

September 28, 2017

RYAN MULLER
ARCADIS U.S., INC.
2999 OAK ROAD, SUITE 300
WALNUT CREEK, CA 94597

RE: BARNSDALL CTB

Enclosed are the results of analyses for samples received by the laboratory on 09/11/17 15:05.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-9. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/ga/lab accred certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2 Total Haloacetic Acids (HAA-5)
Method EPA 524.2 Total Trihalomethanes (TTHM)
Method EPA 524.4 Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B Total Coliform and E. coli (Colilert MMO-MUG)

Method EPA 524.2 Regulated VOCs and Total Trihalomethanes (TTHM)

Method EPA 552.2 Total Haloacetic Acids (HAA-5)

Celey D. Keine

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



ARCADIS U.S., INC. 2999 OAK ROAD, SUITE 300 WALNUT CREEK CA, 94597 Project: BARNSDALL CTB
Project Number: NONE GIVEN
Project Manager: RYAN MULLER

Fax To: NOT GIVEN

Reported: 28-Sep-17 11:54

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
NORTH WALL 1	H702410-01	Soil	11-Sep-17 11:30	11-Sep-17 15:05
NORTH WALL 2	H702410-02	Soil	11-Sep-17 11:32	11-Sep-17 15:05
EAST WALL 4	H702410-03	Soil	11-Sep-17 11:36	11-Sep-17 15:05
SOUTH WALL 6	H702410-04	Soil	11-Sep-17 11:40	11-Sep-17 15:05
SOUTH WALL 7	H702410-05	Soil	11-Sep-17 11:42	11-Sep-17 15:05
SOUTH WALL 8	H702410-06	Soil	11-Sep-17 11:44	11-Sep-17 15:05
BOTTOM 1	H702410-07	Soil	11-Sep-17 13:15	11-Sep-17 15:05
BOTTOM 2	H702410-08	Soil	11-Sep-17 13:17	11-Sep-17 15:05
NORTH WALL 3	H702410-09	Soil	11-Sep-17 11:34	11-Sep-17 15:05
WEST WALL 5	H702410-10	Soil	11-Sep-17 13:30	11-Sep-17 15:05

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Analytical Results For:

ARCADIS U.S., INC. 2999 OAK ROAD, SUITE 300 WALNUT CREEK CA, 94597 Project: BARNSDALL CTB
Project Number: NONE GIVEN
Project Manager: RYAN MULLER

lanager: RYAN MULLER Fax To: NOT GIVEN

NORTH WALL 1 H702410-01 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardin	al Laborat	ories					
Volatile Organic Compounds b	y EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Total Xylenes*	< 0.150		0.150	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			99.5 %	72-	148	7091206	MS	12-Sep-17	8021B	
Petroleum Hydrocarbons by G	C FID									
GRO C6-C10	< 50.0		50.0	mg/kg	5	7091201	MS	12-Sep-17	8015B	
DRO >C10-C28	209		50.0	mg/kg	5	7091201	MS	12-Sep-17	8015B	QR-03
EXT DRO >C28-C36	74.3		50.0	mg/kg	5	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctane			79.5 %	28.3	-164	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctadecane			111 %	34.7	-157	7091201	MS	12-Sep-17	8015B	
			Green Anal	lytical Lab	oratories					
Soluble (DI Water Extraction)										
Chloride	728		20.0	mg/kg wet	20	B709128	JDA	25-Sep-17	EPA300.0	

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Analytical Results For:

ARCADIS U.S., INC. 2999 OAK ROAD, SUITE 300 WALNUT CREEK CA, 94597 Project: BARNSDALL CTB
Project Number: NONE GIVEN
Project Manager: RYAN MULLER

Project Manager: RYAN MULLER Fax To: NOT GIVEN

NORTH WALL 2 H702410-02 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	al Laborat	ories					
Volatile Organic Compounds b	y EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Total Xylenes*	< 0.150		0.150	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			105 %	72-	148	7091206	MS	12-Sep-17	8021B	
Petroleum Hydrocarbons by G	C FID									
GRO C6-C10	< 50.0		50.0	mg/kg	5	7091201	MS	12-Sep-17	8015B	
DRO >C10-C28	1990		50.0	mg/kg	5	7091201	MS	12-Sep-17	8015B	
EXT DRO >C28-C36	615		50.0	mg/kg	5	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctane			82.6 %	28.3-	-164	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctadecane			137 %	34.7-	-157	7091201	MS	12-Sep-17	8015B	
			Green Anal	ytical Lab	oratories					
Soluble (DI Water Extraction)										
Chloride	1100		50.0	mg/kg wet	50	B709128	JDA	25-Sep-17	EPA300.0	

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Analytical Results For:

ARCADIS U.S., INC. 2999 OAK ROAD, SUITE 300 WALNUT CREEK CA, 94597 Project: BARNSDALL CTB
Project Number: NONE GIVEN
Project Manager: PVAN MULLER

Project Manager: RYAN MULLER Fax To: NOT GIVEN

EAST WALL 4 H702410-03 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	al Laborato	ories					
Volatile Organic Compounds by	EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Total Xylenes*	< 0.150		0.150	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			101 %	72-1	48	7091206	MS	12-Sep-17	8021B	
Petroleum Hydrocarbons by GC	FID									
GRO C6-C10	< 50.0		50.0	mg/kg	5	7091201	MS	12-Sep-17	8015B	
DRO >C10-C28	576		50.0	mg/kg	5	7091201	MS	12-Sep-17	8015B	
EXT DRO >C28-C36	296		50.0	mg/kg	5	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctane			74.3 %	28.3-	164	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctadecane			108 %	34.7-	157	7091201	MS	12-Sep-17	8015B	
			Green Anal	ytical Labo	oratories					
Soluble (DI Water Extraction)										
Chloride	1700		50.0	mg/kg wet	50	B709128	JDA	25-Sep-17	EPA300.0	

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Analytical Results For:

ARCADIS U.S., INC. 2999 OAK ROAD, SUITE 300 WALNUT CREEK CA, 94597 Project: BARNSDALL CTB
Project Number: NONE GIVEN
Project Manager: PVAN MULLER

Project Manager: RYAN MULLER
Fax To: NOT GIVEN

SOUTH WALL 6 H702410-04 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	al Laborato	ories					
Volatile Organic Compounds by	EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Total Xylenes*	< 0.150		0.150	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			106 %	72-1	48	7091206	MS	12-Sep-17	8021B	
Petroleum Hydrocarbons by GC	FID									
GRO C6-C10	<10.0		10.0	mg/kg	1	7091201	MS	12-Sep-17	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	7091201	MS	12-Sep-17	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctane			84.0 %	28.3-	164	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctadecane			92.2 %	34.7-	157	7091201	MS	12-Sep-17	8015B	
			Green Anal	ytical Labo	oratories					
Soluble (DI Water Extraction)										
Chloride	369		10.0	mg/kg wet	10	B709128	JDA	22-Sep-17	EPA300.0	

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ARCADIS U.S., INC. 2999 OAK ROAD, SUITE 300 WALNUT CREEK CA, 94597 Project: BARNSDALL CTB
Project Number: NONE GIVEN
Project Manager: RYAN MULLER

lanager: RYAN MULLER
Fax To: NOT GIVEN

Reported: 28-Sep-17 11:54

SOUTH WALL 7 H702410-05 (Soil)

Analyte	Result	MDL I	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardin	al Laborat	ories					
Volatile Organic Compounds by	EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Total Xylenes*	< 0.150		0.150	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			105 %	72-1	148	7091206	MS	12-Sep-17	8021B	
Petroleum Hydrocarbons by GC	FID									
GRO C6-C10	<10.0		10.0	mg/kg	1	7091201	MS	12-Sep-17	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	7091201	MS	12-Sep-17	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctane			90.5 %	28.3-	164	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctadecane			99.6 %	34.7-	-157	7091201	MS	12-Sep-17	8015B	
		G	Freen Anal	ytical Lab	oratories					
Soluble (DI Water Extraction)										
Chloride	218		10.0	mg/kg wet	10	B709128	JDA	22-Sep-17	EPA300.0	

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ARCADIS U.S., INC. 2999 OAK ROAD, SUITE 300 WALNUT CREEK CA, 94597 Project: BARNSDALL CTB
Project Number: NONE GIVEN
Project Manager: PVAN MULLER

Project Manager: RYAN MULLER
Fax To: NOT GIVEN

Reported: 28-Sep-17 11:54

SOUTH WALL 8 H702410-06 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	al Laborat	ories					
Volatile Organic Compounds l	oy EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Total Xylenes*	< 0.150		0.150	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Surrogate: 4-Bromofluorobenzene (PID))		103 %	72-1	148	7091206	MS	12-Sep-17	8021B	
Petroleum Hydrocarbons by C	GC FID									
GRO C6-C10	<10.0		10.0	mg/kg	1	7091201	MS	12-Sep-17	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	7091201	MS	12-Sep-17	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctane			85.2 %	28.3-	164	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctadecane			91.7 %	34.7-	-157	7091201	MS	12-Sep-17	8015B	
			Green Anal	ytical Labo	oratories					
Soluble (DI Water Extraction)										
Chloride	35.7		10.0	mg/kg wet	10	B709128	JDA	22-Sep-17	EPA300.0	

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Analytical Results For:

ARCADIS U.S., INC. 2999 OAK ROAD, SUITE 300 WALNUT CREEK CA, 94597 Project: BARNSDALL CTB
Project Number: NONE GIVEN
Project Manager: DVAN MULLER

Project Manager: RYAN MULLER
Fax To: NOT GIVEN

BOTTOM 1 H702410-07 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	ıl Laborat	ories					
Volatile Organic Compounds	by EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Total Xylenes*	< 0.150		0.150	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Surrogate: 4-Bromofluorobenzene (PID))		102 %	72-	148	7091206	MS	12-Sep-17	8021B	
Petroleum Hydrocarbons by C	GC FID									
GRO C6-C10	< 50.0		50.0	mg/kg	5	7091201	MS	12-Sep-17	8015B	
DRO >C10-C28	771		50.0	mg/kg	5	7091201	MS	12-Sep-17	8015B	
EXT DRO >C28-C36	98.4		50.0	mg/kg	5	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctane			83.3 %	28.3-	-164	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctadecane			104 %	34.7-	-157	7091201	MS	12-Sep-17	8015B	
			Green Anal	ytical Lab	oratories					
Soluble (DI Water Extraction))									
Chloride	2480		100	mg/kg wet	100	B709128	JDA	25-Sep-17	EPA300.0	

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Analytical Results For:

ARCADIS U.S., INC. 2999 OAK ROAD, SUITE 300 WALNUT CREEK CA, 94597 Project: BARNSDALL CTB
Project Number: NONE GIVEN
Project Manager: RYAN MULLER

Fax To: NOT GIVEN

BOTTOM 2 H702410-08 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	al Laborat	ories					
Volatile Organic Compounds by	EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Total Xylenes*	< 0.150		0.150	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			102 %	72-1	48	7091206	MS	12-Sep-17	8021B	
Petroleum Hydrocarbons by GC	FID									
GRO C6-C10	<10.0		10.0	mg/kg	1	7091201	MS	12-Sep-17	8015B	
DRO >C10-C28	<10.0		10.0	mg/kg	1	7091201	MS	12-Sep-17	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctane			89.6 %	28.3-	164	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctadecane			97.0 %	34.7-	157	7091201	MS	12-Sep-17	8015B	
			Green Anal	ytical Labo	oratories					
Soluble (DI Water Extraction)										
Chloride	1730		50.0	mg/kg wet	50	B709128	JDA	25-Sep-17	EPA300.0	

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ARCADIS U.S., INC. 2999 OAK ROAD, SUITE 300 WALNUT CREEK CA, 94597 Project: BARNSDALL CTB
Project Number: NONE GIVEN
Project Manager: DVAN MULLER

Project Manager: RYAN MULLER
Fax To: NOT GIVEN

Reported: 28-Sep-17 11:54

NORTH WALL 3 H702410-09 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardin	al Laborat	ories					
Volatile Organic Compounds b	y EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Total Xylenes*	< 0.150		0.150	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	7091206	MS	12-Sep-17	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			101 %	72-	148	7091206	MS	12-Sep-17	8021B	
Petroleum Hydrocarbons by G	C FID									
GRO C6-C10	< 50.0		50.0	mg/kg	5	7091201	MS	12-Sep-17	8015B	
DRO >C10-C28	1400		50.0	mg/kg	5	7091201	MS	12-Sep-17	8015B	
EXT DRO >C28-C36	489		50.0	mg/kg	5	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctane			81.5 %	28.3-	-164	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctadecane			116 %	34.7-	-157	7091201	MS	12-Sep-17	8015B	
			Green Anal	ytical Lab	oratories					
Soluble (DI Water Extraction)										
Chloride	7460		200	mg/kg wet	200	B709128	JDA	25-Sep-17	EPA300.0	

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Analytical Results For:

ARCADIS U.S., INC. 2999 OAK ROAD, SUITE 300 WALNUT CREEK CA, 94597 Project: BARNSDALL CTB
Project Number: NONE GIVEN
Project Manager: RYAN MULLER

Fax To: NOT GIVEN

NONE GIVEN 28-Sep-17 11:54
RYAN MULLER

WEST WALL 5 H702410-10 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
			Cardina	al Laborat	ories					
Volatile Organic Compounds by	EPA Method	8021								
Benzene*	< 0.050		0.050	mg/kg	50	7091301	MS	13-Sep-17	8021B	
Toluene*	< 0.050		0.050	mg/kg	50	7091301	MS	13-Sep-17	8021B	
Ethylbenzene*	< 0.050		0.050	mg/kg	50	7091301	MS	13-Sep-17	8021B	
Total Xylenes*	< 0.150		0.150	mg/kg	50	7091301	MS	13-Sep-17	8021B	
Total BTEX	< 0.300		0.300	mg/kg	50	7091301	MS	13-Sep-17	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			103 %	72-1	48	7091301	MS	13-Sep-17	8021B	
Petroleum Hydrocarbons by GC	FID									
GRO C6-C10	< 50.0		50.0	mg/kg	5	7091201	MS	12-Sep-17	8015B	
DRO >C10-C28	92.1		50.0	mg/kg	5	7091201	MS	12-Sep-17	8015B	
EXT DRO >C28-C36	< 50.0		50.0	mg/kg	5	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctane			100 %	28.3-	164	7091201	MS	12-Sep-17	8015B	
Surrogate: 1-Chlorooctadecane			119 %	34.7-	157	7091201	MS	12-Sep-17	8015B	
			Green Anal	ytical Labo	oratories					
Soluble (DI Water Extraction)										
Chloride	307		10.0	mg/kg wet	10	B709128	JDA	22-Sep-17	EPA300.0	

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ARCADIS U.S., INC. 2999 OAK ROAD, SUITE 300 WALNUT CREEK CA, 94597 Project: BARNSDALL CTB
Project Number: NONE GIVEN
Project Manager: RYAN MULLER

Fax To: NOT GIVEN

Reported: 28-Sep-17 11:54

Volatile Organic Compounds by EPA Method 8021 - Quality Control

Cardinal Laboratories

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 7091206 - Volatiles										
Blank (7091206-BLK1)				Prepared &	Analyzed:	12-Sep-17				
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	ND		mg/kg	0.0500		99.3	72-148			
LCS (7091206-BS1)				Prepared &	Analyzed:	12-Sep-17				
Benzene	1.63	0.050	mg/kg	2.00		81.4	79.5-124			
Toluene	1.71	0.050	mg/kg	2.00		85.7	75.5-127			
Ethylbenzene	1.89	0.050	mg/kg	2.00		94.3	77.7-125			
Total Xylenes	5.70	0.150	mg/kg	6.00		94.9	70.9-124			
Surrogate: 4-Bromofluorobenzene (PID)	0.0489		mg/kg	0.0500		97.8	72-148			
LCS Dup (7091206-BSD1)				Prepared &	Analyzed:	12-Sep-17				
Benzene	1.62	0.050	mg/kg	2.00		81.2	79.5-124	0.180	6.5	
Toluene	1.75	0.050	mg/kg	2.00		87.5	75.5-127	2.03	7.02	
Ethylbenzene	1.91	0.050	mg/kg	2.00		95.5	77.7-125	1.28	7.83	
Total Xylenes	5.76	0.150	mg/kg	6.00		96.0	70.9-124	1.09	7.78	
Surrogate: 4-Bromofluorobenzene (PID)	0.0489		mg/kg	0.0500		97.8	72-148			
Batch 7091301 - Volatiles										
Blank (7091301-BLK1)				Prepared &	: Analyzed:	13-Sep-17				
Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	ND		mg/kg	0.0500		99.8	72-148			

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ARCADIS U.S., INC. 2999 OAK ROAD, SUITE 300 WALNUT CREEK CA, 94597 Project: BARNSDALL CTB
Project Number: NONE GIVEN
Project Manager: RYAN MULLER

Fax To: NOT GIVEN

Reported: 28-Sep-17 11:54

Volatile Organic Compounds by EPA Method 8021 - Quality Control

Cardinal Laboratories

		Reporting		Spike	Source		%REC		RPD			
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes		
Batch 7091301 - Volatiles												
LCS (7091301-BS1)	Prepared & Analyzed: 13-Sep-17											
Benzene	1.79	0.050	mg/kg	2.00		89.6	79.5-124					
Toluene	1.93	0.050	mg/kg	2.00		96.3	75.5-127					
Ethylbenzene	2.12	0.050	mg/kg	2.00		106	77.7-125					
Total Xylenes	6.32	0.150	mg/kg	6.00		105	70.9-124					
Surrogate: 4-Bromofluorobenzene (PID)	0.0493		mg/kg	0.0500		98.5	72-148					
LCS Dup (7091301-BSD1)				Prepared &	Analyzed:	13-Sep-17						
Benzene	1.82	0.050	mg/kg	2.00		91.0	79.5-124	1.54	6.5			
Toluene	1.96	0.050	mg/kg	2.00		98.2	75.5-127	1.98	7.02			
Ethylbenzene	2.15	0.050	mg/kg	2.00		108	77.7-125	1.67	7.83			
Total Xylenes	6.48	0.150	mg/kg	6.00		108	70.9-124	2.50	7.78			
Surrogate: 4-Bromofluorobenzene (PID)	0.0494		mg/kg	0.0500		98.9	72-148					

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ARCADIS U.S., INC. 2999 OAK ROAD, SUITE 300 WALNUT CREEK CA, 94597 Project: BARNSDALL CTB
Project Number: NONE GIVEN
Project Manager: RYAN MULLER

Fax To: NOT GIVEN

Reported: 28-Sep-17 11:54

Petroleum Hydrocarbons by GC FID - Quality Control

Cardinal Laboratories

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch 7091201 - General Prep - Organics										

DII- (7001201 DI I/1)				D J & A	l J. 12 C 15	7			
Blank (7091201-BLK1)				Prepared & Ana	iyzeu: 12-Sep-17	<u> </u>			
GRO C6-C10	ND	10.0	mg/kg						
DRO >C10-C28	ND	10.0	mg/kg						
EXT DRO >C28-C35	ND	10.0	mg/kg						
EXT DRO >C28-C36	ND	10.0	mg/kg						
Total TPH C6-C28	ND	10.0	mg/kg						
Surrogate: 1-Chlorooctane	46.4		mg/kg	50.0	92.8	28.3-164			
Surrogate: 1-Chlorooctadecane	50.4		mg/kg	50.0	101	34.7-157			
LCS (7091201-BS1)				Prepared & Anal	lyzed: 12-Sep-17	7			
GRO C6-C10	180	10.0	mg/kg	200	89.8	76.6-119			
DRO >C10-C28	196	10.0	mg/kg	200	98.0	81.4-124			
Total TPH C6-C28	376	10.0	mg/kg	400	93.9	79.4-121			
Surrogate: 1-Chlorooctane	50.2		mg/kg	50.0	100	28.3-164			
Surrogate: 1-Chlorooctadecane	55.3		mg/kg	50.0	111	34.7-157			
LCS Dup (7091201-BSD1)				Prepared & Anal	lyzed: 12-Sep-17	7			
GRO C6-C10	178	10.0	mg/kg	200	89.0	76.6-119	0.881	7.94	
DRO >C10-C28	193	10.0	mg/kg	200	96.3	81.4-124	1.76	9.83	
Total TPH C6-C28	371	10.0	mg/kg	400	92.7	79.4-121	1.34	8.57	
Surrogate: 1-Chlorooctane	49.4		mg/kg	50.0	98.8	28.3-164			
Surrogate: 1-Chlorooctadecane	53.8		mg/kg	50.0	108	34.7-157			

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%REC



Analytical Results For:

ARCADIS U.S., INC. 2999 OAK ROAD, SUITE 300 WALNUT CREEK CA, 94597 Project: BARNSDALL CTB
Project Number: NONE GIVEN
Project Manager: RYAN MULLER

Reported: 28-Sep-17 11:54

RPD

Fax To: NOT GIVEN

Spike

Source

Soluble (DI Water Extraction) - Quality Control

Green Analytical Laboratories

Reporting

Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch B709128 - General Prep - Wet Chem										
Blank (B709128-BLK1)				Prepared: 1	8-Sep-17 A	Analyzed: 22	?-Sep-17			
Chloride	ND	10.0	mg/kg wet							
LCS (B709128-BS1)				Prepared: 1	8-Sep-17 A	Analyzed: 22	?-Sep-17			
Chloride	242	10.0	mg/kg wet	250		96.8	85-115			
LCS Dup (B709128-BSD1)				Prepared: 1	8-Sep-17 A	Analyzed: 22	?-Sep-17			
Chloride	240	10.0	mg/kg wet	250		95.9	85-115	0.980	20	

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Notes and Definitions

QR-03 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch

accepted based on LCS and/or LCSD recovery and/or RPD values.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

** Samples not received at proper temperature of 6°C or below.

*** Insufficient time to reach temperature.

- Chloride by SM4500Cl-B does not require samples be received at or below 6°C

Samples reported on an as received basis (wet) unless otherwise noted on report

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Distribution: WH	Condition/Cooler Temp:	0		☑ Intact ☐ Not Intact	ody Seal (V)	Dime	Price				-	9/11 1134 / 5	9/11 13/7 / 5	9/11 1315 / 5	9/11 1144 / 5	9/11/142 / 5	9 11 1140 / 5	9/11/11/36 / 5	9/11 1132 / 5	9 11 1130 / 5	те С	Type (Y)	Sampler's Signature:	THUM IN IN	2	E-mail Address:	Faxc	2	Telephone:		CHAIN
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20730826 CofC AR Form 01.12.2007

Distribution: