM D2974

QC Batch Method: ASTM D2974 Analysis Description: Dry Weight / %M by ASTM D2974

Associated Lab Samples: 10499826001, 10499826002, 10499826003, 10499826004

SAMPLE DUPLICATE: 3484586

Parameter	Units	10499891002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	13.6	13.9	2	30	N2

SAMPLE DUPLICATE: 3484816

Parameter	Units	10500472003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	22.2	16.8	27	30	N2

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post  
Pace Project No.: 10499826

QC Batch: 647160 Analysis Method: EPA 8260B  
QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV UST  
Associated Lab Samples: 10499826001, 10499826002, 10499826003, 10499826004, 10499826005

METHOD BLANK: 3482623 Matrix: Solid  
Associated Lab Samples: 10499826001, 10499826002, 10499826003, 10499826004, 10499826005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	<0.010	0.033	11/26/19 23:12	
1,3,5-Trimethylbenzene	mg/kg	<0.0080	0.027	11/26/19 23:12	
Benzene	mg/kg	0.0063J	0.0094	11/26/19 23:12	
Ethylbenzene	mg/kg	<0.0027	0.0091	11/26/19 23:12	
Methyl-tert-butyl ether	mg/kg	<0.0060	0.020	11/26/19 23:12	
Toluene	mg/kg	<0.012	0.041	11/26/19 23:12	
Xylene (Total)	mg/kg	<0.012	0.039	11/26/19 23:12	
1,2-Dichloroethane-d4 (S)	%	98	75-125	11/26/19 23:12	
4-Bromofluorobenzene (S)	%	104	75-125	11/26/19 23:12	
Toluene-d8 (S)	%	101	75-125	11/26/19 23:12	

LABORATORY CONTROL SAMPLE: 3482624

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	1	1.0	100	51-126	
1,3,5-Trimethylbenzene	mg/kg	1	1.0	105	52-127	
Benzene	mg/kg	1	1.1	107	48-125	
Ethylbenzene	mg/kg	1	0.89	89	51-125	
Methyl-tert-butyl ether	mg/kg	1	0.92	92	53-125	
Toluene	mg/kg	1	0.97	97	51-125	
Xylene (Total)	mg/kg	3	2.9	97	52-125	
1,2-Dichloroethane-d4 (S)	%			96	75-125	
4-Bromofluorobenzene (S)	%			102	75-125	
Toluene-d8 (S)	%			99	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3482625 3482626

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10499545027 Result	Spike Conc.	Spike Conc.	Result						
1,2,4-Trimethylbenzene	mg/kg	218 ug/kg	1.3	1.3	3.8	4.1	265	285	65-145	7	30 M1
1,3,5-Trimethylbenzene	mg/kg	79.0 ug/kg	1.3	1.3	2.5	2.7	181	191	66-148	5	30 M1
Benzene	mg/kg	<3.2 ug/kg	1.3	1.3	1.6	1.5	117	113	63-136	4	30
Ethylbenzene	mg/kg	57.4 ug/kg	1.3	1.3	1.5	1.5	105	108	64-142	2	30
Methyl-tert-butyl ether	mg/kg	<6.8 ug/kg	1.3	1.3	1.4	1.3	102	93	69-134	10	30
Toluene	mg/kg	56.0J ug/kg	1.3	1.3	1.4	1.3	96	95	61-141	1	30
Xylene (Total)	mg/kg	298 ug/kg	4	4	5.0	5.1	115	118	67-145	2	30
1,2-Dichloroethane-d4 (S)	%						96	93	75-125		

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10499826

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3482625 3482626												
Parameter	Units	10499545027 Result	MS	MSD	MS Result	MSD	MS % Rec	MSD	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	Spike Conc.		MSD Result		% Rec % Rec				
4-Bromofluorobenzene (S)	%						104	106	75-125			
Toluene-d8 (S)	%						99	105	75-125			

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post  
Pace Project No.: 10499826

QC Batch: 645752 Analysis Method: EPA 8270D by SIM  
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid PAH by SIM MSSV  
Associated Lab Samples: 10499826001

METHOD BLANK: 3475756 Matrix: Solid  
Associated Lab Samples: 10499826001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	mg/kg	<0.00048	0.0016	11/20/19 09:35	
2-Methylnaphthalene	mg/kg	<0.00047	0.0016	11/20/19 09:35	
Acenaphthene	mg/kg	<0.00041	0.0014	11/20/19 09:35	
Acenaphthylene	mg/kg	<0.00080	0.0027	11/20/19 09:35	
Anthracene	mg/kg	<0.00028	0.00095	11/20/19 09:35	
Benzo(a)anthracene	mg/kg	<0.00033	0.0011	11/20/19 09:35	
Benzo(a)pyrene	mg/kg	<0.00039	0.0013	11/20/19 09:35	
Benzo(b)fluoranthene	mg/kg	<0.00020	0.00065	11/20/19 09:35	
Benzo(g,h,i)perylene	mg/kg	<0.00027	0.00091	11/20/19 09:35	
Benzo(k)fluoranthene	mg/kg	<0.00025	0.00084	11/20/19 09:35	
Chrysene	mg/kg	<0.00040	0.0013	11/20/19 09:35	
Dibenz(a,h)anthracene	mg/kg	<0.00040	0.0013	11/20/19 09:35	
Fluoranthene	mg/kg	<0.00033	0.0011	11/20/19 09:35	
Fluorene	mg/kg	<0.00030	0.00098	11/20/19 09:35	
Indeno(1,2,3-cd)pyrene	mg/kg	<0.00020	0.00068	11/20/19 09:35	
Naphthalene	mg/kg	<0.00046	0.0015	11/20/19 09:35	
Phenanthrene	mg/kg	<0.00025	0.00083	11/20/19 09:35	
Pyrene	mg/kg	<0.00032	0.0011	11/20/19 09:35	
2-Fluorobiphenyl (S)	%	73	30-125	11/20/19 09:35	
p-Terphenyl-d14 (S)	%	75	30-125	11/20/19 09:35	

LABORATORY CONTROL SAMPLE: 3475757

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	mg/kg	0.033	0.024	71	33-125	
2-Methylnaphthalene	mg/kg	0.033	0.024	73	49-125	
Acenaphthene	mg/kg	0.033	0.023	69	46-125	
Acenaphthylene	mg/kg	0.033	0.024	71	44-125	
Anthracene	mg/kg	0.033	0.025	75	62-125	
Benzo(a)anthracene	mg/kg	0.033	0.027	80	53-125	
Benzo(a)pyrene	mg/kg	0.033	0.026	79	62-125	
Benzo(b)fluoranthene	mg/kg	0.033	0.028	85	51-125	
Benzo(g,h,i)perylene	mg/kg	0.033	0.026	79	58-125	
Benzo(k)fluoranthene	mg/kg	0.033	0.026	78	59-125	
Chrysene	mg/kg	0.033	0.027	81	59-125	
Dibenz(a,h)anthracene	mg/kg	0.033	0.026	78	60-125	
Fluoranthene	mg/kg	0.033	0.027	80	67-125	
Fluorene	mg/kg	0.033	0.024	72	51-125	
Indeno(1,2,3-cd)pyrene	mg/kg	0.033	0.026	79	59-125	
Naphthalene	mg/kg	0.033	0.024	72	47-125	

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10499826

LABORATORY CONTROL SAMPLE: 3475757

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenanthrene	mg/kg	0.033	0.025	75	61-125	
Pyrene	mg/kg	0.033	0.028	83	52-125	
2-Fluorobiphenyl (S)	%			75	30-125	
p-Terphenyl-d14 (S)	%			80	30-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3475758 3475759

Parameter	Units	10499795001		MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec						
1-Methylnaphthalene	mg/kg	<10.7 ug/kg	0.035	0.035	0.027	0.026	75	72	30-125	3	30				
2-Methylnaphthalene	mg/kg	<10.7 ug/kg	0.035	0.035	0.028	0.026	77	73	30-125	5	30				
Acenaphthene	mg/kg	<0.011	0.035	0.035	0.027	0.026	75	73	30-125	2	30				
Acenaphthylene	mg/kg	<0.011	0.035	0.035	0.029	0.027	80	76	30-125	6	30				
Anthracene	mg/kg	<0.011	0.035	0.035	0.028	0.028	79	77	30-131	3	30				
Benzo(a)anthracene	mg/kg	<0.011	0.035	0.035	0.033	0.032	92	89	30-126	4	30				
Benzo(a)pyrene	mg/kg	<0.011	0.035	0.035	0.033	0.033	93	92	30-150	1	30				
Benzo(b)fluoranthene	mg/kg	<0.011	0.035	0.035	0.035	0.036	99	100	30-150	1	30				
Benzo(g,h,i)perylene	mg/kg	<0.011	0.035	0.035	0.032	0.032	89	91	30-150	2	30				
Benzo(k)fluoranthene	mg/kg	<0.011	0.035	0.035	0.031	0.030	87	85	30-150	2	30				
Chrysene	mg/kg	<0.011	0.035	0.035	0.033	0.033	92	91	30-150	0	30				
Dibenz(a,h)anthracene	mg/kg	<0.011	0.035	0.035	0.029	0.029	81	80	30-143	1	30				
Fluoranthene	mg/kg	<0.011	0.035	0.035	0.036	0.034	100	96	30-143	4	30				
Fluorene	mg/kg	<0.011	0.035	0.035	0.028	0.026	77	74	30-138	5	30				
Indeno(1,2,3-cd)pyrene	mg/kg	<0.011	0.035	0.035	0.031	0.031	87	87	30-150	0	30				
Naphthalene	mg/kg	<0.011	0.035	0.035	0.025	0.024	71	68	30-125	4	30				
Phenanthrene	mg/kg	<0.011	0.035	0.035	0.029	0.028	80	79	30-142	2	30				
Pyrene	mg/kg	<0.011	0.035	0.035	0.036	0.034	100	94	30-149	5	30				
2-Fluorobiphenyl (S)	%						77	74	30-125						
p-Terphenyl-d14 (S)	%						74	74	30-125						

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post  
Pace Project No.: 10499826

QC Batch: 645753 Analysis Method: EPA 8270D by SIM  
QC Batch Method: EPA 3550 Analysis Description: 8270D Solid PAH by SIM MSSV  
Associated Lab Samples: 10499826002, 10499826003, 10499826004

METHOD BLANK: 3475760 Matrix: Solid  
Associated Lab Samples: 10499826002, 10499826003, 10499826004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	mg/kg	<0.00048	0.0016	11/20/19 09:34	
2-Methylnaphthalene	mg/kg	<0.00047	0.0016	11/20/19 09:34	
Acenaphthene	mg/kg	<0.00041	0.0014	11/20/19 09:34	
Acenaphthylene	mg/kg	<0.00080	0.0027	11/20/19 09:34	
Anthracene	mg/kg	<0.00028	0.00095	11/20/19 09:34	
Benzo(a)anthracene	mg/kg	<0.00033	0.0011	11/20/19 09:34	
Benzo(a)pyrene	mg/kg	<0.00039	0.0013	11/20/19 09:34	
Benzo(b)fluoranthene	mg/kg	<0.00020	0.00065	11/20/19 09:34	
Benzo(g,h,i)perylene	mg/kg	<0.00027	0.00091	11/20/19 09:34	
Benzo(k)fluoranthene	mg/kg	<0.00025	0.00084	11/20/19 09:34	
Chrysene	mg/kg	<0.00040	0.0013	11/20/19 09:34	
Dibenz(a,h)anthracene	mg/kg	<0.00040	0.0013	11/20/19 09:34	
Fluoranthene	mg/kg	<0.00033	0.0011	11/20/19 09:34	
Fluorene	mg/kg	<0.00030	0.00098	11/20/19 09:34	
Indeno(1,2,3-cd)pyrene	mg/kg	<0.00020	0.00068	11/20/19 09:34	
Naphthalene	mg/kg	<0.00046	0.0015	11/20/19 09:34	
Phenanthrene	mg/kg	<0.00025	0.00083	11/20/19 09:34	
Pyrene	mg/kg	<0.00032	0.0011	11/20/19 09:34	
2-Fluorobiphenyl (S)	%	67	30-125	11/20/19 09:34	
p-Terphenyl-d14 (S)	%	77	30-125	11/20/19 09:34	

LABORATORY CONTROL SAMPLE: 3475761

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	mg/kg	0.033	0.023	69	33-125	
2-Methylnaphthalene	mg/kg	0.033	0.026	77	49-125	
Acenaphthene	mg/kg	0.033	0.024	72	46-125	
Acenaphthylene	mg/kg	0.033	0.024	73	44-125	
Anthracene	mg/kg	0.033	0.024	71	62-125	
Benzo(a)anthracene	mg/kg	0.033	0.030	90	53-125	
Benzo(a)pyrene	mg/kg	0.033	0.027	81	62-125	
Benzo(b)fluoranthene	mg/kg	0.033	0.026	79	51-125	
Benzo(g,h,i)perylene	mg/kg	0.033	0.024	73	58-125	
Benzo(k)fluoranthene	mg/kg	0.033	0.027	81	59-125	
Chrysene	mg/kg	0.033	0.024	72	59-125	
Dibenz(a,h)anthracene	mg/kg	0.033	0.026	79	60-125	
Fluoranthene	mg/kg	0.033	0.027	82	67-125	
Fluorene	mg/kg	0.033	0.026	78	51-125	
Indeno(1,2,3-cd)pyrene	mg/kg	0.033	0.025	76	59-125	
Naphthalene	mg/kg	0.033	0.023	70	47-125	

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### QUALITY CONTROL DATA

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10499826

LABORATORY CONTROL SAMPLE: 3475761

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenanthrene	mg/kg	0.033	0.025	74	61-125	
Pyrene	mg/kg	0.033	0.026	77	52-125	
2-Fluorobiphenyl (S)	%			67	30-125	
p-Terphenyl-d14 (S)	%			77	30-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3476098 3476099

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10499826004 Result	Spike Conc.	Spike Conc.	MS Result						
1-Methylnaphthalene	mg/kg	0.016	0.037	0.037	0.046	82	67	30-125	13	30	
2-Methylnaphthalene	mg/kg	0.023	0.037	0.037	0.059	97	72	30-125	17	30	
Acenaphthene	mg/kg	0.0030	0.037	0.037	0.031	75	68	30-125	9	30	
Acenaphthylene	mg/kg	0.0014J	0.037	0.037	0.031	78	73	30-125	7	30	
Anthracene	mg/kg	0.0058	0.037	0.037	0.035	79	74	30-131	6	30	
Benzo(a)anthracene	mg/kg	0.053	0.037	0.037	0.047	-16	-25	30-126	8	30	M1
Benzo(a)pyrene	mg/kg	<0.00044	0.037	0.037	0.045	121	113	30-150	7	30	
Benzo(b)fluoranthene	mg/kg	0.034	0.037	0.037	0.053	50	35	30-150	11	30	
Benzo(g,h,i)perylene	mg/kg	0.044	0.037	0.037	0.054	29	21	30-150	5	30	M1
Benzo(k)fluoranthene	mg/kg	<0.00028	0.037	0.037	0.037	99	82	30-150	19	30	
Chrysene	mg/kg	0.036	0.037	0.037	0.074	101	53	30-150	28	30	
Dibenz(a,h)anthracene	mg/kg	<0.00044	0.037	0.037	0.034	90	84	30-143	6	30	
Fluoranthene	mg/kg	0.020	0.037	0.037	0.046	69	55	30-143	12	30	
Fluorene	mg/kg	0.0063	0.037	0.037	0.034	74	65	30-138	11	30	
Indeno(1,2,3-cd)pyrene	mg/kg	<0.00023	0.037	0.037	0.035	94	90	30-150	4	30	
Naphthalene	mg/kg	0.0067	0.037	0.037	0.038	83	76	30-125	7	30	
Phenanthrene	mg/kg	0.039	0.037	0.037	0.061	58	41	30-142	10	30	
Pyrene	mg/kg	0.044	0.037	0.037	0.061	47	25	30-149	14	30	M1
2-Fluorobiphenyl (S)	%					74	70	30-125			
p-Terphenyl-d14 (S)	%					78	74	30-125			

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## QUALIFIERS

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10499826

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

### ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

N2 The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 49161427.16 100 102 Husky Post

Pace Project No.: 10499826

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10499826001	SB-9_ 0-1.5	ASTM D2974	647586		
10499826002	SB-9_ 3-4	ASTM D2974	647586		
10499826003	SB-8_ 0-1.5	ASTM D2974	647586		
10499826004	SB-8_ 3-4	ASTM D2974	647586		
10499826001	SB-9_ 0-1.5	EPA 3550	645752	EPA 8270D by SIM	646031
10499826002	SB-9_ 3-4	EPA 3550	645753	EPA 8270D by SIM	646032
10499826003	SB-8_ 0-1.5	EPA 3550	645753	EPA 8270D by SIM	646032
10499826004	SB-8_ 3-4	EPA 3550	645753	EPA 8270D by SIM	646032
10499826001	SB-9_ 0-1.5	EPA 5035/5030B	647160	EPA 8260B	647251
10499826002	SB-9_ 3-4	EPA 5035/5030B	647160	EPA 8260B	647251
10499826003	SB-8_ 0-1.5	EPA 5035/5030B	647160	EPA 8260B	647251
10499826004	SB-8_ 3-4	EPA 5035/5030B	647160	EPA 8260B	647251
10499826005	Trip Blank-6	EPA 5035/5030B	647160	EPA 8260B	647251

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# Barr Engineering Co. Chain of Custody

Ann Arbor 
  Duluth 
  Hibbing 
  Minneapolis  
 Bismarck 
  Grand Rapids 
  Jefferson City 
  Salt Lake City

Sample Origination State:  
 KS  MO  UT  
 MI  ND  WI  
 MN  SD Other: \_\_\_\_\_

COC Number: **56892**  
 COC 1 of 1

**Matrix Code:**  
 GW = Groundwater  
 SW = Surface Water  
 WW = Waste Water  
 DW = Drinking Water  
 S = Soil/Solid  
 SD = Sediment  
 O = Other

**Preservative Code:**  
 A = None  
 B = HCl  
 C = HNO<sub>3</sub>  
 D = H<sub>2</sub>SO<sub>4</sub>  
 E = NaOH  
 F = MeOH  
 G = NaHSO<sub>4</sub>  
 H = Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>  
 I = Ascorbic Acid  
 J = NH<sub>4</sub>Cl  
 K = Zn Acetate  
 O = Other

REPORT TO	INVOICE TO
Company: <u>Barr Engineering</u>	Company: <u>Barr</u>
Address: <u>325 S. Lake Ave. Duluth MN</u>	Address: <u>↓</u>
Name: <u>Lynette Carney</u>	Name: <u>↓</u>
email: <u>lcarney@barr.com</u>	email: <u>↓</u>
Copy to: <u>datamgt@barr.com</u>	P.O. <u>-</u>
Project Name: <u>Husky Post Fire Site Investigation</u>	Barr Project No: <u>49761427.1b 100 102</u>

Location	Sample Depth			Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix Code	Perform MS/MSD Y/N	Total Number of Containers	Analysis Requested		% Solids
	Start	Stop	Unit (m./ft. or in.)						Water	Soil	
1. <u>SB-9</u>	<u>0</u>	<u>1.5</u>	<u>ft</u>	<u>11/15/19</u>	<u>1420</u>	<u>S</u>	<u>N</u>	<u>4</u>	<u>2</u>	<u>1</u>	<u>1</u>
2. <u>SB-9</u>	<u>3</u>	<u>4</u>	<u>ft</u>	<u>↓</u>	<u>1435</u>	<u>↓</u>	<u>↓</u>	<u>4</u>	<u>2</u>	<u>1</u>	<u>1</u>
3. <u>SB-8</u>	<u>0</u>	<u>1.5</u>	<u>ft</u>	<u>↓</u>	<u>1525</u>	<u>↓</u>	<u>↓</u>	<u>4</u>	<u>2</u>	<u>1</u>	<u>1</u>
4. <u>SB-8</u>	<u>3</u>	<u>4</u>	<u>ft</u>	<u>↓</u>	<u>1535</u>	<u>↓</u>	<u>↓</u>	<u>4</u>	<u>2</u>	<u>1</u>	<u>1</u>
5. <u>trip Blank -6</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>11/15/19</u>	<u>-</u>	<u>-</u>	<u>N</u>	<u>1</u>	<u>1</u>	<u>---</u>	<u>---</u>
6.											
7.											
8.											
9.											
10.											

Perform MS/MSD Y/N

10A Vials MeOH  
4oz quantity

% Solids

Preservative Code  
 Field Filtered Y/N  
pvoc-8260; PAH-827051m

**WO#: 10499826**



<b>BARR USE ONLY</b>		Relinquished by: <u>[Signature]</u>	On Ice? <input checked="" type="checkbox"/> N	Date: <u>11/18/19</u>	Time: <u>1100</u>	Received by: <u>[Signature]</u>	Date: <u>11/18/19</u>	Time: <u>11:00</u>
Sampled by: <u>kmj3</u>	Barr Proj. Manager: <u>LMC</u>	Relinquished by: <u>[Signature]</u>	On Ice? <input type="checkbox"/> Y <input type="checkbox"/> N	Date: <u>11/18/19</u>	Time: <u>1835</u>	Received by: <u>[Signature]</u>	Date: <u>11/18/19</u>	Time: <u>1835</u>
Lab DQ Manager: <u>TAD</u>	Lab Name: <u>Pace</u>	Samples Shipped VIA: <input type="checkbox"/> Courier <input type="checkbox"/> Federal Express <input checked="" type="checkbox"/> Sampler <input type="checkbox"/> Other: _____			Air Bill Number: _____		Requested Due Date: <input type="checkbox"/> Standard Turn Around Time <input type="checkbox"/> Rush _____ (mm/dd/yyyy)	
Lab Location: <u>Minneapolis</u>	Lab WO: _____	Temperature on Receipt (°C): <u>1.6</u>			Custody Seal Intact? <input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> None			

Distribution - White-Original: Accompanies Shipment to Laboratory; Yellow Copy: Include in Field Documents; Pink Copy: Send to Data Management Administrators.

H:\RLG\STDFORMS\Chain of Custody Form 2015 RLG Rev. 01/02/18

<b>Sample Condition Upon Receipt</b>	Client Name: <u>Barr Engineering</u>	Project #: <b>WO# : 10499826</b>
	Courier: <input type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input type="checkbox"/> USPS <input type="checkbox"/> Client <input checked="" type="checkbox"/> Pace <input type="checkbox"/> SpeedDee <input type="checkbox"/> Commercial <input type="checkbox"/> See Exceptions	PM: AA1 <span style="float:right">Due Date: 12/05/19</span> <b>CLIENT: BARR</b>

Tracking Number: \_\_\_\_\_

Custody Seal on Cooler/Box Present?  Yes  No      Seals Intact?  Yes  No      Biological Tissue Frozen?  Yes  No  N/A

Packing Material:  Bubble Wrap  Bubble Bags  None  Other: \_\_\_\_\_      Temp Blank?  Yes  No

Thermometer:  T1(0461)  T2(1336)  T3(0459)      Type of Ice:  Wet  Blue  None  Dry  Melted  
 T4(0254)  T5(0489)

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C	Cooler Temp Read w/temp blank: <u>1.7</u> °C	Average Corrected Temp (no temp blank only): <input type="checkbox"/> See Exceptions
Correction Factor: <u>-0.1</u>	Cooler Temp Corrected w/temp blank: <u>1.6</u> °C	<input type="checkbox"/> 1 Container

USDA Regulated Soil: (  N/A, water sample/Other: \_\_\_\_\_ )      Date/Initials of Person Examining Contents: MKZ 11-18-19

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)?  Yes  No      Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?  Yes  No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

		COMMENTS:
Chain of Custody Present and Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. <input type="checkbox"/> Fecal Coliform <input type="checkbox"/> HPC <input type="checkbox"/> Total Coliform/E coli <input type="checkbox"/> BOD/cBOD <input type="checkbox"/> Hex Chrome <input type="checkbox"/> Turbidity <input type="checkbox"/> Nitrate <input type="checkbox"/> Nitrite <input type="checkbox"/> Orthophos <input type="checkbox"/> Other
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Field Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	10. Is sediment visible in the dissolved container? <input type="checkbox"/> Yes <input type="checkbox"/> No
Is sufficient information available to reconcile the samples to the COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	11. If no, write ID/ Date/Time on Container Below: <input type="checkbox"/> See Exception
Matrix: <input type="checkbox"/> Water <input checked="" type="checkbox"/> Soil <input type="checkbox"/> Oil <input type="checkbox"/> Other		
All containers needing acid/base preservation have been checked?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Sulfide, NaOH >12 Cyanide)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<input type="checkbox"/> NaOH <input type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Positive for Res. <input type="checkbox"/> Yes <input type="checkbox"/> No      See Exception
		Chlorine? <input type="checkbox"/> No      pH Paper Lot# <input type="checkbox"/>
		Res. Chlorine      0-6 Roll      0-6 Strip      0-14 Strip
Extra labels present on soil VOA or WIDRO containers?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> See Exception
Headspace in VOA Vials (greater than 6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Trip Blank Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Trip Blank Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Pace Trip Blank Lot # (if purchased): _____

**CLIENT NOTIFICATION/RESOLUTION**      Field Data Required?  Yes  No

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/Resolution: \_\_\_\_\_

Project Manager Review: Amanda J Albrecht      Date: 11/20/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office ( i.e out of hold, incorrect preservative, out of temp, incorrect containers).

July 09, 2019

Ryan Rivord  
Husky Energy  
2407 Stinson Avenue  
Minneapolis, MN 55480

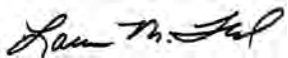
RE: Project: Demo: Tank Farm (FCCU)  
Pace Project No.: 12130507

Dear Ryan Rivord:

Enclosed are the analytical results for sample(s) received by the laboratory on June 14, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Laura Flood  
laura.flood@pacelabs.com  
(218) 727-6380  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

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### Minnesota Certification IDs

1700 Elm Street SE, Minneapolis, MN 55414-2485

A2LA Certification #: 2926.01

Alabama Certification #: 40770

Alaska Contaminated Sites Certification #: 17-009

Alaska DW Certification #: MN00064

Arizona Certification #: AZ0014

Arkansas DW Certification #: MN00064

Arkansas WW Certification #: 88-0680

California Certification #: 2929

CNMI Saipan Certification #: MP0003

Colorado Certification #: MN00064

Connecticut Certification #: PH-0256

EPA Region 8+Wyoming DW Certification #: via MN 027-053-137

Florida Certification #: E87605

Georgia Certification #: 959

Guam EPA Certification #: MN00064

Hawaii Certification #: MN00064

Idaho Certification #: MN00064

Illinois Certification #: 200011

Indiana Certification #: C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky DW Certification #: 90062

Kentucky WW Certification #: 90062

Louisiana DEQ Certification #: 03086

Louisiana DW Certification #: MN00064

Maine Certification #: MN00064

Maryland Certification #: 322

Massachusetts Certification #: M-MN064

Michigan Certification #: 9909

Minnesota Certification #: 027-053-137

Minnesota Dept of Ag Certification #: via MN 027-053-137

Minnesota Petrofund Certification #: 1240

Mississippi Certification #: MN00064

Missouri Certification #: 10100

Montana Certification #: CERT0092

Nebraska Certification #: NE-OS-18-06

Nevada Certification #: MN00064

New Hampshire Certification #: 2081

New Jersey Certification #: MN002

New York Certification #: 11647

North Carolina DW Certification #: 27700

North Carolina WW Certification #: 530

North Dakota Certification #: R-036

Ohio DW Certification #: 41244

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Primary Certification #: MN300001

Oregon Secondary Certification #: MN200001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification #: MN00064

South Carolina Certification #: 74003001

Tennessee Certification #: TN02818

Texas Certification #: T104704192

Utah Certification #: MN00064

Vermont Certification #: VT-027053137

Virginia Certification #: 460163

Washington Certification #: C486

West Virginia DEP Certification #: 382

West Virginia DW Certification #: 9952 C

Wisconsin Certification #: 999407970

Wyoming UST Certification #: via A2LA 2926.01

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

Lab ID	Sample ID	Matrix	Date Collected	Date Received
12130507001	1-A	Solid	06/13/19 15:24	06/14/19 08:49
12130507002	1-B	Solid	06/13/19 15:29	06/14/19 08:49
12130507003	2-A	Solid	06/13/19 12:00	06/14/19 08:49
12130507004	2-B	Solid	06/13/19 12:06	06/14/19 08:49
12130507005	3-A	Solid	06/13/19 15:07	06/14/19 08:49
12130507006	3-B	Solid	06/13/19 15:11	06/14/19 08:49
12130507007	4-A	Solid	06/13/19 14:20	06/14/19 08:49
12130507008	4-B	Solid	06/13/19 14:24	06/14/19 08:49
12130507009	5-A	Solid	06/13/19 11:10	06/14/19 08:49
12130507010	5-B	Solid	06/13/19 11:15	06/14/19 08:49
12130507011	6-A	Solid	06/13/19 11:32	06/14/19 08:49
12130507012	6-B	Solid	06/13/19 11:37	06/14/19 08:49
12130507013	7-A	Solid	06/13/19 14:43	06/14/19 08:49
12130507014	7-B	Solid	06/13/19 14:48	06/14/19 08:49
12130507015	8-A	Solid	06/13/19 14:06	06/14/19 08:49
12130507016	8B	Solid	06/13/19 14:11	06/14/19 08:49
12130507017	9-A	Solid	06/13/19 10:50	06/14/19 08:49
12130507018	9-B	Solid	06/13/19 10:56	06/14/19 08:49
12130507019	10-A	Solid	06/13/19 12:54	06/14/19 08:49
12130507020	10-B	Solid	06/13/19 12:58	06/14/19 08:49
12130507021	11-A	Solid	06/13/19 13:11	06/14/19 08:49
12130507022	11-B	Solid	06/13/19 13:17	06/14/19 08:49
12130507023	12-A	Solid	06/13/19 13:28	06/14/19 08:49
12130507024	12-B	Solid	06/13/19 13:33	06/14/19 08:49
12130507025	1-A (FCCU)	Solid	06/13/19 17:35	06/14/19 08:49
12130507026	1-B (FCCU)	Solid	06/13/19 17:40	06/14/19 08:49
12130507027	2-A (FCCU)	Solid	06/13/19 17:21	06/14/19 08:49
12130507028	2-B (FCCU)	Solid	06/13/19 17:24	06/14/19 08:49
12130507029	3-A (FCCU)	Solid	06/13/19 16:29	06/14/19 08:49
12130507030	3-B (FCCU)	Solid	06/13/19 16:35	06/14/19 08:49
12130507031	4-A (FCCU)	Solid	06/13/19 16:43	06/14/19 08:49
12130507032	4-B (FCCU)	Solid	06/13/19 16:47	06/14/19 08:49
12130507033	5-A (FCCU)	Solid	06/13/19 16:55	06/14/19 08:49
12130507034	5-B (FCCU)	Solid	06/13/19 16:59	06/14/19 08:49

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### SAMPLE ANALYTE COUNT

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
12130507001	1-A	WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
12130507002	1-B	WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
12130507003	2-A	WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AMC	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
12130507004	2-B	WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
12130507005	3-A	WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AMC	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
12130507006	3-B	WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AMC	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
12130507007	4-A	WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AMC	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
12130507008	4-B	WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AMC	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
12130507009	5-A	WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AMC	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
12130507010	5-B	WI MOD DRO	JVM	2	PASI-M

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### SAMPLE ANALYTE COUNT

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
12130507011	6-A	WI MOD GRO	AJR	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
12130507012	6-B	ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
12130507013	7-A	EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
12130507014	7-B	WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AMC	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
12130507015	8-A	WI MOD GRO	AJR	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
12130507016	8B	ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
12130507017	9-A	EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
12130507018	9-B	WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
12130507019	10-A	WI MOD GRO	AJR	2	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		EPA 8260B	GDM	14	PASI-M

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
12130507020	10-B	ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
12130507021	11-A	ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
12130507022	11-B	ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
12130507023	12-A	ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
12130507024	12-B	ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
12130507025	1-A (FCCU)	ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
12130507026	1-B (FCCU)	ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
12130507027	2-A (FCCU)	ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
12130507028	2-B (FCCU)	ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M

### REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
12130507029	3-A (FCCU)	EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
12130507030	3-B (FCCU)	EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
12130507031	4-A (FCCU)	EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
12130507032	4-B (FCCU)	EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
12130507033	5-A (FCCU)	EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
12130507034	5-B (FCCU)	EPA 8260B	GDM	14	PASI-M
		WI MOD DRO	JVM	2	PASI-M
		WI MOD GRO	AJR	2	PASI-M
		ASTM D2974	JDL	1	PASI-M
		EPA 8260B	GDM	14	PASI-M

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## ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 1-A**      **Lab ID: 12130507001**      Collected: 06/13/19 15:24      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO      Preparation Method: WI MOD DRO									
WDRO C10-C28	<4.0	mg/kg	13.2	4.0	1	06/18/19 12:37	06/21/19 20:30		
<b>Surrogates</b>									
n-Triacontane (S)	97	%	50-150		1	06/18/19 12:37	06/21/19 20:30	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO      Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<1.7	mg/kg	5.7	1.7	1	06/30/19 15:43	07/01/19 08:34		1V
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	98	%	80-150		1	06/30/19 15:43	07/01/19 08:34	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	26.2	%	0.10	0.10	1		06/26/19 15:30		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
Benzene	<3.8	ug/kg	12.5	3.8	1	06/25/19 13:46	06/26/19 00:20	71-43-2	
1,2-Dibromoethane (EDB)	<7.0	ug/kg	23.4	7.0	1	06/25/19 13:46	06/26/19 00:20	106-93-4	
1,2-Dichloroethane	<7.3	ug/kg	24.5	7.3	1	06/25/19 13:46	06/26/19 00:20	107-06-2	
Ethylbenzene	<3.6	ug/kg	12.1	3.6	1	06/25/19 13:46	06/26/19 00:20	100-41-4	
2-Methylnaphthalene	<100	ug/kg	334	100	1	06/25/19 13:46	06/26/19 00:20	91-57-6	
Methyl-tert-butyl ether	<7.9	ug/kg	26.5	7.9	1	06/25/19 13:46	06/26/19 00:20	1634-04-4	
Naphthalene	<62.5	ug/kg	208	62.5	1	06/25/19 13:46	06/26/19 00:20	91-20-3	
Toluene	<16.3	ug/kg	54.2	16.3	1	06/25/19 13:46	06/26/19 00:20	108-88-3	
1,2,4-Trimethylbenzene	<13.4	ug/kg	44.5	13.4	1	06/25/19 13:46	06/26/19 00:20	95-63-6	
1,3,5-Trimethylbenzene	<10.6	ug/kg	35.4	10.6	1	06/25/19 13:46	06/26/19 00:20	108-67-8	
Xylene (Total)	<15.5	ug/kg	51.6	15.5	1	06/25/19 13:46	06/26/19 00:20	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	118	%	75-125		1	06/25/19 13:46	06/26/19 00:20	17060-07-0	
Toluene-d8 (S)	98	%	75-125		1	06/25/19 13:46	06/26/19 00:20	2037-26-5	
4-Bromofluorobenzene (S)	101	%	75-125		1	06/25/19 13:46	06/26/19 00:20	460-00-4	

**Sample: 1-B**      **Lab ID: 12130507002**      Collected: 06/13/19 15:29      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO      Preparation Method: WI MOD DRO									
WDRO C10-C28	10.0J	mg/kg	15.7	4.7	1	06/18/19 12:37	06/21/19 19:57		
<b>Surrogates</b>									
n-Triacontane (S)	94	%	50-150		1	06/18/19 12:37	06/21/19 19:57	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO      Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<2.1	mg/kg	6.8	2.1	1	06/30/19 15:43	07/01/19 09:00		
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	98	%	80-150		1	06/30/19 15:43	07/01/19 09:00	98-08-8	

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### ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 1-B** Lab ID: **12130507002** Collected: 06/13/19 15:29 Received: 06/14/19 08:49 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>36.2</b>	%	0.10	0.10	1		06/26/19 15:30		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;4.5</b>	ug/kg	14.9	4.5	1	06/25/19 13:46	06/26/19 00:41	71-43-2	
1,2-Dibromoethane (EDB)	<b>&lt;8.3</b>	ug/kg	27.7	8.3	1	06/25/19 13:46	06/26/19 00:41	106-93-4	
1,2-Dichloroethane	<b>&lt;8.7</b>	ug/kg	29.0	8.7	1	06/25/19 13:46	06/26/19 00:41	107-06-2	
Ethylbenzene	<b>&lt;4.3</b>	ug/kg	14.3	4.3	1	06/25/19 13:46	06/26/19 00:41	100-41-4	
2-Methylnaphthalene	<b>&lt;119</b>	ug/kg	396	119	1	06/25/19 13:46	06/26/19 00:41	91-57-6	
Methyl-tert-butyl ether	<b>&lt;9.4</b>	ug/kg	31.3	9.4	1	06/25/19 13:46	06/26/19 00:41	1634-04-4	
Naphthalene	<b>&lt;74.0</b>	ug/kg	246	74.0	1	06/25/19 13:46	06/26/19 00:41	91-20-3	
Toluene	<b>&lt;19.3</b>	ug/kg	64.2	19.3	1	06/25/19 13:46	06/26/19 00:41	108-88-3	
1,2,4-Trimethylbenzene	<b>&lt;15.8</b>	ug/kg	52.7	15.8	1	06/25/19 13:46	06/26/19 00:41	95-63-6	
1,3,5-Trimethylbenzene	<b>&lt;12.6</b>	ug/kg	42.0	12.6	1	06/25/19 13:46	06/26/19 00:41	108-67-8	
Xylene (Total)	<b>&lt;18.3</b>	ug/kg	61.1	18.3	1	06/25/19 13:46	06/26/19 00:41	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	112	%	75-125		1	06/25/19 13:46	06/26/19 00:41	17060-07-0	
Toluene-d8 (S)	98	%	75-125		1	06/25/19 13:46	06/26/19 00:41	2037-26-5	
4-Bromofluorobenzene (S)	98	%	75-125		1	06/25/19 13:46	06/26/19 00:41	460-00-4	

**Sample: 2-A** Lab ID: **12130507003** Collected: 06/13/19 12:00 Received: 06/14/19 08:49 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
WDRO C10-C28	<b>&lt;4.2</b>	mg/kg	14.1	4.2	1	06/18/19 12:37	06/21/19 20:49		
<b>Surrogates</b>									
n-Triacontane (S)	91	%	50-150		1	06/18/19 12:37	06/21/19 20:49	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<b>&lt;1.7</b>	mg/kg	5.7	1.7	1	06/30/19 15:43	07/01/19 12:37		1V
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	98	%	80-150		1	06/30/19 15:43	07/01/19 12:37	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>26.3</b>	%	0.10	0.10	1		06/26/19 15:30		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;3.9</b>	ug/kg	13.0	3.9	1	06/25/19 13:46	06/26/19 01:03	71-43-2	
1,2-Dibromoethane (EDB)	<b>&lt;7.3</b>	ug/kg	24.2	7.3	1	06/25/19 13:46	06/26/19 01:03	106-93-4	
1,2-Dichloroethane	<b>&lt;7.6</b>	ug/kg	25.3	7.6	1	06/25/19 13:46	06/26/19 01:03	107-06-2	
Ethylbenzene	<b>&lt;3.8</b>	ug/kg	12.5	3.8	1	06/25/19 13:46	06/26/19 01:03	100-41-4	
2-Methylnaphthalene	<b>&lt;104</b>	ug/kg	346	104	1	06/25/19 13:46	06/26/19 01:03	91-57-6	

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## ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)  
Pace Project No.: 12130507

**Sample: 2-A**      **Lab ID: 12130507003**      Collected: 06/13/19 12:00      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B    Preparation Method: EPA 5035/5030B									
Methyl-tert-butyl ether	<8.2	ug/kg	27.4	8.2	1	06/25/19 13:46	06/26/19 01:03	1634-04-4	
Naphthalene	<64.7	ug/kg	216	64.7	1	06/25/19 13:46	06/26/19 01:03	91-20-3	
Toluene	<16.9	ug/kg	56.2	16.9	1	06/25/19 13:46	06/26/19 01:03	108-88-3	
1,2,4-Trimethylbenzene	<13.8	ug/kg	46.1	13.8	1	06/25/19 13:46	06/26/19 01:03	95-63-6	
1,3,5-Trimethylbenzene	<11.0	ug/kg	36.7	11.0	1	06/25/19 13:46	06/26/19 01:03	108-67-8	
Xylene (Total)	<16.0	ug/kg	53.4	16.0	1	06/25/19 13:46	06/26/19 01:03	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	111	%	75-125		1	06/25/19 13:46	06/26/19 01:03	17060-07-0	
Toluene-d8 (S)	99	%	75-125		1	06/25/19 13:46	06/26/19 01:03	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125		1	06/25/19 13:46	06/26/19 01:03	460-00-4	

**Sample: 2-B**      **Lab ID: 12130507004**      Collected: 06/13/19 12:06      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b>									
Analytical Method: WI MOD DRO    Preparation Method: WI MOD DRO									
WDRO C10-C28	<4.1	mg/kg	13.8	4.1	1	06/18/19 12:37	06/21/19 20:43		
<b>Surrogates</b>									
n-Triacontane (S)	91	%	50-150		1	06/18/19 12:37	06/21/19 20:43	638-68-6	D5
<b>WIGRO GCV</b>									
Analytical Method: WI MOD GRO    Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<1.5	mg/kg	4.9	1.5	1	06/30/19 15:43	07/01/19 09:26		1V
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	98	%	80-150		1	06/30/19 15:43	07/01/19 09:26	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b>									
Analytical Method: ASTM D2974									
Percent Moisture	26.9	%	0.10	0.10	1		06/26/19 15:30		
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B    Preparation Method: EPA 5035/5030B									
Benzene	<3.3	ug/kg	10.9	3.3	1	06/25/19 13:46	06/26/19 01:24	71-43-2	
1,2-Dibromoethane (EDB)	<6.1	ug/kg	20.3	6.1	1	06/25/19 13:46	06/26/19 01:24	106-93-4	
1,2-Dichloroethane	<6.4	ug/kg	21.2	6.4	1	06/25/19 13:46	06/26/19 01:24	107-06-2	
Ethylbenzene	<3.1	ug/kg	10.5	3.1	1	06/25/19 13:46	06/26/19 01:24	100-41-4	
2-Methylnaphthalene	<86.9	ug/kg	290	86.9	1	06/25/19 13:46	06/26/19 01:24	91-57-6	
Methyl-tert-butyl ether	<6.9	ug/kg	22.9	6.9	1	06/25/19 13:46	06/26/19 01:24	1634-04-4	
Naphthalene	<54.1	ug/kg	180	54.1	1	06/25/19 13:46	06/26/19 01:24	91-20-3	
Toluene	<14.1	ug/kg	47.0	14.1	1	06/25/19 13:46	06/26/19 01:24	108-88-3	
1,2,4-Trimethylbenzene	<11.6	ug/kg	38.5	11.6	1	06/25/19 13:46	06/26/19 01:24	95-63-6	
1,3,5-Trimethylbenzene	<9.2	ug/kg	30.7	9.2	1	06/25/19 13:46	06/26/19 01:24	108-67-8	
Xylene (Total)	<13.4	ug/kg	44.7	13.4	1	06/25/19 13:46	06/26/19 01:24	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	123	%	75-125		1	06/25/19 13:46	06/26/19 01:24	17060-07-0	2V
Toluene-d8 (S)	99	%	75-125		1	06/25/19 13:46	06/26/19 01:24	2037-26-5	

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### ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 2-B** Lab ID: 12130507004 Collected: 06/13/19 12:06 Received: 06/14/19 08:49 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
<b>Surrogates</b>									
4-Bromofluorobenzene (S)	97	%	75-125		1	06/25/19 13:46	06/26/19 01:24	460-00-4	

**Sample: 3-A** Lab ID: 12130507005 Collected: 06/13/19 15:07 Received: 06/14/19 08:49 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
WDRO C10-C28	49.6	mg/kg	17.8	5.3	1	06/18/19 12:37	06/21/19 19:44		T6,T7
<b>Surrogates</b>									
n-Triacontane (S)	88	%	50-150		1	06/18/19 12:37	06/21/19 19:44	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<2.2	mg/kg	7.2	2.2	1	06/30/19 15:43	07/01/19 13:03		
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	97	%	80-150		1	06/30/19 15:43	07/01/19 13:03	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	41.6	%	0.10	0.10	1		06/26/19 15:30		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<4.8	ug/kg	16.1	4.8	1	06/25/19 13:46	06/26/19 01:45	71-43-2	
1,2-Dibromoethane (EDB)	<9.0	ug/kg	30.1	9.0	1	06/25/19 13:46	06/26/19 01:45	106-93-4	
1,2-Dichloroethane	<9.5	ug/kg	31.5	9.5	1	06/25/19 13:46	06/26/19 01:45	107-06-2	
Ethylbenzene	<4.7	ug/kg	15.6	4.7	1	06/25/19 13:46	06/26/19 01:45	100-41-4	
2-Methylnaphthalene	<129	ug/kg	430	129	1	06/25/19 13:46	06/26/19 01:45	91-57-6	
Methyl-tert-butyl ether	<10.2	ug/kg	34.0	10.2	1	06/25/19 13:46	06/26/19 01:45	1634-04-4	
Naphthalene	<80.4	ug/kg	268	80.4	1	06/25/19 13:46	06/26/19 01:45	91-20-3	
Toluene	<21.0	ug/kg	69.8	21.0	1	06/25/19 13:46	06/26/19 01:45	108-88-3	
1,2,4-Trimethylbenzene	<17.2	ug/kg	57.2	17.2	1	06/25/19 13:46	06/26/19 01:45	95-63-6	
1,3,5-Trimethylbenzene	<13.7	ug/kg	45.6	13.7	1	06/25/19 13:46	06/26/19 01:45	108-67-8	
Xylene (Total)	<19.9	ug/kg	66.4	19.9	1	06/25/19 13:46	06/26/19 01:45	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	114	%	75-125		1	06/25/19 13:46	06/26/19 01:45	17060-07-0	
Toluene-d8 (S)	98	%	75-125		1	06/25/19 13:46	06/26/19 01:45	2037-26-5	
4-Bromofluorobenzene (S)	96	%	75-125		1	06/25/19 13:46	06/26/19 01:45	460-00-4	

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## ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 3-B**      **Lab ID: 12130507006**      Collected: 06/13/19 15:11      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO      Preparation Method: WI MOD DRO									
WDRO C10-C28	<5.1	mg/kg	17.0	5.1	1	06/18/19 15:51	06/27/19 11:18		
<b>Surrogates</b>									
n-Triacontane (S)	90	%	50-150		1	06/18/19 15:51	06/27/19 11:18	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO      Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<2.1	mg/kg	7.1	2.1	1	06/30/19 15:43	07/01/19 13:30		
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	97	%	80-150		1	06/30/19 15:43	07/01/19 13:30	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	39.6	%	0.10	0.10	1		06/26/19 15:30		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
Benzene	<4.7	ug/kg	15.6	4.7	1	06/25/19 13:46	06/26/19 02:06	71-43-2	
1,2-Dibromoethane (EDB)	<8.7	ug/kg	29.0	8.7	1	06/25/19 13:46	06/26/19 02:06	106-93-4	
1,2-Dichloroethane	<9.1	ug/kg	30.4	9.1	1	06/25/19 13:46	06/26/19 02:06	107-06-2	
Ethylbenzene	<4.5	ug/kg	15.0	4.5	1	06/25/19 13:46	06/26/19 02:06	100-41-4	
2-Methylnaphthalene	<125	ug/kg	415	125	1	06/25/19 13:46	06/26/19 02:06	91-57-6	
Methyl-tert-butyl ether	<9.9	ug/kg	32.9	9.9	1	06/25/19 13:46	06/26/19 02:06	1634-04-4	
Naphthalene	<77.6	ug/kg	258	77.6	1	06/25/19 13:46	06/26/19 02:06	91-20-3	
Toluene	<20.2	ug/kg	67.4	20.2	1	06/25/19 13:46	06/26/19 02:06	108-88-3	
1,2,4-Trimethylbenzene	<16.6	ug/kg	55.2	16.6	1	06/25/19 13:46	06/26/19 02:06	95-63-6	
1,3,5-Trimethylbenzene	<13.2	ug/kg	44.0	13.2	1	06/25/19 13:46	06/26/19 02:06	108-67-8	
Xylene (Total)	<19.2	ug/kg	64.1	19.2	1	06/25/19 13:46	06/26/19 02:06	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	124	%	75-125		1	06/25/19 13:46	06/26/19 02:06	17060-07-0	
Toluene-d8 (S)	99	%	75-125		1	06/25/19 13:46	06/26/19 02:06	2037-26-5	
4-Bromofluorobenzene (S)	101	%	75-125		1	06/25/19 13:46	06/26/19 02:06	460-00-4	

**Sample: 4-A**      **Lab ID: 12130507007**      Collected: 06/13/19 14:20      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO      Preparation Method: WI MOD DRO									
WDRO C10-C28	2370	mg/kg	1380	416	10	06/18/19 15:51	06/27/19 16:02		T6
<b>Surrogates</b>									
n-Triacontane (S)	0	%	50-150		10	06/18/19 15:51	06/27/19 16:02	638-68-6	D5,S4
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO      Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<1.7	mg/kg	5.8	1.7	1	06/30/19 15:43	07/01/19 13:56		G+
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	96	%	80-150		1	06/30/19 15:43	07/01/19 13:56	98-08-8	

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### ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 4-A** Lab ID: **12130507007** Collected: 06/13/19 14:20 Received: 06/14/19 08:49 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>25.3</b>	%	0.10	0.10	1		06/26/19 16:05		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;3.8</b>	ug/kg	12.8	3.8	1	06/25/19 13:46	06/26/19 02:28	71-43-2	
1,2-Dibromoethane (EDB)	<b>&lt;7.2</b>	ug/kg	23.9	7.2	1	06/25/19 13:46	06/26/19 02:28	106-93-4	
1,2-Dichloroethane	<b>&lt;7.5</b>	ug/kg	24.9	7.5	1	06/25/19 13:46	06/26/19 02:28	107-06-2	
Ethylbenzene	<b>&lt;3.7</b>	ug/kg	12.3	3.7	1	06/25/19 13:46	06/26/19 02:28	100-41-4	
2-Methylnaphthalene	<b>&lt;102</b>	ug/kg	341	102	1	06/25/19 13:46	06/26/19 02:28	91-57-6	
Methyl-tert-butyl ether	<b>&lt;8.1</b>	ug/kg	27.0	8.1	1	06/25/19 13:46	06/26/19 02:28	1634-04-4	
Naphthalene	<b>&lt;63.7</b>	ug/kg	212	63.7	1	06/25/19 13:46	06/26/19 02:28	91-20-3	
Toluene	<b>&lt;16.6</b>	ug/kg	55.3	16.6	1	06/25/19 13:46	06/26/19 02:28	108-88-3	
1,2,4-Trimethylbenzene	<b>&lt;13.6</b>	ug/kg	45.3	13.6	1	06/25/19 13:46	06/26/19 02:28	95-63-6	
1,3,5-Trimethylbenzene	<b>&lt;10.9</b>	ug/kg	36.1	10.9	1	06/25/19 13:46	06/26/19 02:28	108-67-8	
Xylene (Total)	<b>&lt;15.8</b>	ug/kg	52.6	15.8	1	06/25/19 13:46	06/26/19 02:28	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	116	%	75-125		1	06/25/19 13:46	06/26/19 02:28	17060-07-0	
Toluene-d8 (S)	100	%	75-125		1	06/25/19 13:46	06/26/19 02:28	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125		1	06/25/19 13:46	06/26/19 02:28	460-00-4	

**Sample: 4-B** Lab ID: **12130507008** Collected: 06/13/19 14:24 Received: 06/14/19 08:49 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
WDRO C10-C28	<b>11.3J</b>	mg/kg	12.7	3.8	1	06/18/19 15:51	06/27/19 11:12		T6,T7
<b>Surrogates</b>									
n-Triacontane (S)	78	%	50-150		1	06/18/19 15:51	06/27/19 11:12	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<b>18.7</b>	mg/kg	5.3	1.6	1	06/30/19 15:43	07/01/19 14:22		1V,G+
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	96	%	80-150		1	06/30/19 15:43	07/01/19 14:22	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>18.9</b>	%	0.10	0.10	1		06/26/19 16:05		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;3.5</b>	ug/kg	11.7	3.5	1	06/25/19 13:46	06/26/19 02:50	71-43-2	
1,2-Dibromoethane (EDB)	<b>&lt;6.6</b>	ug/kg	21.9	6.6	1	06/25/19 13:46	06/26/19 02:50	106-93-4	
1,2-Dichloroethane	<b>&lt;6.9</b>	ug/kg	22.9	6.9	1	06/25/19 13:46	06/26/19 02:50	107-06-2	
Ethylbenzene	<b>&lt;3.4</b>	ug/kg	11.3	3.4	1	06/25/19 13:46	06/26/19 02:50	100-41-4	
2-Methylnaphthalene	<b>712</b>	ug/kg	313	93.9	1	06/25/19 13:46	06/26/19 02:50	91-57-6	

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## ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 4-B**      **Lab ID: 12130507008**      Collected: 06/13/19 14:24      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B    Preparation Method: EPA 5035/5030B									
Methyl-tert-butyl ether	<7.4	ug/kg	24.7	7.4	1	06/25/19 13:46	06/26/19 02:50	1634-04-4	
Naphthalene	484	ug/kg	195	58.4	1	06/25/19 13:46	06/26/19 02:50	91-20-3	
Toluene	<15.2	ug/kg	50.7	15.2	1	06/25/19 13:46	06/26/19 02:50	108-88-3	
1,2,4-Trimethylbenzene	<12.5	ug/kg	41.6	12.5	1	06/25/19 13:46	06/26/19 02:50	95-63-6	
1,3,5-Trimethylbenzene	<10	ug/kg	33.1	10	1	06/25/19 13:46	06/26/19 02:50	108-67-8	
Xylene (Total)	<14.5	ug/kg	48.2	14.5	1	06/25/19 13:46	06/26/19 02:50	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	118	%	75-125		1	06/25/19 13:46	06/26/19 02:50	17060-07-0	
Toluene-d8 (S)	94	%	75-125		1	06/25/19 13:46	06/26/19 02:50	2037-26-5	
4-Bromofluorobenzene (S)	111	%	75-125		1	06/25/19 13:46	06/26/19 02:50	460-00-4	

**Sample: 5-A**      **Lab ID: 12130507009**      Collected: 06/13/19 11:10      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b>									
Analytical Method: WI MOD DRO    Preparation Method: WI MOD DRO									
WDRO C10-C28	<4.3	mg/kg	14.2	4.3	1	06/18/19 15:51	06/27/19 11:38		
<b>Surrogates</b>									
n-Triacontane (S)	92	%	50-150		1	06/18/19 15:51	06/27/19 11:38	638-68-6	D5
<b>WIGRO GCV</b>									
Analytical Method: WI MOD GRO    Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<1.7	mg/kg	5.6	1.7	1	06/30/19 15:43	07/01/19 14:49		1V
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	97	%	80-150		1	06/30/19 15:43	07/01/19 14:49	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b>									
Analytical Method: ASTM D2974									
Percent Moisture	25.2	%	0.10	0.10	1		06/26/19 16:05		
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B    Preparation Method: EPA 5035/5030B									
Benzene	<3.8	ug/kg	12.6	3.8	1	06/25/19 13:46	06/26/19 03:11	71-43-2	
1,2-Dibromoethane (EDB)	<7.0	ug/kg	23.4	7.0	1	06/25/19 13:46	06/26/19 03:11	106-93-4	
1,2-Dichloroethane	<7.4	ug/kg	24.5	7.4	1	06/25/19 13:46	06/26/19 03:11	107-06-2	
Ethylbenzene	<3.6	ug/kg	12.1	3.6	1	06/25/19 13:46	06/26/19 03:11	100-41-4	
2-Methylnaphthalene	<101	ug/kg	335	101	1	06/25/19 13:46	06/26/19 03:11	91-57-6	
Methyl-tert-butyl ether	<8.0	ug/kg	26.5	8.0	1	06/25/19 13:46	06/26/19 03:11	1634-04-4	
Naphthalene	<62.6	ug/kg	209	62.6	1	06/25/19 13:46	06/26/19 03:11	91-20-3	
Toluene	<16.3	ug/kg	54.4	16.3	1	06/25/19 13:46	06/26/19 03:11	108-88-3	
1,2,4-Trimethylbenzene	<13.4	ug/kg	44.6	13.4	1	06/25/19 13:46	06/26/19 03:11	95-63-6	
1,3,5-Trimethylbenzene	<10.7	ug/kg	35.5	10.7	1	06/25/19 13:46	06/26/19 03:11	108-67-8	
Xylene (Total)	<15.5	ug/kg	51.7	15.5	1	06/25/19 13:46	06/26/19 03:11	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	114	%	75-125		1	06/25/19 13:46	06/26/19 03:11	17060-07-0	
Toluene-d8 (S)	98	%	75-125		1	06/25/19 13:46	06/26/19 03:11	2037-26-5	

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## ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 5-A**      **Lab ID: 12130507009**      Collected: 06/13/19 11:10      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
<b>Surrogates</b>									
4-Bromofluorobenzene (S)	98	%	75-125		1	06/25/19 13:46	06/26/19 03:11	460-00-4	

**Sample: 5-B**      **Lab ID: 12130507010**      Collected: 06/13/19 11:15      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO      Preparation Method: WI MOD DRO									
WDRO C10-C28	<4.4	mg/kg	14.6	4.4	1	06/18/19 15:51	06/27/19 11:45		
<b>Surrogates</b>									
n-Triacontane (S)	94	%	50-150		1	06/18/19 15:51	06/27/19 11:45	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO      Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<1.8	mg/kg	6.1	1.8	1	06/30/19 15:43	07/01/19 17:53		1V
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	98	%	80-150		1	06/30/19 15:43	07/01/19 17:53	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	30.2	%	0.10	0.10	1		06/26/19 16:05		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
Benzene	<4.1	ug/kg	13.5	4.1	1	06/25/19 13:46	06/26/19 03:32	71-43-2	
1,2-Dibromoethane (EDB)	<7.6	ug/kg	25.3	7.6	1	06/25/19 13:46	06/26/19 03:32	106-93-4	
1,2-Dichloroethane	<7.9	ug/kg	26.4	7.9	1	06/25/19 13:46	06/26/19 03:32	107-06-2	
Ethylbenzene	<3.9	ug/kg	13.1	3.9	1	06/25/19 13:46	06/26/19 03:32	100-41-4	
2-Methylnaphthalene	<108	ug/kg	361	108	1	06/25/19 13:46	06/26/19 03:32	91-57-6	
Methyl-tert-butyl ether	<8.6	ug/kg	28.6	8.6	1	06/25/19 13:46	06/26/19 03:32	1634-04-4	
Naphthalene	<67.5	ug/kg	225	67.5	1	06/25/19 13:46	06/26/19 03:32	91-20-3	
Toluene	<17.6	ug/kg	58.6	17.6	1	06/25/19 13:46	06/26/19 03:32	108-88-3	
1,2,4-Trimethylbenzene	<14.4	ug/kg	48.0	14.4	1	06/25/19 13:46	06/26/19 03:32	95-63-6	
1,3,5-Trimethylbenzene	<11.5	ug/kg	38.3	11.5	1	06/25/19 13:46	06/26/19 03:32	108-67-8	
Xylene (Total)	<16.7	ug/kg	55.7	16.7	1	06/25/19 13:46	06/26/19 03:32	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	121	%	75-125		1	06/25/19 13:46	06/26/19 03:32	17060-07-0	
Toluene-d8 (S)	98	%	75-125		1	06/25/19 13:46	06/26/19 03:32	2037-26-5	
4-Bromofluorobenzene (S)	99	%	75-125		1	06/25/19 13:46	06/26/19 03:32	460-00-4	

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### ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 6-A** Lab ID: 12130507011 Collected: 06/13/19 11:32 Received: 06/14/19 08:49 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
WDRO C10-C28	<4.4	mg/kg	14.5	4.4	1	06/18/19 15:51	06/27/19 11:51		
<b>Surrogates</b>									
n-Triacontane (S)	92	%	50-150		1	06/18/19 15:51	06/27/19 11:51	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<1.8	mg/kg	6.0	1.8	1	06/30/19 15:43	07/01/19 18:19		1V
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	100	%	80-150		1	06/30/19 15:43	07/01/19 18:19	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	28.1	%	0.10	0.10	1		06/26/19 16:05		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<3.8	ug/kg	12.8	3.8	1	06/25/19 13:46	06/26/19 03:53	71-43-2	
1,2-Dibromoethane (EDB)	<7.2	ug/kg	23.9	7.2	1	06/25/19 13:46	06/26/19 03:53	106-93-4	
1,2-Dichloroethane	<7.5	ug/kg	25.0	7.5	1	06/25/19 13:46	06/26/19 03:53	107-06-2	
Ethylbenzene	<3.7	ug/kg	12.3	3.7	1	06/25/19 13:46	06/26/19 03:53	100-41-4	
2-Methylnaphthalene	<103	ug/kg	341	103	1	06/25/19 13:46	06/26/19 03:53	91-57-6	
Methyl-tert-butyl ether	<8.1	ug/kg	27.0	8.1	1	06/25/19 13:46	06/26/19 03:53	1634-04-4	
Naphthalene	<63.8	ug/kg	212	63.8	1	06/25/19 13:46	06/26/19 03:53	91-20-3	
Toluene	<16.6	ug/kg	55.4	16.6	1	06/25/19 13:46	06/26/19 03:53	108-88-3	
1,2,4-Trimethylbenzene	<13.6	ug/kg	45.4	13.6	1	06/25/19 13:46	06/26/19 03:53	95-63-6	
1,3,5-Trimethylbenzene	<10.9	ug/kg	36.2	10.9	1	06/25/19 13:46	06/26/19 03:53	108-67-8	
Xylene (Total)	<15.8	ug/kg	52.7	15.8	1	06/25/19 13:46	06/26/19 03:53	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	116	%	75-125		1	06/25/19 13:46	06/26/19 03:53	17060-07-0	
Toluene-d8 (S)	98	%	75-125		1	06/25/19 13:46	06/26/19 03:53	2037-26-5	
4-Bromofluorobenzene (S)	98	%	75-125		1	06/25/19 13:46	06/26/19 03:53	460-00-4	

**Sample: 6-B** Lab ID: 12130507012 Collected: 06/13/19 11:37 Received: 06/14/19 08:49 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
WDRO C10-C28	<4.7	mg/kg	15.5	4.7	1	06/18/19 15:51	06/27/19 11:58		
<b>Surrogates</b>									
n-Triacontane (S)	94	%	50-150		1	06/18/19 15:51	06/27/19 11:58	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<1.8	mg/kg	6.1	1.8	1	06/30/19 15:43	07/01/19 18:45		1V
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	98	%	80-150		1	06/30/19 15:43	07/01/19 18:45	98-08-8	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 6-B**      **Lab ID: 12130507012**      Collected: 06/13/19 11:37      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	31.1	%	0.10	0.10	1		06/26/19 16:06		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
Benzene	<4.0	ug/kg	13.5	4.0	1	06/25/19 13:46	06/26/19 04:15	71-43-2	
1,2-Dibromoethane (EDB)	<7.6	ug/kg	25.2	7.6	1	06/25/19 13:46	06/26/19 04:15	106-93-4	
1,2-Dichloroethane	<7.9	ug/kg	26.3	7.9	1	06/25/19 13:46	06/26/19 04:15	107-06-2	
Ethylbenzene	<3.9	ug/kg	13.0	3.9	1	06/25/19 13:46	06/26/19 04:15	100-41-4	
2-Methylnaphthalene	<108	ug/kg	360	108	1	06/25/19 13:46	06/26/19 04:15	91-57-6	
Methyl-tert-butyl ether	<8.5	ug/kg	28.5	8.5	1	06/25/19 13:46	06/26/19 04:15	1634-04-4	
Naphthalene	<67.2	ug/kg	224	67.2	1	06/25/19 13:46	06/26/19 04:15	91-20-3	
Toluene	<17.5	ug/kg	58.3	17.5	1	06/25/19 13:46	06/26/19 04:15	108-88-3	
1,2,4-Trimethylbenzene	<14.4	ug/kg	47.8	14.4	1	06/25/19 13:46	06/26/19 04:15	95-63-6	
1,3,5-Trimethylbenzene	<11.4	ug/kg	38.1	11.4	1	06/25/19 13:46	06/26/19 04:15	108-67-8	
Xylene (Total)	<16.7	ug/kg	55.5	16.7	1	06/25/19 13:46	06/26/19 04:15	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	117	%	75-125		1	06/25/19 13:46	06/26/19 04:15	17060-07-0	
Toluene-d8 (S)	100	%	75-125		1	06/25/19 13:46	06/26/19 04:15	2037-26-5	
4-Bromofluorobenzene (S)	98	%	75-125		1	06/25/19 13:46	06/26/19 04:15	460-00-4	

**Sample: 7-A**      **Lab ID: 12130507013**      Collected: 06/13/19 14:43      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO      Preparation Method: WI MOD DRO									
WDRO C10-C28	69.3	mg/kg	28.8	8.6	2	06/18/19 15:51	06/27/19 10:39		T6
<b>Surrogates</b>									
n-Triacontane (S)	84	%	50-150		2	06/18/19 15:51	06/27/19 10:39	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO      Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<1.8	mg/kg	5.9	1.8	1	06/30/19 15:43	07/01/19 19:12		
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	98	%	80-150		1	06/30/19 15:43	07/01/19 19:12	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	26.2	%	0.10	0.10	1		06/26/19 16:06		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
Benzene	<4.0	ug/kg	13.2	4.0	1	06/25/19 13:46	06/26/19 04:36	71-43-2	
1,2-Dibromoethane (EDB)	<7.4	ug/kg	24.6	7.4	1	06/25/19 13:46	06/26/19 04:36	106-93-4	
1,2-Dichloroethane	<7.7	ug/kg	25.7	7.7	1	06/25/19 13:46	06/26/19 04:36	107-06-2	
Ethylbenzene	<3.8	ug/kg	12.7	3.8	1	06/25/19 13:46	06/26/19 04:36	100-41-4	
2-Methylnaphthalene	<106	ug/kg	352	106	1	06/25/19 13:46	06/26/19 04:36	91-57-6	

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## ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 7-A**      **Lab ID: 12130507013**      Collected: 06/13/19 14:43      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B    Preparation Method: EPA 5035/5030B									
Methyl-tert-butyl ether	<8.4	ug/kg	27.8	8.4	1	06/25/19 13:46	06/26/19 04:36	1634-04-4	
Naphthalene	<65.7	ug/kg	219	65.7	1	06/25/19 13:46	06/26/19 04:36	91-20-3	
Toluene	<17.1	ug/kg	57.1	17.1	1	06/25/19 13:46	06/26/19 04:36	108-88-3	
1,2,4-Trimethylbenzene	<14.0	ug/kg	46.8	14.0	1	06/25/19 13:46	06/26/19 04:36	95-63-6	
1,3,5-Trimethylbenzene	<11.2	ug/kg	37.3	11.2	1	06/25/19 13:46	06/26/19 04:36	108-67-8	
Xylene (Total)	<16.3	ug/kg	54.3	16.3	1	06/25/19 13:46	06/26/19 04:36	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	115	%	75-125		1	06/25/19 13:46	06/26/19 04:36	17060-07-0	
Toluene-d8 (S)	97	%	75-125		1	06/25/19 13:46	06/26/19 04:36	2037-26-5	
4-Bromofluorobenzene (S)	99	%	75-125		1	06/25/19 13:46	06/26/19 04:36	460-00-4	

**Sample: 7-B**      **Lab ID: 12130507014**      Collected: 06/13/19 14:48      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b>									
Analytical Method: WI MOD DRO    Preparation Method: WI MOD DRO									
WDRO C10-C28	7.5J	mg/kg	14.0	4.2	1	06/18/19 15:51	06/27/19 10:45		
<b>Surrogates</b>									
n-Triacontane (S)	90	%	50-150		1	06/18/19 15:51	06/27/19 10:45	638-68-6	D5
<b>WIGRO GCV</b>									
Analytical Method: WI MOD GRO    Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<1.7	mg/kg	5.6	1.7	1	06/30/19 15:43	07/01/19 12:11		1V
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	97	%	80-150		1	06/30/19 15:43	07/01/19 12:11	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b>									
Analytical Method: ASTM D2974									
Percent Moisture	24.6	%	0.10	0.10	1		06/26/19 16:06		
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B    Preparation Method: EPA 5035/5030B									
Benzene	<3.8	ug/kg	12.5	3.8	1	06/25/19 13:46	06/26/19 04:57	71-43-2	
1,2-Dibromoethane (EDB)	<7.0	ug/kg	23.4	7.0	1	06/25/19 13:46	06/26/19 04:57	106-93-4	
1,2-Dichloroethane	<7.3	ug/kg	24.4	7.3	1	06/25/19 13:46	06/26/19 04:57	107-06-2	
Ethylbenzene	<3.6	ug/kg	12.1	3.6	1	06/25/19 13:46	06/26/19 04:57	100-41-4	
2-Methylnaphthalene	<100	ug/kg	334	100	1	06/25/19 13:46	06/26/19 04:57	91-57-6	
Methyl-tert-butyl ether	<7.9	ug/kg	26.4	7.9	1	06/25/19 13:46	06/26/19 04:57	1634-04-4	
Naphthalene	<62.4	ug/kg	208	62.4	1	06/25/19 13:46	06/26/19 04:57	91-20-3	
Toluene	<16.3	ug/kg	54.2	16.3	1	06/25/19 13:46	06/26/19 04:57	108-88-3	
1,2,4-Trimethylbenzene	<13.3	ug/kg	44.4	13.3	1	06/25/19 13:46	06/26/19 04:57	95-63-6	
1,3,5-Trimethylbenzene	<10.6	ug/kg	35.4	10.6	1	06/25/19 13:46	06/26/19 04:57	108-67-8	
Xylene (Total)	<15.5	ug/kg	51.5	15.5	1	06/25/19 13:46	06/26/19 04:57	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	124	%	75-125		1	06/25/19 13:46	06/26/19 04:57	17060-07-0	
Toluene-d8 (S)	99	%	75-125		1	06/25/19 13:46	06/26/19 04:57	2037-26-5	

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### ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 7-B** Lab ID: **12130507014** Collected: 06/13/19 14:48 Received: 06/14/19 08:49 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
<b>Surrogates</b>									
4-Bromofluorobenzene (S)	100	%	75-125		1	06/25/19 13:46	06/26/19 04:57	460-00-4	

**Sample: 8-A** Lab ID: **12130507015** Collected: 06/13/19 14:06 Received: 06/14/19 08:49 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
WDRO C10-C28	<b>25.2J</b>	mg/kg	25.4	7.6	2	06/18/19 15:51	06/27/19 10:32		T6
<b>Surrogates</b>									
n-Triacontane (S)	66	%	50-150		2	06/18/19 15:51	06/27/19 10:32	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<b>&lt;1.6</b>	mg/kg	5.3	1.6	1	07/01/19 10:31	07/02/19 13:06		G+
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	98	%	80-150		1	07/01/19 10:31	07/02/19 13:06	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>18.8</b>	%	0.10	0.10	1		06/26/19 16:06		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;3.4</b>	ug/kg	11.4	3.4	1	06/25/19 13:46	06/26/19 05:19	71-43-2	
1,2-Dibromoethane (EDB)	<b>&lt;6.4</b>	ug/kg	21.2	6.4	1	06/25/19 13:46	06/26/19 05:19	106-93-4	
1,2-Dichloroethane	<b>&lt;6.7</b>	ug/kg	22.2	6.7	1	06/25/19 13:46	06/26/19 05:19	107-06-2	
Ethylbenzene	<b>&lt;3.3</b>	ug/kg	11.0	3.3	1	06/25/19 13:46	06/26/19 05:19	100-41-4	
2-Methylnaphthalene	<b>&lt;91.2</b>	ug/kg	304	91.2	1	06/25/19 13:46	06/26/19 05:19	91-57-6	
Methyl-tert-butyl ether	<b>&lt;7.2</b>	ug/kg	24.0	7.2	1	06/25/19 13:46	06/26/19 05:19	1634-04-4	
Naphthalene	<b>&lt;56.8</b>	ug/kg	189	56.8	1	06/25/19 13:46	06/26/19 05:19	91-20-3	
Toluene	<b>&lt;14.8</b>	ug/kg	49.3	14.8	1	06/25/19 13:46	06/26/19 05:19	108-88-3	
1,2,4-Trimethylbenzene	<b>&lt;12.1</b>	ug/kg	40.4	12.1	1	06/25/19 13:46	06/26/19 05:19	95-63-6	
1,3,5-Trimethylbenzene	<b>&lt;9.7</b>	ug/kg	32.2	9.7	1	06/25/19 13:46	06/26/19 05:19	108-67-8	
Xylene (Total)	<b>&lt;14.1</b>	ug/kg	46.8	14.1	1	06/25/19 13:46	06/26/19 05:19	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	116	%	75-125		1	06/25/19 13:46	06/26/19 05:19	17060-07-0	
Toluene-d8 (S)	98	%	75-125		1	06/25/19 13:46	06/26/19 05:19	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125		1	06/25/19 13:46	06/26/19 05:19	460-00-4	

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### ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 8B** Lab ID: **12130507016** Collected: 06/13/19 14:11 Received: 06/14/19 08:49 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
WDRO C10-C28	<b>11.7J</b>	mg/kg	13.5	4.1	1	06/18/19 15:51	06/27/19 11:25		T6
<b>Surrogates</b>									
n-Triacontane (S)	92	%	50-150		1	06/18/19 15:51	06/27/19 11:25	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<b>34.2</b>	mg/kg	5.3	1.6	1	07/01/19 10:31	07/03/19 19:13		1V,G+
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	98	%	80-150		1	07/01/19 10:31	07/03/19 19:13	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>25.8</b>	%	0.10	0.10	1		06/26/19 16:06		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;3.8</b>	ug/kg	12.6	3.8	1	06/25/19 13:46	06/26/19 05:40	71-43-2	
1,2-Dibromoethane (EDB)	<b>&lt;7.1</b>	ug/kg	23.6	7.1	1	06/25/19 13:46	06/26/19 05:40	106-93-4	
1,2-Dichloroethane	<b>&lt;7.4</b>	ug/kg	24.7	7.4	1	06/25/19 13:46	06/26/19 05:40	107-06-2	
Ethylbenzene	<b>&lt;3.7</b>	ug/kg	12.2	3.7	1	06/25/19 13:46	06/26/19 05:40	100-41-4	
2-Methylnaphthalene	<b>146J</b>	ug/kg	337	101	1	06/25/19 13:46	06/26/19 05:40	91-57-6	
Methyl-tert-butyl ether	<b>&lt;8.0</b>	ug/kg	26.7	8.0	1	06/25/19 13:46	06/26/19 05:40	1634-04-4	
Naphthalene	<b>92.0J</b>	ug/kg	210	63.0	1	06/25/19 13:46	06/26/19 05:40	91-20-3	
Toluene	<b>&lt;16.4</b>	ug/kg	54.7	16.4	1	06/25/19 13:46	06/26/19 05:40	108-88-3	
1,2,4-Trimethylbenzene	<b>&lt;13.5</b>	ug/kg	44.9	13.5	1	06/25/19 13:46	06/26/19 05:40	95-63-6	
1,3,5-Trimethylbenzene	<b>&lt;10.7</b>	ug/kg	35.7	10.7	1	06/25/19 13:46	06/26/19 05:40	108-67-8	
Xylene (Total)	<b>&lt;15.6</b>	ug/kg	52.0	15.6	1	06/25/19 13:46	06/26/19 05:40	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	121	%	75-125		1	06/25/19 13:46	06/26/19 05:40	17060-07-0	
Toluene-d8 (S)	93	%	75-125		1	06/25/19 13:46	06/26/19 05:40	2037-26-5	
4-Bromofluorobenzene (S)	104	%	75-125		1	06/25/19 13:46	06/26/19 05:40	460-00-4	

**Sample: 9-A** Lab ID: **12130507017** Collected: 06/13/19 10:50 Received: 06/14/19 08:49 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
WDRO C10-C28	<b>&lt;3.8</b>	mg/kg	12.6	3.8	1	06/18/19 15:51	06/27/19 12:04		
<b>Surrogates</b>									
n-Triacontane (S)	108	%	50-150		1	06/18/19 15:51	06/27/19 12:04	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<b>&lt;1.7</b>	mg/kg	5.8	1.7	1	07/01/19 10:31	07/02/19 13:59		1V
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	98	%	80-150		1	07/01/19 10:31	07/02/19 13:59	98-08-8	

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### ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 9-A**      **Lab ID: 12130507017**      Collected: 06/13/19 10:50      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>24.3</b>	%	0.10	0.10	1		06/26/19 16:06		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;3.7</b>	ug/kg	12.4	3.7	1	06/25/19 13:46	06/26/19 06:01	71-43-2	
1,2-Dibromoethane (EDB)	<b>&lt;6.9</b>	ug/kg	23.1	6.9	1	06/25/19 13:46	06/26/19 06:01	106-93-4	
1,2-Dichloroethane	<b>&lt;7.2</b>	ug/kg	24.1	7.2	1	06/25/19 13:46	06/26/19 06:01	107-06-2	
Ethylbenzene	<b>&lt;3.6</b>	ug/kg	11.9	3.6	1	06/25/19 13:46	06/26/19 06:01	100-41-4	
2-Methylnaphthalene	<b>&lt;99.1</b>	ug/kg	330	99.1	1	06/25/19 13:46	06/26/19 06:01	91-57-6	
Methyl-tert-butyl ether	<b>&lt;7.8</b>	ug/kg	26.1	7.8	1	06/25/19 13:46	06/26/19 06:01	1634-04-4	
Naphthalene	<b>&lt;61.7</b>	ug/kg	205	61.7	1	06/25/19 13:46	06/26/19 06:01	91-20-3	
Toluene	<b>&lt;16.1</b>	ug/kg	53.6	16.1	1	06/25/19 13:46	06/26/19 06:01	108-88-3	
1,2,4-Trimethylbenzene	<b>&lt;13.2</b>	ug/kg	43.9	13.2	1	06/25/19 13:46	06/26/19 06:01	95-63-6	
1,3,5-Trimethylbenzene	<b>&lt;10.5</b>	ug/kg	35.0	10.5	1	06/25/19 13:46	06/26/19 06:01	108-67-8	
Xylene (Total)	<b>&lt;15.3</b>	ug/kg	50.9	15.3	1	06/25/19 13:46	06/26/19 06:01	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	119	%	75-125		1	06/25/19 13:46	06/26/19 06:01	17060-07-0	
Toluene-d8 (S)	98	%	75-125		1	06/25/19 13:46	06/26/19 06:01	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125		1	06/25/19 13:46	06/26/19 06:01	460-00-4	

**Sample: 9-B**      **Lab ID: 12130507018**      Collected: 06/13/19 10:56      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO      Preparation Method: WI MOD DRO									
WDRO C10-C28	<b>&lt;4.3</b>	mg/kg	14.3	4.3	1	06/18/19 15:51	06/27/19 12:11		
<b>Surrogates</b>									
n-Triacontane (S)	87	%	50-150		1	06/18/19 15:51	06/27/19 12:11	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO      Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<b>&lt;1.8</b>	mg/kg	6.1	1.8	1	07/01/19 10:31	07/02/19 14:32		1V
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	99	%	80-150		1	07/01/19 10:31	07/02/19 14:32	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>29.6</b>	%	0.10	0.10	1		06/26/19 16:07		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;4.0</b>	ug/kg	13.2	4.0	1	06/25/19 13:46	06/26/19 06:23	71-43-2	
1,2-Dibromoethane (EDB)	<b>&lt;7.4</b>	ug/kg	24.7	7.4	1	06/25/19 13:46	06/26/19 06:23	106-93-4	
1,2-Dichloroethane	<b>&lt;7.8</b>	ug/kg	25.8	7.8	1	06/25/19 13:46	06/26/19 06:23	107-06-2	
Ethylbenzene	<b>&lt;3.8</b>	ug/kg	12.8	3.8	1	06/25/19 13:46	06/26/19 06:23	100-41-4	
2-Methylnaphthalene	<b>&lt;106</b>	ug/kg	353	106	1	06/25/19 13:46	06/26/19 06:23	91-57-6	

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## ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 9-B**      **Lab ID: 12130507018**      Collected: 06/13/19 10:56      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B    Preparation Method: EPA 5035/5030B									
Methyl-tert-butyl ether	<8.4	ug/kg	27.9	8.4	1	06/25/19 13:46	06/26/19 06:23	1634-04-4	
Naphthalene	<66.0	ug/kg	220	66.0	1	06/25/19 13:46	06/26/19 06:23	91-20-3	
Toluene	<17.2	ug/kg	57.3	17.2	1	06/25/19 13:46	06/26/19 06:23	108-88-3	
1,2,4-Trimethylbenzene	<14.1	ug/kg	47.0	14.1	1	06/25/19 13:46	06/26/19 06:23	95-63-6	
1,3,5-Trimethylbenzene	<11.2	ug/kg	37.4	11.2	1	06/25/19 13:46	06/26/19 06:23	108-67-8	
Xylene (Total)	<16.4	ug/kg	54.5	16.4	1	06/25/19 13:46	06/26/19 06:23	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	119	%	75-125		1	06/25/19 13:46	06/26/19 06:23	17060-07-0	
Toluene-d8 (S)	100	%	75-125		1	06/25/19 13:46	06/26/19 06:23	2037-26-5	
4-Bromofluorobenzene (S)	98	%	75-125		1	06/25/19 13:46	06/26/19 06:23	460-00-4	

**Sample: 10-A**      **Lab ID: 12130507019**      Collected: 06/13/19 12:54      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b>									
Analytical Method: WI MOD DRO    Preparation Method: WI MOD DRO									
WDRO C10-C28	61.8	mg/kg	22.5	6.8	2	06/18/19 15:51	06/27/19 10:26		T6
<b>Surrogates</b>									
n-Triacontane (S)	68	%	50-150		2	06/18/19 15:51	06/27/19 10:26	638-68-6	D5
<b>WIGRO GCV</b>									
Analytical Method: WI MOD GRO    Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<1.5	mg/kg	5.0	1.5	1	07/01/19 10:31	07/02/19 14:59		1V
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	100	%	80-150		1	07/01/19 10:31	07/02/19 14:59	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b>									
Analytical Method: ASTM D2974									
Percent Moisture	15.2	%	0.10	0.10	1		06/26/19 16:07		
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B    Preparation Method: EPA 5035/5030B									
Benzene	<3.3	ug/kg	11.1	3.3	1	06/25/19 13:46	06/26/19 06:45	71-43-2	
1,2-Dibromoethane (EDB)	<6.2	ug/kg	20.8	6.2	1	06/25/19 13:46	06/26/19 06:45	106-93-4	
1,2-Dichloroethane	<6.5	ug/kg	21.7	6.5	1	06/25/19 13:46	06/26/19 06:45	107-06-2	
Ethylbenzene	<3.2	ug/kg	10.7	3.2	1	06/25/19 13:46	06/26/19 06:45	100-41-4	
2-Methylnaphthalene	<89.1	ug/kg	297	89.1	1	06/25/19 13:46	06/26/19 06:45	91-57-6	
Methyl-tert-butyl ether	<7.1	ug/kg	23.5	7.1	1	06/25/19 13:46	06/26/19 06:45	1634-04-4	
Naphthalene	<55.5	ug/kg	185	55.5	1	06/25/19 13:46	06/26/19 06:45	91-20-3	
Toluene	<14.5	ug/kg	48.1	14.5	1	06/25/19 13:46	06/26/19 06:45	108-88-3	
1,2,4-Trimethylbenzene	<11.9	ug/kg	39.5	11.9	1	06/25/19 13:46	06/26/19 06:45	95-63-6	
1,3,5-Trimethylbenzene	<9.4	ug/kg	31.5	9.4	1	06/25/19 13:46	06/26/19 06:45	108-67-8	
Xylene (Total)	<13.7	ug/kg	45.8	13.7	1	06/25/19 13:46	06/26/19 06:45	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	119	%	75-125		1	06/25/19 13:46	06/26/19 06:45	17060-07-0	
Toluene-d8 (S)	98	%	75-125		1	06/25/19 13:46	06/26/19 06:45	2037-26-5	

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### ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 10-A**      **Lab ID: 12130507019**      Collected: 06/13/19 12:54      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
<b>Surrogates</b>									
4-Bromofluorobenzene (S)	97	%	75-125		1	06/25/19 13:46	06/26/19 06:45	460-00-4	

**Sample: 10-B**      **Lab ID: 12130507020**      Collected: 06/13/19 12:58      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO      Preparation Method: WI MOD DRO									
WDRO C10-C28	<4.0	mg/kg	13.3	4.0	1	06/18/19 15:51	06/27/19 12:17		
<b>Surrogates</b>									
n-Triacontane (S)	85	%	50-150		1	06/18/19 15:51	06/27/19 12:17	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO      Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<1.7	mg/kg	5.6	1.7	1	07/01/19 10:31	07/02/19 15:25		1V
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	98	%	80-150		1	07/01/19 10:31	07/02/19 15:25	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	25.4	%	0.10	0.10	1		06/26/19 16:07		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
Benzene	<3.7	ug/kg	12.4	3.7	1	06/26/19 09:58	06/26/19 15:20	71-43-2	
1,2-Dibromoethane (EDB)	<6.9	ug/kg	23.1	6.9	1	06/26/19 09:58	06/26/19 15:20	106-93-4	
1,2-Dichloroethane	<7.3	ug/kg	24.1	7.3	1	06/26/19 09:58	06/26/19 15:20	107-06-2	
Ethylbenzene	<3.6	ug/kg	11.9	3.6	1	06/26/19 09:58	06/26/19 15:20	100-41-4	
2-Methylnaphthalene	<99.2	ug/kg	330	99.2	1	06/26/19 09:58	06/26/19 15:20	91-57-6	
Methyl-tert-butyl ether	<7.8	ug/kg	26.1	7.8	1	06/26/19 09:58	06/26/19 15:20	1634-04-4	
Naphthalene	<61.7	ug/kg	205	61.7	1	06/26/19 09:58	06/26/19 15:20	91-20-3	
Toluene	<16.1	ug/kg	53.6	16.1	1	06/26/19 09:58	06/26/19 15:20	108-88-3	
1,2,4-Trimethylbenzene	<13.2	ug/kg	43.9	13.2	1	06/26/19 09:58	06/26/19 15:20	95-63-6	
1,3,5-Trimethylbenzene	<10.5	ug/kg	35.0	10.5	1	06/26/19 09:58	06/26/19 15:20	108-67-8	
Xylene (Total)	<15.3	ug/kg	50.9	15.3	1	06/26/19 09:58	06/26/19 15:20	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	126	%	75-125		1	06/26/19 09:58	06/26/19 15:20	17060-07-0	S3
Toluene-d8 (S)	101	%	75-125		1	06/26/19 09:58	06/26/19 15:20	2037-26-5	
4-Bromofluorobenzene (S)	102	%	75-125		1	06/26/19 09:58	06/26/19 15:20	460-00-4	

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### ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)  
Pace Project No.: 12130507

**Sample: 11-A**      **Lab ID: 12130507021**      Collected: 06/13/19 13:11      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO      Preparation Method: WI MOD DRO									
WDRO C10-C28	<b>30.4</b>	mg/kg	11.1	3.3	1	06/18/19 15:51	06/27/19 10:52		T6,T7
<b>Surrogates</b>									
n-Triacontane (S)	101	%	50-150		1	06/18/19 15:51	06/27/19 10:52	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO      Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<b>&lt;1.5</b>	mg/kg	5.1	1.5	1	07/01/19 10:31	07/04/19 07:57		
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	101	%	80-150		1	07/01/19 10:31	07/04/19 07:57	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>15.9</b>	%	0.10	0.10	1		06/26/19 16:07		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;3.4</b>	ug/kg	11.2	3.4	1	06/26/19 09:58	06/26/19 15:42	71-43-2	
1,2-Dibromoethane (EDB)	<b>&lt;6.3</b>	ug/kg	20.9	6.3	1	06/26/19 09:58	06/26/19 15:42	106-93-4	
1,2-Dichloroethane	<b>&lt;6.5</b>	ug/kg	21.8	6.5	1	06/26/19 09:58	06/26/19 15:42	107-06-2	
Ethylbenzene	<b>&lt;3.2</b>	ug/kg	10.8	3.2	1	06/26/19 09:58	06/26/19 15:42	100-41-4	
2-Methylnaphthalene	<b>&lt;89.5</b>	ug/kg	298	89.5	1	06/26/19 09:58	06/26/19 15:42	91-57-6	
Methyl-tert-butyl ether	<b>&lt;7.1</b>	ug/kg	23.6	7.1	1	06/26/19 09:58	06/26/19 15:42	1634-04-4	
Naphthalene	<b>&lt;55.7</b>	ug/kg	186	55.7	1	06/26/19 09:58	06/26/19 15:42	91-20-3	
Toluene	<b>&lt;14.5</b>	ug/kg	48.4	14.5	1	06/26/19 09:58	06/26/19 15:42	108-88-3	
1,2,4-Trimethylbenzene	<b>&lt;11.9</b>	ug/kg	39.7	11.9	1	06/26/19 09:58	06/26/19 15:42	95-63-6	
1,3,5-Trimethylbenzene	<b>&lt;9.5</b>	ug/kg	31.6	9.5	1	06/26/19 09:58	06/26/19 15:42	108-67-8	
Xylene (Total)	<b>&lt;13.8</b>	ug/kg	46.0	13.8	1	06/26/19 09:58	06/26/19 15:42	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	119	%	75-125		1	06/26/19 09:58	06/26/19 15:42	17060-07-0	
Toluene-d8 (S)	97	%	75-125		1	06/26/19 09:58	06/26/19 15:42	2037-26-5	
4-Bromofluorobenzene (S)	96	%	75-125		1	06/26/19 09:58	06/26/19 15:42	460-00-4	

**Sample: 11-B**      **Lab ID: 12130507022**      Collected: 06/13/19 13:17      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO      Preparation Method: WI MOD DRO									
WDRO C10-C28	<b>&lt;3.8</b>	mg/kg	12.7	3.8	1	06/18/19 15:51	06/27/19 12:24		
<b>Surrogates</b>									
n-Triacontane (S)	87	%	50-150		1	06/18/19 15:51	06/27/19 12:24	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO      Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<b>&lt;1.7</b>	mg/kg	5.8	1.7	1	07/01/19 10:31	07/04/19 08:23		1V
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	100	%	80-150		1	07/01/19 10:31	07/04/19 08:23	98-08-8	

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## ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 11-B**      **Lab ID: 12130507022**      Collected: 06/13/19 13:17      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	25.4	%	0.10	0.10	1		06/26/19 16:07		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
Benzene	<3.7	ug/kg	12.3	3.7	1	06/26/19 09:58	06/26/19 16:03	71-43-2	
1,2-Dibromoethane (EDB)	<6.9	ug/kg	23.0	6.9	1	06/26/19 09:58	06/26/19 16:03	106-93-4	
1,2-Dichloroethane	<7.2	ug/kg	24.0	7.2	1	06/26/19 09:58	06/26/19 16:03	107-06-2	
Ethylbenzene	<3.6	ug/kg	11.9	3.6	1	06/26/19 09:58	06/26/19 16:03	100-41-4	
2-Methylnaphthalene	<98.7	ug/kg	329	98.7	1	06/26/19 09:58	06/26/19 16:03	91-57-6	
Methyl-tert-butyl ether	<7.8	ug/kg	26.0	7.8	1	06/26/19 09:58	06/26/19 16:03	1634-04-4	
Naphthalene	<61.4	ug/kg	205	61.4	1	06/26/19 09:58	06/26/19 16:03	91-20-3	
Toluene	<16.0	ug/kg	53.3	16.0	1	06/26/19 09:58	06/26/19 16:03	108-88-3	
1,2,4-Trimethylbenzene	<13.1	ug/kg	43.7	13.1	1	06/26/19 09:58	06/26/19 16:03	95-63-6	
1,3,5-Trimethylbenzene	<10.5	ug/kg	34.8	10.5	1	06/26/19 09:58	06/26/19 16:03	108-67-8	
Xylene (Total)	<15.2	ug/kg	50.7	15.2	1	06/26/19 09:58	06/26/19 16:03	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	126	%	75-125		1	06/26/19 09:58	06/26/19 16:03	17060-07-0	S3
Toluene-d8 (S)	97	%	75-125		1	06/26/19 09:58	06/26/19 16:03	2037-26-5	
4-Bromofluorobenzene (S)	100	%	75-125		1	06/26/19 09:58	06/26/19 16:03	460-00-4	

**Sample: 12-A**      **Lab ID: 12130507023**      Collected: 06/13/19 13:28      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO      Preparation Method: WI MOD DRO									
WDRO C10-C28	53.5	mg/kg	10.7	3.2	1	06/18/19 15:51	06/27/19 10:59		T6,T7
<b>Surrogates</b>									
n-Triacontane (S)	105	%	50-150		1	06/18/19 15:51	06/27/19 10:59	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO      Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<1.7	mg/kg	5.6	1.7	1	07/01/19 10:31	07/04/19 08:49		1V
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	100	%	80-150		1	07/01/19 10:31	07/04/19 08:49	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	23.7	%	0.10	0.10	1		06/26/19 16:07		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
Benzene	<3.7	ug/kg	12.4	3.7	1	06/26/19 09:58	06/26/19 16:25	71-43-2	
1,2-Dibromoethane (EDB)	<7.0	ug/kg	23.2	7.0	1	06/26/19 09:58	06/26/19 16:25	106-93-4	
1,2-Dichloroethane	<7.3	ug/kg	24.2	7.3	1	06/26/19 09:58	06/26/19 16:25	107-06-2	
Ethylbenzene	<3.6	ug/kg	12.0	3.6	1	06/26/19 09:58	06/26/19 16:25	100-41-4	
2-Methylnaphthalene	<99.5	ug/kg	331	99.5	1	06/26/19 09:58	06/26/19 16:25	91-57-6	

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## ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 12-A**      **Lab ID: 12130507023**      Collected: 06/13/19 13:28      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B    Preparation Method: EPA 5035/5030B									
Methyl-tert-butyl ether	<7.9	ug/kg	26.2	7.9	1	06/26/19 09:58	06/26/19 16:25	1634-04-4	
Naphthalene	<61.9	ug/kg	206	61.9	1	06/26/19 09:58	06/26/19 16:25	91-20-3	
Toluene	<16.1	ug/kg	53.8	16.1	1	06/26/19 09:58	06/26/19 16:25	108-88-3	
1,2,4-Trimethylbenzene	<13.2	ug/kg	44.1	13.2	1	06/26/19 09:58	06/26/19 16:25	95-63-6	
1,3,5-Trimethylbenzene	<10.5	ug/kg	35.1	10.5	1	06/26/19 09:58	06/26/19 16:25	108-67-8	
Xylene (Total)	<15.4	ug/kg	51.1	15.4	1	06/26/19 09:58	06/26/19 16:25	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	117	%	75-125		1	06/26/19 09:58	06/26/19 16:25	17060-07-0	
Toluene-d8 (S)	96	%	75-125		1	06/26/19 09:58	06/26/19 16:25	2037-26-5	
4-Bromofluorobenzene (S)	98	%	75-125		1	06/26/19 09:58	06/26/19 16:25	460-00-4	

**Sample: 12-B**      **Lab ID: 12130507024**      Collected: 06/13/19 13:33      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b>									
Analytical Method: WI MOD DRO    Preparation Method: WI MOD DRO									
WDRO C10-C28	<3.6	mg/kg	12.0	3.6	1	06/18/19 15:51	06/27/19 11:31		
<b>Surrogates</b>									
n-Triacontane (S)	87	%	50-150		1	06/18/19 15:51	06/27/19 11:31	638-68-6	D5
<b>WIGRO GCV</b>									
Analytical Method: WI MOD GRO    Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<1.5	mg/kg	4.8	1.5	1	07/01/19 10:31	07/04/19 09:16		1V
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	99	%	80-150		1	07/01/19 10:31	07/04/19 09:16	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b>									
Analytical Method: ASTM D2974									
Percent Moisture	22.3	%	0.10	0.10	1		06/26/19 16:08		
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B    Preparation Method: EPA 5035/5030B									
Benzene	<3.6	ug/kg	11.8	3.6	1	06/26/19 09:58	06/26/19 16:46	71-43-2	
1,2-Dibromoethane (EDB)	<6.6	ug/kg	22.1	6.6	1	06/26/19 09:58	06/26/19 16:46	106-93-4	
1,2-Dichloroethane	<6.9	ug/kg	23.1	6.9	1	06/26/19 09:58	06/26/19 16:46	107-06-2	
Ethylbenzene	<3.4	ug/kg	11.4	3.4	1	06/26/19 09:58	06/26/19 16:46	100-41-4	
2-Methylnaphthalene	<94.7	ug/kg	315	94.7	1	06/26/19 09:58	06/26/19 16:46	91-57-6	
Methyl-tert-butyl ether	<7.5	ug/kg	25.0	7.5	1	06/26/19 09:58	06/26/19 16:46	1634-04-4	
Naphthalene	<58.9	ug/kg	196	58.9	1	06/26/19 09:58	06/26/19 16:46	91-20-3	
Toluene	<15.4	ug/kg	51.2	15.4	1	06/26/19 09:58	06/26/19 16:46	108-88-3	
1,2,4-Trimethylbenzene	<12.6	ug/kg	41.9	12.6	1	06/26/19 09:58	06/26/19 16:46	95-63-6	
1,3,5-Trimethylbenzene	<10.0	ug/kg	33.4	10.0	1	06/26/19 09:58	06/26/19 16:46	108-67-8	
Xylene (Total)	<14.6	ug/kg	48.6	14.6	1	06/26/19 09:58	06/26/19 16:46	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	121	%	75-125		1	06/26/19 09:58	06/26/19 16:46	17060-07-0	
Toluene-d8 (S)	99	%	75-125		1	06/26/19 09:58	06/26/19 16:46	2037-26-5	

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### ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 12-B** Lab ID: **12130507024** Collected: 06/13/19 13:33 Received: 06/14/19 08:49 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
<b>Surrogates</b>									
4-Bromofluorobenzene (S)	99	%	75-125		1	06/26/19 09:58	06/26/19 16:46	460-00-4	

**Sample: 1-A (FCCU)** Lab ID: **12130507025** Collected: 06/13/19 17:35 Received: 06/14/19 08:49 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b>									
Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
WDRO C10-C28	<b>1500</b>	mg/kg	294	88.1	20	06/18/19 15:51	06/27/19 16:08		
<b>Surrogates</b>									
n-Triacontane (S)	0	%	50-150		20	06/18/19 15:51	06/27/19 16:08	638-68-6	D5,S4
<b>WIGRO GCV</b>									
Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<b>3.6J</b>	mg/kg	5.8	1.8	1	07/01/19 10:31	07/04/19 02:41		1V,G+
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	99	%	80-150		1	07/01/19 10:31	07/04/19 02:41	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b>									
Analytical Method: ASTM D2974									
Percent Moisture	<b>27.1</b>	%	0.10	0.10	1		06/26/19 16:08		
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;3.9</b>	ug/kg	12.9	3.9	1	06/26/19 09:58	06/26/19 20:42	71-43-2	
1,2-Dibromoethane (EDB)	<b>&lt;7.2</b>	ug/kg	24.0	7.2	1	06/26/19 09:58	06/26/19 20:42	106-93-4	
1,2-Dichloroethane	<b>&lt;7.5</b>	ug/kg	25.1	7.5	1	06/26/19 09:58	06/26/19 20:42	107-06-2	
Ethylbenzene	<b>&lt;3.7</b>	ug/kg	12.4	3.7	1	06/26/19 09:58	06/26/19 20:42	100-41-4	
2-Methylnaphthalene	<b>6100</b>	ug/kg	344	103	1	06/26/19 09:58	06/26/19 20:42	91-57-6	
Methyl-tert-butyl ether	<b>&lt;8.2</b>	ug/kg	27.2	8.2	1	06/26/19 09:58	06/26/19 20:42	1634-04-4	
Naphthalene	<b>&lt;64.2</b>	ug/kg	214	64.2	1	06/26/19 09:58	06/26/19 20:42	91-20-3	
Toluene	<b>&lt;16.7</b>	ug/kg	55.8	16.7	1	06/26/19 09:58	06/26/19 20:42	108-88-3	
1,2,4-Trimethylbenzene	<b>&lt;13.7</b>	ug/kg	45.7	13.7	1	06/26/19 09:58	06/26/19 20:42	95-63-6	
1,3,5-Trimethylbenzene	<b>&lt;10.9</b>	ug/kg	36.4	10.9	1	06/26/19 09:58	06/26/19 20:42	108-67-8	
Xylene (Total)	<b>&lt;15.9</b>	ug/kg	53.0	15.9	1	06/26/19 09:58	06/26/19 20:42	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	114	%	75-125		1	06/26/19 09:58	06/26/19 20:42	17060-07-0	
Toluene-d8 (S)	97	%	75-125		1	06/26/19 09:58	06/26/19 20:42	2037-26-5	
4-Bromofluorobenzene (S)	99	%	75-125		1	06/26/19 09:58	06/26/19 20:42	460-00-4	

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### ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 1-B (FCCU)**      **Lab ID: 12130507026**      Collected: 06/13/19 17:40      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO      Preparation Method: WI MOD DRO									
WDRO C10-C28	<b>17.8</b>	mg/kg	15.9	4.8	1	06/19/19 17:30	06/21/19 17:39		
<b>Surrogates</b>									
n-Triacontane (S)	84	%	50-150		1	06/19/19 17:30	06/21/19 17:39	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO      Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<b>&lt;1.9</b>	mg/kg	6.4	1.9	1	07/01/19 10:31	07/04/19 09:42		
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	99	%	80-150		1	07/01/19 10:31	07/04/19 09:42	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>32.0</b>	%	0.10	0.10	1		06/26/19 16:08		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;4.2</b>	ug/kg	14.0	4.2	1	06/26/19 09:58	06/26/19 17:08	71-43-2	
1,2-Dibromoethane (EDB)	<b>&lt;7.8</b>	ug/kg	26.1	7.8	1	06/26/19 09:58	06/26/19 17:08	106-93-4	
1,2-Dichloroethane	<b>&lt;8.2</b>	ug/kg	27.3	8.2	1	06/26/19 09:58	06/26/19 17:08	107-06-2	
Ethylbenzene	<b>&lt;4.1</b>	ug/kg	13.5	4.1	1	06/26/19 09:58	06/26/19 17:08	100-41-4	
2-Methylnaphthalene	<b>&lt;112</b>	ug/kg	373	112	1	06/26/19 09:58	06/26/19 17:08	91-57-6	
Methyl-tert-butyl ether	<b>&lt;8.9</b>	ug/kg	29.5	8.9	1	06/26/19 09:58	06/26/19 17:08	1634-04-4	
Naphthalene	<b>&lt;69.7</b>	ug/kg	232	69.7	1	06/26/19 09:58	06/26/19 17:08	91-20-3	
Toluene	<b>&lt;18.2</b>	ug/kg	60.5	18.2	1	06/26/19 09:58	06/26/19 17:08	108-88-3	
1,2,4-Trimethylbenzene	<b>&lt;14.9</b>	ug/kg	49.6	14.9	1	06/26/19 09:58	06/26/19 17:08	95-63-6	
1,3,5-Trimethylbenzene	<b>&lt;11.9</b>	ug/kg	39.6	11.9	1	06/26/19 09:58	06/26/19 17:08	108-67-8	
Xylene (Total)	<b>&lt;17.3</b>	ug/kg	57.6	17.3	1	06/26/19 09:58	06/26/19 17:08	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	119	%	75-125		1	06/26/19 09:58	06/26/19 17:08	17060-07-0	
Toluene-d8 (S)	98	%	75-125		1	06/26/19 09:58	06/26/19 17:08	2037-26-5	
4-Bromofluorobenzene (S)	99	%	75-125		1	06/26/19 09:58	06/26/19 17:08	460-00-4	

**Sample: 2-A (FCCU)**      **Lab ID: 12130507027**      Collected: 06/13/19 17:21      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO      Preparation Method: WI MOD DRO									
WDRO C10-C28	<b>124</b>	mg/kg	15.3	4.6	1	06/20/19 13:06	06/21/19 11:43		T6
<b>Surrogates</b>									
n-Triacontane (S)	106	%	50-150		1	06/20/19 13:06	06/21/19 11:43	638-68-6	3V
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO      Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<b>&lt;1.8</b>	mg/kg	6.1	1.8	1	07/01/19 10:31	07/04/19 10:08		1V
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	99	%	80-150		1	07/01/19 10:31	07/04/19 10:08	98-08-8	

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## ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 2-A (FCCU)**      **Lab ID: 12130507027**      Collected: 06/13/19 17:21      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>29.4</b>	%	0.10	0.10	1		06/26/19 16:57		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;4.0</b>	ug/kg	13.3	4.0	1	06/26/19 09:58	06/26/19 17:30	71-43-2	
1,2-Dibromoethane (EDB)	<b>&lt;7.4</b>	ug/kg	24.8	7.4	1	06/26/19 09:58	06/26/19 17:30	106-93-4	
1,2-Dichloroethane	<b>&lt;7.8</b>	ug/kg	25.9	7.8	1	06/26/19 09:58	06/26/19 17:30	107-06-2	
Ethylbenzene	<b>&lt;3.8</b>	ug/kg	12.8	3.8	1	06/26/19 09:58	06/26/19 17:30	100-41-4	
2-Methylnaphthalene	<b>&lt;106</b>	ug/kg	354	106	1	06/26/19 09:58	06/26/19 17:30	91-57-6	
Methyl-tert-butyl ether	<b>&lt;8.4</b>	ug/kg	28.0	8.4	1	06/26/19 09:58	06/26/19 17:30	1634-04-4	
Naphthalene	<b>&lt;66.2</b>	ug/kg	221	66.2	1	06/26/19 09:58	06/26/19 17:30	91-20-3	
Toluene	<b>&lt;17.3</b>	ug/kg	57.5	17.3	1	06/26/19 09:58	06/26/19 17:30	108-88-3	
1,2,4-Trimethylbenzene	<b>&lt;14.2</b>	ug/kg	47.1	14.2	1	06/26/19 09:58	06/26/19 17:30	95-63-6	
1,3,5-Trimethylbenzene	<b>&lt;11.3</b>	ug/kg	37.6	11.3	1	06/26/19 09:58	06/26/19 17:30	108-67-8	
Xylene (Total)	<b>&lt;16.4</b>	ug/kg	54.7	16.4	1	06/26/19 09:58	06/26/19 17:30	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	117	%	75-125		1	06/26/19 09:58	06/26/19 17:30	17060-07-0	
Toluene-d8 (S)	98	%	75-125		1	06/26/19 09:58	06/26/19 17:30	2037-26-5	
4-Bromofluorobenzene (S)	98	%	75-125		1	06/26/19 09:58	06/26/19 17:30	460-00-4	

**Sample: 2-B (FCCU)**      **Lab ID: 12130507028**      Collected: 06/13/19 17:24      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO      Preparation Method: WI MOD DRO									
WDRO C10-C28	<b>8.6J</b>	mg/kg	15.9	4.8	1	06/20/19 13:06	06/21/19 12:16		
<b>Surrogates</b>									
n-Triacontane (S)	83	%	50-150		1	06/20/19 13:06	06/21/19 12:16	638-68-6	3V
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO      Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<b>&lt;2.0</b>	mg/kg	6.5	2.0	1	07/01/19 10:31	07/04/19 10:35		
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	100	%	80-150		1	07/01/19 10:31	07/04/19 10:35	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>35.6</b>	%	0.10	0.10	1		06/26/19 16:57		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;4.4</b>	ug/kg	14.7	4.4	1	06/26/19 09:58	06/26/19 17:51	71-43-2	
1,2-Dibromoethane (EDB)	<b>&lt;8.2</b>	ug/kg	27.5	8.2	1	06/26/19 09:58	06/26/19 17:51	106-93-4	
1,2-Dichloroethane	<b>&lt;8.6</b>	ug/kg	28.7	8.6	1	06/26/19 09:58	06/26/19 17:51	107-06-2	
Ethylbenzene	<b>&lt;4.3</b>	ug/kg	14.2	4.3	1	06/26/19 09:58	06/26/19 17:51	100-41-4	
2-Methylnaphthalene	<b>&lt;118</b>	ug/kg	393	118	1	06/26/19 09:58	06/26/19 17:51	91-57-6	

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## ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 2-B (FCCU)**      **Lab ID: 12130507028**      Collected: 06/13/19 17:24      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B    Preparation Method: EPA 5035/5030B									
Methyl-tert-butyl ether	<9.3	ug/kg	31.1	9.3	1	06/26/19 09:58	06/26/19 17:51	1634-04-4	
Naphthalene	<73.4	ug/kg	244	73.4	1	06/26/19 09:58	06/26/19 17:51	91-20-3	
Toluene	<19.1	ug/kg	63.7	19.1	1	06/26/19 09:58	06/26/19 17:51	108-88-3	
1,2,4-Trimethylbenzene	<15.7	ug/kg	52.2	15.7	1	06/26/19 09:58	06/26/19 17:51	95-63-6	
1,3,5-Trimethylbenzene	<12.5	ug/kg	41.6	12.5	1	06/26/19 09:58	06/26/19 17:51	108-67-8	
Xylene (Total)	<18.2	ug/kg	60.6	18.2	1	06/26/19 09:58	06/26/19 17:51	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	119	%	75-125		1	06/26/19 09:58	06/26/19 17:51	17060-07-0	
Toluene-d8 (S)	99	%	75-125		1	06/26/19 09:58	06/26/19 17:51	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125		1	06/26/19 09:58	06/26/19 17:51	460-00-4	

**Sample: 3-A (FCCU)**      **Lab ID: 12130507029**      Collected: 06/13/19 16:29      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b>									
Analytical Method: WI MOD DRO    Preparation Method: WI MOD DRO									
WDRO C10-C28	93.4	mg/kg	12.2	3.7	1	06/20/19 15:30	06/24/19 13:37		T6,T7
<b>Surrogates</b>									
n-Triacontane (S)	101	%	50-150		1	06/20/19 15:30	06/24/19 13:37	638-68-6	D5
<b>WIGRO GCV</b>									
Analytical Method: WI MOD GRO    Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<1.5	mg/kg	4.9	1.5	1	07/01/19 10:31	07/04/19 11:01		1V,G+
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	98	%	80-150		1	07/01/19 10:31	07/04/19 11:01	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b>									
Analytical Method: ASTM D2974									
Percent Moisture	13.0	%	0.10	0.10	1		06/26/19 16:57		
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B    Preparation Method: EPA 5035/5030B									
Benzene	<3.2	ug/kg	10.7	3.2	1	06/26/19 09:58	06/26/19 18:12	71-43-2	
1,2-Dibromoethane (EDB)	<6.0	ug/kg	20.0	6.0	1	06/26/19 09:58	06/26/19 18:12	106-93-4	
1,2-Dichloroethane	<6.3	ug/kg	20.9	6.3	1	06/26/19 09:58	06/26/19 18:12	107-06-2	
Ethylbenzene	14.3	ug/kg	10.3	3.1	1	06/26/19 09:58	06/26/19 18:12	100-41-4	
2-Methylnaphthalene	<85.7	ug/kg	286	85.7	1	06/26/19 09:58	06/26/19 18:12	91-57-6	
Methyl-tert-butyl ether	<6.8	ug/kg	22.6	6.8	1	06/26/19 09:58	06/26/19 18:12	1634-04-4	
Naphthalene	<53.4	ug/kg	178	53.4	1	06/26/19 09:58	06/26/19 18:12	91-20-3	
Toluene	<13.9	ug/kg	46.3	13.9	1	06/26/19 09:58	06/26/19 18:12	108-88-3	
1,2,4-Trimethylbenzene	86.2	ug/kg	38.0	11.4	1	06/26/19 09:58	06/26/19 18:12	95-63-6	
1,3,5-Trimethylbenzene	<9.1	ug/kg	30.3	9.1	1	06/26/19 09:58	06/26/19 18:12	108-67-8	
Xylene (Total)	<13.2	ug/kg	44.0	13.2	1	06/26/19 09:58	06/26/19 18:12	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	118	%	75-125		1	06/26/19 09:58	06/26/19 18:12	17060-07-0	
Toluene-d8 (S)	97	%	75-125		1	06/26/19 09:58	06/26/19 18:12	2037-26-5	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 3-A (FCCU)**      **Lab ID: 12130507029**      Collected: 06/13/19 16:29      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B    Preparation Method: EPA 5035/5030B									
<b>Surrogates</b>									
4-Bromofluorobenzene (S)	97	%	75-125		1	06/26/19 09:58	06/26/19 18:12	460-00-4	

**Sample: 3-B (FCCU)**      **Lab ID: 12130507030**      Collected: 06/13/19 16:35      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b>									
Analytical Method: WI MOD DRO    Preparation Method: WI MOD DRO									
WDRO C10-C28	<3.7	mg/kg	12.3	3.7	1	06/20/19 15:30	06/24/19 13:43		
<b>Surrogates</b>									
n-Triacontane (S)	105	%	50-150		1	06/20/19 15:30	06/24/19 13:43	638-68-6	D5
<b>WIGRO GCV</b>									
Analytical Method: WI MOD GRO    Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<1.7	mg/kg	5.7	1.7	1	07/01/19 10:31	07/04/19 11:28		1V
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	98	%	80-150		1	07/01/19 10:31	07/04/19 11:28	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b>									
Analytical Method: ASTM D2974									
Percent Moisture	28.5	%	0.10	0.10	1		06/26/19 16:58		
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B    Preparation Method: EPA 5035/5030B									
Benzene	<4.0	ug/kg	13.3	4.0	1	06/26/19 09:58	06/26/19 18:34	71-43-2	
1,2-Dibromoethane (EDB)	<7.5	ug/kg	24.9	7.5	1	06/26/19 09:58	06/26/19 18:34	106-93-4	
1,2-Dichloroethane	<7.8	ug/kg	26.0	7.8	1	06/26/19 09:58	06/26/19 18:34	107-06-2	
Ethylbenzene	<3.9	ug/kg	12.9	3.9	1	06/26/19 09:58	06/26/19 18:34	100-41-4	
2-Methylnaphthalene	<107	ug/kg	355	107	1	06/26/19 09:58	06/26/19 18:34	91-57-6	
Methyl-tert-butyl ether	<8.4	ug/kg	28.1	8.4	1	06/26/19 09:58	06/26/19 18:34	1634-04-4	
Naphthalene	<66.4	ug/kg	221	66.4	1	06/26/19 09:58	06/26/19 18:34	91-20-3	
Toluene	<17.3	ug/kg	57.6	17.3	1	06/26/19 09:58	06/26/19 18:34	108-88-3	
1,2,4-Trimethylbenzene	<14.2	ug/kg	47.3	14.2	1	06/26/19 09:58	06/26/19 18:34	95-63-6	
1,3,5-Trimethylbenzene	<11.3	ug/kg	37.7	11.3	1	06/26/19 09:58	06/26/19 18:34	108-67-8	
Xylene (Total)	<16.5	ug/kg	54.8	16.5	1	06/26/19 09:58	06/26/19 18:34	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	116	%	75-125		1	06/26/19 09:58	06/26/19 18:34	17060-07-0	
Toluene-d8 (S)	98	%	75-125		1	06/26/19 09:58	06/26/19 18:34	2037-26-5	
4-Bromofluorobenzene (S)	97	%	75-125		1	06/26/19 09:58	06/26/19 18:34	460-00-4	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)  
Pace Project No.: 12130507

**Sample: 4-A (FCCU)**      **Lab ID: 12130507031**      Collected: 06/13/19 16:43      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO      Preparation Method: WI MOD DRO									
WDRO C10-C28	<3.7	mg/kg	12.3	3.7	1	06/20/19 15:30	06/24/19 14:49		
<b>Surrogates</b>									
n-Triacontane (S)	85	%	50-150		1	06/20/19 15:30	06/24/19 14:49	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO      Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<1.7	mg/kg	5.8	1.7	1	07/01/19 10:31	07/04/19 11:54		
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	100	%	80-150		1	07/01/19 10:31	07/04/19 11:54	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	26.2	%	0.10	0.10	1		06/26/19 16:58		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B      Preparation Method: EPA 5035/5030B									
Benzene	<3.8	ug/kg	12.8	3.8	1	06/26/19 09:58	06/26/19 18:56	71-43-2	
1,2-Dibromoethane (EDB)	<7.2	ug/kg	23.9	7.2	1	06/26/19 09:58	06/26/19 18:56	106-93-4	
1,2-Dichloroethane	<7.5	ug/kg	25.0	7.5	1	06/26/19 09:58	06/26/19 18:56	107-06-2	
Ethylbenzene	<3.7	ug/kg	12.4	3.7	1	06/26/19 09:58	06/26/19 18:56	100-41-4	
2-Methylnaphthalene	<103	ug/kg	342	103	1	06/26/19 09:58	06/26/19 18:56	91-57-6	
Methyl-tert-butyl ether	<8.1	ug/kg	27.0	8.1	1	06/26/19 09:58	06/26/19 18:56	1634-04-4	
Naphthalene	<63.8	ug/kg	213	63.8	1	06/26/19 09:58	06/26/19 18:56	91-20-3	
Toluene	<16.6	ug/kg	55.4	16.6	1	06/26/19 09:58	06/26/19 18:56	108-88-3	
1,2,4-Trimethylbenzene	<13.6	ug/kg	45.4	13.6	1	06/26/19 09:58	06/26/19 18:56	95-63-6	
1,3,5-Trimethylbenzene	<10.9	ug/kg	36.2	10.9	1	06/26/19 09:58	06/26/19 18:56	108-67-8	
Xylene (Total)	<15.8	ug/kg	52.7	15.8	1	06/26/19 09:58	06/26/19 18:56	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	117	%	75-125		1	06/26/19 09:58	06/26/19 18:56	17060-07-0	
Toluene-d8 (S)	98	%	75-125		1	06/26/19 09:58	06/26/19 18:56	2037-26-5	
4-Bromofluorobenzene (S)	100	%	75-125		1	06/26/19 09:58	06/26/19 18:56	460-00-4	

**Sample: 4-B (FCCU)**      **Lab ID: 12130507032**      Collected: 06/13/19 16:47      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO      Preparation Method: WI MOD DRO									
WDRO C10-C28	4.7J	mg/kg	14.6	4.4	1	06/20/19 15:30	06/24/19 13:50		
<b>Surrogates</b>									
n-Triacontane (S)	91	%	50-150		1	06/20/19 15:30	06/24/19 13:50	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO      Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<1.9	mg/kg	6.2	1.9	1	07/01/19 10:31	07/04/19 12:21		1V
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	99	%	80-150		1	07/01/19 10:31	07/04/19 12:21	98-08-8	

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### ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 4-B (FCCU)** Lab ID: **12130507032** Collected: 06/13/19 16:47 Received: 06/14/19 08:49 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>29.4</b>	%	0.10	0.10	1		06/26/19 16:58		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;4.0</b>	ug/kg	13.4	4.0	1	06/26/19 09:58	06/26/19 19:17	71-43-2	
1,2-Dibromoethane (EDB)	<b>&lt;7.5</b>	ug/kg	25.1	7.5	1	06/26/19 09:58	06/26/19 19:17	106-93-4	
1,2-Dichloroethane	<b>&lt;7.9</b>	ug/kg	26.2	7.9	1	06/26/19 09:58	06/26/19 19:17	107-06-2	
Ethylbenzene	<b>&lt;3.9</b>	ug/kg	13.0	3.9	1	06/26/19 09:58	06/26/19 19:17	100-41-4	
2-Methylnaphthalene	<b>&lt;108</b>	ug/kg	358	108	1	06/26/19 09:58	06/26/19 19:17	91-57-6	
Methyl-tert-butyl ether	<b>&lt;8.5</b>	ug/kg	28.4	8.5	1	06/26/19 09:58	06/26/19 19:17	1634-04-4	
Naphthalene	<b>&lt;67.0</b>	ug/kg	223	67.0	1	06/26/19 09:58	06/26/19 19:17	91-20-3	
Toluene	<b>&lt;17.5</b>	ug/kg	58.1	17.5	1	06/26/19 09:58	06/26/19 19:17	108-88-3	
1,2,4-Trimethylbenzene	<b>&lt;14.3</b>	ug/kg	47.6	14.3	1	06/26/19 09:58	06/26/19 19:17	95-63-6	
1,3,5-Trimethylbenzene	<b>&lt;11.4</b>	ug/kg	38.0	11.4	1	06/26/19 09:58	06/26/19 19:17	108-67-8	
Xylene (Total)	<b>&lt;16.6</b>	ug/kg	55.3	16.6	1	06/26/19 09:58	06/26/19 19:17	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	127	%	75-125		1	06/26/19 09:58	06/26/19 19:17	17060-07-0	S3
Toluene-d8 (S)	101	%	75-125		1	06/26/19 09:58	06/26/19 19:17	2037-26-5	
4-Bromofluorobenzene (S)	100	%	75-125		1	06/26/19 09:58	06/26/19 19:17	460-00-4	

**Sample: 5-A (FCCU)** Lab ID: **12130507033** Collected: 06/13/19 16:55 Received: 06/14/19 08:49 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b> Analytical Method: WI MOD DRO Preparation Method: WI MOD DRO									
WDRO C10-C28	<b>&lt;3.7</b>	mg/kg	12.2	3.7	1	06/20/19 15:30	06/24/19 14:56		
<b>Surrogates</b>									
n-Triacontane (S)	91	%	50-150		1	06/20/19 15:30	06/24/19 14:56	638-68-6	D5
<b>WIGRO GCV</b> Analytical Method: WI MOD GRO Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<b>&lt;1.6</b>	mg/kg	5.2	1.6	1	07/01/19 10:31	07/04/19 12:47		1V,G+
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	97	%	80-150		1	07/01/19 10:31	07/04/19 12:47	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b> Analytical Method: ASTM D2974									
Percent Moisture	<b>19.0</b>	%	0.10	0.10	1		06/26/19 16:58		
<b>8260B MSV UST</b> Analytical Method: EPA 8260B Preparation Method: EPA 5035/5030B									
Benzene	<b>&lt;3.5</b>	ug/kg	11.6	3.5	1	06/26/19 09:58	06/26/19 19:38	71-43-2	
1,2-Dibromoethane (EDB)	<b>&lt;6.5</b>	ug/kg	21.7	6.5	1	06/26/19 09:58	06/26/19 19:38	106-93-4	
1,2-Dichloroethane	<b>&lt;6.8</b>	ug/kg	22.7	6.8	1	06/26/19 09:58	06/26/19 19:38	107-06-2	
Ethylbenzene	<b>&lt;3.4</b>	ug/kg	11.2	3.4	1	06/26/19 09:58	06/26/19 19:38	100-41-4	
2-Methylnaphthalene	<b>&lt;93.1</b>	ug/kg	310	93.1	1	06/26/19 09:58	06/26/19 19:38	91-57-6	

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## ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

**Sample: 5-A (FCCU)**      **Lab ID: 12130507033**      Collected: 06/13/19 16:55      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B    Preparation Method: EPA 5035/5030B									
Methyl-tert-butyl ether	<7.4	ug/kg	24.5	7.4	1	06/26/19 09:58	06/26/19 19:38	1634-04-4	
Naphthalene	<b>148J</b>	ug/kg	193	57.9	1	06/26/19 09:58	06/26/19 19:38	91-20-3	
Toluene	<15.1	ug/kg	50.3	15.1	1	06/26/19 09:58	06/26/19 19:38	108-88-3	
1,2,4-Trimethylbenzene	<b>130</b>	ug/kg	41.2	12.4	1	06/26/19 09:58	06/26/19 19:38	95-63-6	
1,3,5-Trimethylbenzene	<b>94.3</b>	ug/kg	32.9	9.9	1	06/26/19 09:58	06/26/19 19:38	108-67-8	
Xylene (Total)	<14.4	ug/kg	47.8	14.4	1	06/26/19 09:58	06/26/19 19:38	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	119	%	75-125		1	06/26/19 09:58	06/26/19 19:38	17060-07-0	
Toluene-d8 (S)	96	%	75-125		1	06/26/19 09:58	06/26/19 19:38	2037-26-5	
4-Bromofluorobenzene (S)	100	%	75-125		1	06/26/19 09:58	06/26/19 19:38	460-00-4	

**Sample: 5-B (FCCU)**      **Lab ID: 12130507034**      Collected: 06/13/19 16:59      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>WIDRO GCS</b>									
Analytical Method: WI MOD DRO    Preparation Method: WI MOD DRO									
WDRO C10-C28	<4.5	mg/kg	15.1	4.5	1	06/20/19 15:30	06/24/19 13:56		
<b>Surrogates</b>									
n-Triacontane (S)	112	%	50-150		1	06/20/19 15:30	06/24/19 13:56	638-68-6	D5
<b>WIGRO GCV</b>									
Analytical Method: WI MOD GRO    Preparation Method: EPA 5030 Medium Soil									
Gasoline Range Organics	<1.8	mg/kg	6.1	1.8	1	07/01/19 10:47	07/02/19 03:31		1V
<b>Surrogates</b>									
a,a,a-Trifluorotoluene (S)	97	%	80-150		1	07/01/19 10:47	07/02/19 03:31	98-08-8	
<b>Dry Weight / %M by ASTM D2974</b>									
Analytical Method: ASTM D2974									
Percent Moisture	<b>29.6</b>	%	0.10	0.10	1		06/26/19 16:58		
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B    Preparation Method: EPA 5035/5030B									
Benzene	<4.0	ug/kg	13.3	4.0	1	06/26/19 09:58	06/26/19 19:59	71-43-2	
1,2-Dibromoethane (EDB)	<7.4	ug/kg	24.8	7.4	1	06/26/19 09:58	06/26/19 19:59	106-93-4	
1,2-Dichloroethane	<7.8	ug/kg	25.9	7.8	1	06/26/19 09:58	06/26/19 19:59	107-06-2	
Ethylbenzene	<3.8	ug/kg	12.8	3.8	1	06/26/19 09:58	06/26/19 19:59	100-41-4	
2-Methylnaphthalene	<106	ug/kg	354	106	1	06/26/19 09:58	06/26/19 19:59	91-57-6	
Methyl-tert-butyl ether	<8.4	ug/kg	28.0	8.4	1	06/26/19 09:58	06/26/19 19:59	1634-04-4	
Naphthalene	<66.2	ug/kg	220	66.2	1	06/26/19 09:58	06/26/19 19:59	91-20-3	
Toluene	<17.3	ug/kg	57.5	17.3	1	06/26/19 09:58	06/26/19 19:59	108-88-3	
1,2,4-Trimethylbenzene	<14.1	ug/kg	47.1	14.1	1	06/26/19 09:58	06/26/19 19:59	95-63-6	
1,3,5-Trimethylbenzene	<11.3	ug/kg	37.5	11.3	1	06/26/19 09:58	06/26/19 19:59	108-67-8	
Xylene (Total)	<16.4	ug/kg	54.6	16.4	1	06/26/19 09:58	06/26/19 19:59	1330-20-7	
<b>Surrogates</b>									
1,2-Dichloroethane-d4 (S)	117	%	75-125		1	06/26/19 09:58	06/26/19 19:59	17060-07-0	
Toluene-d8 (S)	97	%	75-125		1	06/26/19 09:58	06/26/19 19:59	2037-26-5	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: Demo: Tank Farm (FCCU)  
Pace Project No.: 12130507

**Sample: 5-B (FCCU)**      **Lab ID: 12130507034**      Collected: 06/13/19 16:59      Received: 06/14/19 08:49      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260B MSV UST</b>									
Analytical Method: EPA 8260B    Preparation Method: EPA 5035/5030B									
<b>Surrogates</b>									
4-Bromofluorobenzene (S)	99	%.	75-125		1	06/26/19 09:58	06/26/19 19:59	460-00-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

QC Batch:	616555	Analysis Method:	WI MOD GRO
QC Batch Method:	EPA 5030 Medium Soil	Analysis Description:	WIGRO Solid GCV
Associated Lab Samples:	12130507001, 12130507002, 12130507003, 12130507004, 12130507005, 12130507006, 12130507007, 12130507008, 12130507009, 12130507010, 12130507011, 12130507012, 12130507013, 12130507014		

METHOD BLANK:	3330670	Matrix:	Solid
Associated Lab Samples:	12130507001, 12130507002, 12130507003, 12130507004, 12130507005, 12130507006, 12130507007, 12130507008, 12130507009, 12130507010, 12130507011, 12130507012, 12130507013, 12130507014		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	<1.3	4.3	07/01/19 02:00	
a,a,a-Trifluorotoluene (S)	%	98	80-150	07/01/19 02:00	

LABORATORY CONTROL SAMPLE & LCSD:		3330671		3330672							
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers	
Gasoline Range Organics	mg/kg	50	50.4	48.8	101	98	80-120	3	20		
a,a,a-Trifluorotoluene (S)	%				98	100	80-150				

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:		3331022		3331023								
Parameter	Units	10480119017 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Gasoline Range Organics	mg/kg	ND	59.9	64.5	65.5	65.0	109	101	80-120	1	20	
a,a,a-Trifluorotoluene (S)	%						98	99	80-150			

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### QUALITY CONTROL DATA

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

QC Batch: 616556 Analysis Method: WI MOD GRO  
 QC Batch Method: EPA 5030 Medium Soil Analysis Description: WIGRO Solid GCV  
 Associated Lab Samples: 12130507015, 12130507016, 12130507017, 12130507018, 12130507019, 12130507020, 12130507021, 12130507022, 12130507023, 12130507024, 12130507025, 12130507026, 12130507027, 12130507028, 12130507029, 12130507030, 12130507031, 12130507032, 12130507033

METHOD BLANK: 3330678 Matrix: Solid  
 Associated Lab Samples: 12130507015, 12130507016, 12130507017, 12130507018, 12130507019, 12130507020, 12130507021, 12130507022, 12130507023, 12130507024, 12130507025, 12130507026, 12130507027, 12130507028, 12130507029, 12130507030, 12130507031, 12130507032, 12130507033

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	<1.3	4.3	07/02/19 09:19	
a,a,a-Trifluorotoluene (S)	%	98	80-150	07/02/19 09:19	

LABORATORY CONTROL SAMPLE & LCSD: 3330679 3330680

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	50	47.8	56.7	96	113	80-120	17	20	
a,a,a-Trifluorotoluene (S)	%				98	99	80-150			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3331760 3331761

Parameter	Units	10479928001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Gasoline Range Organics	mg/kg	<11.3	66.5	61.6	61.4	56.1	92	91	80-120	9	20	
a,a,a-Trifluorotoluene (S)	%						99	98	80-150			

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### QUALITY CONTROL DATA

Project: Demo: Tank Farm (FCCU)  
Pace Project No.: 12130507

QC Batch: 616758 Analysis Method: WI MOD GRO  
QC Batch Method: EPA 5030 Medium Soil Analysis Description: WIGRO Solid GCV  
Associated Lab Samples: 12130507034

METHOD BLANK: 3331755 Matrix: Solid  
Associated Lab Samples: 12130507034

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	<1.3	4.3	07/01/19 20:05	
a,a,a-Trifluorotoluene (S)	%.	99	80-150	07/01/19 20:05	

LABORATORY CONTROL SAMPLE & LCSD: 3331756 3331757

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Gasoline Range Organics	mg/kg	50	40.9	45.3	82	91	80-120	10	20	
a,a,a-Trifluorotoluene (S)	%.				98	99	80-150			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3331821 3331822

Parameter	Units	10480203011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Gasoline Range Organics	mg/kg	ND	65	64.7	65.2	56.6	100	87	80-120	14	20	G+
a,a,a-Trifluorotoluene (S)	%.						98	98	80-150			

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### QUALITY CONTROL DATA

Project: Demo: Tank Farm (FCCU)  
Pace Project No.: 12130507

QC Batch: 615621 Analysis Method: ASTM D2974  
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight / %M by ASTM D2974  
Associated Lab Samples: 12130507001, 12130507002, 12130507003, 12130507004, 12130507005, 12130507006

SAMPLE DUPLICATE: 3325753

Parameter	Units	10479374004 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	17.9	17.3	3	30	

SAMPLE DUPLICATE: 3325754

Parameter	Units	12130507006 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	39.6	39.6	0	30	

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### QUALITY CONTROL DATA

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

QC Batch: 615658

Analysis Method: ASTM D2974

QC Batch Method: ASTM D2974

Analysis Description: Dry Weight / %M by ASTM D2974

Associated Lab Samples: 12130507007, 12130507008, 12130507009, 12130507010, 12130507011, 12130507012, 12130507013, 12130507014, 12130507015, 12130507016, 12130507017, 12130507018, 12130507019, 12130507020, 12130507021, 12130507022, 12130507023, 12130507024, 12130507025, 12130507026

SAMPLE DUPLICATE: 3325905

Parameter	Units	12130507007 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	25.3	24.2	5	30	

SAMPLE DUPLICATE: 3325906

Parameter	Units	12130507026 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	32.0	32.6	2	30	

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### QUALITY CONTROL DATA

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

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QC Batch: 615665 Analysis Method: ASTM D2974  
 QC Batch Method: ASTM D2974 Analysis Description: Dry Weight / %M by ASTM D2974  
 Associated Lab Samples: 12130507027, 12130507028, 12130507029, 12130507030, 12130507031, 12130507032, 12130507033, 12130507034

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SAMPLE DUPLICATE: 3325973

Parameter	Units	12130507027 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	29.4	29.4	0	30	

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SAMPLE DUPLICATE: 3325974

Parameter	Units	10480181001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	6.4	6.4	1	30	

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### QUALITY CONTROL DATA

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

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QC Batch: 615432 Analysis Method: EPA 8260B  
 QC Batch Method: EPA 5035/5030B Analysis Description: 8260B MSV UST  
 Associated Lab Samples: 12130507001, 12130507002, 12130507003, 12130507004, 12130507005, 12130507006, 12130507007, 12130507008, 12130507009, 12130507010, 12130507011, 12130507012, 12130507013, 12130507014, 12130507015, 12130507016, 12130507017, 12130507018, 12130507019

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METHOD BLANK: 3324699 Matrix: Solid  
 Associated Lab Samples: 12130507001, 12130507002, 12130507003, 12130507004, 12130507005, 12130507006, 12130507007, 12130507008, 12130507009, 12130507010, 12130507011, 12130507012, 12130507013, 12130507014, 12130507015, 12130507016, 12130507017, 12130507018, 12130507019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	<10.0	33.3	06/25/19 23:37	
1,2-Dibromoethane (EDB)	ug/kg	<5.3	17.5	06/25/19 23:37	
1,2-Dichloroethane	ug/kg	<5.5	18.3	06/25/19 23:37	
1,3,5-Trimethylbenzene	ug/kg	<8.0	26.5	06/25/19 23:37	
2-Methylnaphthalene	ug/kg	<75.2	250	06/25/19 23:37	
Benzene	ug/kg	<2.8	9.4	06/25/19 23:37	
Ethylbenzene	ug/kg	<2.7	9.1	06/25/19 23:37	
Methyl-tert-butyl ether	ug/kg	<6.0	19.8	06/25/19 23:37	
Naphthalene	ug/kg	<46.8	156	06/25/19 23:37	
Toluene	ug/kg	<12.2	40.6	06/25/19 23:37	
Xylene (Total)	ug/kg	<11.6	38.6	06/25/19 23:37	
1,2-Dichloroethane-d4 (S)	%	109	75-125	06/25/19 23:37	
4-Bromofluorobenzene (S)	%	96	75-125	06/25/19 23:37	
Toluene-d8 (S)	%	98	75-125	06/25/19 23:37	

LABORATORY CONTROL SAMPLE: 3324700

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	1000	793	79	51-126	
1,2-Dibromoethane (EDB)	ug/kg	1000	787	79	52-125	
1,2-Dichloroethane	ug/kg	1000	783	78	51-125	
1,3,5-Trimethylbenzene	ug/kg	1000	793	79	52-127	
2-Methylnaphthalene	ug/kg	500	410	82	45-132	
Benzene	ug/kg	1000	718	72	48-125	
Ethylbenzene	ug/kg	1000	749	75	51-125	
Methyl-tert-butyl ether	ug/kg	1000	748	75	53-125	
Naphthalene	ug/kg	1000	789	79	51-125	
Toluene	ug/kg	1000	730	73	51-125	
Xylene (Total)	ug/kg	3000	2260	75	52-125	
1,2-Dichloroethane-d4 (S)	%			107	75-125	
4-Bromofluorobenzene (S)	%			101	75-125	
Toluene-d8 (S)	%			99	75-125	

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### QUALITY CONTROL DATA

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

Parameter	Units	3324701		3324702		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		10480639001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
1,2,4-Trimethylbenzene	ug/kg	ND	960	966	905	837	94	87	65-145	8	30		
1,2-Dibromoethane (EDB)	ug/kg	ND	960	966	898	821	94	85	67-135	9	30		
1,2-Dichloroethane	ug/kg	ND	960	966	926	829	96	86	56-132	11	30		
1,3,5-Trimethylbenzene	ug/kg	ND	960	966	892	831	93	86	66-148	7	30		
2-Methylnaphthalene	ug/kg	ND	480	483	462	441	96	91	54-150	5	30		
Benzene	ug/kg	ND	960	966	809	758	84	78	63-136	6	30		
Ethylbenzene	ug/kg	ND	960	966	854	770	89	80	64-142	10	30		
Methyl-tert-butyl ether	ug/kg	ND	960	966	867	785	90	81	69-134	10	30		
Naphthalene	ug/kg	ND	960	966	892	824	93	85	63-148	8	30		
Toluene	ug/kg	ND	960	966	799	745	83	77	61-141	7	30		
Xylene (Total)	ug/kg	ND	2880	2900	2520	2340	87	81	67-145	8	30		
1,2-Dichloroethane-d4 (S)	%						106	105	75-125				
4-Bromofluorobenzene (S)	%						100	100	75-125				
Toluene-d8 (S)	%						97	98	75-125				

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### QUALITY CONTROL DATA

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

QC Batch: 615574

Analysis Method: EPA 8260B

QC Batch Method: EPA 5035/5030B

Analysis Description: 8260B MSV UST

Associated Lab Samples: 12130507020, 12130507021, 12130507022, 12130507023, 12130507024, 12130507025, 12130507026, 12130507027, 12130507028, 12130507029, 12130507030, 12130507031, 12130507032, 12130507033, 12130507034

METHOD BLANK: 3325648

Matrix: Solid

Associated Lab Samples: 12130507020, 12130507021, 12130507022, 12130507023, 12130507024, 12130507025, 12130507026, 12130507027, 12130507028, 12130507029, 12130507030, 12130507031, 12130507032, 12130507033, 12130507034

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	33.3	06/26/19 12:50	
1,2-Dibromoethane (EDB)	ug/kg	ND	17.5	06/26/19 12:50	
1,2-Dichloroethane	ug/kg	ND	18.3	06/26/19 12:50	
1,3,5-Trimethylbenzene	ug/kg	ND	26.5	06/26/19 12:50	
2-Methylnaphthalene	ug/kg	ND	250	06/26/19 12:50	
Benzene	ug/kg	ND	9.4	06/26/19 12:50	
Ethylbenzene	ug/kg	ND	9.1	06/26/19 12:50	
Methyl-tert-butyl ether	ug/kg	ND	19.8	06/26/19 12:50	
Naphthalene	ug/kg	ND	156	06/26/19 12:50	
Toluene	ug/kg	ND	40.6	06/26/19 12:50	
Xylene (Total)	ug/kg	ND	38.6	06/26/19 12:50	
1,2-Dichloroethane-d4 (S)	%	110	75-125	06/26/19 12:50	
4-Bromofluorobenzene (S)	%	99	75-125	06/26/19 12:50	
Toluene-d8 (S)	%	99	75-125	06/26/19 12:50	

LABORATORY CONTROL SAMPLE: 3325649

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	1000	822	82	51-126	
1,2-Dibromoethane (EDB)	ug/kg	1000	768	77	52-125	
1,2-Dichloroethane	ug/kg	1000	794	79	51-125	
1,3,5-Trimethylbenzene	ug/kg	1000	803	80	52-127	
2-Methylnaphthalene	ug/kg	500	425	85	45-132	
Benzene	ug/kg	1000	721	72	48-125	
Ethylbenzene	ug/kg	1000	758	76	51-125	
Methyl-tert-butyl ether	ug/kg	1000	743	74	53-125	
Naphthalene	ug/kg	1000	810	81	51-125	
Toluene	ug/kg	1000	713	71	51-125	
Xylene (Total)	ug/kg	3000	2270	76	52-125	
1,2-Dichloroethane-d4 (S)	%			106	75-125	
4-Bromofluorobenzene (S)	%			99	75-125	
Toluene-d8 (S)	%			99	75-125	

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### QUALITY CONTROL DATA

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

Parameter	Units	3325650		3325651		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		12130625002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
1,2,4-Trimethylbenzene	ug/kg	ND	1250	1190	1620	1350	129	113	65-145	18	30		
1,2-Dibromoethane (EDB)	ug/kg	ND	1250	1190	1440	1230	115	103	67-135	16	30		
1,2-Dichloroethane	ug/kg	ND	1250	1190	1480	1250	118	105	56-132	17	30		
1,3,5-Trimethylbenzene	ug/kg	ND	1250	1190	1590	1350	127	113	66-148	16	30		
2-Methylnaphthalene	ug/kg	ND	627	596	782	683	125	115	54-150	14	30		
Benzene	ug/kg	ND	1250	1190	1450	1230	115	103	63-136	17	30		
Ethylbenzene	ug/kg	ND	1250	1190	1450	1210	116	102	64-142	18	30		
Methyl-tert-butyl ether	ug/kg	ND	1250	1190	1370	1180	110	99	69-134	15	30		
Naphthalene	ug/kg	ND	1250	1190	1490	1240	119	104	63-148	18	30		
Toluene	ug/kg	ND	1250	1190	1410	1200	113	101	61-141	16	30		
Xylene (Total)	ug/kg	ND	3760	3580	4380	3730	116	104	67-145	16	30		
1,2-Dichloroethane-d4 (S)	%						108	103	75-125				
4-Bromofluorobenzene (S)	%						101	102	75-125				
Toluene-d8 (S)	%						100	98	75-125				

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### QUALITY CONTROL DATA

Project: Demo: Tank Farm (FCCU)  
Pace Project No.: 12130507

QC Batch: 613760 Analysis Method: WI MOD DRO  
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS  
Associated Lab Samples: 12130507001, 12130507002, 12130507003, 12130507004, 12130507005

METHOD BLANK: 3316082 Matrix: Solid  
Associated Lab Samples: 12130507001, 12130507002, 12130507003, 12130507004, 12130507005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	<3.9	12.9	06/21/19 19:05	
n-Triacontane (S)	%.	104	50-150	06/21/19 19:05	

LABORATORY CONTROL SAMPLE & LCSD: 3316083

Parameter	Units	3316084								
		Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	70.9	73.8	89	92	70-120	4	20	
n-Triacontane (S)	%.				100	99	50-150			

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**QUALITY CONTROL DATA**

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

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QC Batch: 613761 Analysis Method: WI MOD DRO  
 QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS  
 Associated Lab Samples: 12130507006, 12130507007, 12130507008, 12130507009, 12130507010, 12130507011, 12130507012,  
 12130507013, 12130507014, 12130507015, 12130507016, 12130507017, 12130507018, 12130507019,  
 12130507020, 12130507021, 12130507022, 12130507023, 12130507024, 12130507025

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METHOD BLANK: 3316089 Matrix: Solid  
 Associated Lab Samples: 12130507006, 12130507007, 12130507008, 12130507009, 12130507010, 12130507011, 12130507012,  
 12130507013, 12130507014, 12130507015, 12130507016, 12130507017, 12130507018, 12130507019,  
 12130507020, 12130507021, 12130507022, 12130507023, 12130507024, 12130507025

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	<3.9	12.9	06/27/19 10:06	
n-Triacontane (S)	%	97	50-150	06/27/19 10:06	

---

LABORATORY CONTROL SAMPLE & LCSD: 3316090 3316091

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	70.3	73.6	88	92	70-120	5	20	
n-Triacontane (S)	%				96	98	50-150			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

**REPORT OF LABORATORY ANALYSIS**

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### QUALITY CONTROL DATA

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

QC Batch: 614072	Analysis Method: WI MOD DRO
QC Batch Method: WI MOD DRO	Analysis Description: WIDRO GCS
Associated Lab Samples: 12130507026	

METHOD BLANK: 3317596 Matrix: Solid

Associated Lab Samples: 12130507026

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	<3.9	12.9	06/21/19 16:27	
n-Triacontane (S)	%.	93	50-150	06/21/19 16:27	

LABORATORY CONTROL SAMPLE & LCSD: 3317597 3317598

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	77.3	75.9	97	95	70-120	2	20	
n-Triacontane (S)	%.				105	101	50-150			

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

QC Batch: 614407 Analysis Method: WI MOD DRO  
QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS  
Associated Lab Samples: 12130507027, 12130507028

METHOD BLANK: 3319096 Matrix: Solid

Associated Lab Samples: 12130507027, 12130507028

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	<3.9	12.9	06/21/19 10:57	
n-Triacontane (S)	%.	93	50-150	06/21/19 10:57	

LABORATORY CONTROL SAMPLE & LCSD: 3319097 3319098

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/kg	80	72.6	73.1	91	91	70-120	1	20	
n-Triacontane (S)	%.				102	100	50-150			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

QC Batch: 614408 Analysis Method: WI MOD DRO  
 QC Batch Method: WI MOD DRO Analysis Description: WIDRO GCS  
 Associated Lab Samples: 12130507029, 12130507030, 12130507031, 12130507032, 12130507033, 12130507034

METHOD BLANK: 3319100 Matrix: Solid  
 Associated Lab Samples: 12130507029, 12130507030, 12130507031, 12130507032, 12130507033, 12130507034

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
WDRO C10-C28	mg/kg	<3.9	12.9	06/24/19 13:17	
n-Triacontane (S)	%.	87	50-150	06/24/19 13:17	

Parameter	Units	3319101		3319102		% Rec Limits	RPD	Max RPD	Qualifiers
		Spike Conc.	LCS Result	LCSD Result	LCS % Rec				
WDRO C10-C28	mg/kg	80	70.5	75.9	88	95	7	20	
n-Triacontane (S)	%.				88	96			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

---

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-M Pace Analytical Services - Minneapolis

### ANALYTE QUALIFIERS

- 1V Sample found to exceed the method's maximum sample weight to container requirement of 20g per 40mL vial. Analysis proceeding by client request
- 2V The sample could not achieve the 1:1 ratio of soil to methanol due to excessive sample weight.
- 3V The sample was re-weighed into a new container because the sample was transferred from a JGFU jar.
- D5 The sample was re-weighed into a new container because the sample weight in the original container exceeded the method specifications.
- G+ Late peaks present outside the GRO window.
- M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
- S3 Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated sample.
- S4 Surrogate recovery not evaluated against control limits due to sample dilution.
- T6 High boiling point hydrocarbons are present in the sample.
- T7 Low boiling point hydrocarbons are present in the sample.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
12130507001	1-A	WI MOD DRO	613760	WI MOD DRO	614792
12130507002	1-B	WI MOD DRO	613760	WI MOD DRO	614792
12130507003	2-A	WI MOD DRO	613760	WI MOD DRO	614792
12130507004	2-B	WI MOD DRO	613760	WI MOD DRO	614792
12130507005	3-A	WI MOD DRO	613760	WI MOD DRO	614792
12130507006	3-B	WI MOD DRO	613761	WI MOD DRO	616025
12130507007	4-A	WI MOD DRO	613761	WI MOD DRO	616025
12130507008	4-B	WI MOD DRO	613761	WI MOD DRO	616025
12130507009	5-A	WI MOD DRO	613761	WI MOD DRO	616025
12130507010	5-B	WI MOD DRO	613761	WI MOD DRO	616025
12130507011	6-A	WI MOD DRO	613761	WI MOD DRO	616025
12130507012	6-B	WI MOD DRO	613761	WI MOD DRO	616025
12130507013	7-A	WI MOD DRO	613761	WI MOD DRO	616025
12130507014	7-B	WI MOD DRO	613761	WI MOD DRO	616025
12130507015	8-A	WI MOD DRO	613761	WI MOD DRO	616025
12130507016	8B	WI MOD DRO	613761	WI MOD DRO	616025
12130507017	9-A	WI MOD DRO	613761	WI MOD DRO	616025
12130507018	9-B	WI MOD DRO	613761	WI MOD DRO	616025
12130507019	10-A	WI MOD DRO	613761	WI MOD DRO	616025
12130507020	10-B	WI MOD DRO	613761	WI MOD DRO	616025
12130507021	11-A	WI MOD DRO	613761	WI MOD DRO	616025
12130507022	11-B	WI MOD DRO	613761	WI MOD DRO	616025
12130507023	12-A	WI MOD DRO	613761	WI MOD DRO	616025
12130507024	12-B	WI MOD DRO	613761	WI MOD DRO	616025
12130507025	1-A (FCCU)	WI MOD DRO	613761	WI MOD DRO	616025
12130507026	1-B (FCCU)	WI MOD DRO	614072	WI MOD DRO	614793
12130507027	2-A (FCCU)	WI MOD DRO	614407	WI MOD DRO	614742
12130507028	2-B (FCCU)	WI MOD DRO	614407	WI MOD DRO	614742
12130507029	3-A (FCCU)	WI MOD DRO	614408	WI MOD DRO	615132
12130507030	3-B (FCCU)	WI MOD DRO	614408	WI MOD DRO	615132
12130507031	4-A (FCCU)	WI MOD DRO	614408	WI MOD DRO	615132
12130507032	4-B (FCCU)	WI MOD DRO	614408	WI MOD DRO	615132
12130507033	5-A (FCCU)	WI MOD DRO	614408	WI MOD DRO	615132
12130507034	5-B (FCCU)	WI MOD DRO	614408	WI MOD DRO	615132
12130507001	1-A	EPA 5030 Medium Soil	616555	WI MOD GRO	616602
12130507002	1-B	EPA 5030 Medium Soil	616555	WI MOD GRO	616602
12130507003	2-A	EPA 5030 Medium Soil	616555	WI MOD GRO	616602
12130507004	2-B	EPA 5030 Medium Soil	616555	WI MOD GRO	616602
12130507005	3-A	EPA 5030 Medium Soil	616555	WI MOD GRO	616602
12130507006	3-B	EPA 5030 Medium Soil	616555	WI MOD GRO	616602
12130507007	4-A	EPA 5030 Medium Soil	616555	WI MOD GRO	616602
12130507008	4-B	EPA 5030 Medium Soil	616555	WI MOD GRO	616602
12130507009	5-A	EPA 5030 Medium Soil	616555	WI MOD GRO	616602
12130507010	5-B	EPA 5030 Medium Soil	616555	WI MOD GRO	616602
12130507011	6-A	EPA 5030 Medium Soil	616555	WI MOD GRO	616602
12130507012	6-B	EPA 5030 Medium Soil	616555	WI MOD GRO	616602

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Demo: Tank Farm (FCCU)  
Pace Project No.: 12130507

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
12130507013	7-A	EPA 5030 Medium Soil	616555	WI MOD GRO	616602
12130507014	7-B	EPA 5030 Medium Soil	616555	WI MOD GRO	616602
12130507015	8-A	EPA 5030 Medium Soil	616556	WI MOD GRO	616891
12130507016	8B	EPA 5030 Medium Soil	616556	WI MOD GRO	616891
12130507017	9-A	EPA 5030 Medium Soil	616556	WI MOD GRO	616891
12130507018	9-B	EPA 5030 Medium Soil	616556	WI MOD GRO	616891
12130507019	10-A	EPA 5030 Medium Soil	616556	WI MOD GRO	616891
12130507020	10-B	EPA 5030 Medium Soil	616556	WI MOD GRO	616891
12130507021	11-A	EPA 5030 Medium Soil	616556	WI MOD GRO	616891
12130507022	11-B	EPA 5030 Medium Soil	616556	WI MOD GRO	616891
12130507023	12-A	EPA 5030 Medium Soil	616556	WI MOD GRO	616891
12130507024	12-B	EPA 5030 Medium Soil	616556	WI MOD GRO	616891
12130507025	1-A (FCCU)	EPA 5030 Medium Soil	616556	WI MOD GRO	616891
12130507026	1-B (FCCU)	EPA 5030 Medium Soil	616556	WI MOD GRO	616891
12130507027	2-A (FCCU)	EPA 5030 Medium Soil	616556	WI MOD GRO	616891
12130507028	2-B (FCCU)	EPA 5030 Medium Soil	616556	WI MOD GRO	616891
12130507029	3-A (FCCU)	EPA 5030 Medium Soil	616556	WI MOD GRO	616891
12130507030	3-B (FCCU)	EPA 5030 Medium Soil	616556	WI MOD GRO	616891
12130507031	4-A (FCCU)	EPA 5030 Medium Soil	616556	WI MOD GRO	616891
12130507032	4-B (FCCU)	EPA 5030 Medium Soil	616556	WI MOD GRO	616891
12130507033	5-A (FCCU)	EPA 5030 Medium Soil	616556	WI MOD GRO	616891
12130507034	5-B (FCCU)	EPA 5030 Medium Soil	616758	WI MOD GRO	616916
12130507001	1-A	ASTM D2974	615621		
12130507002	1-B	ASTM D2974	615621		
12130507003	2-A	ASTM D2974	615621		
12130507004	2-B	ASTM D2974	615621		
12130507005	3-A	ASTM D2974	615621		
12130507006	3-B	ASTM D2974	615621		
12130507007	4-A	ASTM D2974	615658		
12130507008	4-B	ASTM D2974	615658		
12130507009	5-A	ASTM D2974	615658		
12130507010	5-B	ASTM D2974	615658		
12130507011	6-A	ASTM D2974	615658		
12130507012	6-B	ASTM D2974	615658		
12130507013	7-A	ASTM D2974	615658		
12130507014	7-B	ASTM D2974	615658		
12130507015	8-A	ASTM D2974	615658		
12130507016	8B	ASTM D2974	615658		
12130507017	9-A	ASTM D2974	615658		
12130507018	9-B	ASTM D2974	615658		
12130507019	10-A	ASTM D2974	615658		
12130507020	10-B	ASTM D2974	615658		
12130507021	11-A	ASTM D2974	615658		
12130507022	11-B	ASTM D2974	615658		
12130507023	12-A	ASTM D2974	615658		
12130507024	12-B	ASTM D2974	615658		
12130507025	1-A (FCCU)	ASTM D2974	615658		

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Demo: Tank Farm (FCCU)

Pace Project No.: 12130507

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
12130507026	1-B (FCCU)	ASTM D2974	615658		
12130507027	2-A (FCCU)	ASTM D2974	615665		
12130507028	2-B (FCCU)	ASTM D2974	615665		
12130507029	3-A (FCCU)	ASTM D2974	615665		
12130507030	3-B (FCCU)	ASTM D2974	615665		
12130507031	4-A (FCCU)	ASTM D2974	615665		
12130507032	4-B (FCCU)	ASTM D2974	615665		
12130507033	5-A (FCCU)	ASTM D2974	615665		
12130507034	5-B (FCCU)	ASTM D2974	615665		
12130507001	1-A	EPA 5035/5030B	615432	EPA 8260B	615506
12130507002	1-B	EPA 5035/5030B	615432	EPA 8260B	615506
12130507003	2-A	EPA 5035/5030B	615432	EPA 8260B	615506
12130507004	2-B	EPA 5035/5030B	615432	EPA 8260B	615506
12130507005	3-A	EPA 5035/5030B	615432	EPA 8260B	615506
12130507006	3-B	EPA 5035/5030B	615432	EPA 8260B	615506
12130507007	4-A	EPA 5035/5030B	615432	EPA 8260B	615506
12130507008	4-B	EPA 5035/5030B	615432	EPA 8260B	615506
12130507009	5-A	EPA 5035/5030B	615432	EPA 8260B	615506
12130507010	5-B	EPA 5035/5030B	615432	EPA 8260B	615506
12130507011	6-A	EPA 5035/5030B	615432	EPA 8260B	615506
12130507012	6-B	EPA 5035/5030B	615432	EPA 8260B	615506
12130507013	7-A	EPA 5035/5030B	615432	EPA 8260B	615506
12130507014	7-B	EPA 5035/5030B	615432	EPA 8260B	615506
12130507015	8-A	EPA 5035/5030B	615432	EPA 8260B	615506
12130507016	8B	EPA 5035/5030B	615432	EPA 8260B	615506
12130507017	9-A	EPA 5035/5030B	615432	EPA 8260B	615506
12130507018	9-B	EPA 5035/5030B	615432	EPA 8260B	615506
12130507019	10-A	EPA 5035/5030B	615432	EPA 8260B	615506
12130507020	10-B	EPA 5035/5030B	615574	EPA 8260B	615655
12130507021	11-A	EPA 5035/5030B	615574	EPA 8260B	615655
12130507022	11-B	EPA 5035/5030B	615574	EPA 8260B	615655
12130507023	12-A	EPA 5035/5030B	615574	EPA 8260B	615655
12130507024	12-B	EPA 5035/5030B	615574	EPA 8260B	615655
12130507025	1-A (FCCU)	EPA 5035/5030B	615574	EPA 8260B	615655
12130507026	1-B (FCCU)	EPA 5035/5030B	615574	EPA 8260B	615655
12130507027	2-A (FCCU)	EPA 5035/5030B	615574	EPA 8260B	615655
12130507028	2-B (FCCU)	EPA 5035/5030B	615574	EPA 8260B	615655
12130507029	3-A (FCCU)	EPA 5035/5030B	615574	EPA 8260B	615655
12130507030	3-B (FCCU)	EPA 5035/5030B	615574	EPA 8260B	615655
12130507031	4-A (FCCU)	EPA 5035/5030B	615574	EPA 8260B	615655
12130507032	4-B (FCCU)	EPA 5035/5030B	615574	EPA 8260B	615655
12130507033	5-A (FCCU)	EPA 5035/5030B	615574	EPA 8260B	615655
12130507034	5-B (FCCU)	EPA 5035/5030B	615574	EPA 8260B	615655

### REPORT OF LABORATORY ANALYSIS

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# CHAIN-OF-CUSTODY Analytical Request Document

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LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number

MTJL

## WO#: 12130507

Page 55 of 59

ALL SHADED AR

PM: LMF

Due Date: 06/28/19

CLIENT: 13\_CALUMET

Company: **Husky Energy**

Billing Information:

Address: **2407 Stinson Avenue**

Report To: **Ryan Rivord**

Email To: **ryan.rivord@huskyenergy.com**

Copy To: **justin.boucher@insightenv.com**

Site Collection Info/Address: **Husky Superior Refinery**

Customer Project Name/Number: **Demo: Tank Farm**

State: **WI** County/City: **Superior** Time Zone Collected: **[ ] PT [ ] MT [x] CT [ ] ET**

Phone: 715-969-4446  
Email: ryan.rivord@huskyenergy.com

Site/Facility ID #:

Compliance Monitoring?  
 Yes  No

Collected By (print): **Chris Cox/Tim Cyr**

Purchase Order #:   
Quote #:

DW PWS ID #:   
DW Location Code:

Collected By (signature):

Turnaround Date Required:

Immediately Packed on Ice:  
 Yes  No

Sample Disposal:  
 Dispose as appropriate  Return  
 Archive: \_\_\_\_\_  
 Hold: \_\_\_\_\_

Rush:  
 Same Day  Next Day  
 2 Day  3 Day  4 Day  5 Day  
(Expedite Charges Apply)

Field Filtered (if applicable):  
 Yes  No  
Analysis: \_\_\_\_\_

\* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	WI GRO	WI DRO	PVOC 8260
			Date	Time	Date	Time					
1-A	SL-Soil	Grab	6/13/19	15:24				4	X	X	X
1-B	SL-Soil	Grab		15:29				4	X	X	X
2-A	SL-Soil	Grab		12:00				4	X	X	X
2-B	SL-Soil	Grab		12:06				4	X	X	X
3-A	SL-Soil	Grab		15:07				4	X	X	X
3-B	SL-Soil	Grab		15:11				4	X	X	X
4-A	SL-Soil	Grab		14:20				4	X	X	X
4-B	SL-Soil	Grab		14:24				4	X	X	X
5-A	SL-Soil	Grab		11:10				4	X	X	X
5-B	SL-Soil	Grab		11:15				4	X	X	X

Customer Remarks / Special Conditions / Possible Hazards:  
A=2' Depth  
B=6' Depth

Type of Ice Used: Wet Blue Dry None  
Packing Material Used:  
Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A  
Lab Tracking #:  
Samples received via:  
FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:  
Temp Blank Received: Y N NA  
Therm ID#: \_\_\_\_\_  
Cooler 1 Temp Upon Receipt: \_\_\_\_\_oC  
Cooler 1 Therm Corr. Factor: \_\_\_\_\_oC  
Cooler 1 Corrected Temp: \_\_\_\_\_oC  
Comments:

Relinquished by/Company: (Signature)  
*[Signature]*  
Relinquished by/Company: (Signature)  
Relinquished by/Company: (Signature)

Date/Time:  
6-14-19 08:49

Received by/Company: (Signature)  
*[Signature]*  
Received by/Company: (Signature)  
Received by/Company: (Signature)

Date/Time:  
6/14/19 08:49

MTJL LAB USE ONLY  
Table #:  
Acctnum:  
Template:  
Prelogin:  
PM:  
PB:

3.4, 2.8, 3.3  
Trip Blank Received: Y N NA  
HCL MeOH TSP Other  
Non Conformance(s): YES / NO  
Page: 1 of 3





# CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Lor  
MTJL

# WO#: 12130507

PM: LMF

Due Date: 06/28/19

CLIENT: 13\_CALUMET

Company: **Husky Energy** Billing Information:

Address: **2407 Stinson Avenue**

Report To: **Ryan Rivord** Email To: **ryan.rivord@huskyenergy.com**

Copy To: **justin.boucher@insightenv.com** Site Collection Info/Address: **Husky Superior Refinery**

Customer Project Name/Number: **Demo: Tank Farm** State: **WI** County/City: **Superior** Time Zone Collected: **[ ] PT [ ] MT [x] CT [ ] ET**

Phone: 715-969-4446 Site/Facility ID #: Compliance Monitoring? **[ ] Yes [ ] No**

Email: ryan.rivord@huskyenergy.com

Collected By (print): Purchase Order #: DW PWS ID #: Quote #: DW Location Code:

Collected By (signature): **Chris Cox / Tim Cyr** Turnaround Date Required: Immediately Packed on Ice: **[x] Yes [ ] No**

Sample Disposal: **[x] Dispose as appropriate [ ] Return** Rush: **[ ] Same Day [ ] Next Day** Field Filtered (if applicable): **[ ] Yes [ ] No**  
**[ ] Archive: [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day** (Expedite Charges Apply)  
**[ ] Hold:** Analysis:

\* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	WI GRO	WI DRO	P VOC 8260
			Date	Time	Date	Time					
6-A	SL-Soil	Grab	6/13/19	11:32				4	X	X	X
6-B	SL-Soil	Grab		11:37				4	X	X	X
7-A	SL-Soil	Grab		14:43				4	X	X	X
7-B	SL-Soil	Grab		14:48				4	X	X	X
8-A	SL-Soil	Grab		14:06				4	X	X	X
8B	SL-Soil	Grab		14:11				4	X	X	X
9-A	SL-Soil	Grab		10:50				4	X	X	X
9-B	SL-Soil	Grab		10:56				4	X	X	X
10-A	SL-Soil	Grab		12:54				4	X	X	X
10-B	SL-Soil	Grab		12:58				4	X	X	X

Customer Remarks / Special Conditions / Possible Hazards: A=2' Depth B=6' Depth

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #:

Samples received via: FEDEX UPS Client Courier Pace Courier

Relinquished by/Company: (Signature) **[Signature]** Date/Time: **6-14-19 08:49**

Received by/Company: (Signature) **[Signature]** Date/Time: **6/14/19 08:49**

Relinquished by/Company: (Signature) Date/Time:

Received by/Company: (Signature) Date/Time:

Relinquished by/Company: (Signature) Date/Time:

Received by/Company: (Signature) Date/Time:

Container Preservative Type \*\*

6

\*\* Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses

Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact Y N NA

Custody Signatures Present Y N NA

Collector Signature Present Y N NA

Bottles Intact Y N NA

Correct Bottles Y N NA

Sufficient Volume Y N NA

Samples Received on Ice Y N NA

VOA - Headspace Acceptable Y N NA

USDA Regulated Soils Y N NA

Samples in Holding Time Y N NA

Residual Chlorine Present Y N NA

Cl Strips: \_\_\_\_\_

Sample pH Acceptable Y N NA

pH Strips: \_\_\_\_\_

Sulfide Present Y N NA

Lead Acetate Strips: \_\_\_\_\_

LAB USE ONLY: Lab Sample # / Comments:

Lab Sample Temperature Info:

Temp Blank Received: Y N NA

Therm ID#: \_\_\_\_\_

Cooler 1 Temp Upon Receipt: \_\_\_\_\_ oC

Cooler 1 Therm Corr. Factor: \_\_\_\_\_ oC

Cooler 1 Corrected Temp: \_\_\_\_\_ oC

Comments: **3.4, 2.8, 3.3**

Trip Blank Received: Y N NA

HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: 2 of: 3





# CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/La  
MTJL

# WO# : 12130507

PM: LMF Due Date: 06/28/19  
CLIENT: 13\_CALUMET

Page 57 of 59

ALL SHADED AR

Container Preservative Type \*\*

6

\*\* Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses

Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact Y N NA  
 Custody Signatures Present Y N NA  
 Collector Signature Present Y N NA  
 Bottles Intact Y N NA  
 Correct Bottles Y N NA  
 Sufficient Volume Y N NA  
 Samples Received on Ice Y N NA  
 VOA - Headspace Acceptable Y N NA  
 USDA Regulated Soils Y N NA  
 Samples in Holding Time Y N NA  
 Residual Chlorine Present Y N NA  
 Cl Strips: \_\_\_\_\_  
 Sample pH Acceptable Y N NA  
 pH Strips: \_\_\_\_\_  
 Sulfide Present Y N NA  
 Lead Acetate Strips: \_\_\_\_\_

LAB USE ONLY:  
Lab Sample # / Comments:

Company: **Husky Energy** Billing Information:

Address: **2407 Stinson Avenue**

Report To: **Ryan Rivord** Email To: **ryan.rivord@huskyenergy.com**

Copy To: **justin.boucher@insightenv.com** Site Collection Info/Address: **Husky Superior Refinery**

Customer Project Name/Number: **Demo: Tank Farm** State: **WI** County/City: **/Superior** Time Zone Collected: **[ ] PT [ ] MT [x] CT [ ] ET**

Phone: 715-969-4446 Site/Facility ID #: Compliance Monitoring? **[ ] Yes [ ] No**

Email: ryan.rivord@huskyenergy.com

Collected By (print): **Chris Cox / Tim Cyr** Purchase Order #: DW PWS ID #: Quote #: DW Location Code:

Collected By (signature): Turnaround Date Required: Immediately Packed on Ice: **[x] Yes [ ] No**

Sample Disposal: **[x] Dispose as appropriate [ ] Return** Rush: **[ ] Same Day [ ] Next Day** Field Filtered (if applicable): **[ ] Yes [ ] No**  
**[ ] Archive: [ ] 2 Day [ ] 3 Day [ ] 4 Day [ ] 5 Day** Analysis: **(Expedite Charges Apply)**

\* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	WI GRO	WI DRO	PVOC 8260
			Date	Time	Date	Time					
11-A	SL-Soil	Grab	6/13/19	13:11				4	X	X	X
11-B	SL-Soil	Grab		13:17				4	X	X	X
12-A	SL-Soil	Grab		13:28				4	X	X	X
12-B	SL-Soil	Grab		13:33				4	X	X	X
								4	X	X	

Customer Remarks / Special Conditions / Possible Hazards: A=2' Depth B=6' Depth

Type of Ice Used: Wet Blue Dry None

Packing Material Used:

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #:

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:

Temp Blank Received: Y N NA

Therm ID#: \_\_\_\_\_

Cooler 1 Temp Upon Receipt: \_\_\_\_\_ oC

Cooler 1 Therm Corr. Factor: \_\_\_\_\_ oC

Cooler 1 Corrected Temp: \_\_\_\_\_ oC

Comments:

Relinquished by/Company: (Signature) **[Signature]** Date/Time: **6-14-19 08:49** Received by/Company: (Signature) **[Signature]** Date/Time: **6/14/19 08:49**

Relinquished by/Company: (Signature) Date/Time: Received by/Company: (Signature) Date/Time:

Relinquished by/Company: (Signature) Date/Time: Received by/Company: (Signature) Date/Time:

MTJL LAB USE ONLY

Table #: \_\_\_\_\_

Acctnum: \_\_\_\_\_

Template: \_\_\_\_\_

Prelogin: \_\_\_\_\_

PM: \_\_\_\_\_

PB: \_\_\_\_\_

**3.4, 2.8, 3.3**

Trip Blank Received: Y N NA

HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: 3 of: 3





# CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or

MTJL I

## WO#: 12130507

ALL SHADED ARE

PM: LMF

Due Date: 06/28/19

CLIENT: 13\_CALUMET

Container Preservative Type \*\*

6

\*\* Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses

Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact Y N NA  
 Custody Signatures Present Y N NA  
 Collector Signature Present Y N NA  
 Bottles Intact Y N NA  
 Correct Bottles Y N NA  
 Sufficient Volume Y N NA  
 Samples Received on Ice Y N NA  
 VOA - Headspace Acceptable Y N NA  
 USDA Regulated Soils Y N NA  
 Samples in Holding Time Y N NA  
 Residual Chlorine Present Y N NA  
 Cl Strips: \_\_\_\_\_  
 Sample pH Acceptable Y N NA  
 pH Strips: \_\_\_\_\_  
 Sulfide Present Y N NA  
 Lead Acetate Strips: \_\_\_\_\_

LAB USE ONLY:  
Lab Sample # / Comments:

Company: **Husky Energy**  
 Address: **2407 Stinson Avenue**  
 Report To: **Ryan Rivord**  
 Copy To: **justin.boucher@insightenv.com**  
 Customer Project Name/Number: **Demo: FCCU**  
 Phone: 715-969-4446  
 Email: ryan.rivord@huskyenergy.com  
 Collected By (print): **Chris Cox/Tim Cyr**  
 Collected By (signature): \_\_\_\_\_  
 Sample Disposal:  Dispose as appropriate  Return  
 Archive: \_\_\_\_\_  
 Hold: \_\_\_\_\_

Billing Information:  
 Email To: **ryan.rivord@huskyenergy.com**  
 Site Collection Info/Address: **Husky Superior Refinery**  
 State: **WI** County/City: **/Superior** Time Zone Collected: **[ ] PT [ ] MT [x] CT [ ] ET**

Compliance Monitoring?  
 Yes  No

DW PWS ID #: \_\_\_\_\_  
 DW Location Code: \_\_\_\_\_  
 Immediately Packed on Ice:  
 Yes  No

Field Filtered (if applicable):  
 Yes  No  
 Analysis: \_\_\_\_\_

\* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	WI GRO	WI DRO	PVOC 8260
			Date	Time	Date	Time					
1-A	SL-Soil	Grab	6/13/19	17:35				4	X	X	X
1-B	SL-Soil	Grab	6/13/19	17:40				4	X	X	X
2-A	SL-Soil	Grab	6/13/19	17:21				4	X	X	X
2-B	SL-Soil	Grab	6/13/19	17:24				4	X	X	X
3-A	SL-Soil	Grab	6/13/19	16:29				4	X	X	X
3-B	SL-Soil	Grab	6/13/19	16:35				4	X	X	X
4-A	SL-Soil	Grab	6/13/19	16:43				4	X	X	X
4-B	SL-Soil	Grab	6/13/19	16:47				4	X	X	X
5-A	SL-Soil	Grab	6/13/19	16:55				4	X	X	X
5-B	SL-Soil	Grab	6/13/19	16:59				4	X	X	X

Customer Remarks / Special Conditions / Possible Hazards:  
 A=2' Depth  
 B=6' Depth

Type of Ice Used: Wet Blue Dry None  
 SHORT HOLDS PRESENT (<72 hours): Y N N/A

Packing Material Used: \_\_\_\_\_  
 Lab Tracking #: \_\_\_\_\_

Radchem sample(s) screened (<500 cpm): Y N NA  
 Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:  
 Temp Blank Received: Y N NA  
 Therm ID#: \_\_\_\_\_  
 Cooler 1 Temp Upon Receipt: \_\_\_\_\_ oC  
 Cooler 1 Therm Corr. Factor: \_\_\_\_\_ oC  
 Cooler 1 Corrected Temp: \_\_\_\_\_ oC  
 Comments: **3.4, 2.8, 3.3**

Relinquished by/Company: (Signature) **CL** Date/Time: **6-14-19 08:49**  
 Received by/Company: (Signature) **[Signature]** Date/Time: **6/14/19 08:49**

Relinquished by/Company: (Signature) \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Received by/Company: (Signature) \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished by/Company: (Signature) \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Received by/Company: (Signature) \_\_\_\_\_ Date/Time: \_\_\_\_\_

MTJL LAB USE ONLY

Table #: \_\_\_\_\_  
 Acctnum: \_\_\_\_\_  
 Template: \_\_\_\_\_  
 Prelogin: \_\_\_\_\_  
 PM: \_\_\_\_\_  
 PB: \_\_\_\_\_

Non Conformance(s): YES / NO  
 Page: 1 of: 1



**Sample Condition Upon Receipt**

Client Name: HUSKY ENERGY Project #: \_\_\_\_\_

**WO# : 12130507**

Courier:  Fed Ex  UPS  USPS  Client  
 Commercial  Pace  Other: \_\_\_\_\_

PM: LMF Due Date: 06/28/19  
 CLIENT: 13\_CALUMET


Tracking Number: \_\_\_\_\_

Custody Seal on Cooler/Box Present?  Yes  No Seals Intact?  Yes  No Optional: Proj. Due Date: \_\_\_\_\_ Proj. Name: \_\_\_\_\_

Packing Material:  Bubble Wrap  Bubble Bags  None  Other: \_\_\_\_\_ Temp Blank?  Yes  No

Thermometer Used:  07335252/710  170481599 Type of Ice:  Wet  Blue  None  Samples on ice, cooling process has begun

Cooler Temp Read °C: 3.4, 2.8, 3.3 Cooler Temp Corrected °C: 3.4, 2.8, 3.3 Biological Tissue Frozen?  Yes  No  NA

Temp should be above freezing to 6 °C Correction Factor: TR-VE Date and Initials of Person Examining Contents: 6/14/19 

If temperature is ≤ 0 °C, is there evidence of ice formation?  Yes  No  NA

Comments:

Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5. If Fecal: <input type="checkbox"/> <8 hours <input type="checkbox"/> >8, <24 hours <input type="checkbox"/> >24 hours
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>SL</u>		
All containers needing acid/base preservation properly preserved?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. Note samples needing adjustment:
Headspace in Methyl Mercury Container	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

CLIENT NOTIFICATION/RESOLUTION

Field Data Required?  Yes  No

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/Resolution: \_\_\_\_\_

FECAL WAIVER ON FILE Y N

TEMPERATURE WAIVER ON FILE Y N

Project Manager Review:  Date: 06/17/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)