

#### Laboratory Analytical Results Summary Crossroads AWC Pipeline

		Sample	SP1 @ 1'	SP1 @ 4'	SP1 @ 6'	SP1 @ 8'	SP1 @ 11'	SP1 @ 13'	SP1 @ 18'
Analyte	Method	Date	8/8/17	8/8/17	8/8/17	8/8/17	8/8/17	8/8/17	3/14/18
			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Benzene	BTEX 8021B		<0.500	1.72	<0.400	<0.050	<0.050	< 0.050	<0.050
Toluene	BTEX 8021B		5.71	16.7	6.25	< 0.050	< 0.050	< 0.050	<0.050
Ethylbenzene	BTEX 8021B		7.17	13.3	9.79	< 0.050	< 0.050	< 0.050	<0.050
Total Xylenes	BTEX 8021B		46.7	72.1	43.6	<0.150	<0.150	<0.150	<0.150
Total BTEX	BTEX 8021B		59.6	104	59.7	< 0.300	< 0.300	<0.300	<0.300
Chloride	SM4500CI-B		64	368	336	256	176	192	<16.0
GRO	TPH 8015M		2960	3020	4530	<10.0	<10.0	<10.0	<10.0
DRO	TPH 8015M		13700	9230	17300	20.1	77.1	68.3	<10.0
EXT DRO	TPH 8015M		1510	926	1750	21.5	13.5	12	<10.0

		Sample	SP2 @ 1'	SP2 @ 4'	SP2 @ 6'	SP2 @ 8'	SP2 @ 11'	SP2 @ 13'	SP2 @ 18'
Analyte	Method	Date	8/8/17	8/8/17	8/8/17	8/8/17	8/8/17	8/8/17	1/17/18
			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Benzene	BTEX 8021B		0.51	0.603	0.544	<0.050	< 0.050	<0.050	<0.050
Toluene	BTEX 8021B		8.26	8.76	7.43	< 0.050	< 0.050	<0.050	<0.050
Ethylbenzene	BTEX 8021B		10.4	10.9	10.5	< 0.050	< 0.050	< 0.050	<0.050
Total Xylenes	BTEX 8021B		52	53.6	45.8	<0.150	<0.150	<0.150	<0.150
Total BTEX	BTEX 8021B		71.2	73.8	64.3	< 0.300	< 0.300	< 0.300	< 0.300
Chloride	SM4500CI-B		32	336	384	240	240	160	176
GRO	TPH 8015M		4700	3580	4480	<10.0	<10.0	<10.0	<10.0
DRO	TPH 8015M		18100	11900	17600	29.3	28.5	69.7	<10.0
EXT DRO	TPH 8015M		1770	1220	1820	25.1	<10.0	11.6	<10.0

		Sample	SP3 @ 1'	SP3 @ 2'	SP3 @ 3'	SP3 @ 5'	SP3 @ 10'
Analyte	Method	Date	8/8/17	8/8/17	8/8/17	1/17/18	1/17/18
			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Benzene	BTEX 8021B		<0.050	<0.050	<0.050	< 0.050	< 0.050
Toluene	BTEX 8021B		<0.050	<0.050	<0.050	< 0.050	<0.050
Ethylbenzene	BTEX 8021B		<0.050	<0.050	<0.050	<0.050	< 0.050
Total Xylenes	BTEX 8021B		<0.150	<0.150	0.18	<0.150	<0.150
Total BTEX	BTEX 8021B		<0.300	<0.300	<0.300	<0.300	<0.300
Chloride	SM4500CI-B		32	16	64	176	128
GRO	TPH 8015M		<10.0	<10.0	<10.0	<10.0	<10.0
DRO	TPH 8015M		38.8	<10.0	51.7	<10.0	<10.0
EXT DRO	TPH 8015M		10.2	<10.0	14.9	<10.0	<10.0

		Sample	SP4 @ 1'	SP4 @ 2'	SP4 @ 3'	SP4 @ 5'	SP4 @ 10'
Analyte	Method	Date	8/8/17	8/8/17	8/8/17	1/17/18	1/17/18
			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Benzene	BTEX 8021B		<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	BTEX 8021B		<0.050	<0.050	<0.050	<0.050	<0.050
Ethylbenzene	BTEX 8021B		<0.050	<0.050	<0.050	< 0.050	<0.050
Total Xylenes	BTEX 8021B		<0.150	<0.150	0.178	<0.150	<0.150
Total BTEX	BTEX 8021B		< 0.300	< 0.300	<0.300	< 0.300	< 0.300
Chloride	SM4500CI-B		16	<16.0	64	160	144
GRO	TPH 8015M		<10.0	<10.0	<10.0	<10.0	<10.0
DRO	TPH 8015M		16.1	<10.0	45.5	<10.0	<10.0
EXT DRO	TPH 8015M		<10.0	<10.0	12.8	<10.0	<10.0

		Sample	SP5 @ 1'	SP5 @ 2'	SP5 @ 3'	SP5 @ 4'	SP5 @ 5'	SP5 @ 10'	SP5 @ 15'
Analyte	Method	Date	8/9/17	89/17	8/9/17	1/18/18	1/18/18	1/18/18	1/18/18
			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Benzene	BTEX 8021B		13.3	5.52	6.77	<0.050	<0.050	< 0.050	<0.050
Toluene	BTEX 8021B		103	59.3	41.7	< 0.050	< 0.050	< 0.050	< 0.050
Ethylbenzene	BTEX 8021B		78.1	41.1	25.1	< 0.050	<0.050	< 0.050	<0.050
Total Xylenes	BTEX 8021B		276	207	136	<0.150	<0.150	<0.150	<0.150
Total BTEX	BTEX 8021B		470	313	209	< 0.300	< 0.300	< 0.300	< 0.300
Chloride	SM4500CI-B		32	16	32	16	32	16	32
GRO	TPH 8015M		12500	7350	3240	<10.0	<10.0	<10.0	<10.0
DRO	TPH 8015M		26400	20200	8680	<10.0	<10.0	<10.0	<10.0
EXT DRO	TPH 8015M		2590	2030	1100	<10.0	<10.0	<10.0	<10.0

		Sample	SP6 @ 1'	SP6 @ 2'	SP6 @ 3'	SP6 @ 4'	SP6 @ 5'	SP6 @ 10'	SP6 @ 15'
Analyte	Method	Date	8/9/17	89/17	8/9/17	1/18/18	1/18/18	1/18/18	1/18/18
			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Benzene	BTEX 8021B		< 0.050	< 0.050	< 0.050	< 0.050	<0.050	< 0.050	<0.050
Toluene	BTEX 8021B		0.064	< 0.050	< 0.050	< 0.050	<0.050	< 0.050	<0.050
Ethylbenzene	BTEX 8021B		< 0.050	< 0.050	< 0.050	< 0.050	<0.050	< 0.050	<0.050
Total Xylenes	BTEX 8021B		0.163	0.263	0.347	<0.150	<0.150	<0.150	<0.150
Total BTEX	BTEX 8021B		< 0.300	< 0.300	0.347	< 0.300	< 0.300	< 0.300	< 0.300
Chloride	SM4500CI-B		16	<16.0	<16.0	<16.0	<16.0	<16.0	16
GRO	TPH 8015M		<10.0	<10.0	12.3	<10.0	<10.0	<10.0	<10.0
DRO	TPH 8015M		346	863	1350	<10.0	<10.0	<10.0	<10.0
EXT DRO	TPH 8015M		82.6	188	312	<10.0	<10.0	<10.0	<10.0

		Sample	SP7 @ 1'	SP7 @ 2'	SP7 @ 3'	SP7 @ 4'	SP7 @ 6'	SP7 @ 8'	SP7 @ 10'	SP7 @ 15'	SP7 @ 20'
Analyte	Method	Date	8/9/17	89/17	8/9/17	3/14/18	3/14/18	3/14/18	3/14/18	3/14/18	3/14/18
			mg/Kg	mg/Kg	mg/Kg						
Benzene	BTEX 8021B		15.4	10.3	12.2	4.79	6.47	<0.050	< 0.050	<0.050	<0.050
Toluene	BTEX 8021B		107	69.7	71.6	33.6	47.5	0.169	< 0.050	< 0.050	0.053
Ethylbenzene	BTEX 8021B		64.6	39.9	42.6	16.3	29	0.408	< 0.050	<0.050	<0.050
Total Xylenes	BTEX 8021B		267	198	212	116	128	2.22	<0.150	<0.150	0.221
Total BTEX	BTEX 8021B		454	318	338	171	211	2.79	< 0.300	<0.300	<0.300
Chloride	SM4500CI-B		16	16	<16.0	<16.0	<16.0	32	<16.0	32	32
GRO	TPH 8015M		10000	6910	6620	2680	3030	94.1	<10.0	<10.0	<10.0
DRO	TPH 8015M		26100	24200	24400	6980	6940	784	<10.0	<10.0	<10.0
EXT DRO	TPH 8015M		2840	2960	2930	616	658	83.2	<10.0	<10.0	<10.0

		Sample	SP8 @ 1'	SP8 @ 2'	SP8 @ 3'	SP8 @ 4'	SP8 @ 6'	SP8 @ 8'	SP8 @ 10'	SP8 @ 15'	SP8 @ 20'
Analyte	Method	Date	8/9/17	89/17	8/9/17	3/14/18	3/14/18	3/14/18	3/14/18	3/14/18	3/14/18
			mg/Kg	mg/Kg	mg/Kg						
Benzene	BTEX 8021B		<5.00	5.9	6.05	1.25	<0.050	<0.050	< 0.050	<0.050	<0.050
Toluene	BTEX 8021B		40.4	44.2	51.1	14.4	6.48	0.386	0.12	0.301	<0.050
Ethylbenzene	BTEX 8021B		26.8	30.5	34	10.4	8.26	0.557	0.141	0.214	<0.050
Total Xylenes	BTEX 8021B		189	150	168	72.5	40.7	3.3	0.797	1.21	0.194
Total BTEX	BTEX 8021B		256	231	259	98.5	55.4	4.24	1.06	1.73	<0.300
Chloride	SM4500CI-B		<16.0	<16.0	16	<16.0	32	<16.0	<16.0	32	<16.0
GRO	TPH 8015M		7490	5360	5110	2060	1010	164	<10.0	<10.0	<10.0
DRO	TPH 8015M		23400	19300	18000	6590	3650	1230	<10.0	<10.0	<10.0
EXT DRO	TPH 8015M		2530	2010	2000	555	320	121	<10.0	<10.0	<10.0

#### Laboratory Analytical Results Summary Crossroads AWC Pipeline

		Sample	SP9 @ 1'	SP9 @ 2'	SP9 @ 3'	SP9 @ 4'	SP9 @ 5'	SP9 @ 10'	SP9 @ 15'
Analyte	Method	Date	8/9/17	89/17	8/9/17	1/19/18	1/19/18	1/19/18	1/19/18
			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Benzene	BTEX 8021B		<0.050	<0.050	<0.050	< 0.050	<0.050	< 0.050	<0.050
Toluene	BTEX 8021B		<0.050	<0.050	<0.050	< 0.050	<0.050	< 0.050	<0.050
Ethylbenzene	BTEX 8021B		0.059	<0.050	<0.050	< 0.050	<0.050	<0.050	<0.050
Total Xylenes	BTEX 8021B		<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150
Total BTEX	BTEX 8021B		<0.300	< 0.300	<0.300	< 0.300	<0.300	<0.300	<0.300
Chloride	SM4500CI-B		<16.0	16	16	<16.0	16	<16.0	<16.0
GRO	TPH 8015M		<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
DRO	TPH 8015M		736	170	172	<10.0	<10.0	<10.0	<10.0
EXT DRO	TPH 8015M		129	30.7	47.2	<10.0	<10.0	<10.0	<10.0

		Sample	SP10 @ 1'	SP10 @ 2'	SP10 @ 3'	SP10 @ 4'	SP10 @ 5'	SP10 @ 10'	SP10 @ 15'
Analyte	Method	Date	8/9/17	89/17	8/9/17	1/19/18	1/19/18	1/19/18	1/19/18
			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Benzene	BTEX 8021B		<0.050	<0.050	<0.050	< 0.050	<0.050	< 0.050	<0.050
Toluene	BTEX 8021B		<0.050	<0.050	<0.050	<0.050	<0.050	< 0.050	<0.050
Ethylbenzene	BTEX 8021B		<0.050	<0.050	<0.050	< 0.050	<0.050	< 0.050	<0.050
Total Xylenes	BTEX 8021B		<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150
Total BTEX	BTEX 8021B		< 0.300	< 0.300	<0.300	< 0.300	<0.300	< 0.300	<0.300
Chloride	SM4500CI-B		16	<16.0	<16.0	32	16	32	<16.0
GRO	TPH 8015M		<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
DRO	TPH 8015M		528	245	127	<10.0	<10.0	<10.0	<10.0
EXT DRO	TPH 8015M		90	43.1	37.3	<10.0	<10.0	<10.0	<10.0

		Sample	SP11 @ 1'	SP11 @ 2'	SP11 @ 3'	SP11 @ 4'	SP11 @ 5'	SP11 @ 6'	SP11 @ 11'	SP11 @ 16'
Analyte	Method	Date	8/9/17	89/17	8/9/17	1/22/18	1/22/18	1/22/18	1/22/18	1/22/18
			mg/Kg	mg/Kg						
Benzene	BTEX 8021B		<0.050	<0.050	<0.050	<0.500	<0.050	<0.050	< 0.050	<0.050
Toluene	BTEX 8021B		<0.050	<0.050	<0.050	3.52	<0.050	<0.050	< 0.050	< 0.050
Ethylbenzene	BTEX 8021B		<0.050	<0.050	<0.050	4.82	<0.050	<0.050	< 0.050	<0.050
Total Xylenes	BTEX 8021B		<0.150	<0.150	<0.150	23.3	0.348	<0.150	<0.150	<0.150
Total BTEX	BTEX 8021B		< 0.300	< 0.300	<0.300	31.6	0.348	< 0.300	< 0.300	< 0.300
Chloride	SM4500CI-B		<16.0	<16.0	<16.0	16	32	<16.0	16	16
GRO	TPH 8015M		<10.0	<10.0	<10.0	751	26.8	<10.0	<10.0	<10.0
DRO	TPH 8015M		549	252	117	2950	360	<10.0	<10.0	<10.0
EXT DRO	TPH 8015M		92.6	46.2	36.4	311	56.2	<10.0	<10.0	<10.0

		Sample	NORTH @ SURFACE	SOUTH @ SURFACE	EAST @ SURFACE	WEST @ SURFACE
Analyte	Method	Date	8/9/17	8/9/17	8/9/17	8/9/17
			mg/Kg	mg/Kg	mg/Kg	mg/Kg
Benzene	BTEX 8021B		< 0.050	< 0.050	< 0.050	<0.050
Toluene	BTEX 8021B		< 0.050	0.06	0.089	<0.050
Ethylbenzene	BTEX 8021B		<0.050	0.063	0.075	<0.050
Total Xylenes	BTEX 8021B		<0.150	0.306	0.329	<0.150
Total BTEX	BTEX 8021B		< 0.300	0.429	0.493	< 0.300
Chloride	SM4500CI-B		16	16	16	32
GRO	TPH 8015M		<10.0	<10.0	<10.0	<10.0
DRO	TPH 8015M		<10.0	<10.0	<10.0	<10.0
EXT DRO	TPH 8015M		<10.0	<10.0	<10.0	<10.0



March 16, 2018

Cliff Brunson BBC International, Inc.

P.O. Box 805

Hobbs, NM 88241

RE: CROSSROADS AWC PIPELINE

Enclosed are the results of analyses for samples received by the laboratory on 03/15/18 10:35.

www.tceq.texas.gov/field/qa/lab\_accred\_certif.html. an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. Accreditation

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



BBC International, Inc. Cliff Brunson P.O. Box 805 Hobbs NM, 88241 Fax To: (575) 397-0397

Project Location:	Project Number:	Project Name:	Reported:	Received:
OXY- TATUM	CENTURION	CROSSROADS AWC PIPELINE	03/16/2018	03/15/2018

Sampling Date: Sampling Type: Sampling Condition: Sample Received By:

Soil Cool & Intact Tamara Oldaker

03/14/2018

# Sample ID: SP 1 @ 18 (H800755-01)

### Cardinal Laboratories

Surrogate: 1-Chlorooctadecane

87.5 %

37.6-147

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Celey D. Keene, Lab Director/Quality Manager

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Project Location:	Project Number:	Project Name:	Reported:	Received:
OXY- TATUM	CENTURION	CROSSROADS AWC PIPELINE	03/16/2018	03/15/2018

Sampling Date: Sampling Type: Sampling Condition: Sample Received By:

Soil Cool & Intact Tamara Oldaker

03/14/2018

# Sample ID: SP 7 @ 4 (H800755-02)

BTEX 8021B	mg/kg	' kg	Analyzed By: MS	i By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	4.79	0.500	03/15/2018	ND	1.99	99.6	2.00	1.93	
Toluene*	33.6	0.500	03/15/2018	ND	2.04	102	2.00	0.340	
Ethylbenzene*	16.3	0.500	03/15/2018	ND	2.01	101	2.00	0.528	
Total Xylenes*	116	1.50	03/15/2018	ND	6.16	103	6.00	0.336	
Total BTEX	171	3.00	03/15/2018	ND					
- Surrogate: 4-Bromofluorobenzene (PIL)	115 %	% 72-148							
Chloride, SM4500CI-B	mg/kg	'kg	Analyzed By: AC	1 By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	03/15/2018	ND	480	120	400	0.00	
TPH 8015M	mg/kg	'kg	Analyzed By: MS	i By: MS					S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	2680	50.0	03/15/2018	ND	194	97.1	200	1.28	
DRO >C10-C28*	6980	50.0	03/15/2018	ND	215	107	200	3.78	
EXT DRO >C28-C36	616	50.0	03/15/2018	ND					
Surrogate: I-Chlorooctane	181 %	% 41-142							

### Cardinal Laboratories

Surrogate: 1-Chlorooctadecane

116 %

37.6-147

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Celey D. Keene, Lab Director/Quality Manager

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Project Location:	Project Number:	Project Name:	Reported:	Received:
OXY- TATUM	CENTURION	CROSSROADS AWC PIPELINE	03/16/2018	03/15/2018

Sampling Date: Sampling Type: Sampling Condition: Sample Received By:

Soil Cool & Intact Tamara Oldaker 03/14/2018

# Sample ID: SP 7 @ 6 (H800755-03)

BTEX 8021B	mg/kg	' kg	Analyzed By: MS	i By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	6.47	0.500	03/15/2018	ND	1.99	99.6	2.00	1.93	
Toluene*	47.5	0.500	03/15/2018	ND	2.04	102	2.00	0.340	
Ethylbenzene*	29.0	0.500	03/15/2018	ND	2.01	101	2.00	0.528	
Total Xylenes*	128	1.50	03/15/2018	ND	6.16	103	6.00	0.336	
Total BTEX	211	3.00	03/15/2018	ND					
Surrogate: 4-Bromofluorobenzene (PID	115 %	% 72-148							
Chloride, SM4500Cl-B	mg/kg	'kg	Analyzed By: AC	1 By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	03/15/2018	ND	480	120	400	0.00	
TPH 8015M	mg/kg	'kg	Analyzed By: MS	i By: MS					S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	3030	50.0	03/15/2018	ND	194	97.1	200	1.28	
DR0 >C10-C28*	6940	50.0	03/15/2018	ND	215	107	200	3.78	
EXT DRO >C28-C36	658	50.0	03/15/2018	ND					
Surrogate: 1-Chlorooctane	188 %	% 41-142							

### Cardinal Laboratories

Surrogate: 1-Chlorooctadecane

153 %

37.6-147

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Fax To: BBC International, Inc. Hobbs NM, 88241 P.O. Box 805 Cliff Brunson (575) 397-0397

Project Location:	Project Number:	Project Name:	Reported:	Received:	
OXY- TATUM	CENTURION	CROSSROADS AWC PIPELINE	03/16/2018	03/15/2018	

Sampling Type: Sample Received By: Sampling Condition: Sampling Date:

Tamara Oldaker Cool & Intact Soil

03/14/2018

# Sample ID: SP 7 @ 8 (H800755-04)

BTEV 6001B			Amplitud But MC						
Analyte	Result	Reporting Limit	Analvzed	Method Blank	8	% Recoverv	True Value OC	RPD	Oualifier
Benzene*	<0.050	0.050	03/15/2018	ND	1.99	99.6	2.00	1.93	
Toluene*	0.169	0.050	03/15/2018	ND	2.04	102	2.00	0.340	
Ethylbenzene*	0.408	0.050	03/15/2018	ND	2.01	101	2.00	0.528	
Total Xylenes*	2.22	0.150	03/15/2018	ND	6.16	103	6.00	0.336	
Total BTEX	2.79	0.300	03/15/2018	ND					
Surrogate: 4-Bromofluorobenzene (PIL)	114 %	% 72-148							
Chloride, SM4500Cl-B	mg/kg	kg	Analyzed By: AC	1 By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	03/15/2018	ND	480	120	400	0.00	
TPH 8015M	mg/kg	kg	Analyzed By: MS	1 By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GR0 C6-C10*	94.1	10.0	03/15/2018	ND	194	97.1	200	1.28	
DRO >C10-C28*	784	10.0	03/15/2018	ND	215	107	200	3.78	
EXT DRO >C28-C36	83.2	10.0	03/15/2018	ND					
Surrogate: 1-Chlorooctane	92.6 %	% 41-142							

### Cardinal Laboratories

Surrogate: 1-Chlorooctadecane

105 %

37.6-147

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Cardinal Laboratories

GRO C6-C10\*

<10.0

Result

Reporting Limit

Analyzed

Method Blank

ß

% Recovery

True Value QC

Qualifier

97.1

Analyte

EXT DRO >C28-C36 DRO >C10-C28\*

<10.0 <10.0

10.0

03/15/2018 03/15/2018 03/15/2018

ND ND ND

> 215 194

107

200 200

3.78 1.28 RPD

10.0 10.0

Surrogate: 1-Chlorooctadecane Surrogate: 1-Chlorooctane

88.7% 89.2 %

37.6-147 41-142 Chloride

<16.0 Result

16.0

03/15/2018

ND

480

120

400

0.00 RPD

Analyzed By: MS

mg/kg

Chloride, SM4500Cl-B

Analyte

Surrogate: 4-Bromofluorobenzene (PID

92.6 %

72-148

mg/kg

Reporting Limit

Analyzed

Method Blank

ß

% Recovery

True Value QC

Qualifier

Analyzed By: AC

Total BTEX Total Xylenes\* Ethylbenzene\* Toluene\* Benzene\*

<0.300 <0.150 <0.050 <0.050 <0.050 Result

0.300 0.150 0.050

03/15/2018

B B B ND ND

03/15/2018

03/15/2018

**TPH 8015M** 

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PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Fax To: P.O. Box 805 Cliff Brunson Hobbs NM, 88241

Analytical Results For:

BBC International, Inc.

aboratories

CROSSROADS AWC PIPELINE 03/16/2018 03/15/2018 CENTURION

Sample ID: SP 7 @ 10 (H800755-05)

Project Location: Project Number: Project Name: Reported: Received:

OXY- TATUM

**BTEX 8021B** 

mg/kg

Reporting Limit

Analyzed

Method Blank

ß

% Recovery

True Value QC

RPD

Qualifier

Analyzed By: MS

0.050 0.050

03/15/2018 03/15/2018

2.04 2.01 6.16

> 101 102

2.00 2.00

103

6.00

0.336 0.528 0.340 1.93

1.99

99.6

2.00

Analyte

Sample Received By:

Soil

Tamara Oldaker Cool & Intact

03/14/2018

(575) 397-0397

Sampling Type: Sampling Date:

Sampling Condition:



Celey D. Keene, Lab Director/Quality Manager

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Cardinal Laboratories

GRO C6-C10\*

<10.0

Result

Reporting Limit

Analyzed

Method Blank

ß

% Recovery

True Value QC

Qualifier

97.1

32.0 Result

16.0

03/15/2018

ND

480

120

400

0.00 RPD

Analyzed By: MS

mg/kg

Analyte

TPH 8015M Chloride Chloride, SM4500Cl-B

Analyte

Surrogate: 4-Bromofluorobenzene (PID

95.0%

72-148

mg/kg

Reporting Limit

Analyzed

Method Blank

ß

% Recovery

True Value QC

Qualifier

Analyzed By: AC

Total BTEX Total Xylenes\* Ethylbenzene\* Toluene\* Benzene<sup>\*</sup>

<0.300 <0.150 <0.050 <0.050 <0.050 Result

0.300 0.150 0.050

03/15/2018

B B B ND ND

03/15/2018

03/15/2018

EXT DRO >C28-C36 DRO >C10-C28\*

<10.0 <10.0

10.0

03/15/2018 03/15/2018 03/15/2018

ND ND ND

> 215 194

107

200 200

3.78 1.28 RPD

10.0 10.0

Surrogate: 1-Chlorooctadecane Surrogate: 1-Chlorooctane

88.0% 89.7%

37.6-147 41-142

\*=Accredited Analyte

BBC International, Inc. P.O. Box 805 Cliff Brunson Hobbs NM, 88241

Project Number: Project Name: Reported: Received: CROSSROADS AWC PIPELINE 03/16/2018 03/15/2018 CENTURION Fax To:

Sample ID: SP 7 @ 15 (H800755-06)

Project Location:

OXY- TATUM

**BTEX 8021B** 

mg/kg

Reporting Limit

Analyzed

Method Blank

ß

% Recovery

True Value QC

RPD

Qualifier

Analyzed By: MS

0.050 0.050

03/15/2018 03/15/2018

2.04 2.01 6.16

> 101 102

2.00 2.00

103

6.00

0.336 0.528 0.340 1.93

1.99

99.6

2.00

Analyte

Sample Received By: Sampling Condition: Sampling Type: Sampling Date:

Soil

Cool & Intact

Tamara Oldaker

(575) 397-0397

03/14/2018

Analytical Results For: PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240 \_aboratories



Fax To: BBC International, Inc. Hobbs NM, 88241 P.O. Box 805 Cliff Brunson (575) 397-0397

Project Location:	Project Number:	Project Name:	Reported:	Received:
OXY- TATUM	CENTURION	CROSSROADS AWC PIPELINE	03/16/2018	03/15/2018

Sampling Type: Sample Received By: Sampling Condition: Sampling Date:

Tamara Oldaker Cool & Intact Soil 03/14/2018

# Sample ID: SP 7 @ 20 (H800755-07)

		6	Analyzad Ry: MC	By: MC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/15/2018	ND	1.99	99.6	2.00	1.93	
Toluene*	0.053	0.050	03/15/2018	ND	2.04	102	2.00	0.340	
Ethylbenzene*	<0.050	0.050	03/15/2018	ND	2.01	101	2.00	0.528	
Total Xylenes*	0.221	0.150	03/15/2018	ND	6.16	103	6.00	0.336	
Total BTEX	<0.300	0.300	03/15/2018	ND					
Surrogate: 4-Bromofluorobenzene (PID	91.7%	% 72-148							
Chloride, SM4500Cl-B	mg/kg	'kg	Analyzed By: AC	1 By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	03/15/2018	ND	480	120	400	0.00	
TPH 8015M	mg/kg	'kg	Analyzed By: MS	1 By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/16/2018	ND	194	97.1	200	1.28	
DRO >C10-C28*	<10.0	10.0	03/16/2018	ND	215	107	200	3.78	
EXT DRO >C28-C36	<10.0	10.0	03/16/2018	ND					
Surrogate: 1-Chlorooctane	82.5 %	% 41-142							

### Cardinal Laboratories

Surrogate: 1-Chlorooctadecane

79.3 %

37.6-147

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Project Location:	Project Number:	Project Name:	Reported:	Received:
OXY- TATUM	CENTURION	CROSSROADS AWC PIPELINE	03/16/2018	03/15/2018

Sampling Type: Sample Received By: Sampling Condition: Sampling Date:

Tamara Oldaker Cool & Intact Soil

03/14/2018

# Sample ID: SP 8 @ 4 (H800755-08)

BTEX 8021B	mg/kg	kg	Analyzed By: MS	l By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	1.25	0.500	03/15/2018	ND	1.99	99.6	2.00	1.93	
Toluene*	14.4	0.500	03/15/2018	ND	2.04	102	2.00	0.340	
Ethylbenzene*	10.4	0.500	03/15/2018	ND	2.01	101	2.00	0.528	
Total Xylenes*	72.5	1.50	03/15/2018	ND	6.16	103	6.00	0.336	
Total BTEX	98.5	3.00	03/15/2018	ND					
Surrogate: 4-Bromofluorobenzene (PID	113 %	% 72-148							
Chloride, SM4500Cl-B	mg/kg	'kg	Analyzed By: AC	l By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	03/15/2018	ND	480	120	400	0.00	
TPH 8015M	mg/kg	'kg	Analyzed By: MS	l By: MS					S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GR0 C6-C10*	2060	50.0	03/16/2018	ND	194	97.1	200	1.28	
DR0 >C10-C28*	6590	50.0	03/16/2018	ND	215	107	200	3.78	
EXT DRO >C28-C36	555	50.0	03/16/2018	ND					
Surrogate: 1-Chlorooctane	176 %	% 41-142							

### **Cardinal Laboratories**

Surrogate: 1-Chlorooctadecane

115 %

37.6-147

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Project Location:	Project Number:	Project Name:	Reported:	Received:
OXY- TATUM	CENTURION	CROSSROADS AWC PIPELINE	03/16/2018	03/15/2018

Sampling Type: Sample Received By: Sampling Condition: Sampling Date:

Tamara Oldaker Cool & Intact Soil 03/14/2018

# Sample ID: SP 8 @ 6 (H800755-09)

BTEX 8021B	pm	mg/kg	Analyzed By: MS	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.500	0.500	03/15/2018	ND	1.99	99.6	2.00	1.93	
Toluene*	6.48	0.500	03/15/2018	ND	2.04	102	2.00	0.340	
Ethylbenzene*	8.26	0.500	03/15/2018	ND	2.01	101	2.00	0.528	
Total Xylenes*	40.7	1.50	03/15/2018	ND	6.16	103	6.00	0.336	
Total BTEX	55.4	3.00	03/15/2018	ND					
Surrogate: 4-Bromofluorobenzene (PID	/09 %	% 72-148	~						
Chloride, SM4500Cl-B	mg	mg/kg	Analyzed By: AC	d By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	03/15/2018	ND	480	120	400	0.00	
TPH 8015M	mg	mg/kg	Analyzed By: MS	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	1010	50.0	03/16/2018	ND	194	97.1	200	1.28	
DRO >C10-C28*	3650	50.0	03/16/2018	ND	215	107	200	3.78	
EXT DRO >C28-C36	320	50.0	03/16/2018	ND					

### Cardinal Laboratories

Surrogate: 1-Chlorooctadecane

106 %

37.6-147

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BBC International, Inc. Cliff Brunson P.O. Box 805 Hobbs NM, 88241 Fax To: (575) 397-0397

Project Location:	Project Number:	Project Name:	Reported:	Received:
OXY- TATUM	CENTURION	CROSSROADS AWC PIPELINE	03/16/2018	03/15/2018

Sampling Date: Sampling Type: Sampling Condition: Sample Received By:

Soil Cool & Intact Tamara Oldaker 03/14/2018

# Sample ID: SP 8 @ 8 (H800755-10)

BIEX 8021B	mg/ kg	kg	Analyzed By: MS	I BY: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/15/2018	ND	1.99	99.6	2.00	1.93	
Toluene*	0.386	0.050	03/15/2018	ND	2.04	102	2.00	0.340	
Ethylbenzene*	0.557	0.050	03/15/2018	ND	2.01	101	2.00	0.528	
Total Xylenes*	3.30	0.150	03/15/2018	ND	6.16	103	6.00	0.336	
Total BTEX	4.24	0.300	03/15/2018	ND					
- Surrogate: 4-Bromofluorobenzene (PID	111 %	% 72-148							
Chloride, SM4500Cl-B	mg/kg	kg	Analyzed By: AC	l By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	03/15/2018	ND	480	120	400	0.00	
TPH 8015M	mg/kg	kg	Analyzed By: MS	l By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	164	10.0	03/16/2018	ND	194	97.1	200	1.28	
DRO >C10-C28*	1230	10.0	03/16/2018	ND	215	107	200	3.78	
EXT DRO >C28-C36	121	10.0	03/16/2018	ND					
Surrogate: 1-Chlorooctane	83.3 %	% 41-142							

### Cardinal Laboratories

Surrogate: 1-Chlorooctadecane

95.4 %

37.6-147

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Cardinal Laboratories

GRO C6-C10\* EXT DRO >C28-C36 DRO >C10-C28\* Analyte Analyte <10.0 <10.0 <10.0 Result <16.0 Result mg/kg mg/kg Reporting Limit Reporting Limit 10.0 10.0 10.0 16.0 03/16/2018 03/16/2018 03/16/2018 03/15/2018 Analyzed Analyzed

1.06 93.6% 0.300 72-148 03/16/2018 Analyzed By: MS Analyzed By: AC Method Blank Method Blank ND ND ND B

400

100

400

3.92 RPD

ß

% Recovery

True Value QC

Qualifier

**TPH 8015M** Chloride, SM4500Cl-B

Chloride

Surrogate: 4-Bromofluorobenzene (PID **Total BTEX** Total Xylenes\* 03/16/2018

Ethylbenzene\* 0.797 0.141 0.150 0.050 03/16/2018 Toluene\* Benzene\*

0.120 <0.050 Result

0.050 0.050

03/16/2018 03/16/2018

B B ND ND

6.16 2.01 2.04 1.99

103

6.00

0.336 0.528 0.340 1.93

101 102

2.00 2.00

Sample ID: SP 8 @ 10 (H800755-11) Project Location: OXY- TATUM mg/kg

Project Number: Project Name: Reported: Received:

CROSSROADS AWC PIPELINE

CENTURION

03/16/2018 03/15/2018

**BTEX 8021B** 

Analyte

Reporting Limit

Analyzed

Method Blank

ß

% Recovery

True Value QC

RPD

Qualifier

99.6

2.00

Analyzed By: MS

Sample Received By:

Soil Cool & Intact

Tamara Oldaker

Sampling Condition: Sampling Type: Sampling Date:

03/14/2018

Analytical Results For: BBC International, Inc. PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240 \_aboratories

P.O. Box 805 Cliff Brunson Hobbs NM, 88241

Fax To: (575) 397-0397

Surrogate: 1-Chlorooctadecane Surrogate: 1-Chlorooctane

81.4 % 84.3 %

37.6-147 41-142

ND

215 194

107

200 200

3.78 1.28 RPD

ß

% Recovery

True Value QC

Qualifier

97.1



BBC International, Inc. Cliff Brunson P.O. Box 805 Hobbs NM, 88241 Fax To: (575) 397-0397

Project Location:	Project Number:	Project Name:	Reported:	Received:
OXY- TATUM	CENTURION	CROSSROADS AWC PIPELINE	03/16/2018	03/15/2018

Sampling Date: Sampling Type: Sampling Condition: Sample Received By:

Soil Cool & Intact Tamara Oldaker 03/14/2018

# Sample ID: SP 8 @ 15 (H800755-12)

BTEX 8021B	BTEX 8021B mg/kg	/kg	Analyzed By: MS	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/16/2018	ND	1.99	99.6	2.00	1.93	
Toluene*	0.301	0.050	03/16/2018	ND	2.04	102	2.00	0.340	
Ethylbenzene*	0.214	0.050	03/16/2018	ND	2.01	101	2.00	0.528	
Total Xylenes*	1.21	0.150	03/16/2018	ND	6.16	103	6.00	0.336	
Total BTEX	1.73	0.300	03/16/2018	ND					
Surrogate: 4-Bromofluorobenzene (PIL)	94.5 %	% 72-148	~						
Chloride, SM4500Cl-B	mg/kg	/kg	Analyzed By: AC	1 By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	03/15/2018	ND	400	100	400	3.92	
TPH 8015M	mg/kg	/kg	Analyzed By: MS	i By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/16/2018	ND	194	97.1	200	1.28	
DRO >C10-C28*	<10.0	10.0	03/16/2018	ND	215	107	200	3.78	
EXT DRO >C28-C36	<10.0	10.0	03/16/2018	ND					
Surrogate: 1-Chlorooctane	82.9 %	% 41-142							

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Surrogate: 1-Chlorooctadecane

81.1 %

37.6-147

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

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Celey D. Keene, Lab Director/Quality Manager

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GRO C6-C10\*

<10.0

Result

Reporting Limit

Analyzed

Method Blank

ß

% Recovery

True Value QC

Qualifier

97.1

Analyte

EXT DRO >C28-C36 DRO >C10-C28\*

<10.0 <10.0

10.0

03/16/2018

ND ND ND

10.0 10.0

03/16/2018 03/16/2018

215 194

107

200 200

3.78 1.28 RPD

80.4 %

77.4%

37.6-147 41-142

Surrogate: 1-Chlorooctadecane Surrogate: 1-Chlorooctane Chloride

<16.0 Result

16.0

03/15/2018

ND

400

100

400

3.92 RPD

Analyzed By: MS

mg/kg

Chloride, SM4500Cl-B

Analyte

Surrogate: 4-Bromofluorobenzene (PID

92.2 %

72-148

mg/kg

Reporting Limit

Analyzed

Method Blank

ß

% Recovery

True Value QC

Qualifier

Analyzed By: AC

Total BTEX Total Xylenes\* Ethylbenzene\* Toluene\* Benzene<sup>\*</sup>

<0.300 0.194 <0.050 <0.050 <0.050 Result

0.300 0.150 0.050

03/16/2018

B B B ND ND

03/16/2018

**TPH 8015M** 

\*=Accredited Analyte

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Analytical Results For:

\_aboratories

97-0397 ភ

Project Location: Project Number: Project Name: CROSSROADS AWC PIPELINE 03/16/2018 OXY- TATUM CENTURION 03/15/2018

Reported:

Sample Received By: Sampling Condition: Sampling Type: Sampling Date:

Soil 03/14/2018 Tamara Oldaker Cool & Intact

Sample ID: SP 8 @ 20 (H800755-13)

**BTEX 8021B** 

mg/kg

Reporting Limit

Analyzed

Method Blank

ß

% Recovery

True Value QC

RPD

Qualifier

Analyzed By: MS

0.050 0.050

03/16/2018 03/16/2018

2.04 2.01 6.16

> 101 102

2.00 2.00

103

6.00

0.336 0.528 0.340 1.93

1.99

99.6

2.00

03/16/2018

Analyte

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Analyte NOT DETECTED at or above the reporting limit recovery. matrix interference's.

**Relative Percent Difference** 

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

Insufficient time to reach temperature.

Chloride by SM4500CI-B does not require samples be received at or below 6°C

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Laboratories

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**Notes and Definitions** 

The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or

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

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



Page 16 of 17

**SEIROTAROBALI LANIGRA** 

ATAC-202 (ANA) YAA ACEC-202 (ANA) 101 East Marland, Hobbs, NM 88240

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† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

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Sampler - UPS - Bus - Other:

Delivered By: (Circle One) -1.32

Cool Intact

Sample Condition

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Sampler - UPS - Bus - Other: Cool Intact Liff · ál 22.1-(sisitini) Delivered By: (Circle One) CHECKED BA: Sample Condition :emiT Relinduished By: Received By: :steÖ 220 .auit 1 < REMARKS: :# sord l'bbA oN □ s9Y □ :# xs∃ l'bbA oN □ s9Y □ Fax Result: B baalsinpnilaA Received By: Phone Result: by Cardinal, repardless of whether such dialin is based upon any of the above stated reasons or otherwise. service. In no event shall Cardinal be lisble for includental or consequential damages, including without limitation, business interruptions, loss or loss analyses. All oralize in writing and stores of any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal writin 30 days after completion of the applicable PLEASE NOTE: Liability and Damages. Cardinal's link and stients exclusive remedy for any claim analign whether based in contract or for, shall be limited to the amount paid by the client for the 0/00 ds 588 う +4 イ 21 オ Э 1/2 Ł X  $\prec$ Х  $\neq$ 61-2 ×. -11 062 4 7 X SSLNBA ICE / COOL OIL SLUDGE OTHER : SOIL # CONTAINERS (G)RAB OR (C)OMP GROUNDWATER OTHER : ACID/BASE WASTEWATER **JWIL 3TAG** .G.I əlqms2 .G.I daJ FOR LAB USE ONLY XIATAM SAMPLING PRESERV Υ Sampler Name: R :# X8-4 Spealssin -M2 Project Location: :# anon9 Project Name: (94)/10/ OV 1 202 State: :diZ Project #: Project Owner: 0XV City: 2 8869-766-276 :# эполя :# xe-:ssenbbA 2620-262-929 city: Hobbs State: NM Zip: 88247 :nttA Address: P.O. Box 805 :Ynsqmod Project Manager: Cliff Brunson # 0 d company Name: BBC International, Inc. OLTALE **ANALYSIS REQUEST** (505) 393-2326 FAX (505) 393-2476 101 East Marland, Hobbs, NM 88240 SEIROTAROBAL LANIGRA CHAIN-OF-CUSTODY AND ANALYSIS REQUEST 2/2