



September 19, 2019

Mr. Ryan Warner  
Magpie Operating, Inc.  
2707 South County Road 11  
Loveland, Colorado 80537

**Safranek-State #2-30  
Field Assessment Report  
39.242416 / -103.713164  
NW¼ NW¼ SEC.30 T9S R56W 6PM  
Lincoln County, Colorado  
Remediation # 13586**

Dear Mr. Warner,

Eagle Environmental Consulting, Inc. (EAGLE) is pleased to present the results from Field Assessment activities completed at the Safranek-State #2-30 site (site).

## **1.0 SITE BACKGROUND**

On September 3, 2019, EAGLE completed assessment activities on behalf of Magpie Operating, Inc. (Magpie) at the site following decommissioning activities. EAGLE collected soil samples to determine if any petroleum hydrocarbon impacts existed above Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 regulatory limits. Per the approved Site Investigation and Remediation Workplan (Doc. # 402104740), seven (7) total soil samples (SS-01 through SS-06, and SB-01) were collected from beneath the previous location of the produced water vessel above-ground storage tank (AST), within the earthen-berm production pit, and adjacent to the historical location of the earthen-berm production pit. Groundwater was not observed during assessment activities.

The following narrative details assessment activities completed at the site.

### **1.1 Site Description**

The Safranek-State #2-30 site is located within the northwest quarter of the northwest quarter of Section 30, Township 9 South, Range 56 West, of the 6<sup>th</sup> Prime Meridian, in Lincoln County, Colorado. The site is located at latitude: 39.242416 and longitude: -103.713164. A topographic site location map is presented in Figure 1 and an aerial site location map is presented in Figure 2.

### **1.2 Site Geology**

The soil lithology observed at the site consists of dense, gravelly sand from the ground surface to approximately six feet below ground surface (bgs). Groundwater was not observed during assessment activities. A detailed description of the subsurface lithology beneath the site is presented in the boring log included in Attachment A.

## **2.0 FIELD ASSESSMENT ACTIVITIES**

### **2.1 Produced Water Vessel Assessment**

On September 3, 2019, EAGLE collected one soil sample (SS-01) following removal of the produced water vessel AST. A portion of the soil sample was placed in a sealable plastic bag for volatile organic compound (VOC) headspace analysis utilizing a field-calibrated, photoionization detector (PID). Another portion of the soil sample was placed in a 2-ounce glass jar and packed in an iced cooler.

The soil sample (SS-01@1') was submitted to Origins Laboratory, Inc. (Origins) under standard chain of custody (COC) procedures and analyzed for benzene, toluene, ethylbenzene, total xylenes (BTEX), and total petroleum hydrocarbons – gasoline range organics (TPH-GRO) following EPA Method 8260D, and total petroleum hydrocarbons – diesel range organics (TPH-DRO) following EPA Method 8015D. Additionally, soil sample SS-01@1' was analyzed for Sodium Adsorption Ratio (SAR) following 20B Saturated Paste, Specific Conductance (EC) following Modified 9050A, and pH following Environmental Protection Agency (EPA) Method 9045D.

The soil sample was received with the required holding time for each laboratory analysis. Spatial location of the soil sample was recorded using a Trimble GeoXT 6000 series instrument. A site map presenting the soil sample location is included in Figure 3.

#### **2.1.1 Produced Water Vessel Soil Analytical Results**

Based on laboratory analytical results:

- Soil sample SS-01@1' did not contain concentrations of BTEX or total petroleum hydrocarbons (TPH) exceeding applicable COGCC Table 910-1 regulatory limits.
- Soil sample SS-01@1' had EC, SAR, and pH values within COGCC Table 910-1 regulatory limits.

Soil analytical results are presented in Figure 3 and summarized in Table 1. The laboratory analytical report is included in Attachment B.

### **2.2 Current Earthen-Berm Production Pit Assessment**

On September 3, 2019, EAGLE collected soil samples (SS-02 through SS-06) within the earthen-berm production pit at the site. A portion of each soil sample was placed in a sealable plastic bag for VOC headspace analysis utilizing a field-calibrated PID. Another portion of the soil sample was placed in a 2-ounce glass jar and packed in an iced cooler. A total of five (5) soil samples (SS-02@4', SS-03@4.5', SS-04@5', SS-05@4.5', and SS-06@6') were submitted to Origins under standard COC procedures.

Soil samples SS-02@4', SS-03@4.5', SS-04@5', SS-05@4.5', and SS-06@6' were analyzed for BTEX, and TPH-GRO following EPA Method 8260D, and TPH-DRO following EPA Method 8015D. Additionally, soil sample SS-06@6' was analyzed for SAR following 20B Saturated Paste, EC following Modified 9050A, and pH following EPA Method 9045D. The soil samples were received with the required holding time for each laboratory analysis. Spatial location of each soil sample was recorded using a Trimble GeoXT 6000 series instrument. A site map presenting soil sample locations is included in Figure 3.

### **2.2.1 *Current Earthen-Berm Production Pit Soil Analytical Results***

Based on laboratory analytical results:

- Soil samples SS-02@4', SS-03@4.5', SS-04@5', SS-05@4.5', and SS-06@6' did not contain concentrations of BTEX or TPH exceeding applicable COGCC Table 910-1 regulatory limits.
- Soil sample SS-06@6' had EC, SAR, and pH values within COGCC Table 910-1 regulatory limits.

Soil analytical results are presented in Figure 3 and summarized in Table 1. The laboratory analytical report is included in Attachment B.

### **2.3 *Historical Earthen-Berm Production Pit Assessment***

Historic review of the location indicates the earthen production pit was located north of the current location on site. The location has been backfilled, and is no longer utilized. On September 3, 2019, EAGLE utilized a stainless-steel hand auger and advanced one soil boring (SB-01) within the previous earthen production pit to determine if any petroleum hydrocarbon impacts existed above COGCC Table 910-1 regulatory limits.

Soil boring SB-01 was advanced to a total depth of five feet bgs. During soil boring advancement, soil samples were collected from soil boring SB-01 and separated into 1-foot intervals. Each sample was logged in the field according to soil description, soil classification, moisture content, staining, and VOC concentrations. A portion of each interval was placed in a sealable plastic bag for VOC headspace analysis utilizing a field calibrated PID. Another portion of the soil sample was placed in a 2-ounce glass jar and packed in an iced cooler. A soil boring log is included in Attachment A.

Based on field observations and PID readings, one soil sample (SB-01@4-5') was submitted to Origins following standard COC procedures, and analyzed for BTEX and TPH-GRO following EPA Method 8260D, and TPH-DRO following EPA Method 8015D. Additionally, soil sample SB-01@4-5' was analyzed for SAR following 20B Saturated Paste, EC following Modified 9050A, and pH following EPA Method 9045D. The soil sample was received with the required holding time for each laboratory analysis. Spatial location of the soil sample was recorded using a Trimble GeoXT 6000 series instrument. A site map presenting the soil sample location is included in Figure 3.

#### **2.3.1 *Historical Earthen-Berm Production Pit Soil Analytical Results***

Based on laboratory analytical results:

- Soil sample SB-01@4-5' did not contain concentrations of BTEX or TPH exceeding applicable COGCC Table 910-1 regulatory limits.
- Soil sample SB-01@4-5' had EC, SAR, and pH values within COGCC Table 910-1 regulatory limits.

Soil analytical results are presented in Figure 3 and summarized in Table 1. The laboratory analytical report is included in Attachment B.

### 3.0 CONCLUSIONS

Based on the information presented in this report, EAGLE concludes the following:

- On September 3, 2019, EAGLE completed surficial and subsurface assessment activities adjacent to the previous produced water vessel AST, current earthen-berm production pit location, and historical earthen-berm production pit location.
- The produced water vessel AST soil sample, SS-01@1', did not contain concentrations of BTEX or TPH exceeding applicable COGCC Table 910-1 regulatory limits.
- The produced water vessel AST soil sample, SS-01@1', had EC, SAR, and pH values within applicable COGCC Table 910-1 regulatory limits/ranges.
- Soil samples SS-02@4', SS-03@4.5', SS-04@5', SS-05@4.5', and SS-06@6', collected within the current earthen-berm production pit, did not contain concentrations of BTEX or TPH exceeding applicable COGCC Table 910-1 regulatory limits.
- Soil sample SS-06@6', collected within the current earthen-berm production pit, had EC, SAR, and pH values within the applicable COGCC Table 910-1 regulatory limits/ranges.
- Soil sample SB-01@4-5', collected within the historical earthen-berm production pit location, did not contain concentrations of BTEX or TPH exceeding applicable COGCC Table 910-1 regulatory limits.
- Soil sample SB-01@4-5', collected within the historical earthen-berm production pit, had EC, SAR, and pH values within the applicable COGCC Table 910-1 regulatory limits/ranges.

### 4.0 RECOMMENDATIONS

Based on the information presented in this report, EAGLE recommends the following:

- No additional assessment or remediation appears warranted for the Safranek-State #2-30 (Remediation # 13586) site at this time.

EAGLE sincerely appreciates the opportunity to provide our services. If you have any questions or require further information, please contact us at (303) 433-0479.

Sincerely,

**EAGLE ENVIRONMENTAL CONSULTING, INC.**



Andrew Newberry  
Project Geologist



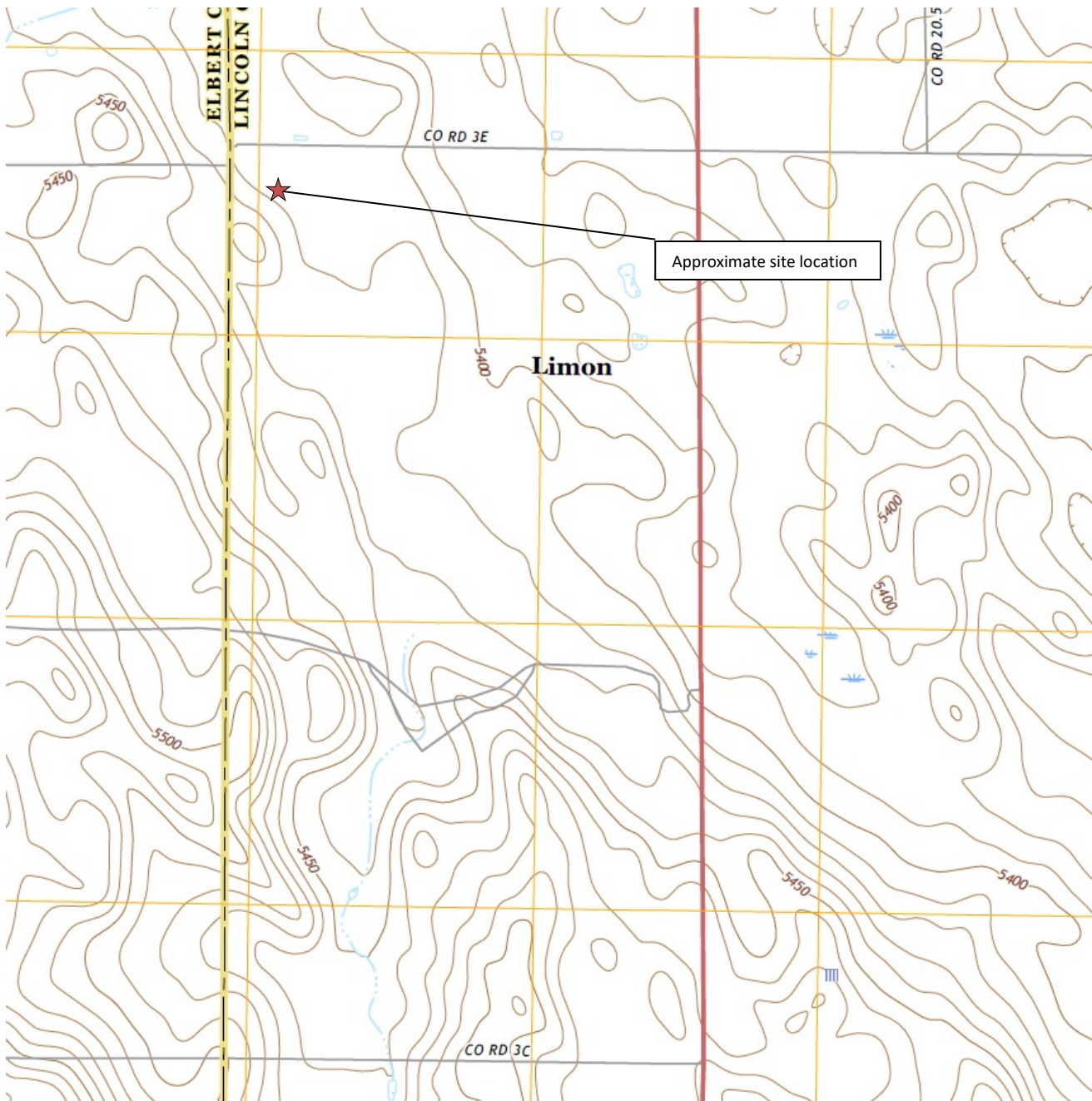
Robin Lockwood  
Project Scientist

## **FIGURES**

**Figure 1: Topographic Site Location Map**

**Figure 2: Aerial Site Location Map**

**Figure 3: Soil Analytical Map**



**Topographic Site Location Map**  
 Safranek-State #2-30  
 Site Assessment  
 39.242416 / -103.713164  
 NW¼ NW¼ SEC.30 T9S R56W 6PM  
 Lincoln County, Colorado  
 Remediation # 13586



**EAGLE**  
 ENVIRONMENTAL  
 CONSULTING, INC.

Source: USGS 7.5 Minute Topographic  
 Map: Lake, CO Quadrangle 2016

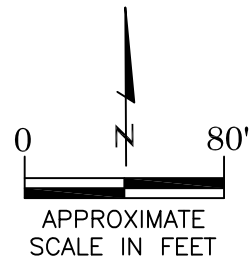
**Figure 1**





# **LEGEND**

- APPROXIMATE SAFRANEK-STATE #2-30 TANK BATTERY
- APPROXIMATE SAFRANEK-STATE #2-30 WELL HEAD
- APPROXIMATE PRODUCED WATER VAULT LOCATION (FACILITY ID 119193)
- APPROXIMATE PRODUCED "PIT" LOCATION (FACILITY ID 116147)



## AERIAL SITE LOCATION MAP

SAFRANEK-STATE #2-30  
SITE ASSESSMENT  
39.242416 / -103.713164  
NW1/4 NW1/4 SEC.30 T9S R56W 6PM  
LOGAN COUNTY, COLORADO  
REMEDIALTION # 13586

DATE:  
09/17/19

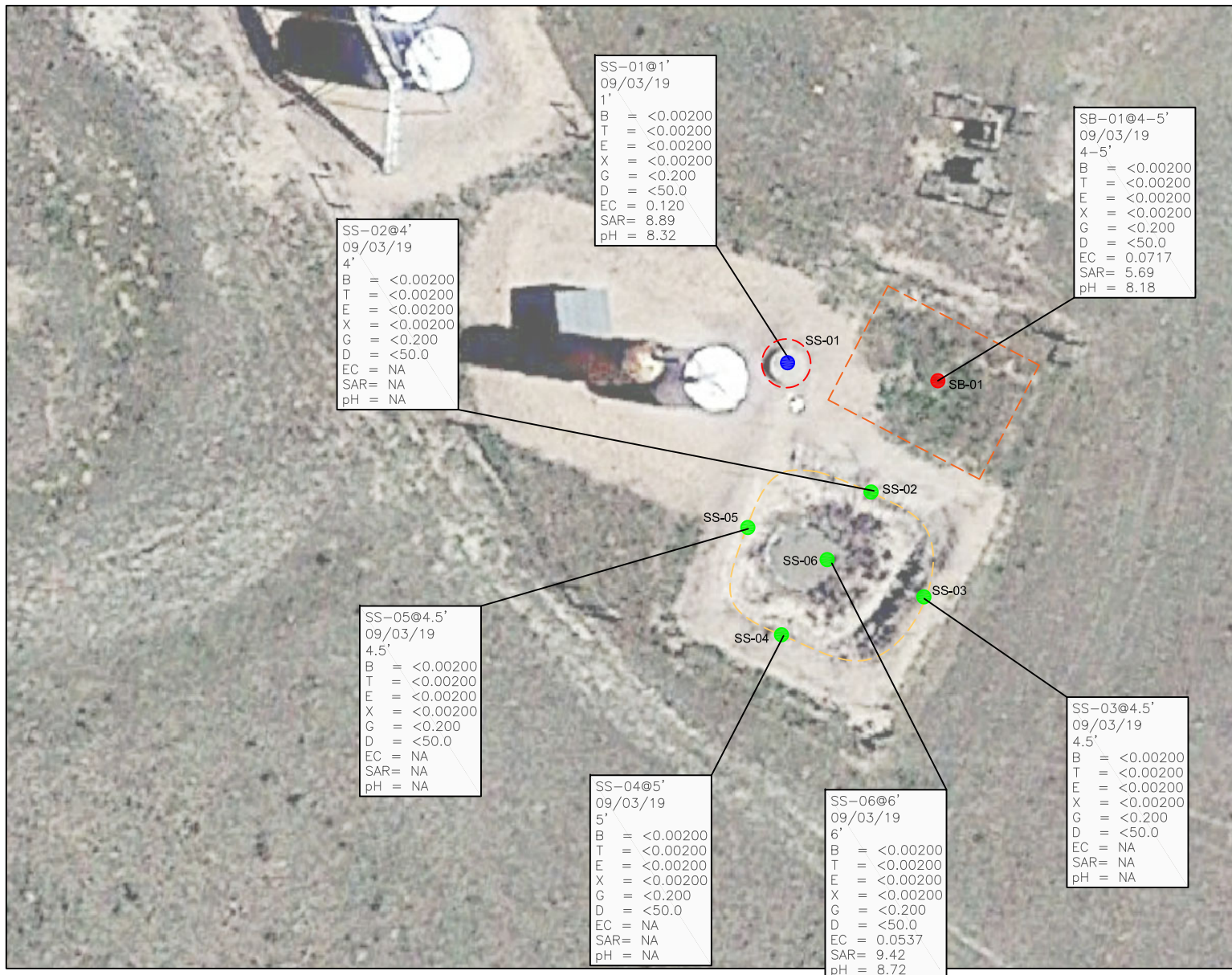
FIG. NO.  
2

DRAWN BY:  
amn



**EAGLE**  
ENVIRONMENTAL  
CONSULTING, INC.  
8000 W 44th Ave, Wheat Ridge, CO 80033  
Ph: 303-433-0479 • F: 303-325-5449





NOTE: AERIAL IMAGE NOT REFLECTIVE OF CURRENT SITE CONDITIONS. AS OF 09/03/19, ALL FACILITIES HAVE BEEN REMOVED.

#### LEGEND

- APPROXIMATE PRODUCED WATER VESSEL LOCATION
- APPROXIMATE PRODUCED WATER VESSEL SOIL SAMPLE LOCATION
- APPROXIMATE PRODUCTION "PIT" LOCATION
- APPROXIMATE PRODUCTION "PIT" SOIL SAMPLE LOCATIONS
- HISTORICAL PRODUCTION "PIT" LOCATION
- APPROXIMATE HISTORICAL PRODUCTION "PIT" SOIL SAMPLE LOCATION

#### PARAMETERS

SOIL SAMPLE LOCATION  
DATE  
DEPTH (FEET)  
B = BENZENE (mg/kg)  
T = TOLUENE (mg/kg)  
E = ETHYLBENZENE (mg/kg)  
X = TOTAL XYLENES (mg/kg)  
N = NAPHTHALENE (mg/kg)  
G = TPH-GRO (mg/kg)  
D = TPH-DRO (mg/kg)  
EC = SPECIFIC CONDUCTANCE (mmhos/cm)  
SAR= SODIUM ADSORPTION RATIO  
pH = pH (pH UNITS)

mg/kg = MILLIGRAMS PER KILOGRAM  
mmhos/cm = MILLIMHOS PER CENTIMETER

TPH-GRO = TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE ORGANICS  
TPH-DRO = TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE ORGANICS

NA = NOT ANALYZED

NOTE: VALUES PRESENTED WITH A LESS THAN SYMBOL (<) DID NOT CONTAIN CONCENTRATIONS AT OR ABOVE LABORATORY DETECTION LIMITS



APPROXIMATE  
SCALE IN FEET

SOIL ANALYTICAL MAP  
SAFRANEK-STATE #2-30  
SITE ASSESSMENT  
39.242416 / -103.713164  
NW1/4 NW1/4 SEC.30 T9S R56W 6PM  
LINCOLN COUNTY, COLORADO  
REMEDATION # 13586

DATE:  
09/17/19

DRAWN BY:  
amn

FIG.  
NO. 3



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## **TABLES**

**Table 1:     Soil Analytical Results Summary**

**TABLE 1**  
**SOIL ANALYTICAL RESULTS SUMMARY**  
**SAFRANEK-STATE #2-30**  
**SITE ASSESSMENT**  
**39.242416 / -103.713164**  
**NW1/4 NW1/4 SEC.30 T9S R56W 6PM**  
**LOGAN COUNTY, COLORADO**  
**REMEDIALTION # 13586**

Sample Location (Latitude/Longitude)	Date	Approximate Depth (feet)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	Specific Conductance (mmhos/cm)	pH (pH units)	SAR
<b>COGCC Table 910-1 Regulatory Limits (mg/kg)</b>			<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	<b>500</b>		<b>&lt;4</b>	<b>6 to 9</b>	<b>&lt;12</b>
SS-01 @ 1' (39.242536773 / -103.7131665)	09/03/19	1	<0.00200	<0.00200	<0.00200	<0.00200	<0.200	<50.0	0.120	8.32	8.89
SS-02 @ 4' (39.242475373 / -103.7131445)	09/03/19	4	<0.00200	<0.00200	<0.00200	<0.00200	<0.200	<50.0	NA	NA	NA
SS-03 @ 4.5' (39.242415465 / -103.713105006)	09/03/19	4.5	<0.00200	<0.00200	<0.00200	<0.00200	<0.200	<50.0	NA	NA	NA
SS-04 @ 5' (39.242398325 / -103.713178536)	09/03/19	5	<0.00200	<0.00200	<0.00200	<0.00200	<0.200	<50.0	NA	NA	NA
SS-05 @ 4.5' (39.242445269 / -103.713203656)	09/03/19	4.5	<0.00200	<0.00200	<0.00200	<0.00200	<0.200	<50.0	NA	NA	NA
SS-06 @ 6' (39.242410784 / -103.713151447)	09/03/19	6	<0.00200	<0.00200	<0.00200	<0.00200	<0.200	<50.0	0.0537	8.72	9.42
SB-01 @ 4-5' (39.242530642 / -103.713070325)	09/03/19	4-5.0	<0.00200	<0.00200	<0.00200	<0.00200	<0.200	<50.0	0.0717	8.18	5.69
COGCC = Colorado Oil and Gas Conservation Commission mg/kg = milligrams per kilogram mmhos/cm = millimhos per centimeter NA = Not Analyzed TPH-GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics TPH-DRO = Total Petroleum Hydrocarbons - Diesel Range Organics SAR = Sodium Adsorption Ratio Note: Values presented with a less than symbol (<) indicate concentrations were not observed at or above the laboratory reporting limit.											

## **ATTACHMENT A**

### **Soil Boring Log – SB-01**

PAGE 1 OF 1

DP - Direct Push  
HC - Hydrocarbon  
BoB - Bottom of Boring  
N/O - no odor  
N/S - no staining  
TOC - top of casing  
bgs - below ground  
surface



**EAGLE**  
ENVIRONMENTAL  
CONSULTING, INC.

8000 W 44TH AVENUE, WHEAT RIDGE, CO 80033  
Ph: 303-433-0479 • F: 303-325-5449



## **ATTACHMENT B**

### **Laboratory Analytical Report**



September 11, 2019

Eagle Environmental Consulting, Inc.

Martin C Eckert III

8000 W 44th Ave

Wheat Ridge CO 80033

Project Name - Magpie - Safraneck-State #2-30

Project Number - [none]

Attached are your analytical results for Magpie - Safraneck-State #2-30 received by Origins Laboratory, Inc. September 03, 2019. This project is associated with Origins project number Y909017-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Eagle Environmental Consulting, Inc.

8000 W 44th Ave

Wheat Ridge CO 80033

Martin C Eckert III

Project Number: [none]

Project: Magpie - Safranek-State #2-30

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS-01@1'	Y909017-01	Soil	September 3, 2019 10:05	09/03/2019 14:09
SS-02@4'	Y909017-02	Soil	September 3, 2019 10:08	09/03/2019 14:09
SS-03@4.5'	Y909017-03	Soil	September 3, 2019 10:15	09/03/2019 14:09
SS-04@5'	Y909017-04	Soil	September 3, 2019 10:23	09/03/2019 14:09
SS-05@4.5'	Y909017-05	Soil	September 3, 2019 10:30	09/03/2019 14:09
SS-06@6'	Y909017-06	Soil	September 3, 2019 10:40	09/03/2019 14:09
SB-01@4-5'	Y909017-07	Soil	September 3, 2019 10:50	09/03/2019 14:09

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*





Eagle Environmental Consulting, Inc.

8000 W 44th Ave

Wheat Ridge CO 80033

Martin C Eckert III

Project Number: [none]

Project: Magpie - Safranek-State #2-30

Origins Laboratory

F-012207-01-R1  
Effective Date: 01/09/12

## Sample Receipt Checklist

Origins Work Order: 4909017

Client: Eagle Env.

Client Project ID: Magpie - Safranek - State #2-30

Checklist Completed by: Don Lee

Shipped Via: H/D  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 7-3-18

Airbill #: NA

Matrix(s) Received: (Check all that apply): ☒ Soil/Solid ☐ Water ☐ Other: \_\_\_\_\_

Cooler Number/Temperature: -18.9 °C 1 °C 1 °C 1 °C (Describe)

Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?		<input checked="" type="checkbox"/>		<u>Sample came Dry</u>
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			<u>gm</u>
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH >10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

<sup>(1)</sup>If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) JP

Date/Time Reviewed 9/4/19

Origins Laboratory, Inc.

*Jefe Pellegrini*

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Eagle Environmental Consulting, Inc.  
8000 W 44th Ave  
Wheat Ridge CO 80033

Martin C Eckert III  
Project Number: [none]  
Project: Magpie - Safranek-State #2-30

SS-01@1'

9/3/2019 10:05:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	---------	----------	----------	-------

**Origins Laboratory, Inc.**  
**Y909017-01 (Soil)**

**BTEX/TVPH by EPA 8260D**

Benzene	ND	0.00200	mg/kg	1	B9I0308	KDK	09/03/2019	09/06/2019	U
Toluene	ND	0.00200	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.00200	"	"	"	KDK	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	107 %	70-130	"	"	"
Surrogate: Toluene-d8	101 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	99.8 %	70-130	"	"	"

**Diesel Range Organics (DRO/TEPH) by EPA 8015D**

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9I0311	KDK	09/03/2019	09/03/2019	U
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Surrogate: o-Terphenyl	78.5 %	50-150	"	"	"
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**Metals (Saturated Paste Prep)**

Calcium	2.17	me/L	1	[none]	09/04/2019	09/06/2019
Magnesium	1.07	"	"	"	"	"
Sodium	11.31	"	"	"	"	"

**pH in Soil by EPA 9045D**

pH	8.32	pH Units	1	B9I0306	DJL	09/03/2019	09/03/2019
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Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Eagle Environmental Consulting, Inc.  
8000 W 44th Ave  
Wheat Ridge CO 80033

Martin C Eckert III  
Project Number: [none]  
Project: Magpie - Safranek-State #2-30

SS-01@1'

9/3/2019 10:05:00AM

Analyte	Result	Reporting		Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
		Limit								

Origins Laboratory, Inc.  
Y909017-01 (Soil)

### SAR by 20B Saturated Paste

SAR	8.89			1		[none]		09/04/2019	09/06/2019	
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### Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.120	0.00500	mmhos/cm	1		B9I0307	TEM	09/03/2019	09/03/2019	
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Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Eagle Environmental Consulting, Inc.  
8000 W 44th Ave  
Wheat Ridge CO 80033

Martin C Eckert III  
Project Number: [none]  
Project: Magpie - Safranek-State #2-30

SS-02@4'

9/3/2019 10:08:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y909017-02 (Soil)**

**BTEX/TVPH by EPA 8260D**

Benzene	ND	0.00200	mg/kg	1	B9I0308	KDK	09/03/2019	09/06/2019	U
Toluene	ND	0.00200	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.00200	"	"	"	KDK	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	107 %	70-130	"	"	"
Surrogate: Toluene-d8	102 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	103 %	70-130	"	"	"

**Diesel Range Organics (DRO/TEPH) by EPA 8015D**

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9I0311	KDK	09/03/2019	09/05/2019	U
Surrogate: o-Terphenyl	85.6 %	50-150			"		"	"	

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.  
8000 W 44th Ave  
Wheat Ridge CO 80033

Martin C Eckert III  
Project Number: [none]  
Project: Magpie - Safranek-State #2-30

SS-03@4.5'

9/3/2019 10:15:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y909017-03 (Soil)**

**BTEX/TVPH by EPA 8260D**

Benzene	ND	0.00200	mg/kg	1	B9I0308	KDK	09/03/2019	09/06/2019	U
Toluene	ND	0.00200	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.00200	"	"	"	KDK	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	112 %	70-130	"	"	"
Surrogate: Toluene-d8	99.0 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	70-130	"	"	"

**Diesel Range Organics (DRO/TEPH) by EPA 8015D**

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9I0311	KDK	09/03/2019	09/05/2019	U
Surrogate: o-Terphenyl	71.4 %	50-150			"		"	"	

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.  
8000 W 44th Ave  
Wheat Ridge CO 80033

Martin C Eckert III  
Project Number: [none]  
Project: Magpie - Safranek-State #2-30

SS-04@5'  
9/3/2019 10:23:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y909017-04 (Soil)**

**BTEX/TVPH by EPA 8260D**

Benzene	ND	0.00200	mg/kg	1	B9I0308	KDK	09/03/2019	09/06/2019	U
Toluene	ND	0.00200	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.00200	"	"	"	KDK	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	111 %	70-130	"	"	"
Surrogate: Toluene-d8	99.9 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	70-130	"	"	"

**Diesel Range Organics (DRO/TEPH) by EPA 8015D**

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9I0311	KDK	09/03/2019	09/05/2019	U
Surrogate: o-Terphenyl	70.7 %	50-150			"		"	"	

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.  
8000 W 44th Ave  
Wheat Ridge CO 80033

Martin C Eckert III  
Project Number: [none]  
Project: Magpie - Safranek-State #2-30

SS-05@4.5'

9/3/2019 10:30:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
Y909017-05 (Soil)

**BTEX/TVPH by EPA 8260D**

Benzene	ND	0.00200	mg/kg	1	B9I0308	KDK	09/03/2019	09/06/2019	U
Toluene	ND	0.00200	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.00200	"	"	"	KDK	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	101 %	70-130			"	"	"
Surrogate: Toluene-d8	102 %	70-130			"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	70-130			"	"	"

**Diesel Range Organics (DRO/TEPH) by EPA 8015D**

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9I0311	KDK	09/03/2019	09/05/2019	U
Surrogate: o-Terphenyl	84.4 %	50-150			"	"	"		

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.  
8000 W 44th Ave  
Wheat Ridge CO 80033

Martin C Eckert III  
Project Number: [none]  
Project: Magpie - Safranek-State #2-30

SS-06@6'  
9/3/2019 10:40:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.  
Y909017-06 (Soil)

### BTEX/TVPH by EPA 8260D

Benzene	ND	0.00200	mg/kg	1	B9I0308	KDK	09/03/2019	09/06/2019	U
Toluene	ND	0.00200	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.00200	"	"	"	KDK	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	104 %	70-130	"	"	"
Surrogate: Toluene-d8	102 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	70-130	"	"	"

### Diesel Range Organics (DRO/TEPH) by EPA 8015D

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9I0311	KDK	09/03/2019	09/05/2019	U
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Surrogate: o-Terphenyl	68.0 %	50-150	"	"	"
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### Metals (Saturated Paste Prep)

Calcium	2.03	me/L	1	[none]	09/04/2019	09/06/2019
Magnesium	0.93	"	"	"	"	"
Sodium	11.46	"	"	"	"	"

### pH in Soil by EPA 9045D

pH	8.72	pH Units	1	B9I0306	DJL	09/03/2019	09/03/2019
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Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.  
8000 W 44th Ave  
Wheat Ridge CO 80033

Martin C Eckert III  
Project Number: [none]  
Project: Magpie - Safranek-State #2-30

SS-06@6'

9/3/2019 10:40:00AM

Analyte	Result	Reporting		Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
		Limit								

Origins Laboratory, Inc.  
Y909017-06 (Soil)

## SAR by 20B Saturated Paste

SAR	9.42			1		[none]		09/04/2019	09/06/2019	
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## Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0537	0.00505	mmhos/cm	1		B9I0307	TEM	09/03/2019	09/03/2019	
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Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.  
8000 W 44th Ave  
Wheat Ridge CO 80033

Martin C Eckert III  
Project Number: [none]  
Project: Magpie - Safranek-State #2-30

SB-01@4-5'  
9/3/2019 10:50:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y909017-07 (Soil)**

**BTEX/TVPH by EPA 8260D**

Benzene	ND	0.00200	mg/kg	1	B9I0308	KDK	09/03/2019	09/06/2019	U
Toluene	ND	0.00200	"	"	"	KDK	"	"	U
Ethylbenzene	ND	0.00200	"	"	"	KDK	"	"	U
Xylenes, total	ND	0.00200	"	"	"	KDK	"	"	U
Gasoline Range Hydrocarbons	ND	0.200	"	"	"	KDK	"	"	U

Surrogate: 1,2-Dichloroethane-d4	101 %	70-130	"	"	"
Surrogate: Toluene-d8	103 %	70-130	"	"	"
Surrogate: 4-Bromofluorobenzene	101 %	70-130	"	"	"

**Diesel Range Organics (DRO/TEPH) by EPA 8015D**

Diesel (C10-C28)	ND	50.0	mg/kg	1	B9I0311	KDK	09/03/2019	09/05/2019	U
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Surrogate: o-Terphenyl	83.8 %	50-150	"	"	"
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**Metals (Saturated Paste Prep)**

Calcium	1.57	me/L	1	[none]	09/04/2019	09/06/2019
Magnesium	2.07	"	"	"	"	"
Sodium	7.68	"	"	"	"	"

**pH in Soil by EPA 9045D**

pH	8.18	pH Units	1	B9I0306	DJL	09/03/2019	09/03/2019
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Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.

8000 W 44th Ave

Wheat Ridge CO 80033

Martin C Eckert III

Project Number: [none]

Project: Magpie - Safranek-State #2-30

SB-01@4-5'

9/3/2019 10:50:00AM

Analyte	Result	Reporting		Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
		Limit								

Origins Laboratory, Inc.

Y909017-07 (Soil)

## SAR by 20B Saturated Paste

SAR	5.69			1	[none]		09/04/2019	09/06/2019
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## Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0717	0.00500	mmhos/cm	1	B9I0307	TEM	09/03/2019	09/03/2019
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Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.

8000 W 44th Ave

Wheat Ridge CO 80033

Martin C Eckert III

Project Number: [none]

Project: Magpie - Safranek-State #2-30

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B9I0308 - EPA 5030 (soil)**

**Blank (B9I0308-BLK1)**

Prepared: 09/03/2019 Analyzed: 09/03/2019

Benzene	ND	0.00200	mg/kg							U
Toluene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		94.1	70-130			
Surrogate: Toluene-d8	0.11		"	0.125		92.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		95.8	70-130			

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.

8000 W 44th Ave

Wheat Ridge CO 80033

Martin C Eckert III

Project Number: [none]

Project: Magpie - Safranek-State #2-30

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9I0308 - EPA 5030 (soil)

**LCS (B9I0308-BS1)**

Prepared: 09/03/2019 Analyzed: 09/03/2019

Benzene	0.106	0.00200	mg/kg	0.100		106	70-130			
Toluene	0.0959	0.00200	"	0.100		95.9	70-130			
Ethylbenzene	0.0970	0.00200	"	0.100		97.0	70-130			
m,p-Xylene	0.168	0.00400	"	0.200		83.8	70-130			
o-Xylene	0.0914	0.00200	"	0.100		91.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		94.4	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		93.8	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.1	70-130			

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.  
8000 W 44th Ave  
Wheat Ridge CO 80033

Martin C Eckert III  
Project Number: [none]  
Project: Magpie - Safranek-State #2-30

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B9I0308 - EPA 5030 (soil)**

Matrix Spike (B9I0308-MS1)		Source: Y909009-07			Prepared: 09/03/2019 Analyzed: 09/03/2019					
Benzene	0.130	0.00200	mg/kg	0.100	0.00114	128	70-130			
Toluene	0.0967	0.00200	"	0.100	ND	96.7	70-130			
Ethylbenzene	0.0914	0.00200	"	0.100	ND	91.4	70-130			
m,p-Xylene	0.159	0.00400	"	0.200	ND	79.4	70-130			
o-Xylene	0.0889	0.00200	"	0.100	ND	88.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		100	70-130			
Surrogate: Toluene-d8	0.11		"	0.125		86.2	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.0	70-130			

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.  
8000 W 44th Ave  
Wheat Ridge CO 80033

Martin C Eckert III  
Project Number: [none]  
Project: Magpie - Safranek-State #2-30

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B9I0308 - EPA 5030 (soil)**

Matrix Spike Dup (B9I0308-MSD1)		Source: Y909009-07			Prepared: 09/03/2019 Analyzed: 09/03/2019					
Benzene	0.144	0.00200	mg/kg	0.100	0.00114	143	70-130	10.4	20	QM-07
Toluene	0.108	0.00200	"	0.100	ND	108	70-130	11.3	20	
Ethylbenzene	0.102	0.00200	"	0.100	ND	102	70-130	10.8	20	
m,p-Xylene	0.178	0.00400	"	0.200	ND	89.0	70-130	11.4	20	
o-Xylene	0.0992	0.00200	"	0.100	ND	99.2	70-130	11.0	20	
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		96.8	70-130			
Surrogate: Toluene-d8	0.11		"	0.125		86.5	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		97.8	70-130			

Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.

8000 W 44th Ave

Wheat Ridge CO 80033

Martin C Eckert III

Project Number: [none]

Project: Magpie - Safranek-State #2-30

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9I0311 - EPA 3580

Blank (B9I0311-BLK1)

Prepared: 09/03/2019 Analyzed: 09/03/2019

Diesel (C10-C28)	ND	25.0	mg/kg							U
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Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Eagle Environmental Consulting, Inc.

8000 W 44th Ave

Wheat Ridge CO 80033

Martin C Eckert III

Project Number: [none]

Project: Magpie - Safranek-State #2-30

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9I0311 - EPA 3580

**LCS (B9I0311-BS1)**

Prepared: 09/03/2019 Analyzed: 09/03/2019

Diesel (C10-C28)	923	50.0	mg/kg	1000	92.3	70-130
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Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Eagle Environmental Consulting, Inc.

8000 W 44th Ave

Wheat Ridge CO 80033

Martin C Eckert III

Project Number: [none]

Project: Magpie - Safranek-State #2-30

## Extractable Petroleum Hydrocarbons by 8015D - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9I0311 - EPA 3580

Matrix Spike (B9I0311-MS1)

Source: Y909017-01

Prepared: 09/03/2019 Analyzed: 09/03/2019

Diesel (C10-C28)	915	50.0	mg/kg	1000	17.2	89.8	70-130
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Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Eagle Environmental Consulting, Inc.

8000 W 44th Ave

Wheat Ridge CO 80033

Martin C Eckert III

Project Number: [none]

Project: Magpie - Safranek-State #2-30

## Extractable Petroleum Hydrocarbons by 8015D - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9I0311 - EPA 3580

Matrix Spike Dup (B9I0311-MSD1)		Source: Y909017-01			Prepared: 09/03/2019 Analyzed: 09/03/2019					
Diesel (C10-C28)	872	50.0	mg/kg	1000	17.2	85.5	70-130	4.77	35	

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President

Eagle Environmental Consulting, Inc.  
8000 W 44th Ave  
Wheat Ridge CO 80033

Martin C Eckert III  
Project Number: [none]  
Project: Magpie - Safranek-State #2-30

## Extractable Petroleum Hydrocarbons by 8015D - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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## Classical Chemistry Parameters - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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### Batch B9I0306 - NO PREP

#### Duplicate (B9I0306-DUP1)

Source: Y909004-01

Prepared: 09/03/2019 Analyzed: 09/03/2019

pH	7.28		pH Units		7.36			1.09	25	
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### Batch B9I0307 - NO PREP

#### Blank (B9I0307-BLK1)

Prepared: 09/03/2019 Analyzed: 09/03/2019

Specific Conductance (EC)	0.00130	0.00500	mmhos/cm							
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#### Duplicate (B9I0307-DUP1)

Source: Y909004-01

Prepared: 09/03/2019 Analyzed: 09/03/2019

Specific Conductance (EC)	0.109	0.00507	mmhos/cm		0.115			5.19	25	
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Origins Laboratory, Inc.



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Eagle Environmental Consulting, Inc.

8000 W 44th Ave

Wheat Ridge CO 80033

Martin C Eckert III

Project Number: [none]

Project: Magpie - Safranek-State #2-30

### Notes and Definitions

U Sample is Non-Detect.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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