

# Closure Report

## Site Description

Site Name:	Willow A State #002
Company:	COG Operating, LLC
Legal Description:	U/L O, Section 3, T25S, R28E
County:	Eddy County, NM
GPS Coordinates:	N 32.15276° W 104.07477°

## Release Data

Date of Release:	08/27/2016
Type of Release:	Oil and produced water
Source of Release:	Stuffing box
Volume of Release:	2 bbls oil, 13 bbls produced water
Volume Recovered:	1 bbl oil, 1 bbl produced water

## Remediation Specifications

Remediation Parameters:	Excavate the entire leak to a depth of 2.5 feet. Backfill the site with clean soil. Dispose of excavated soil at R360 Red Bluff facility.	
Remediation Activities:	11/30/2016 to 12/07/2016	
Plan Sent to OCD:	11/04/2016	Email from Cliff Brunson to Mike Bratcher
OCD Approval of Plan:	11/10/2016	Email from Mike Bratcher to Cliff Brunson
Plan Sent to BLM:	n/a	n/a
BLM Approval of Plan:	n/a	n/a

## Supporting Documentation

Initial C-141	Signed 08/30/2016
Final C-141	Signed 01/03/2017
Site Diagram	October 2016
Groundwater Plot	<50'
TOPO Maps	October 2016
Lab Summary	10/06/2016
Lab Analysis	10/06/2016
Correspondence	Request and approval of remediation plan via email

## Request for Closure

Based on the completion of the remediation plan as agreed upon, BBC International requests closure approval from NMOCD.

Cliff Brunson, President of BBC International Inc.

01/05/2016

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-141  
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in  
accordance with 19.15.29 NMAC.

**Release Notification and Corrective Action**

**OPERATOR**

☒ Initial Report ☐ Final Report

Name of Company:	COG Operating LLC	Contact:	Robert McNeill
Address:	600 West Illinois Avenue, Midland TX 79701	Telephone No.	432-683-7443
Facility Name:	WILLOW A STATE #002	Facility Type:	Well Head

Surface Owner:	State	Mineral Owner:		API No.	30-015-33399
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**LOCATION OF RELEASE**

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	03	25S	28E	330'	South	2570'	East	Eddy

Latitude 32.1527252 Longitude 104.074852

**NATURE OF RELEASE**

Type of Release:	Oil & Produced Water	Volume of Release:	2bbls of Oil & 13bbls of Produced Water	Volume Recovered:	1bbls of Oil & 1bbl of Produced Water
Source of Release:	Stuffing Box	Date and Hour of Occurrence:	08-27-2016 09:30 am	Date and Hour of Discovery:	08-27-2016 09:30 am
Was Immediate Notice Given?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?			
By Whom?		Date and Hour:			
Was a Watercourse Reached?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.			

If a Watercourse was Impacted, Describe Fully.\*

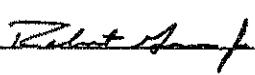
Describe Cause of Problem and Remedial Action Taken.\*

A stuffing box failed at the wellhead. Replaced the packing in the stuffing box.

Describe Area Affected and Cleanup Action Taken.\*

This release occurred on location and a 5 X 10 just on the north edge of the location. Concho will have the spill site sampled to delineate any possible contamination from the release and we will present a remediation work plan to the NMOCD for approval prior to any significant remediation work

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature:		<b>OIL CONSERVATION DIVISION</b>	
Printed Name:	Robert Grubbs Jr.	Approved by Environmental Specialist:	
Title:	Senior Environmental Coordinator	Approval Date:	Expiration Date:
E-mail Address:	rgrubbs@concho.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date:	August 30, 2016	Phone:	432-683-7443

\* Attach Additional Sheets If Necessary

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources

Oil Conservation Division  
1220 South St. Francis Dr.  
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Form C-141  
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in  
accordance with 19.15.29 NMAC.

**Release Notification and Corrective Action**

**OPERATOR**

☐ Initial Report ☒ Final Report

Name of Company: COG Operating LLC	Contact: Robert McNeill
Address: 600 West Illinois Avenue, Midland, TX 79701	Telephone No. 432-230-0077
Facility Name: Willow A State #002	Facility Type: Well

Surface Owner: State	Mineral Owner:	API No. 30-015-33399
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**LOCATION OF RELEASE**

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	3	25S	28E	330	South	2570	East	Eddy County, NM

Latitude N 32.15276° Longitude W 104.07477°

**NATURE OF RELEASE**

Type of Release: Oil and Produced water	Volume of Release: 2 bbls oil, 13 bbls produced water	Volume Recovered: 1 bbl oil, 1 bbl produced water
Source of Release: Stuffing box	Date and Hour of Occurrence 08/27/2016 @ 9:30 am	Date and Hour of Discovery 08/27/2016 @ 9:30 am
Was Immediate Notice Given? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour:	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.\*

Describe Cause of Problem and Remedial Action Taken.\*

The stuffing box at the well head failed causing a leak of 2 bbls of oil and 13 bbls of produced water. A vacuum truck recovered 1 bbl of oil and 1 bbl of produced water and the packing in the stuffing box was replaced.

Describe Area Affected and Cleanup Action Taken.\*

This release occurred on location and a small amount off location on the north edge. The site was delineated and a remediation plan was created. Remediation was completed in accordance with the remediation plan approved by Kristen Lynch of NMOCD via email on 11/10/2016.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

**OIL CONSERVATION DIVISION**

Signature: 

Printed Name: Robert Grubbs Jr

Approved by Environmental Specialist:

Title: Senior Environmental Coordinator

Approval Date:

Expiration Date:

E-mail Address: rgrubbs@concho.com

Conditions of Approval:

Attached ☐

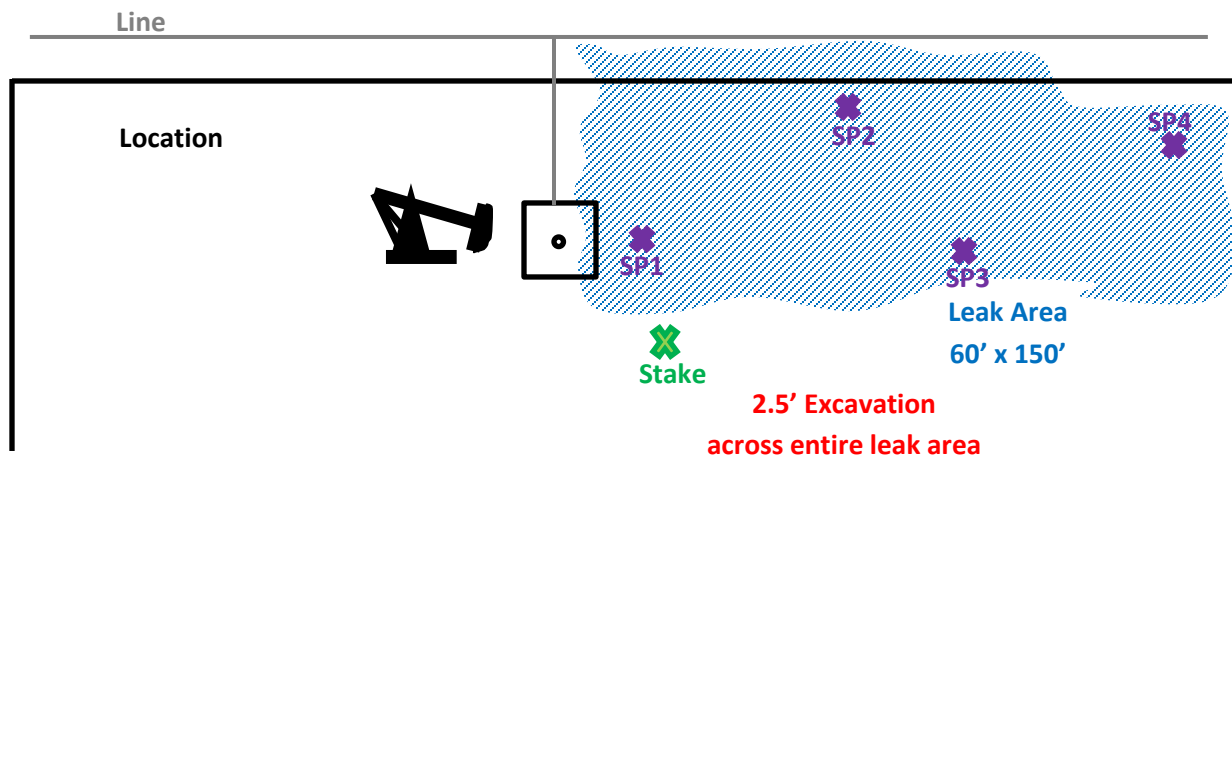
Date: January 3, 2017 Phone: (432) 683-7443

\* Attach Additional Sheets If Necessary



COG

Willow A State #002 (8/27/16)



U/L O, Section 3, T25S, R28E

Eddy County, NM

N 32.15276° W 104.07477°

API# 30-015-33399

BBC International, Inc.

COG

Willow A State #002

Date: 10/03/2016

DRWG by: K. Purvis

NOT TO SCALE

File: COG 2016



# Groundwater Plot

COG Willow A State #002

County  
Eddy

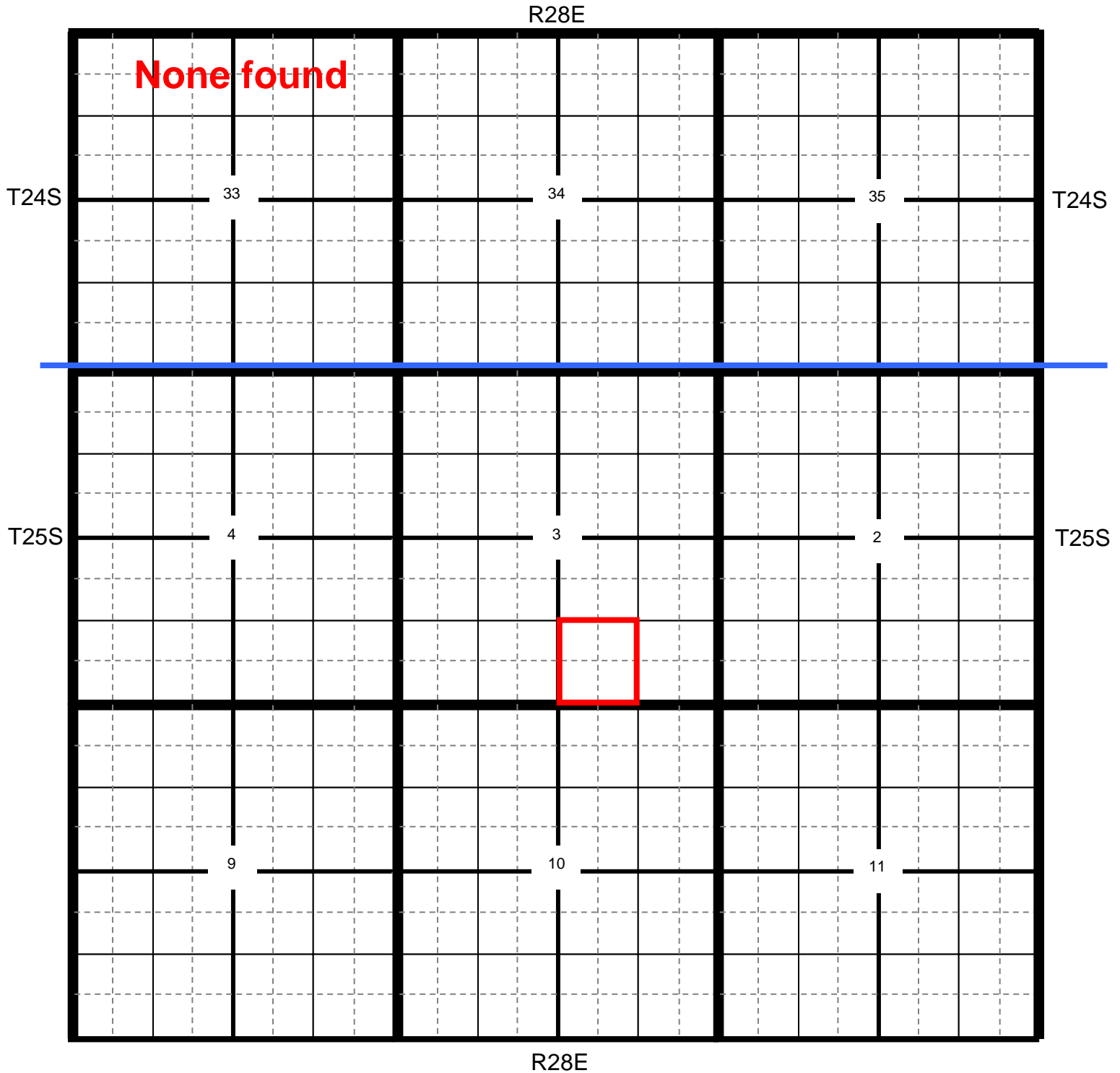
Unit Letter  
O

Section  
3

Township  
25S

Range  
28E

Trend Map <50'



★ Location

● OCD

● USGS

● SEO

● All Databases

## COG Willow A State #002

**County**  
Eddy
 **Unit Letter**  
O
 **Section**  
3
 **Township**  
25S
 **Range**  
28E

Trend Map <50'

1

2

NW/NW <b>None found</b>	NE/NW	NW/NE	NE/NE
Unit Letter D	Unit Letter C	Unit Letter B	Unit Letter A
SW/NW	SE/NW	SW/NE	SE/NE
Unit Letter E	Unit Letter F	Unit Letter G	Unit Letter H
NW/SW	NE/SW	NW/SE	NE/SE
Unit Letter L	Unit Letter K	Unit Letter J	Unit Letter I
SW/SW	SE/SW	SW/SE	SE/SE
Unit Letter M	Unit Letter N	Unit Letter O	Unit Letter P

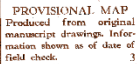
3

4



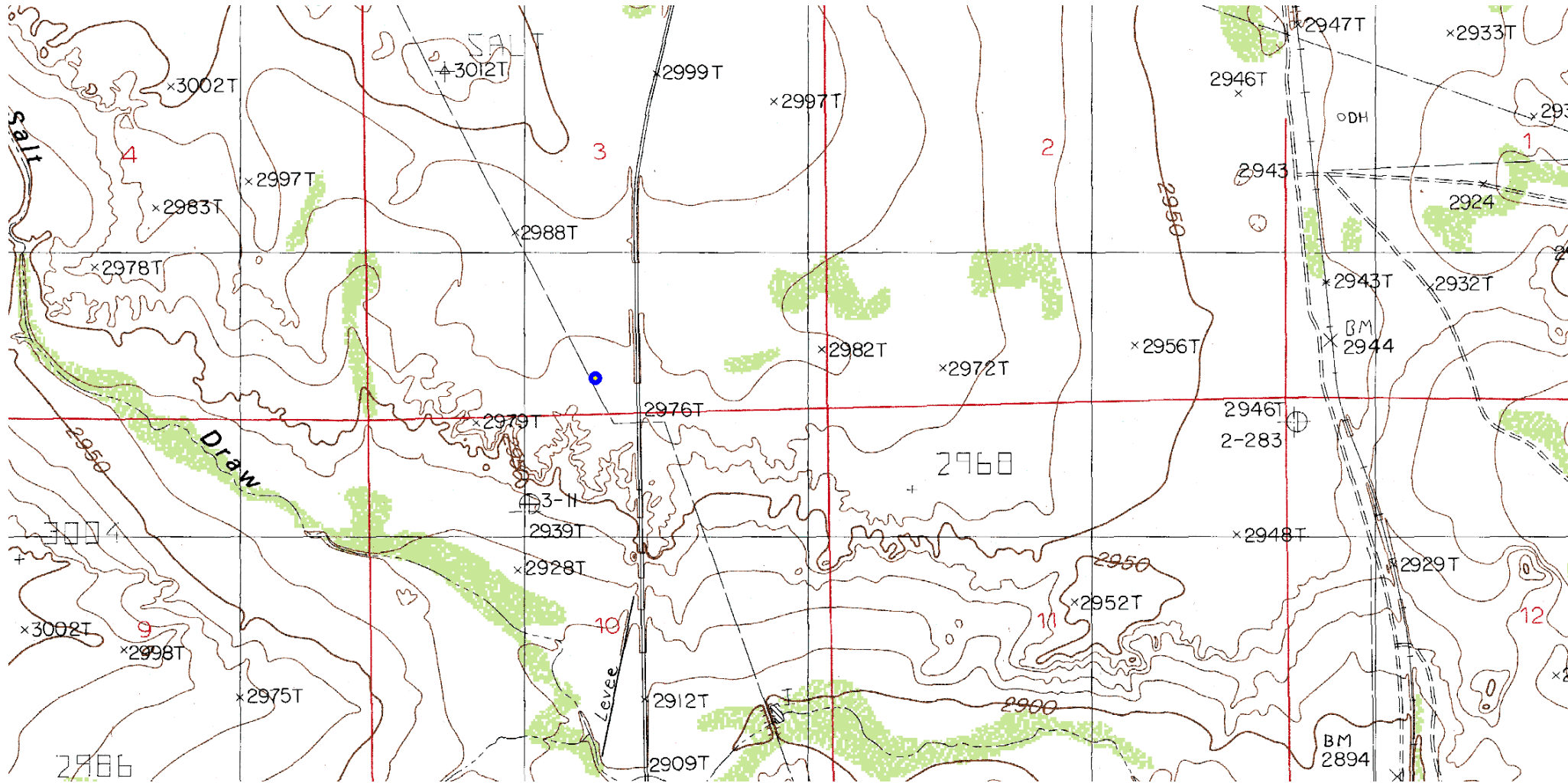
# Willow A State #002

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY



MALAGA, NEW MEXICO  
PROVISIONAL EDITION 1985  
33104-11-77:024

# Willow A State #002





**Laboratory Analytical Results Summary  
Willow A State #2**

		Sample	SP1 @ 1'	SP1 @ 2'	SP1 @ 4'	SP1 @ 6'	SP1 @ 7'
Analyte	Method	Date	10/6/16	10/6/16	10/6/16	10/6/16	10/6/16
			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
<b>Benzene</b>	BTEX 8021B		<0.050	<0.050	N/A	N/A	N/A
<b>Toluene</b>	BTEX 8021B		<0.050	<0.050	N/A	N/A	N/A
<b>Ethylbenzene</b>	BTEX 8021B		<0.050	<0.050	N/A	N/A	N/A
<b>Total Xylenes</b>	BTEX 8021B		<0.150	<0.150	N/A	N/A	N/A
<b>Total BTEX</b>	BTEX 8021B		<0.300	<0.300	N/A	N/A	N/A
<b>Chloride</b>	SM4500Cl-B		<b>2920</b>	<b>1460</b>	<b>656</b>	<b>400</b>	<b>208</b>
<b>GRO</b>	TPH 8015M		<10.0	<10.0	N/A	N/A	N/A
<b>DRO</b>	TPH 8015M		<10.0	<10.0	N/A	N/A	N/A

		Sample	SP2 @ 1'	SP2 @ 2'	SP2 @ 4'	SP2 @ 5'
Analyte	Method	Date	10/6/16	10/6/16	10/6/16	10/6/16
			mg/Kg	mg/Kg	mg/Kg	mg/Kg
<b>Benzene</b>	BTEX 8021B		<0.050	<0.050	N/A	N/A
<b>Toluene</b>	BTEX 8021B		<0.050	<0.050	N/A	N/A
<b>Ethylbenzene</b>	BTEX 8021B		<0.050	<0.050	N/A	N/A
<b>Total Xylenes</b>	BTEX 8021B		<0.150	<0.150	N/A	N/A
<b>Total BTEX</b>	BTEX 8021B		<0.300	<0.300	N/A	N/A
<b>Chloride</b>	SM4500Cl-B		<b>7200</b>	<b>3360</b>	<b>192</b>	<b>176</b>
<b>GRO</b>	TPH 8015M		<10.0	<10.0	N/A	N/A
<b>DRO</b>	TPH 8015M		<10.0	<b>55.1</b>	N/A	N/A

		Sample	SP3 @ 1'	SP3 @ 2'	SP3 @ 3'	SP3 @ 4'
Analyte	Method	Date	10/6/16	10/6/16	10/6/16	10/6/16
			mg/Kg	mg/Kg	mg/Kg	mg/Kg
<b>Benzene</b>	BTEX 8021B		<0.050	<0.050	N/A	N/A
<b>Toluene</b>	BTEX 8021B		<0.050	<0.050	N/A	N/A
<b>Ethylbenzene</b>	BTEX 8021B		<0.050	<0.050	N/A	N/A
<b>Total Xylenes</b>	BTEX 8021B		<0.150	<0.150	N/A	N/A
<b>Total BTEX</b>	BTEX 8021B		<0.300	<0.300	N/A	N/A
<b>Chloride</b>	SM4500Cl-B		<b>1460</b>	<b>896</b>	<b>400</b>	<b>208</b>
<b>GRO</b>	TPH 8015M		<10.0	<10.0	N/A	N/A
<b>DRO</b>	TPH 8015M		<10.0	<10.0	N/A	N/A

		Sample	SP4 @ 1'	SP4 @ 2'	SP4 @ 3'
Analyte	Method	Date	10/6/16	10/6/16	10/6/16
			mg/Kg	mg/Kg	mg/Kg
<b>Benzene</b>	BTEX 8021B		<0.050	<0.050	N/A
<b>Toluene</b>	BTEX 8021B		<0.050	<0.050	N/A
<b>Ethylbenzene</b>	BTEX 8021B		<0.050	<0.050	N/A
<b>Total Xylenes</b>	BTEX 8021B		<0.150	<0.150	N/A
<b>Total BTEX</b>	BTEX 8021B		<0.300	<0.300	N/A
<b>Chloride</b>	SM4500Cl-B		<b>896</b>	<b>656</b>	<b>208</b>
<b>GRO</b>	TPH 8015M		<10.0	<10.0	N/A
<b>DRO</b>	TPH 8015M		<10.0	<10.0	N/A



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

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October 14, 2016

Cliff Brunson

BBC International, Inc.

P.O. Box 805

Hobbs, NM 88241

RE: WILLOW A STATE #2

Enclosed are the results of analyses for samples received by the laboratory on 10/07/16 11:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. 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/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

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

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

Accreditation applies to public drinking water matrices.

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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 10/07/2016  
Reported: 10/14/2016  
Project Name: WILLOW A STATE #2  
Project Number: COG  
Project Location: MALAGA, NM

Sampling Date: 10/06/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SP 1 @ 1' (H602264-01)**

BTX 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/11/2016	ND	2.18	109	2.00	1.38	
Toluene*	<0.050	0.050	10/11/2016	ND	2.27	114	2.00	1.12	
Ethylbenzene*	<0.050	0.050	10/11/2016	ND	2.21	110	2.00	1.03	
Total Xylenes*	<0.150	0.150	10/11/2016	ND	6.66	111	6.00	0.694	
Total BTX	<0.300	0.300	10/11/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.2 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	2920	16.0	10/11/2016	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/10/2016	ND	188	94.1	200	3.55	
DRO >C10-C28	<10.0	10.0	10/10/2016	ND	214	107	200	4.52	

Surrogate: 1-Chlorooctane 84.1 % 35-147

Surrogate: 1-Chlorooctadecane 91.0 % 28-171

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 10/07/2016  
Reported: 10/14/2016  
Project Name: WILLOW A STATE #2  
Project Number: COG  
Project Location: MALAGA, NM

Sampling Date: 10/06/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SP 1 @ 2' (H602264-02)**

BTX 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/11/2016	ND	2.18	109	2.00	1.38	
Toluene*	<0.050	0.050	10/11/2016	ND	2.27	114	2.00	1.12	
Ethylbenzene*	<0.050	0.050	10/11/2016	ND	2.21	110	2.00	1.03	
Total Xylenes*	<0.150	0.150	10/11/2016	ND	6.66	111	6.00	0.694	
Total BTX	<0.300	0.300	10/11/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 96.8 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1460	16.0	10/11/2016	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/10/2016	ND	188	94.1	200	3.55	
DRO >C10-C28	<10.0	10.0	10/10/2016	ND	214	107	200	4.52	

Surrogate: 1-Chlorooctane 78.0 % 35-147

Surrogate: 1-Chlorooctadecane 78.4 % 28-171

**Sample ID: SP 1 @ 4' (H602264-03)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	656	16.0	10/11/2016	ND	416	104	400	0.00	

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 10/07/2016  
Reported: 10/14/2016  
Project Name: WILLOW A STATE #2  
Project Number: COG  
Project Location: MALAGA, NM

Sampling Date: 10/06/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SP 1 @ 6' (H602264-04)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	400	16.0	10/11/2016	ND	416	104	400	0.00	

**Sample ID: SP 1 @ 7' (H602264-05)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	208	16.0	10/11/2016	ND	416	104	400	0.00	

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 10/07/2016  
Reported: 10/14/2016  
Project Name: WILLOW A STATE #2  
Project Number: COG  
Project Location: MALAGA, NM

Sampling Date: 10/06/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SP 2 @ 1' (H602264-06)**

BTEx 8021B		mg/kg		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/11/2016	ND	2.18	109	2.00	1.38		
Toluene*	<0.050	0.050	10/11/2016	ND	2.27	114	2.00	1.12		
Ethylbenzene*	<0.050	0.050	10/11/2016	ND	2.21	110	2.00	1.03		
Total Xylenes*	<0.150	0.150	10/11/2016	ND	6.66	111	6.00	0.694		
Total BTEx	<0.300	0.300	10/11/2016	ND						

Surrogate: 4-Bromofluorobenzene (PID) 98.1 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	7200	16.0	10/11/2016	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/10/2016	ND	188	94.1	200	3.55	
DRO >C10-C28	<10.0	10.0	10/10/2016	ND	214	107	200	4.52	

Surrogate: 1-Chlorooctane 96.2 % 35-147

Surrogate: 1-Chlorooctadecane 105 % 28-171

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

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

Received: 10/07/2016  
Reported: 10/14/2016  
Project Name: WILLOW A STATE #2  
Project Number: COG  
Project Location: MALAGA, NM

Sampling Date: 10/06/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SP 2 @ 2' (H602264-07)**

BTEx 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/11/2016	ND	2.18	109	2.00	1.38	
Toluene*	<0.050	0.050	10/11/2016	ND	2.27	114	2.00	1.12	
Ethylbenzene*	<0.050	0.050	10/11/2016	ND	2.21	110	2.00	1.03	
Total Xylenes*	<0.150	0.150	10/11/2016	ND	6.66	111	6.00	0.694	
Total BTEx	<0.300	0.300	10/11/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.3 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3360	16.0	10/11/2016	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/10/2016	ND	188	94.1	200	3.55	
DRO >C10-C28	55.1	10.0	10/10/2016	ND	214	107	200	4.52	

Surrogate: 1-Chlorooctane 90.3 % 35-147

Surrogate: 1-Chlorooctadecane 99.0 % 28-171

**Sample ID: SP 2 @ 4' (H602264-08)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	10/11/2016	ND	416	104	400	0.00	

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 10/07/2016  
Reported: 10/14/2016  
Project Name: WILLOW A STATE #2  
Project Number: COG  
Project Location: MALAGA, NM

Sampling Date: 10/06/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SP 2 @ 5' (H602264-09)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	176	16.0	10/11/2016	ND	400	100	400	0.00	

**Sample ID: SP 3 @ 1' (H602264-10)**

BTEx 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/11/2016	ND	2.18	109	2.00	1.38	
Toluene*	<0.050	0.050	10/11/2016	ND	2.27	114	2.00	1.12	
Ethylbenzene*	<0.050	0.050	10/11/2016	ND	2.21	110	2.00	1.03	
Total Xylenes*	<0.150	0.150	10/11/2016	ND	6.66	111	6.00	0.694	
Total BTEx	<0.300	0.300	10/11/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 96.9 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1460	16.0	10/11/2016	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/10/2016	ND	188	94.1	200	3.55	
DRO >C10-C28	<10.0	10.0	10/10/2016	ND	214	107	200	4.52	

Surrogate: 1-Chlorooctane 98.5 % 35-147

Surrogate: 1-Chlorooctadecane 98.7 % 28-171

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 10/07/2016  
Reported: 10/14/2016  
Project Name: WILLOW A STATE #2  
Project Number: COG  
Project Location: MALAGA, NM

Sampling Date: 10/06/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SP 3 @ 2' (H602264-11)**

BTEx 8021B		mg/kg		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/11/2016	ND	2.18	109	2.00	1.38		
Toluene*	<0.050	0.050	10/11/2016	ND	2.27	114	2.00	1.12		
Ethylbenzene*	<0.050	0.050	10/11/2016	ND	2.21	110	2.00	1.03		
Total Xylenes*	<0.150	0.150	10/11/2016	ND	6.66	111	6.00	0.694		
Total BTEx	<0.300	0.300	10/11/2016	ND						

Surrogate: 4-Bromofluorobenzene (PID) 97.9 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	896	16.0	10/11/2016	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/10/2016	ND	188	94.1	200	3.55	
DRO >C10-C28	<10.0	10.0	10/10/2016	ND	214	107	200	4.52	

Surrogate: 1-Chlorooctane 99.6 % 35-147

Surrogate: 1-Chlorooctadecane 98.9 % 28-171

**Sample ID: SP 3 @ 3' (H602264-12)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	400	16.0	10/11/2016	ND	400	100	400	0.00	

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 10/07/2016  
Reported: 10/14/2016  
Project Name: WILLOW A STATE #2  
Project Number: COG  
Project Location: MALAGA, NM

Sampling Date: 10/06/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SP 3 @ 4' (H602264-13)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	208	16.0	10/11/2016	ND	400	100	400	0.00	

**Sample ID: SP 4 @ 1' (H602264-14)**

BTEx 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/11/2016	ND	2.18	109	2.00	1.38	
Toluene*	<0.050	0.050	10/11/2016	ND	2.27	114	2.00	1.12	
Ethylbenzene*	<0.050	0.050	10/11/2016	ND	2.21	110	2.00	1.03	
Total Xylenes*	<0.150	0.150	10/11/2016	ND	6.66	111	6.00	0.694	
Total BTEx	<0.300	0.300	10/11/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.8 % 73.6-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	896	16.0	10/11/2016	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/10/2016	ND	188	94.1	200	3.55	
DRO >C10-C28	<10.0	10.0	10/10/2016	ND	214	107	200	4.52	

Surrogate: 1-Chlorooctane 95.1 % 35-147

Surrogate: 1-Chlorooctadecane 98.0 % 28-171

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 10/07/2016  
Reported: 10/14/2016  
Project Name: WILLOW A STATE #2  
Project Number: COG  
Project Location: MALAGA, NM

Sampling Date: 10/06/2016  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SP 4 @ 2' (H602264-15)**

BTEx 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/11/2016	ND	2.18	109	2.00	1.38	
Toluene*	<0.050	0.050	10/11/2016	ND	2.27	114	2.00	1.12	
Ethylbenzene*	<0.050	0.050	10/11/2016	ND	2.21	110	2.00	1.03	
Total Xylenes*	<0.150	0.150	10/11/2016	ND	6.66	111	6.00	0.694	
Total BTEx	<0.300	0.300	10/11/2016	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.4 % 73.6-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	656	16.0	10/11/2016	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/10/2016	ND	188	94.1	200	3.55	
DRO >C10-C28	<10.0	10.0	10/10/2016	ND	214	107	200	4.52	

Surrogate: 1-Chlorooctane 101 % 35-147

Surrogate: 1-Chlorooctadecane 106 % 28-171

**Sample ID: SP 4 @ 3' (H602264-16)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	208	16.0	10/11/2016	ND	400	100	400	0.00	

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Celey D. Keene, Lab Director/Quality Manager

### Notes and Definitions

QR-03	The RPD value for the sample duplicate or MS/MSD was outside if QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
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
**	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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---

Celey D. Keene, Lab Director/Quality Manager





# CARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240  
(505) 393-2326 FAX (505) 393-2476

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: BBC International, Inc.		<b>BILL TO</b>		<b>ANALYSIS REQUEST</b>									
Project Manager: Cliff Brunson		P.O. #:											
Address: P.O. Box 805		Company:											
City: Hobbs		Attn:											
Phone #: 575-397-6388		Address:											
State: NM Zip: 88241		City:											
Fax #: 575-397-0397		State:											
Project #:		Zip:											
Project Name: W. Hwy 4 State #2		Phone #:											
Project Location: N21592		Fax #:											
Sampler Name: V.O.													
FOR LAB USE ONLY													
Lab I.D.		Sample I.D.		(G)RAB OR (C)OMP.		# CONTAINERS		MATRIX		PRESERV.		SAMPLING	
				GROUNDWATER				WASTEWATER					
				SOIL				OIL					
				SLUDGE				OTHER :					
				ACID/BASE:				ICE / COOL					
				OTHER :									
				DATE		TIME							
H002264		Sp1e1		10-6		10:34		X		X		X	
1		4		10:44		X		X		X		X	
2		6		11:20		X		X		X		X	
3		4		11:40		X		X		X		X	
4		2		12:00		X		X		X		X	
5		4		11:11		X		X		X		X	
6		5		12:00		X		X		X		X	
7		5		13:33		X		X		X		X	
8		5		14:42		X		X		X		X	
9		5		15:55		X		X		X		X	
10		5											
PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.													
Relinquished By: [Signature]		Received By: [Signature]		Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No		Add'l Phone #:							
Time: 11:00		Date: 10-7-16		Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No		Add'l Fax #:							
Relinquished By: [Signature]		Received By: [Signature]											
Time:		Date:											
Delivered By: (Circle One)		Sample Condition		CHECKED BY: [Signature]									
Sampler - UPS - Bus - Other:		Cool <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/>		Initials:									
1.30c		<input type="checkbox"/> Yes <input type="checkbox"/> No											

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

#75



**ARDINAL LABORATORIES**  
101 East Marland, Hobbs, NM 88240  
(505) 393-2326 FAX (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: BBC International, Inc.

Project Manager: Cliff Brunson

Address: P.O. Box 805

City: Hobbs

Phone #: 575-397-6388

Project #:

Project Name:

Project Location:

Sampler Name:

**BILL TO**

**ANALYSIS REQUEST**

P.O. #:

Company:

Attn:

Address:

City:

State: Zip:

Phone #:

Fax #:

FOR LAB USE ONLY

Lab I.D.

Sample I.D.

HC021604

SP302

SP41

SP41

SP41

SP41

SP41

SP41

SP41

SP41

SP41

SP41

SP41

SP41

SP41

SP41

SP41

SP41

SP41

SP41

SP41

SP41

SP41

(G)RAB OR (C)OMP.

# CONTAINERS

GROUNDWATER

WASTEWATER

SOIL

OIL

SLUDGE

OTHER :

ACID/BASE:

ICE / COOL

OTHER :

DATE

TIME

DATE

TIME

DATE

TIME

DATE

TIME

DATE

TIME

DATE

TIME

DATE

TIME

DATE

TIME

DATE

TIME

DATE

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DATE

TIME

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Relinquished By:

Date: 10-7-16

Received By:

Phone Result:

Yes

No

Add'l Phone #:

Fax Result:

Yes

No

Add'l Fax #:

REMARKS:

Relinquished By:

Date: 11-00

Received By:

Phone Result:

Yes

No

Add'l Phone #:

Fax Result:

Yes

No

Add'l Fax #:

REMARKS:

Delivered By: (Circle One)

Sampler - UPS - Bus - Other:

1.30

Sample Condition  
Cool ☒ Intact ☒  
Yes ☒ No ☒

CHECKED BY:

(Initials)

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

#75



**From:** Bratcher, Mike, EMNRD  
**To:** [Cliff Brunson](#)  
**Cc:** [Patterson, Heather, EMNRD](#); [Robert Grubbs](#); [Ken Swinney](#); [Jennifer Gilkey](#); [Kathy Purvis](#); [Weaver, Crystal, EMNRD](#)  
**Subject:** RE: COG - Willow A State #002 - Remediation Plan  
**Date:** Thursday, November 10, 2016 9:25:27 AM

---

RE: COG \* Willow A St 2 \* **2RP-3855** \* DOR: 8/27/16

Cliff,

Your proposal for remediation of the above referenced release is approved. Please advise once remedial activities have been scheduled.

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

If you have any questions or concerns, and for notification, please contact me.

**Mike Bratcher**  
**NMOCD District 2**  
**811 S. First Street**  
**Artesia, NM 88210**  
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**From:** Cliff Brunson [mailto:[cbrunson@bbcinternational.com](mailto:cbrunson@bbcinternational.com)]  
**Sent:** Friday, November 04, 2016 3:26 PM  
**To:** Bratcher, Mike, EMNRD  
**Cc:** Patterson, Heather, EMNRD; Robert Grubbs; Ken Swinney; Jennifer Gilkey; Kathy Purvis  
**Subject:** COG - Willow A State #002 - Remediation Plan

Mike,

This e-mail is to confirm our discussion concerning the remediation plan for the COG Willow A State #002 release. I have attached the information packet that we used in our discussion with a cover page describing the remediation plan that we agreed upon.

If you would please reply back via e-mail with your concurrence on this plan, it would be greatly appreciated.

Thanks, Cliff

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