

PRELIMINARY RESULTS



*EOG Resources, Inc.
Artesia Division Office
104 S. 4th Street
Artesia, N. M. 88210*

March 21, 2018

Ms. Olivia Yu
NMOCD District I
1625 N. French Drive
Hobbs, NM 88210

Re: Big Sky ABY State #1
1RP-4792
30-005-21020
Section 26, T8S-R33E
Chaves County, New Mexico

Dear Ms. Yu,

EOG Y Resources, Inc. is submitting the enclosed remediation work plan for the above referenced site.

If there are no objections with the scope of work described in the plan, EOG Y Resources, Inc. will have a contractor begin work on or before April 3, 2018.

If you have any questions call me at (575) 748-4217

Thank you.

Robert Asher
Environmental Supervisor
EOG Y Resources, Inc.



*EOG Resources, Inc.
Artesia Division Office
104 S. 4th Street
Artesia, N. M. 88210*

March 21, 2018

Ms. Olivia Yu
NMOCD District I
1625 N. French Drive
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Robert Asher
Environmental Supervisor
EOG Y Resources, Inc.

I. Location

From the intersection of LeDoux Road and Ruidoso Road, take LeDoux Road east/southeast for approximately 2.6 miles (to ranch house), then follow the road northeast for approximately 0.5 miles, then turn left (north) at the entrance of the location.

II. Background

On August 6, 2017, EOG Y Resources, Inc. submitted to the NMOCD District I office a Form C-141 for the release of 20 B/PW with 8 B/PW recovered. The affected area is approximately 35 feet by 50 feet within the primary berm of the production facility and was contained within the bermed battery. The release was caused by a hole in heater from vandalism (gunshot). A vacuum truck was dispatched to recover the remaining produced water and a backhoe crew was contracted to excavate visually impacted soils (approximately 35' X 50' X 1' deep).

III. Surface and Ground Water

Area surface geology is Cenozoic Tertiary. Based on information regarding this location (Section 26, T8S-R33E), the New Mexico Office of the State Engineer (NMOSE) database depth to groundwater is approximately 157 feet – 165 feet (NMOSE-CL00314 POD1, Section 34, T8S-R33E & NMOSE-CL00307 POD1, Section 13, T8S-R32E), the United States Geological Survey National Water Information System (USGS-333503103325801, Section 34, T8S-R33E & USGS-333522103302901, Section 25, T8S-R33E) depth to groundwater is approximately 147.4 feet - 157 feet. **Based on this information the Site Ranking is a Zero (0).**

Watercourses in the area are dry except for infrequent flows in response to major precipitation events, with the nearest body of surface water being Lane Salt Lake at 8.5 miles away.

IV. NMOCD Ranking Criteria

The ranking for this site is zero (0) based on the following:

Depth to ground water	> 100'
Wellhead Protection Area	> 1000'
Distance to surface water body	> 1000'

Based on the ranking criteria, the NMOCD established RRALs for this site are:

Benzene	10 ppm
BTEX	50 ppm
TPH	5,000 ppm
Chlorides	No established RRAL

V. Soils

The area consists of soils that are loam based topsoil with deeper layers of consisting of a cemented hardpan caliche layer in the subsurface that is impenetrable, which provides a permeability barrier to prohibit percolation of contaminants into the subsurface water system.

VI. Scope of work

During the sampling of 2/5/2018, backhoe refusal did not allow EOG Y to sample any further than the point of four (4) feet below surface. Based off of that fact and the enclosed analytical results, EOG Y Resources, Inc. will excavate four (4) feet of impacted soils from the release area to the hardpan caliche layer. A six (6) inch layer of clean native or like soil will be placed in the bottom of the excavation to cushion a 20 millimeter synthetic liner, this will protect the liner from puncture or damage. The excavation will then be backfilled with approximately 42-46 inches of clean native or like soil to be slightly above grade to allow for settling.

When the remediation work is completed, a Form C-141, Final Report/Closure Report will be submitted requesting closure.

With the well being plugged and the site abandoned after this release occurred the site will be reclaimed per State Land Office rules and reseeded per the SLO's recommended seed and seed rate.

Table 1

Soil Analytical Data

Analytical Report	Sample Area	Latitude/Longitude	Sample Date	Sample Type	Depth	BTEX	GRO	DRO	EXT DRO	Chlorides
S-1.Surface	Excavation Area	33.58575 103.54311	8/15/2017	Grab/Auger	Surface (1' BSL)	ND	10	5000	2200	210
S-1.1	Excavation Area	"	8/15/2017	Grab/Auger	1' (2' BSL)	0.2	61	5500	1800	71
S-1.2	Excavation Area	"	8/15/2017	Grab/Auger	2' (3' BSL)	ND	5	1500	750	100
Analytical Report	Sample Area	Latitude/Longitude	Sample Date	Sample Type	Depth	BTEX	GRO	DRO	EXT DRO	Chlorides
SP-3	Excavation Area	33.58575 103.54311	2/1/2018	Grab/Backhoe	3' (4' BSL)		74.7	2700	228	
SP-4*	Excavation Area	"	2/1/2018	Grab/Backhoe	4' (5' BSL)		305	5270	667	
Analytical Report	Sample Area	Latitude/Longitude	Sample Date	Sample Type	Depth	BTEX	GRO	DRO	EXT DRO	Chlorides
S-2.Surface	Excavation Area	33.585777 103.543130	2/5/2018	Grab/Backhoe	Surface (1' BSL)	<0.3	<10.0	74.1	14.2	2320
S-2.1	Excavation Area	"	2/5/2018	Grab/Backhoe	1' (2' BSL)	<0.3	<10.0	117	24.1	864
S-2.2	Excavation Area	"	2/5/2018	Grab/Backhoe	2' (3' BSL)	<0.3	<10.0	<10.0	<10.0	1100
S-2.3**	Excavation Area	"	2/5/2018	Grab/Backhoe	3' (4' BSL)	<0.3	<10.0	<10.0	<10.0	1150
Analytical Report	Sample Area	Latitude/Longitude	Sample Date	Sample Type	Depth	BTEX	GRO	DRO	EXT DRO	Chlorides
S-3.Surface	Excavation Area	33.585728 103.543132	2/5/2018	Grab/Backhoe	Surface (1' BSL)	<0.3	<10.0	<10.0	<10.0	48
S-3.1	Excavation Area	"	2/5/2018	Grab/Backhoe	1' (2' BSL)	<0.3	<10.0	<10.0	<10.0	192
S-3.2	Excavation Area	"	2/5/2018	Grab/Backhoe	2' (3' BSL)	<0.3	<10.0	<10.0	<10.0	240
S-3.3**	Excavation Area	"	2/5/2018	Grab/Backhoe	3' (4' BSL)	<0.3	<10.0	<10.0	<10.0	208
Analytical Report	Sample Area	Latitude/Longitude	Sample Date	Sample Type	Depth	BTEX	GRO	DRO	EXT DRO	Chlorides
S-4.Surface	Excavation Area	33.585723 103.543036	2/5/2018	Grab/Backhoe	Surface (1' BSL)	<0.3	<10.0	<10.0	<10.0	3200
S-4.1	Excavation Area	"	2/5/2018	Grab/Backhoe	1' (2' BSL)	<0.3	<10.0	76	<10.0	2360
S-4.2	Excavation Area	"	2/5/2018	Grab/Backhoe	2' (3' BSL)	9.4	363	5150	468	1920
S-4.3**	Excavation Area	"	2/5/2018	Grab/Backhoe	3' (4' BSL)	24.9	561	4590	367	432
Analytical Report	Sample Area	Latitude/Longitude	Sample Date	Sample Type	Depth	BTEX	GRO	DRO	EXT DRO	Chlorides
S-5.Surface	Excavation Area	33.585768 103.543031	2/5/2018	Grab/Backhoe	Surface (1' BSL)	<0.3	<10.0	609	94.6	480
S-5.1	Excavation Area	"	2/5/2018	Grab/Backhoe	1' (2' BSL)	1.2	<10.0	32.2	<10.0	688
S-5.2	Excavation Area	"	2/5/2018	Grab/Backhoe	2' (3' BSL)	<0.3	<10.0	<10.0	<10.0	1650
S-5.3**	Excavation Area	"	2/5/2018	Grab/Backhoe	3' (4' BSL)	<0.3	<10.0	<10.0	<10.0	1550

Site Ranking is Twenty (20). Depth to Ground Water >100' (approx. 185', per USGS & NMOSE). Distance to Surface Water Body <200'

All results are ppm. BSL - Below Surface Level. ** - Backhoe refusal @ 3'. * - Backhoe refusal @ 4'.

Analytical Report	Sample Area	Latitude/Longitude	Sample Date	Sample Type	Depth	BTEX	GRO	DRO	EXT DRO	Chlorides
CP-1	North Sidewall	33.58576 103.54316	8/15/2017	Grab/Auger	Surface (2' BSL)	ND	ND	200		900
CP-1.2	"	"	2/1/2018	Grab/Backhoe	2' (3' BSL)		<10	<10		752
CP-1.3**	"	"	2/1/2018	Grab/Backhoe	3' (4' BSL)		<10	<10		688
Analytical Report	Sample Area	Latitude/Longitude	Sample Date	Sample Type	Depth	BTEX	GRO	DRO	EXT DRO	Chlorides
CP-2	East Sidewall	33.58577 103.54310	8/15/2017	Grab/Auger	Surface (2' BSL)	ND	ND	87		ND
CP-2.2	"	"	2/1/2018	Grab/Backhoe	2' (3' BSL)		<10	12.1		
CP-2.3**	"	"	2/1/2018	Grab/Backhoe	3' (4' BSL)		<10	<10		
Analytical Report	Sample Area	Latitude/Longitude	Sample Date	Sample Type	Depth	BTEX	GRO	DRO	EXT DRO	Chlorides
CP-3	South Sidewall	33.58573 103.54302	8/15/2017	Grab/Auger	Surface (2' BSL)	ND	ND	25		610
CP-3.2	"	"	2/1/2018	Grab/Backhoe	2' (3' BSL)					112
CP-3.3**	"	"	2/1/2018	Grab/Backhoe	3' (4' BSL)					176
Analytical Report	Sample Area	Latitude/Longitude	Sample Date	Sample Type	Depth	BTEX	GRO	DRO	EXT DRO	Chlorides
CP-4	West Sidewall	33.589829 103.538936	8/15/2017	Grab/Auger	Surface (2' BSL)	4.3	63	310		470
CP-4.2	"	"	2/1/2018	Grab/Backhoe	2' (3' BSL)		<10	<10		
CP-4.3**	"	"	2/1/2018	Grab/Backhoe	3' (4' BSL)		<10	<10		
Analytical Report	Sample Area	Latitude/Longitude	Sample Date	Sample Type	Depth	BTEX	GRO	DRO	EXT DRO	Chlorides
BG-Surface	Background	33.585878 103.543255	2/1/2018	Grab/Backhoe	Surface	<0.3	<10	<10	<10	16
BG-1	"	"	2/1/2018	Grab/Backhoe	1'	<0.3	<10	<10	<10	16
BG-2	"	"	2/1/2018	Grab/Backhoe	2'	<0.3	<10	<10	<10	<16.0
BG-3	"	"	2/1/2018	Grab/Backhoe	3'	<0.3	<10	<10	<10	64

Site Ranking is Twenty (20). Depth to Ground Water >100' (approx. 185', per USGS & NMOSE). Distance to Surface Water Body <200'

All results are ppm. BSL - Below Surface Level. * - Backhoe refusal @ 4'. ** - Backhoe refusal @ 3'.

Figure 1

Site Map

Big Sky ABY State #1

30-005-21020

Section 26, T8S-R33E

Chaves County, New Mexico

Legend

- Big Sky ABY State #1
- Release Area (Red Outline)

Google Earth

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43

200 ft



Big Sky ABY State #1

30-005-21020

Section 26, T8S-R33E

Chaves County, New Mexico

Big Sky ABY State #1

Legend

- Big Sky ABY State #1
- Release Area (Red Outline)

Google Earth

© 2018 Google

30.1

30.1

Big Sky ABY State #1

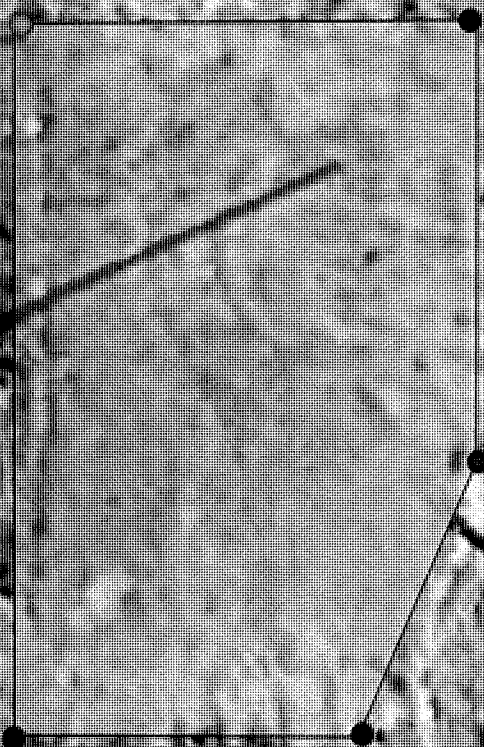
30-005-21020

Section 26, T8S-R33E

Chaves County, New Mexico

Legend

- 33.585700 & -103.542989
- 33.585712 & -103.543167
- 33.585763 & -103.542984
- 33.5857920 & -103.543050
- 33.585799 & -103.543155
- Release Area (Red Outline)



Google Earth

© 2016 Google

50 ft



Figure 2

Vertical Sample Point(s)

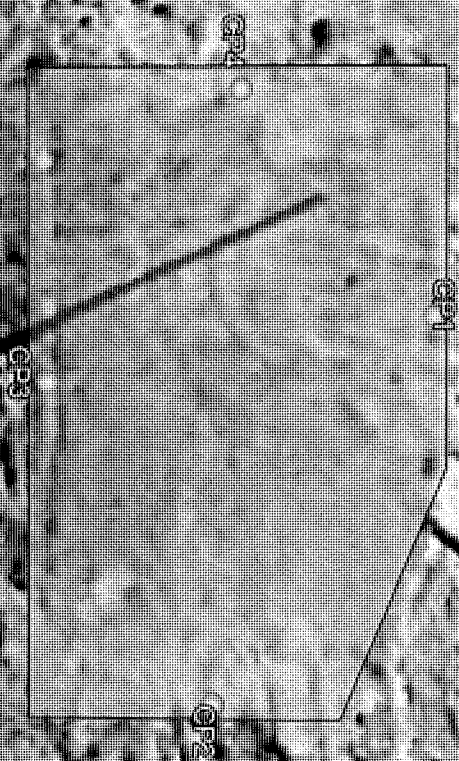
Big Sky ABY State #1

30-005-21020

Section 26, T8S-R33E

Chaves County, New Mexico

- Legend**
- Release Area (Red Outline)
 - Vertical Sample Points



Google Earth

©2019 Google

60 ft



Figure 3
Horizontal Sample Point(s)

Big Sky ABY State #1

30-005-21020

Section 26, T8S-R33E

Chaves County, New Mexico

Legend

- Horizontal Sample Points
- Release Area (Red Outline)

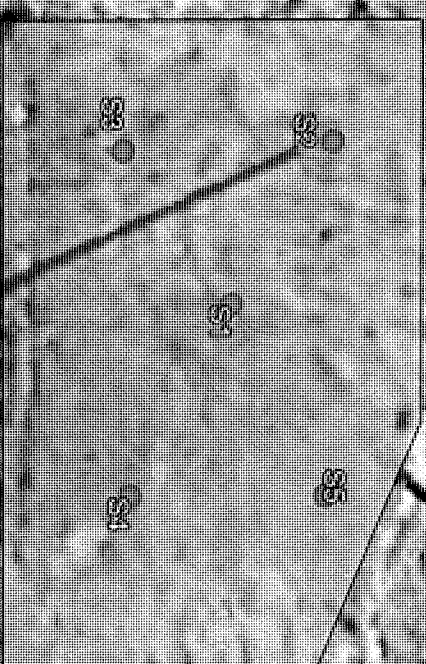


Figure 4

Background Sample Point(s)

Big Sky ABY State #1

30-005-21020

Section 26, T8S-R33E

Chaves County, New Mexico

BG Samples

Legend

- BG Samples
- Release Area (Red Outline)

Google Earth

©2010 Google

60 ft





Appendix A

Water Well Date Site Map

Big Sky ABY State #1

30-005-21020
Section 26, T8S-R33E
Chaves County, New Mexico

- Legend**
-  Big Sky ABY State #1
 -  USGS Water Wells

USGS #333522103302901 (DTGW 147.40')

Big Sky ABY State #1

USGS #333503103325801 (DTGW 155')

Google Earth

© 2017 Google

1 mi



Big Sky ABY State #1

30-005-21020

Section 26, T8S-R33E




Chaves County, New Mexico

NMOSE CL 00307 POD1 (DTGW 165')

LeDoux Road

Ruidosa Road

Legend

-  Big Sky ABY State #1
-  LeDoux Road
-  NMOSE Water Wells
-  Ruidosa Road

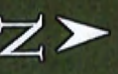
Big Sky ABY State #1

NMOSE CL00314 POD1 (DTGW 157')

Google Earth

© 2017 Google

1 mi



Appendix B

NMOSE Well Log




New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

Well Tag	POD Number	Q64 Q16 Q4	Sec	Tws	Rng	X	Y
	CL 00314 POD1	1	2	2	34 08S 33E	634611	3716897 

Driller License: 1626

Driller Company: TAYLOR, ROY ALLEN

Driller Name: TAYLOR, ROY A.

Drill Start Date: 04/18/2016

Drill Finish Date: 04/20/2016

Plug Date:

Log File Date: 04/29/2016

PCW Rcv Date:

Source: Shallow

Pump Type:

Pipe Discharge Size:

Estimated Yield: 5 GPM

Casing Size: 5.00

Depth Well: 220 feet

Depth Water: 157 feet

Water Bearing Stratifications:

Top Bottom Description

116 135 Sandstone/Gravel/Conglomerate

135 185 Sandstone/Gravel/Conglomerate

182 205 Sandstone/Gravel/Conglomerate

Casing Perforations:

Top Bottom

160 220



New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	CL 00307 POD1	2	3	4	13	08S	32E	628014	3720298

Driller License: 1497	Driller Company: COX DRILLING	
Driller Name: COX, TOM W.		
Drill Start Date: 05/15/2015	Drill Finish Date: 05/15/2015	Plug Date:
Log File Date: 05/29/2015	PCW Rcv Date:	Source: Shallow
Pump Type:	Pipe Discharge Size:	Estimated Yield: 1 GPM
Casing Size: 5.00	Depth Well: 195 feet	Depth Water: 165 feet

Water Bearing Stratifications:	Top	Bottom	Description
	165	175	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	125	195

Appendix C

USGS Groundwater Level Information



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National Water Information System: Web Interface

[USGS Water Resources](#)

Data Category:

Site Information ▼

Geographic Area:

United States ▼

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USGS 333522103302901 08S.33E.25.42422

Available data for this site

SUMMARY OF ALL AVAILABLE DATA ▼

GO

Well Site

DESCRIPTION:

Latitude 33°35'23", Longitude 103°30'37" NAD27
Roosevelt County, New Mexico , Hydrologic Unit 12080001
Well depth: 151 feet
Land surface altitude: 4,315.00 feet above NGVD29.
Well completed in "Ogallala Formation" (121OGLL) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field groundwater-level measurements	1980-02-07	1995-01-26	4

OPERATION:

Record for this site is maintained by the USGS New Mexico Water Science Center
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Title: NWIS Site Information for USA: Site Inventory

URL: <https://waterdata.usgs.gov/nwis/inventory?>



Page Contact Information: [USGS Water Data Support Team](#)

Page Last Modified: 2017-11-03 17:11:55 EDT

0.31 0.29 caww01



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Data Category:

Groundwater ▼

Geographic Area:

United States ▼

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Groundwater levels for the Nation

Search Results -- 1 sites found

site_no list =

- 333522103302901

Minimum number of levels = 1

[Save file of selected sites](#) to local disk for future upload

USGS 333522103302901 08S.33E.25.42422

Available data for this site

Groundwater: Field measurements ▼

GO

Roosevelt County, New Mexico

Hydrologic Unit Code 12080001

Latitude 33°35'23", Longitude 103°30'37" NAD27

Land-surface elevation 4,315.00 feet above NGVD29

The depth of the well is 151 feet below land surface.

This well is completed in the Ogallala Formation (121OGLL) local aquifer.

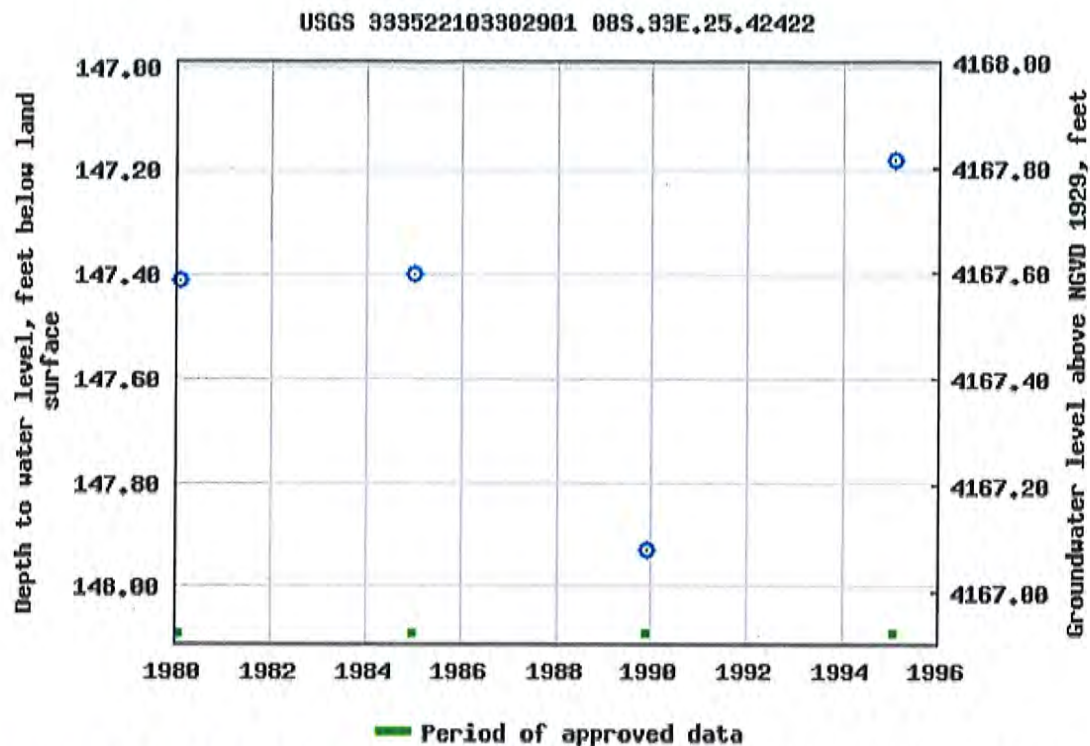
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Breaks in the plot represent a gap of at least one year between field measurements.

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Title: Groundwater for USA: Water Levels

URL: <https://nwis.waterdata.usgs.gov/nwis/gwlevels?>



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1.03 0.87 nadww01



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National Water Information System: Web Interface

[USGS Water Resources](#)

Data Category:

Site Information ▼

Geographic Area:

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USGS 333503103325801 08S.33E.34.212211

Available data for this site

SUMMARY OF ALL AVAILABLE DATA ▼

GO

Well Site

DESCRIPTION:

Latitude 33°35'03", Longitude 103°32'58" NAD27
Chaves County, New Mexico , Hydrologic Unit 12080001
Well depth: 180 feet
Land surface altitude: 4,355 feet above NGVD29.

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field groundwater-level measurements	1995-02-21	1995-02-21	1

OPERATION:

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Title: NWIS Site Information for USA: Site Inventory

URL: <https://waterdata.usgs.gov/nwis/inventory?>



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0.28 0.25 caww01



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Data Category:

Groundwater ▼

Geographic Area:

United States ▼

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Groundwater levels for the Nation

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site_no list =

- 333503103325801

Minimum number of levels = 1

[Save file of selected sites](#) to local disk for future upload

USGS 333503103325801 08S.33E.34.212211

Available data for this site

Groundwater: Field measurements ▼

GO

Chaves County, New Mexico

Hydrologic Unit Code 12080001

Latitude 33°35'03", Longitude 103°32'58" NAD27

Land-surface elevation 4,355 feet above NGVD29

The depth of the well is 180 feet below land surface.

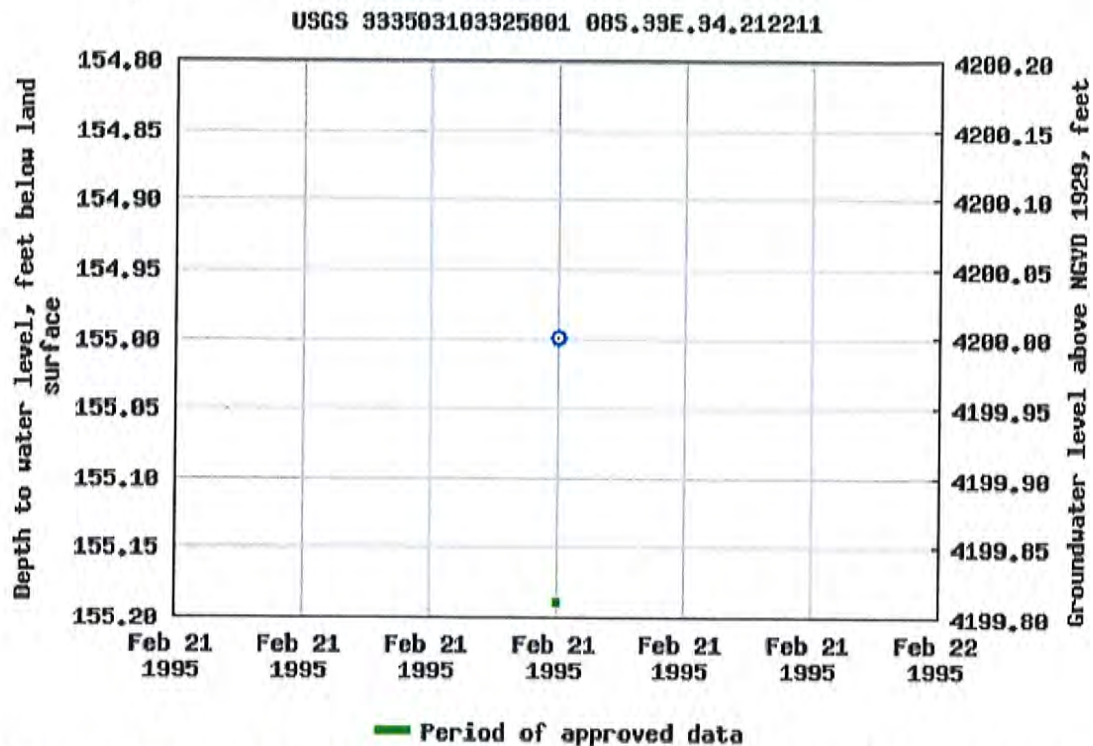
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Breaks in the plot represent a gap of at least one year between field measurements.

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Title: Groundwater for USA: Water Levels

URL: <https://nwis.waterdata.usgs.gov/nwis/gwlevels?>



Page Contact Information: [USGS Water Data Support Team](#)

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1.01 0.88 nadww01

Appendix D

Soil Sample Laboratory Data



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

August 25, 2017

Robert Asher

EOG

105 South Fourth Street

Artesia, NM 88210

TEL:

FAX

RE: Big Sky ABY State 1

OrderNo.: 1708B37

Dear Robert Asher:

Hall Environmental Analysis Laboratory received 7 sample(s) on 8/17/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1708B37

Date Reported: 8/25/2017

CLIENT: EOG

Client Sample ID: CP-1

Project: Big Sky ABY State 1

Collection Date: 8/15/2017 12:12:00 PM

Lab ID: 1708B37-001

Matrix: SOIL

Received Date: 8/17/2017 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM
Diesel Range Organics (DRO)	200	100		mg/Kg	10	8/22/2017 1:15:37 AM	33449
Surr: DNOP	0	70-130	S	%Rec	10	8/22/2017 1:15:37 AM	33449
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/21/2017 10:17:39 PM	33452
Surr: BFB	75.6	54-150		%Rec	1	8/21/2017 10:17:39 PM	33452
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.023		mg/Kg	1	8/21/2017 10:17:39 PM	33452
Toluene	ND	0.047		mg/Kg	1	8/21/2017 10:17:39 PM	33452
Ethylbenzene	ND	0.047		mg/Kg	1	8/21/2017 10:17:39 PM	33452
Xylenes, Total	ND	0.094		mg/Kg	1	8/21/2017 10:17:39 PM	33452
Surr: 4-Bromofluorobenzene	107	66.6-132		%Rec	1	8/21/2017 10:17:39 PM	33452

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report

Lab Order 1708B37

Date Reported: 8/25/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: EOG

Client Sample ID: CP-2

Project: Big Sky ABY State 1

Collection Date: 8/15/2017 12:22:00 PM

Lab ID: 1708B37-002

Matrix: SOIL

Received Date: 8/17/2017 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM
Diesel Range Organics (DRO)	87	9.7		mg/Kg	1	8/22/2017 12:42:01 PM	33449
Surr: DNOP	97.9	70-130		%Rec	1	8/22/2017 12:42:01 PM	33449
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/21/2017 10:41:32 PM	33452
Surr: BFB	78.6	54-150		%Rec	1	8/21/2017 10:41:32 PM	33452
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.025		mg/Kg	1	8/21/2017 10:41:32 PM	33452
Toluene	ND	0.049		mg/Kg	1	8/21/2017 10:41:32 PM	33452
Ethylbenzene	ND	0.049		mg/Kg	1	8/21/2017 10:41:32 PM	33452
Xylenes, Total	ND	0.098		mg/Kg	1	8/21/2017 10:41:32 PM	33452
Surr: 4-Bromofluorobenzene	109	66.6-132		%Rec	1	8/21/2017 10:41:32 PM	33452

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1708B37

Date Reported: 8/25/2017

CLIENT: EOG

Client Sample ID: CP-3

Project: Big Sky ABY State 1

Collection Date: 8/15/2017 12:36:00 PM

Lab ID: 1708B37-003

Matrix: SOIL

Received Date: 8/17/2017 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM
Diesel Range Organics (DRO)	25	9.6		mg/Kg	1	8/22/2017 1:10:15 PM	33449
Surr: DNOP	96.6	70-130		%Rec	1	8/22/2017 1:10:15 PM	33449
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/21/2017 5:45:38 PM	33452
Surr: BFB	91.2	54-150		%Rec	1	8/21/2017 5:45:38 PM	33452
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.023		mg/Kg	1	8/21/2017 5:45:38 PM	33452
Toluene	ND	0.047		mg/Kg	1	8/21/2017 5:45:38 PM	33452
Ethylbenzene	ND	0.047		mg/Kg	1	8/21/2017 5:45:38 PM	33452
Xylenes, Total	ND	0.094		mg/Kg	1	8/21/2017 5:45:38 PM	33452
Surr: 4-Bromofluorobenzene	103	66.6-132		%Rec	1	8/21/2017 5:45:38 PM	33452

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report

Lab Order 1708B37

Date Reported: 8/25/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: EOG

Client Sample ID: CP-4

Project: Big Sky ABY State 1

Collection Date: 8/15/2017 12:48:00 PM

Lab ID: 1708B37-004

Matrix: SOIL

Received Date: 8/17/2017 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM
Diesel Range Organics (DRO)	310	9.3		mg/Kg	1	8/22/2017 1:38:24 PM	33449
Surr: DNOP	102	70-130		%Rec	1	8/22/2017 1:38:24 PM	33449
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	63	9.7		mg/Kg	2	8/21/2017 6:09:17 PM	33452
Surr: BFB	251	54-150	S	%Rec	2	8/21/2017 6:09:17 PM	33452
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.048		mg/Kg	2	8/21/2017 6:09:17 PM	33452
Toluene	0.53	0.097		mg/Kg	2	8/21/2017 6:09:17 PM	33452
Ethylbenzene	1.7	0.097		mg/Kg	2	8/21/2017 6:09:17 PM	33452
Xylenes, Total	2.1	0.19		mg/Kg	2	8/21/2017 6:09:17 PM	33452
Surr: 4-Bromofluorobenzene	119	66.6-132		%Rec	2	8/21/2017 6:09:17 PM	33452

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report

Lab Order 1708B37

Date Reported: 8/25/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: EOG

Client Sample ID: SP-Surface

Project: Big Sky ABY State 1

Collection Date: 8/15/2017 12:58:00 PM

Lab ID: 1708B37-005

Matrix: SOIL

Received Date: 8/17/2017 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM
Diesel Range Organics (DRO)	5000	100		mg/Kg	10	8/22/2017 3:09:24 AM	33449
Surr: DNOP	0	70-130	S -	%Rec	10	8/22/2017 3:09:24 AM	33449
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	10	4.6		mg/Kg	1	8/21/2017 6:33:00 PM	33452
Surr: BFB	173	54-150	S	%Rec	1	8/21/2017 6:33:00 PM	33452
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.023		mg/Kg	1	8/21/2017 6:33:00 PM	33452
Toluene	ND	0.046		mg/Kg	1	8/21/2017 6:33:00 PM	33452
Ethylbenzene	ND	0.046		mg/Kg	1	8/21/2017 6:33:00 PM	33452
Xylenes, Total	ND	0.093		mg/Kg	1	8/21/2017 6:33:00 PM	33452
Surr: 4-Bromofluorobenzene	112	66.6-132		%Rec	1	8/21/2017 6:33:00 PM	33452

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report

Lab Order 1708B37

Date Reported: 8/25/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: EOG

Client Sample ID: SP-1.0

Project: Big Sky ABY State 1

Collection Date: 8/15/2017 1:05:00 PM

Lab ID: 1708B37-006

Matrix: SOIL

Received Date: 8/17/2017 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM
Diesel Range Organics (DRO)	5500	98		mg/Kg	10	8/22/2017 3:37:39 AM	33449
Surr: DNOP	0	70-130	S	%Rec	10	8/22/2017 3:37:39 AM	33449
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	61	9.4		mg/Kg	2	8/21/2017 6:56:44 PM	33452
Surr: BFB	336	54-150	S	%Rec	2	8/21/2017 6:56:44 PM	33452
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.047		mg/Kg	2	8/21/2017 6:56:44 PM	33452
Toluene	ND	0.094		mg/Kg	2	8/21/2017 6:56:44 PM	33452
Ethylbenzene	ND	0.094		mg/Kg	2	8/21/2017 6:56:44 PM	33452
Xylenes, Total	0.23	0.19		mg/Kg	2	8/21/2017 6:56:44 PM	33452
Surr: 4-Bromofluorobenzene	127	66.6-132		%Rec	2	8/21/2017 6:56:44 PM	33452

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report

Lab Order 1708B37

Date Reported: 8/25/2017

Hall Environmental Analysis Laboratory, Inc.**CLIENT:** EOG**Client Sample ID:** SP-2.0**Project:** Big Sky ABY State 1**Collection Date:** 8/15/2017 1:16:00 PM**Lab ID:** 1708B37-007**Matrix:** SOIL**Received Date:** 8/17/2017 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: TOM
Diesel Range Organics (DRO)	1500	97		mg/Kg	10	8/22/2017 4:05:59 AM	33449
Surr: DNOP	0	70-130	S	%Rec	10	8/22/2017 4:05:59 AM	33449
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	5.0	5.0		mg/Kg	1	8/21/2017 7:44:05 PM	33452
Surr: BFB	126	54-150		%Rec	1	8/21/2017 7:44:05 PM	33452
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.025		mg/Kg	1	8/21/2017 7:44:05 PM	33452
Toluene	ND	0.050		mg/Kg	1	8/21/2017 7:44:05 PM	33452
Ethylbenzene	ND	0.050		mg/Kg	1	8/21/2017 7:44:05 PM	33452
Xylenes, Total	ND	0.10		mg/Kg	1	8/21/2017 7:44:05 PM	33452
Surr: 4-Bromofluorobenzene	108	66.6-132		%Rec	1	8/21/2017 7:44:05 PM	33452

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1708B37

25-Aug-17

Client: EOG
Project: Big Sky ABY State 1

Sample ID	LCS-33449	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range Organics						
Client ID:	LCSS	Batch ID:	33449	RunNo:	45091						
Prep Date:	8/18/2017	Analysis Date:	8/21/2017	SeqNo:	1427877	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	51	10	50.00	0	102	73.2	114				
Surr: DNOP	4.7		5.000		93.5	70	130				

Sample ID	MB-33449	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range Organics						
Client ID:	PBS	Batch ID:	33449	RunNo:	45091						
Prep Date:	8/18/2017	Analysis Date:	8/21/2017	SeqNo:	1427878	Units:	mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	ND	10									
Surr: DNOP	9.2		10.00		91.7	70	130				

Sample ID	LCS-33448	SampType:	LCS	TestCode:	EPA Method 8015M/D: Diesel Range Organics						
Client ID:	LCSS	Batch ID:	33448	RunNo:	45117						
Prep Date:	8/18/2017	Analysis Date:	8/21/2017	SeqNo:	1428776	Units:	%Rec				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Surr: DNOP	3.9		5.000		77.7	70	130				

Sample ID	MB-33448	SampType:	MBLK	TestCode:	EPA Method 8015M/D: Diesel Range Organics						
Client ID:	PBS	Batch ID:	33448	RunNo:	45117						
Prep Date:	8/18/2017	Analysis Date:	8/21/2017	SeqNo:	1428777	Units:	%Rec				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Surr: DNOP	8.4		10.00		84.0	70	130				

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1708B37

25-Aug-17

Client: EOG

Project: Big Sky ABY State 1

Sample ID	MB-33452	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	33452	RunNo:	45097					
Prep Date:	8/18/2017	Analysis Date:	8/21/2017	SeqNo:	1428026	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	840		1000		84.3	54	150			

Sample ID	LCS-33452	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	33452	RunNo:	45097					
Prep Date:	8/18/2017	Analysis Date:	8/21/2017	SeqNo:	1428027	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	93.0	76.4	125			
Surr: BFB	920		1000		92.2	54	150			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
PQL Practical Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1708B37

25-Aug-17

Client: EOG
Project: Big Sky ABY State 1

Sample ID	MB-33452	SampType:	MBLK	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	PBS	Batch ID:	33452	RunNo:	45097					
Prep Date:	8/18/2017	Analysis Date:	8/21/2017	SeqNo:	1428054	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.2		1.000		119	66.6	132			

Sample ID	LCS-33452	SampType:	LCS	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	LCSS	Batch ID:	33452	RunNo:	45097					
Prep Date:	8/18/2017	Analysis Date:	8/21/2017	SeqNo:	1428055	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	109	80	120			
Toluene	1.1	0.050	1.000	0	108	80	120			
Ethylbenzene	1.1	0.050	1.000	0	107	80	120			
Xylenes, Total	3.3	0.10	3.000	0	108	80	120			
Surr: 4-Bromofluorobenzene	1.2		1.000		123	66.6	132			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: EOG/Yates

Work Order Number: 1708B37

RcptNo: 1

Received By: Erin Melendrez

8-17-17
8/18/2017 8:45:00 AM

Completed By: Ashley Gallegos

8/18/2017 11:01:39 AM

Reviewed By: IMO

8/18/2017

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☒
2. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
5. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☒ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☒ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
9. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒
11. Were any sample containers received broken? Yes ☐ No ☒
12. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
14. Is it clear what analyses were requested? Yes ☒ No ☐
15. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐

of preserved
bottles checked
for pH: _____
(<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:	_____	Date	_____
By Whom:	_____	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	_____		
Client Instructions:	_____		

17. Additional remarks:

18. Cooler Information

Cooler No.	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	4.6	Good	Yes			

Chain-of-Custody Record

Client: **EOG Resources, Inc.**

Standard **Rush**

Project Name:

Mailing Address: 105 South 4th Street

Big Sky ABY State #1

Artesia, NM 88210

Project #:

Phone #: (575) 748-4217

30-005-21020

email: Robert_Asher@eogresources.com

Project Manager:

QA/QC Package:

Robert Asher

X Standard

☐ Level 4 (Full Validation)

PO# 205632

Accreditation:

Sampler: Robert Asher

☐ NELAP

☐ Other

On Ice: ☒ Yes ☐ No

Sample Temperature: 4.6

HEAL No. 1768B337

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

TPH Method 8015B (Gas/Diesel)

BTEX + MTBE + TMBs (8021)

BTEX + MTBE + TMBs (8021)

BTEX + MTBE + TMBs (8021)

BTEX + MTBE + TMBs (8021)

BTEX + MTBE + TMBs (8021)

BTEX + MTBE + TMBs (8021)

BTEX + MTBE + TMBs (8021)

BTEX + MTBE + TMBs (8021)

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BTEX + MTBE + TMBs (8021)

BTEX + MTBE + TMBs (8021)

BTEX + MTBE + TMBs (8021)

BTEX + MTBE + TMBs (8021)

BTEX + MTBE + TMBs (8021)

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BTEX + MTBE + TMBs (8021)

BTEX + MTBE + TMBs (8021)

BTEX + MTBE + TMBs (8021)

BTEX + MTBE + TMBs (8021)

8/15/17

12:12 PM

Soil

CP-1

1 - 4oz.

Ice

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

8/15/17

12:22 PM

Soil

CP-2

1 - 4oz.

Ice

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

8/15/17

12:36 PM

Soil

CP-3

1 - 4oz.

Ice

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

8/15/17

12:48 PM

Soil

CP-4

1 - 4oz.

Ice

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

8/15/17

12:58 PM

Soil

SP-Surface

1 - 4oz.

Ice

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

8/15/17

1:05 PM

Soil

SP-1.0

1 - 4oz.

Ice

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

8/15/17

1:16 PM

Soil

SP-2.0

1 - 4oz.

Ice

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

8/15/17

1:16 PM

Soil



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

August 25, 2017

Robert Asher

EOG

105 South Fourth Street

Artesia, NM 88210

TEL:

FAX

RE: Big Sky ABY State 1

OrderNo.: 1708B37

Dear Robert Asher:

Hall Environmental Analysis Laboratory received 7 sample(s) on 8/17/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order: 1708B37

Date Reported: 8/25/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: EOG
Project: Big Sky ABY State 1

Lab Order: 1708B37

Lab ID: 1708B37-001

Collection Date: 8/15/2017 12:12:00 PM

Client Sample ID: CP-1

Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							
Chloride	990	30		mg/Kg	20	8/22/2017 3:04:05 PM	33484

Analyst: MRA

Lab ID: 1708B37-002

Collection Date: 8/15/2017 12:22:00 PM

Client Sample ID: CP-2

Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							
Chloride	ND	30		mg/Kg	20	8/22/2017 3:16:30 PM	33484

Analyst: MRA

Lab ID: 1708B37-003

Collection Date: 8/15/2017 12:36:00 PM

Client Sample ID: CP-3

Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							
Chloride	610	30		mg/Kg	20	8/22/2017 3:53:44 PM	33484

Analyst: MRA

Lab ID: 1708B37-004

Collection Date: 8/15/2017 12:48:00 PM

Client Sample ID: CP-4

Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							
Chloride	470	30		mg/Kg	20	8/22/2017 4:06:09 PM	33484

Analyst: MRA

Lab ID: 1708B37-005

Collection Date: 8/15/2017 12:58:00 PM

Client Sample ID: SP-Surface

Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS							
Chloride	210	30		mg/Kg	20	8/22/2017 4:18:33 PM	33484

Analyst: MRA

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report

Lab Order: 1708B37

Date Reported: 8/25/2017

Hall Environmental Analysis Laboratory, Inc.

CLIENT: EOG
Project: Big Sky ABY State 1

Lab Order: 1708B37

Lab ID: 1708B37-006

Collection Date: 8/15/2017 1:05:00 PM

Client Sample ID: SP-1.0

Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	71	30		mg/Kg	20	8/22/2017 4:30:58 PM	33484
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Lab ID: 1708B37-007

Collection Date: 8/15/2017 1:16:00 PM

Client Sample ID: SP-2.0

Matrix: SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch ID
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EPA METHOD 300.0: ANIONS

Analyst: MRA

Chloride	100	30		mg/Kg	20	8/22/2017 4:43:22 PM	33484
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Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1708B37

25-Aug-17

Client: EOG
Project: Big Sky ABY State 1

Sample ID	MB-33484	SampType:	mbk	TestCode:	EPA Method 300.0: Anions					
Client ID:	PBS	Batch ID:	33484	RunNo:	45131					
Prep Date:	8/22/2017	Analysis Date:	8/22/2017	SeqNo:	1429509	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	LCS-33484	SampType:	lcs	TestCode:	EPA Method 300.0: Anions					
Client ID:	LCSS	Batch ID:	33484	RunNo:	45131					
Prep Date:	8/22/2017	Analysis Date:	8/22/2017	SeqNo:	1429510	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.9	90	110			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
PQL Practical Quantitative Limit	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified

Sample Log-In Check List

Client Name: EOG/Yates

50
8/22/17

Work Order Number: 1708B37

RcptNo: 1

Received By: Erin Melendrez

8-17-17

8/18/2017 8:45:00 AM

Completed By: Ashley Gallegos

8/18/2017 11:01:39 AM

Reviewed By:

IMO

8/18/2017

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☒
2. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☒ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☒ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
9. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒
11. Were any sample containers received broken? Yes ☐ No ☒
12. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
14. Is it clear what analyses were requested? Yes ☒ No ☐
15. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐

of preserved
bottles checked
for pH: _____
(<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:		Date:	
By Whom:		Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:			
Client Instructions:			

17. Additional remarks:

18. Cooler Information

Cooler No.	Temp °C	Condition	Seal Intact	Seal No.	Seal Date	Signed By
1	4.6	Good	Yes			

Chain-of-Custody Record

Client: **EOG Resources, Inc.**

Standard **Rush**

Project Name:

Mailing Address: 105 South 4th Street

Big Sky ABY State #1

Artesia, NM 88210

Project #:

Phone #: (575) 748-4217

30-005-21020

email: Robert_Asher@eogresources.com

Project Manager:

QA/QC Package:

Robert Asher

X Standard

☐ Level 4 (Full Validation)

PO# 205632

Accreditation:

Sampler: Robert Asher

☐ NELAP

☐ Other

On Ice: ☒ Yes ☐ No

Sample Temperature: 4.6

HEAL No. 1768B337

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

CP-1

Soil

12:12 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

CP-2

Soil

12:22 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

CP-3

Soil

12:36 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

CP-4

Soil

12:48 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

SP-Surface

Soil

12:58 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

SP-1.0

Soil

1:05 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

SP-2.0

Soil

1:16 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

SP-2.0

Soil

1:16 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

SP-2.0

Soil

1:16 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

SP-2.0

Soil

1:16 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

SP-2.0

Soil

1:16 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

SP-2.0

Soil

1:16 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

SP-2.0

Soil

1:16 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

SP-2.0

Soil

1:16 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

SP-2.0

Soil

1:16 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

SP-2.0

Soil

1:16 PM

8/15/17

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Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

SP-2.0

Soil

1:16 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

SP-2.0

Soil

1:16 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

SP-2.0

Soil

1:16 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

SP-2.0

Soil

1:16 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

SP-2.0

Soil

1:16 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

SP-2.0

Soil

1:16 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.

SP-2.0

Soil

1:16 PM

8/15/17

Date

Time

Matrix

Sample Request ID

Container Type and #

Preservative Type

Ice

1 - 4oz.</

February 12, 2018

ROBERT ASHER

EOG Y RESOURCES, INC

105 SOUTH 4TH STREET

ARTESIA, NM 88210

RE: BIG SKY ABY STATE #1 (S-2)

Enclosed are the results of analyses for samples received by the laboratory on 02/07/18 11:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. 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.

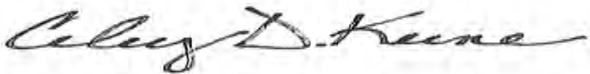
Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

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,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131

Received: 02/07/2018
Reported: 02/12/2018
Project Name: BIG SKY ABY STATE #1 (S-2)
Project Number: 30-005-21020
Project Location: CHAVES COUNTY

Sampling Date: 02/05/2018
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: S -2. SURFACE (H800397-01)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/09/2018	ND	2.05	103	2.00	1.96	QR-03
Toluene*	<0.050	0.050	02/09/2018	ND	2.01	100	2.00	2.18	QR-03
Ethylbenzene*	<0.050	0.050	02/09/2018	ND	1.97	98.6	2.00	1.49	QR-03
Total Xylenes*	<0.150	0.150	02/09/2018	ND	6.01	100	6.00	1.60	QR-03
Total BTEX	<0.300	0.300	02/09/2018	ND					

Surrogate: 4-Bromofluorobenzene (PJE) 103 % 72-148

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/09/2018	ND	214	107	200	13.9	
DRO >C10-C28*	74.1	10.0	02/09/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	14.2	10.0	02/09/2018	ND					

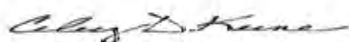
Surrogate: 1-Chlorooctane 54.3 % 41-142

Surrogate: 1-Chlorooctadecane 61.0 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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 client for 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 thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131Received: 02/07/2018
Reported: 02/12/2018
Project Name: BIG SKY ABY STATE #1 (S-2)
Project Number: 30-005-21020
Project Location: CHAVES COUNTYSampling Date: 02/05/2018
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker**Sample ID: S -2. 1 (H800397-02)**

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/09/2018	ND	2.05	103	2.00	1.96	
Toluene*	<0.050	0.050	02/09/2018	ND	2.01	100	2.00	2.18	
Ethylbenzene*	<0.050	0.050	02/09/2018	ND	1.97	98.6	2.00	1.49	
Total Xylenes*	<0.150	0.150	02/09/2018	ND	6.01	100	6.00	1.60	
Total BTEX	<0.300	0.300	02/09/2018	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 102 % 72-148

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/09/2018	ND	214	107	200	13.9	
DRO >C10-C28*	117	10.0	02/09/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	24.1	10.0	02/09/2018	ND					

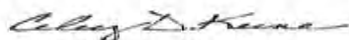
Surrogate: 1-Chlorooctane 52.9 % 41-142

Surrogate: 1-Chlorooctadecane 61.7 % 37.6-147

Cardinal Laboratories

* = Accredited Analyte

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 client for 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 thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 EOG Y RESOURCES, INC
 ROBERT ASHER
 105 SOUTH 4TH STREET
 ARTESIA NM, 88210
 Fax To: (575) 748-4131

 Received: 02/07/2018
 Reported: 02/12/2018
 Project Name: BIG SKY ABY STATE #1 (S-2)
 Project Number: 30-005-21020
 Project Location: CHAVES COUNTY

 Sampling Date: 02/05/2018
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: S -2. 2 (H800397-03)

BTEX 8021B	mg/kg	Analyzed By: MS							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/09/2018	ND	2.05	103	2.00	1.96	
Toluene*	<0.050	0.050	02/09/2018	ND	2.01	100	2.00	2.18	
Ethylbenzene*	<0.050	0.050	02/09/2018	ND	1.97	98.6	2.00	1.49	
Total Xylenes*	<0.150	0.150	02/09/2018	ND	6.01	100	6.00	1.60	
Total BTEX	<0.300	0.300	02/09/2018	ND					

Surrogate: 4-Bromofluorobenzene (PIL) 104 % 72-148

TPH 8015M	mg/kg	Analyzed By: MS							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/09/2018	ND	214	107	200	13.9	
DRO >C10-C28*	<10.0	10.0	02/09/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	<10.0	10.0	02/09/2018	ND					

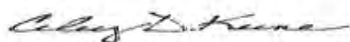
Surrogate: 1-Chlorooctane 62.3 % 41-142

Surrogate: 1-Chlorooctadecane 59.7 % 37.6-147

Cardinal Laboratories

* = Accredited Analyte

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 client for 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 thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Caley D. Keene, Lab Director/Quality Manager

Analytical Results For:EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131Received: 02/07/2018
Reported: 02/12/2018
Project Name: BIG SKY ABY STATE #1 (S-2)
Project Number: 30-005-21020
Project Location: CHAVES COUNTYSampling Date: 02/05/2018
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker**Sample ID: S -2. 3 (H800397-04)**

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/09/2018	ND	1.75	87.4	2.00	23.7	QR-03
Toluene*	<0.050	0.050	02/09/2018	ND	1.77	88.5	2.00	22.3	
Ethylbenzene*	<0.050	0.050	02/09/2018	ND	1.76	87.9	2.00	23.4	
Total Xylenes*	<0.150	0.150	02/09/2018	ND	5.25	87.5	6.00	22.5	
Total BTEX	<0.300	0.300	02/09/2018	ND					

Surrogate: 4-Bromofluorobenzene (PIL) 111 % 72-148

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/09/2018	ND	214	107	200	13.9	
DRO >C10-C28*	<10.0	10.0	02/09/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	<10.0	10.0	02/09/2018	ND					

Surrogate: 1-Chlorooctane 68.4 % 41-142

Surrogate: 1-Chlorooctadecane 66.7 % 37.6-147

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*=Accredited Analyte

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Caley D. Keene, Lab Director/Quality Manager

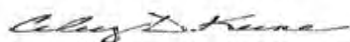
Notes and Definitions

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.
QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
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

Cardinal Laboratories

*=Accredited Analyte

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Caley D. Keene, Lab Director/Quality Manager



Star

February 12, 2018

ROBERT ASHER

EOG Y RESOURCES, INC

105 SOUTH 4TH STREET

ARTESIA, NM 88210

RE: BIG SKY ABY STATE #1 (S-2)

Enclosed are the results of analyses for samples received by the laboratory on 02/07/18 11:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. 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.

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,



Caley D. Keene

Lab Director/Quality Manager

Analytical Results For:

EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131

Received: 02/07/2018
Reported: 02/12/2018
Project Name: BIG SKY ABY STATE #1 (S-2)
Project Number: 30-005-21020
Project Location: CHAVES COUNTY

Sampling Date: 02/05/2018
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: S -2. SURFACE (H800397-01)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2320	16.0	02/12/2018	ND	416	104	400	3.77	

Sample ID: S -2. 1 (H800397-02)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	864	16.0	02/12/2018	ND	416	104	400	3.77	

Sample ID: S -2. 2 (H800397-03)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1100	16.0	02/12/2018	ND	416	104	400	3.77	

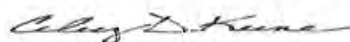
Sample ID: S -2. 3 (H800397-04)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1150	16.0	02/12/2018	ND	416	104	400	3.77	

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
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***	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

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

[illegible]

February 12, 2018

ROBERT ASHER

EOG Y RESOURCES, INC

105 SOUTH 4TH STREET

ARTESIA, NM 88210

RE: BIG SKY ABY STATE #1 (S-3)

Enclosed are the results of analyses for samples received by the laboratory on 02/07/18 11:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. 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.

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Method EPA 524.2	Total Trihalomethanes (TTHM)
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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

Analytical Results For:

 EOG Y RESOURCES, INC
 ROBERT ASHER
 105 SOUTH 4TH STREET
 ARTESIA NM, 88210
 Fax To: (575) 748-4131

 Received: 02/07/2018
 Reported: 02/12/2018
 Project Name: BIG SKY ABY STATE #1 (S-3)
 Project Number: 30-005-21020
 Project Location: CHAVES COUNTY

 Sampling Date: 02/05/2018
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: S -3.SURFACE (H800394-01)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/08/2018	ND	2.25	113	2.00	11.8	
Toluene*	<0.050	0.050	02/08/2018	ND	2.28	114	2.00	12.8	
Ethylbenzene*	<0.050	0.050	02/08/2018	ND	2.30	115	2.00	14.6	
Total Xylenes*	<0.150	0.150	02/08/2018	ND	6.74	112	6.00	14.5	
Total BTEX	<0.300	0.300	02/08/2018	ND					

Surrogate: 4-Bromofluorobenzene (PIL) 117 % 72-148

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/08/2018	ND	214	107	200	13.9	
DRO >C10-C28*	<10.0	10.0	02/08/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	<10.0	10.0	02/08/2018	ND					

Surrogate: 1-Chlorooctane 78.2 % 41-142

Surrogate: 1-Chlorooctadecane 76.1 % 37.6-147

Cardinal Laboratories

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Caley D. Keene, Lab Director/Quality Manager

Analytical Results For:

EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131

Received: 02/07/2018
Reported: 02/12/2018
Project Name: BIG SKY ABY STATE #1 (S-3)
Project Number: 30-005-21020
Project Location: CHAVES COUNTY

Sampling Date: 02/05/2018
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: S -3.1 (H800394-02)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/08/2018	ND	2.25	113	2.00	11.8	
Toluene*	<0.050	0.050	02/08/2018	ND	2.28	114	2.00	12.8	
Ethylbenzene*	<0.050	0.050	02/08/2018	ND	2.30	115	2.00	14.6	
Total Xylenes*	<0.150	0.150	02/08/2018	ND	6.74	112	6.00	14.5	
Total BTEX	<0.300	0.300	02/08/2018	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 116 % 72-148

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/08/2018	ND	214	107	200	13.9	
DRO >C10-C28*	<10.0	10.0	02/08/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	<10.0	10.0	02/08/2018	ND					

Surrogate: 1-Chlorooctane 80.0 % 41-142

Surrogate: 1-Chlorooctadecane 75.5 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Caley D. Keene, Lab Director/Quality Manager

Analytical Results For:

 EOG Y RESOURCES, INC
 ROBERT ASHER
 105 SOUTH 4TH STREET
 ARTESIA NM, 88210
 Fax To: (575) 748-4131

 Received: 02/07/2018
 Reported: 02/12/2018
 Project Name: BIG SKY ABY STATE #1 (S-3)
 Project Number: 30-005-21020
 Project Location: CHAVES COUNTY

 Sampling Date: 02/05/2018
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: S -3.2 (H800394-03)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/08/2018	ND	2.25	113	2.00	11.8	
Toluene*	<0.050	0.050	02/08/2018	ND	2.28	114	2.00	12.8	
Ethylbenzene*	<0.050	0.050	02/08/2018	ND	2.30	115	2.00	14.6	
Total Xylenes*	<0.150	0.150	02/08/2018	ND	6.74	112	6.00	14.5	
Total BTEX	<0.300	0.300	02/08/2018	ND					

Surrogate: 4-Bromofluorobenzene (PIL) 112 % 72-148

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/09/2018	ND	214	107	200	13.9	
DRO >C10-C28*	<10.0	10.0	02/09/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	<10.0	10.0	02/09/2018	ND					


Surrogate: 1-Chlorooctane 50.7 % 41-142

Surrogate: 1-Chlorooctadecane 53.2 % 37.6-147

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131

Received: 02/07/2018
Reported: 02/12/2018
Project Name: BIG SKY ABY STATE #1 (S-3)
Project Number: 30-005-21020
Project Location: CHAVES COUNTY

Sampling Date: 02/05/2018
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: S -3.3 (H800394-04)

BTEX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	02/08/2018	ND	2.25	113	2.00	11.8		
Toluene*	<0.050	0.050	02/08/2018	ND	2.28	114	2.00	12.8		
Ethylbenzene*	<0.050	0.050	02/08/2018	ND	2.30	115	2.00	14.6		
Total Xylenes*	<0.150	0.150	02/08/2018	ND	6.74	112	6.00	14.5		
Total BTEX	<0.300	0.300	02/08/2018	ND						

Surrogate: 4-Bromofluorobenzene (PIC) 120 % 72-148

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/08/2018	ND	214	107	200	13.9	
DRO >C10-C28*	<10.0	10.0	02/08/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	<10.0	10.0	02/08/2018	ND					

Surrogate: 1-Chlorooctane 71.8 % 41-142

Surrogate: 1-Chlorooctadecane 68.7 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

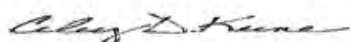
Notes and Definitions

QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
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

February 12, 2018

ROBERT ASHER

EOG Y RESOURCES, INC

105 SOUTH 4TH STREET

ARTESIA, NM 88210

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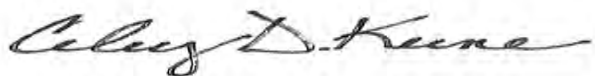
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Sincerely,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131

Received: 02/07/2018
Reported: 02/12/2018
Project Name: BIG SKY ABY STATE #1 (S-3)
Project Number: 30-005-21020
Project Location: CHAVES COUNTY

Sampling Date: 02/05/2018
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: S -3.SURFACE (H800394-01)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	02/09/2018	ND	400	100	400	0.00	

Sample ID: S -3.1 (H800394-02)

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	02/09/2018	ND	400	100	400	0.00	

Sample ID: S -3.2 (H800394-03)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	240	16.0	02/09/2018	ND	416	104	400	3.77	

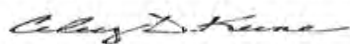
Sample ID: S -3.3 (H800394-04)

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	02/09/2018	ND	416	104	400	3.77	

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

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.

Cardinal Laboratories

*==Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



ARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240

(505) 393-2326 FAX (505) 393-2476

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Robert Asher

Company Name: EOG Resources, Inc.

Company Address: 104 South 4th Street

City/State/Zip: Artesia, NM 88210

Telephone No: 575-748-4171

Sampler Signature: *EOG*

Project Name: Big Sky ABY State #1 (S-3)

Project #: 30-005-21020

Project Loc: Chaves County

PO #: 205632

Report Format: ☒ Standard ☐ TRRP ☐ NPDES

(lab use only)

ORDER #: H8C0394-

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total #. of Containers	Preservation & # of Containers								Matrix	Analyze For:										RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
								Ice	HNO ₃	HCl	H ₂ SO ₄	NaOH	Na ₂ S ₂ O ₃	None	Other (Specify)		TPH: 8015M Extended	TPH: TX 1005	TX 1006	Callons (Ca, Mg, Na, K)	Anions (Cl)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.

1	S-3. Surface	4"	4"	2/5/2018	10:14 AM		1	X								S	X				X								X	
2	S-3.1	1'	1'	2/5/2018	10:15 AM		1	X								S	X				X								X	
3	S-3.2	2'	2'	2/5/2018	10:17 AM		1	X								S	X				X								X	
4	S-3.3	3'	3'	2/5/2018	10:18 AM		1	X								S	X				X								X	

Special Instructions: **TPH EXTENDED. Chlorides on Separate Results.** ALL results in mg/kg. Thank you.

Relinquished by:	Date	Time	Received by:	Date	Time
<i>EOG</i>	02/06/18	3:30 PM	<i>Braden Clatter</i>	2-7-18	11:30

Relinquished by:	Date	Time	Received by:	Date	Time

Relinquished by:	Date	Time	Received by:	Date	Time

Laboratory Comments:
Sample Containers Intact? ☒ N
VOCs Free of Headspace? ☒ N
Labels on container(s) ☒ N
Custody seals on container(s) ☒ N
Custody seals on cooler(s) ☒ N
Sample Hand Delivered by Sampler/Client Rep. ? ☒ N
by Courier? ☒ N
UPS ☒ N
DHL ☒ N
FedEx ☒ N
Lone Star ☒ N
Temperature Upon Receipt: *41.5* °C
2056 correct



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

February 12, 2018

ROBERT ASHER

EOG Y RESOURCES, INC

105 SOUTH 4TH STREET

ARTESIA, NM 88210

RE: BIG SKY ABY STATE #1 (S-4)

Enclosed are the results of analyses for samples received by the laboratory on 02/07/18 11:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. 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.

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,

Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

 EOG Y RESOURCES, INC
 ROBERT ASHER
 105 SOUTH 4TH STREET
 ARTESIA NM, 88210
 Fax To: (575) 748-4131

 Received: 02/07/2018
 Reported: 02/12/2018
 Project Name: BIG SKY ABY STATE #1 (S-4)
 Project Number: 30-005-21020
 Project Location: CHAVES COUNTY

 Sampling Date: 02/05/2018
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: S -4. SURFACE (H800398-01)

BTEX 8021B	mg/kg	Analyzed By: MS							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/09/2018	ND	1.75	87.4	2.00	23.7	
Toluene*	<0.050	0.050	02/09/2018	ND	1.77	88.5	2.00	22.3	
Ethylbenzene*	<0.050	0.050	02/09/2018	ND	1.76	87.9	2.00	23.4	
Total Xylenes*	<0.150	0.150	02/09/2018	ND	5.25	87.5	6.00	22.5	
Total BTEX	<0.300	0.300	02/09/2018	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 111 % 72-148

TPH 8015M	mg/kg	Analyzed By: MS							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/09/2018	ND	214	107	200	13.9	
DRO >C10-C28*	<10.0	10.0	02/09/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	<10.0	10.0	02/09/2018	ND					

Surrogate: 1-Chlorooctane 87.3 % 41-142

Surrogate: 1-Chlorooctadecane 88.0 % 37.6-147

Cardinal Laboratories

* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131

Received: 02/07/2018
Reported: 02/12/2018
Project Name: BIG SKY ABY STATE #1 (S-4)
Project Number: 30-005-21020
Project Location: CHAVES COUNTY

Sampling Date: 02/05/2018
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: S -4. 1 (H800398-02)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/09/2018	ND	1.75	87.4	2.00	23.7	
Toluene*	<0.050	0.050	02/09/2018	ND	1.77	88.5	2.00	22.3	
Ethylbenzene*	<0.050	0.050	02/09/2018	ND	1.76	87.9	2.00	23.4	
Total Xylenes*	<0.150	0.150	02/09/2018	ND	5.25	87.5	6.00	22.5	
Total BTEx	<0.300	0.300	02/09/2018	ND					

Surrogate: 4-Bromofluorobenzene (PIE) 118 % 72-148

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/09/2018	ND	214	107	200	13.9	
DRO >C10-C28*	76.0	10.0	02/09/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	<10.0	10.0	02/09/2018	ND					

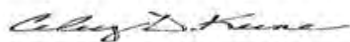
Surrogate: 1-Chlorooctane 74.4 % 41-142

Surrogate: 1-Chlorooctadecane 78.0 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131

Received: 02/07/2018
Reported: 02/12/2018
Project Name: BIG SKY ABY STATE #1 (S-4)
Project Number: 30-005-21020
Project Location: CHAVES COUNTY

Sampling Date: 02/05/2018
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: S -4. 2 (H800398-03)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/09/2018	ND	1.75	87.4	2.00	23.7	
Toluene*	0.637	0.050	02/09/2018	ND	1.77	88.5	2.00	22.3	
Ethylbenzene*	1.98	0.050	02/09/2018	ND	1.76	87.9	2.00	23.4	
Total Xylenes*	6.79	0.150	02/09/2018	ND	5.25	87.5	6.00	22.5	
Total BTEX	9.40	0.300	02/09/2018	ND					

Surrogate: 4-Bromofluorobenzene (PIL) 114 % 72-148

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	363	50.0	02/09/2018	ND	214	107	200	13.9	
DRO >C10-C28*	5150	50.0	02/09/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	468	50.0	02/09/2018	ND					

Surrogate: 1-Chlorooctane 118 % 41-142

Surrogate: 1-Chlorooctadecane 140 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131

Received: 02/07/2018
Reported: 02/12/2018
Project Name: BIG SKY ABY STATE #1 (S-4)
Project Number: 30-005-21020
Project Location: CHAVES COUNTY

Sampling Date: 02/05/2018
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: S -4. 3 (H800398-04)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/09/2018	ND	1.75	87.4	2.00	23.7	
Toluene*	0.257	0.050	02/09/2018	ND	1.77	88.5	2.00	22.3	
Ethylbenzene*	1.46	0.050	02/09/2018	ND	1.76	87.9	2.00	23.4	
Total Xylenes*	23.2	0.150	02/09/2018	ND	5.25	87.5	6.00	22.5	
Total BTEX	24.9	0.300	02/09/2018	ND					

Surrogate: 4-Bromofluorobenzene (PJE) 124 % 72-148

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	561	50.0	02/09/2018	ND	214	107	200	13.9	
DRO >C10-C28*	4590	50.0	02/09/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	367	50.0	02/09/2018	ND					

Surrogate: 1-Chlorooctane 140 % 41-142

Surrogate: 1-Chlorooctadecane 132 % 37.6-147

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*=Accredited Analyte

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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 of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
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

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Robert Asher

Company Name EOG Resources, Inc.

Company Address: 104 South 4th Street

City/State/Zip: Artesia, NM 88210

Telephone No: 575-748-4171

Sampler Signature:

e-mail:

boba@yatespetroleum.com

Report Format: ☒ Standard ☐ TRRP

Project Name: **Big Sky ABY State #1 (S-4)**

Project #: 30-005-21020Project Loc: Chaves County

PO #: 205632

(lab use only)

ORDER #: H800398

[illegible]



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

February 12, 2018`

ROBERT ASHER

EOG Y RESOURCES, INC

105 SOUTH 4TH STREET

ARTESIA, NM 88210

RE: BIG SKY ABY STATE #1 (S-4)

Enclosed are the results of analyses for samples received by the laboratory on 02/07/18 11:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. 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 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,

Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

 EOG Y RESOURCES, INC
 ROBERT ASHER
 105 SOUTH 4TH STREET
 ARTESIA NM, 88210
 Fax To: (575) 748-4131

 Received: 02/07/2018
 Reported: 02/12/2018
 Project Name: BIG SKY ABY STATE #1 (S-4)
 Project Number: 30-005-21020
 Project Location: CHAVES COUNTY

 Sampling Date: 02/05/2018
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: S -4. SURFACE (H800398-01)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3200	16.0	02/12/2018	ND	416	104	400	3.77	

Sample ID: S -4. 1 (H800398-02)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2360	16.0	02/12/2018	ND	416	104	400	3.77	

Sample ID: S -4. 2 (H800398-03)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1920	16.0	02/12/2018	ND	416	104	400	3.77	

Sample ID: S -4. 3 (H800398-04)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	432	16.0	02/12/2018	ND	416	104	400	3.77	

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

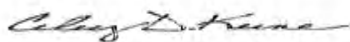
Notes and Definitions

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

Cardinal Laboratories

* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Robert Ashner

Company Name EOG Resources, Inc.

Company Address: 104 South 4th Street

City/State/Zip: Artesia, NM 88210

Telephone No: 575-748-4171

Sampler Signature:

e-mail:

boba@yatespetroleum.com

Report Format: ☒ Standard

☒ Standard ☐ TRRP☐ NPDES

Project Name: **Big Sky ABY State #1 (S-4)**

Project #: 30-005-21020Project Loc: Chaves County

PO #: 205632

(lab use only)

ORDER #: H800398

[illegible]



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

February 12, 2018

ROBERT ASHER

EOG Y RESOURCES, INC

105 SOUTH 4TH STREET

ARTESIA, NM 88210

RE: BIG SKY ABY STATE #1 (S-5)

Enclosed are the results of analyses for samples received by the laboratory on 02/07/18 11:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. 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.

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,

Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131

Received: 02/07/2018
Reported: 02/12/2018
Project Name: BIG SKY ABY STATE #1 (S-5)
Project Number: 30-005-21020
Project Location: CHAVES COUNTY

Sampling Date: 02/05/2018
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: S -5.SURFACE (H800395-01)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/09/2018	ND	2.25	113	2.00	11.8	
Toluene*	<0.050	0.050	02/09/2018	ND	2.28	114	2.00	12.8	
Ethylbenzene*	<0.050	0.050	02/09/2018	ND	2.30	115	2.00	14.6	
Total Xylenes*	<0.150	0.150	02/09/2018	ND	6.74	112	6.00	14.5	
Total BTEX	<0.300	0.300	02/09/2018	ND					

Surrogate: 4-Bromofluorobenzene (PIL) 122 % 72-148

TPH 8015M	mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/08/2018	ND	214	107	200	13.9	
DRO >C10-C28*	609	10.0	02/08/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	94.6	10.0	02/08/2018	ND					

Surrogate: 1-Chlorooctane 75.9 % 41-142

Surrogate: 1-Chlorooctadecane 80.7 % 37.6-147

Cardinal Laboratories

* = Accredited Analyte

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 client for 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 thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131

Received: 02/07/2018
Reported: 02/12/2018
Project Name: BIG SKY ABY STATE #1 (S-5)
Project Number: 30-005-21020
Project Location: CHAVES COUNTY

Sampling Date: 02/05/2018
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: S -5.1 (H800395-02)

BTEX 8021B	mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/09/2018	ND	2.25	113	2.00	11.8	
Toluene*	0.083	0.050	02/09/2018	ND	2.28	114	2.00	12.8	
Ethylbenzene*	0.429	0.050	02/09/2018	ND	2.30	115	2.00	14.6	
Total Xylenes*	0.733	0.150	02/09/2018	ND	6.74	112	6.00	14.5	
Total BTEX	1.24	0.300	02/09/2018	ND					

Surrogate: 4-Bromofluorobenzene (PIL) 122 % 72-148

TPH 8015M	mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/08/2018	ND	214	107	200	13.9	
DRO >C10-C28*	39.2	10.0	02/08/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	<10.0	10.0	02/08/2018	ND					

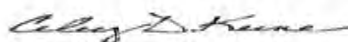
Surrogate: 1-Chlorooctane 63.8 % 41-142

Surrogate: 1-Chlorooctadecane 64.4 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Caley D. Keene, Lab Director/Quality Manager

Analytical Results For:

EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131

Received: 02/07/2018
Reported: 02/12/2018
Project Name: BIG SKY ABY STATE #1 (S-5)
Project Number: 30-005-21020
Project Location: CHAVES COUNTY

Sampling Date: 02/05/2018
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: S -5.2 (H800395-03)

BTEX 80218		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/09/2018	ND	2.25	113	2.00	11.8	
Toluene*	<0.050	0.050	02/09/2018	ND	2.28	114	2.00	12.8	
Ethylbenzene*	<0.050	0.050	02/09/2018	ND	2.30	115	2.00	14.6	
Total Xylenes*	<0.150	0.150	02/09/2018	ND	6.74	112	6.00	14.5	
Total BTEX	<0.300	0.300	02/09/2018	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 115 % 72-148

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/08/2018	ND	214	107	200	13.9	
DRO >C10-C28*	<10.0	10.0	02/08/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	<10.0	10.0	02/08/2018	ND					

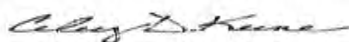
Surrogate: 1-Chlorooctane 74.2 % 41-142

Surrogate: 1-Chlorooctadecane 73.2 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Caley D. Keene, Lab Director/Quality Manager

Analytical Results For:

 EOG Y RESOURCES, INC
 ROBERT ASHER
 105 SOUTH 4TH STREET
 ARTESIA NM, 88210
 Fax To: (575) 748-4131

Received:	02/07/2018	Sampling Date:	02/05/2018
Reported:	02/12/2018	Sampling Type:	Soil
Project Name:	BIG SKY ABY STATE #1 (S-5)	Sampling Condition:	Cool & Intact
Project Number:	30-005-21020	Sample Received By:	Tamara Oldaker
Project Location:	CHAVES COUNTY		

Sample ID: S -5.3 (H800395-04)

BTEX 8021B		mg/kg	Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/09/2018	ND	2.25	113	2.00	11.8	
Toluene*	<0.050	0.050	02/09/2018	ND	2.28	114	2.00	12.8	
Ethylbenzene*	<0.050	0.050	02/09/2018	ND	2.30	115	2.00	14.6	
Total Xylenes*	<0.150	0.150	02/09/2018	ND	6.74	112	6.00	14.5	
Total BTEX	<0.300	0.300	02/09/2018	ND					

Surrogate: 4-Bromofluorobenzene (PIL) 116 % 72-148

TPH 8015M		mg/kg	Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/08/2018	ND	214	107	200	13.9	
DRO >C10-C28*	<10.0	10.0	02/08/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	<10.0	10.0	02/08/2018	ND					


Surrogate: 1-Chlorooctane 68.0 % 41-142

Surrogate: 1-Chlorooctadecane 66.4 % 37.6-147

Cardinal Laboratories

* = Accredited Analyte

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Caley D. Keene, Lab Director/Quality Manager

Notes and Definitions

QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
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

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



ARDINAL LABORATORIES
101 East Marland, Hobbs, NM 88240

(505) 393-2326 FAX (505) 393-2476

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Robert Asher

Company Name: EOG Resources, Inc.

Company Address: 104 South 4th Street

City/State/Zip: Artesia, NM 88210

Telephone No: 575-748-4171

Fax No:

Sampler Signature: *EOG*

e-mail:

boba@yatespetroleum.com

Project Name: **Big Sky ABY State #1 (S-5)**

Project #: 30-005-21020

Project Loc: Chaves County

PO #: 205632

Report Format: ☒ Standard ☐ TRRP ☐ NPDES

(lab use only)

ORDER #: 14800395

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total #. of Containers	Preservation & # of Containers	Matrix	TPH: 8015M Extended	TPH: TX 1005 TX 1006	Calions (Ca, Mg, Na, K)	Anions (Cl)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT	
1	S-5-Surface	4"	4"	2/5/2018	10:29 AM		1	X	S	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	S-5-1	1'	1'	2/5/2018	10:30 AM		1	X	S	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3	S-5-2	2'	2'	2/5/2018	10:31 AM		1	X	S	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4	S-5-3	3'	3'	2/5/2018	10:33 AM		1	X	S	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Special Instructions:

TPH EXTENDED. Chlorides on Separate Results. ALL results in mg/kg. Thank you.

Relinquished by: *EOG* Date: 02/06/18 Time: 3:32 PM Received by: *Yates* Date: 2-7-18 Time: 11:30

Relinquished by: Date: Time: Received by: Date: Time:

Relinquished by: Date: Time: Received by: Date: Time:

Laboratory Comments:

Sample Containers Intact? ☒ VOCs Free of Headspace? ☒ Labels on container(s) ☒ Custody seals on container(s) ☒ Custody seals on cooler(s) ☒ Sample Hand Delivered ☒ by Sampler/Client Rep. ? ☒ by Courier? ☒ UPS ☒ DHL ☒ FedEx ☒ Lone Star

Temperature Upon Receipt: 1.8°C *corrected 20.5°C*

February 12, 2018

ROBERT ASHER

EOG Y RESOURCES, INC

105 SOUTH 4TH STREET

ARTESIA, NM 88210

RE: BIG SKY ABY STATE #1 (S-5)

Enclosed are the results of analyses for samples received by the laboratory on 02/07/18 11:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. 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.

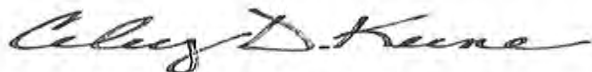
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Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

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,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

 EOG Y RESOURCES, INC
 ROBERT ASHER
 105 SOUTH 4TH STREET
 ARTESIA NM, 88210
 Fax To: (575) 748-4131

 Received: 02/07/2018
 Reported: 02/12/2018
 Project Name: BIG SKY ABY STATE #1 (S-5)
 Project Number: 30-005-21020
 Project Location: CHAVES COUNTY

 Sampling Date: 02/05/2018
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: S -5.SURFACE (H800395-01)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	480	16.0	02/12/2018	ND	416	104	400	3.77	

Sample ID: S -5.1 (H800395-02)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	688	16.0	02/12/2018	ND	416	104	400	3.77	

Sample ID: S -5.2 (H800395-03)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1650	16.0	02/12/2018	ND	416	104	400	3.77	

Sample ID: S -5.3 (H800395-04)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1550	16.0	02/12/2018	ND	416	104	400	3.77	

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

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

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



ARDINAL LABORATORIES
101 East Marland, Hobbs, NM 88240

(505) 393-2326 FAX (505) 393-2476

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Robert Asher

Company Name: EOG Resources, Inc.

Company Address: 104 South 4th Street

City/State/Zip: Artesia, NM 88210

Telephone No: 575-748-4171

Sampler Signature: *EOG*

Fax No:

e-mail: boba@yatespetroleum.com

Project Name: **Big Sky ABY State #1 (S-5)**

Project #: 30-005-21020

Project Loc: Chaves County

PO #: 205632

Report Format: ☒ Standard ☐ TRRP ☐ NPDES

(lab use only)

ORDER #: **H 800 395**

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total #. of Containers	Ice	HNO ₃	HCl	H ₂ SO ₄	NaOH	Na ₂ S ₂ O ₃	None	Other (Specify)	DW=Drinking Water SL=Sludge	GW = Groundwater S=Soil/Solid	NP=Non-Potable Specify Other	TPH: 8015M Extended	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT	
	S-5-Surface	4"	4"	2/5/2018	10:29 AM		1	X											X													
	S-5.1	1'	1'	2/5/2018	10:30 AM		1	X											X													
	S-5.2	2'	2'	2/5/2018	10:31 AM		1	X											X													
	S-5.3	3'	3'	2/5/2018	10:33 AM		1	X											X													

Special Instructions:

TPH EXTENDED. Chlorides on Separate Results. ALL results in mg/kg. Thank you.

Relinquished by: *EOG* Date: 02/06/18 Time: 3:32 PM Received by: *Marina Martinez* Date: 2-7-18 Time: 11:30

Relinquished by: Date: Time: Received by: Date: Time:

Relinquished by: Date: Time: Received by: Date: Time:

Laboratory Comments:

Sample Containers Intact? ☒ N
VOCs Free of Headspace? ☒ N
Labels on container(s) ☒ N
Custody seals on container(s) ☒ N
Custody seals on cooler(s) ☒ N
Sample Hand Delivered ☒ N
by Sampler/Client Rep. ? ☒ N
by Courier? ☒ N
UPS ☒ N
DHL ☒ N
FedEx ☒ N
Lone Star ☒ N

Temperature Upon Receipt: 1.8°C

Corrected 20.5°C

February 12, 2018

ROBERT ASHER

EOG Y RESOURCES, INC

105 SOUTH 4TH STREET

ARTESIA, NM 88210

RE: BIG SKY ABY STATE #1 (SP-3,4; CP-1,2,3,4)

Enclosed are the results of analyses for samples received by the laboratory on 02/07/18 11:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. 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.

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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,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131

Received:	02/07/2018	Sampling Date:	02/01/2018
Reported:	02/12/2018	Sampling Type:	Soil
Project Name:	BIG SKY ABY STATE #1 (SP-3,4; CP-1,2,	Sampling Condition:	Cool & Intact
Project Number:	30-005-21020	Sample Received By:	Tamara Oldaker
Project Location:	CHAVES COUNTY		

Sample ID: SP - 3 (H800400-01)

TPH 8015M	mg/kg	Analyzed By: MS							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	74.7	10.0	02/11/2018	ND	226	113	200	0.572	
DRO >C10-C28*	2700	10.0	02/11/2018	ND	221	111	200	2.83	QM-07
EXT DRO >C28-C36	228	10.0	02/11/2018	ND					
<hr/>									
Surrogate: 1-Chlorooctane	90.3 %	41-142							
Surrogate: 1-Chlorooctadecane	117 %	37.6-147							

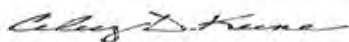
Sample ID: SP - 4 (H800400-02)

TPH 8015M	mg/kg	Analyzed By: MS								S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	305	10.0	02/11/2018	ND	226	113	200	0.572		
DRO >C10-C28*	5270	10.0	02/11/2018	ND	221	111	200	2.83		
EXT DRO >C28-C36	667	10.0	02/11/2018	ND						
<hr/>										
Surrogate: 1-Chlorooctane	128 %	41-142								
Surrogate: 1-Chlorooctadecane	225 %	37.6-147								

Cardinal Laboratories

*=Accredited Analyte

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 client for 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 thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131

Received:	02/07/2018	Sampling Date:	02/01/2018
Reported:	02/12/2018	Sampling Type:	Soil
Project Name:	BIG SKY ABY STATE #1 (SP-3,4; CP-1,2,	Sampling Condition:	Cool & Intact
Project Number:	30-005-21020	Sample Received By:	Tamara Oldaker
Project Location:	CHAVES COUNTY		

Sample ID: CP - 2.2 (H800400-05)

TPH 8015M	mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/11/2018	ND	226	113	200	0.572	
DRO >C10-C28*	12.1	10.0	02/11/2018	ND	221	111	200	2.83	
EXT DRO >C28-C36	<10.0	10.0	02/11/2018	ND					
<hr/>									
Surrogate: 1-Chlorooctane	87.7 %	41-142							
Surrogate: 1-Chlorooctadecane	91.9 %	37.6-147							

Sample ID: CP - 2.3 (H800400-06)

TPH 8015M	mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/11/2018	ND	226	113	200	0.572	
DRO >C10-C28*	<10.0	10.0	02/11/2018	ND	221	111	200	2.83	
EXT DRO >C28-C36	<10.0	10.0	02/11/2018	ND					
<hr/>									
Surrogate: 1-Chlorooctane	86.4 %	41-142							
Surrogate: 1-Chlorooctadecane	88.3 %	37.6-147							

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131

Received:	02/07/2018	Sampling Date:	02/01/2018
Reported:	02/12/2018	Sampling Type:	Soil
Project Name:	BIG SKY ABY STATE #1 (SP-3,4; CP-1,2,	Sampling Condition:	Cool & Intact
Project Number:	30-005-21020	Sample Received By:	Tamara Oldaker
Project Location:	CHAVES COUNTY		

Sample ID: CP - 1.2 (H800400-07)

TPH 8015M	mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/11/2018	ND	226	113	200	0.572	
DRO >C10-C28*	<10.0	10.0	02/11/2018	ND	221	111	200	2.83	
EXT DRO >C28-C36	<10.0	10.0	02/11/2018	ND					
<hr/>									
Surrogate: 1-Chlorooctane	74.7 %	41-142							
Surrogate: 1-Chlorooctadecane	74.6 %	37.6-147							

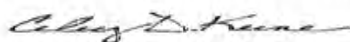
Sample ID: CP - 1.3 (H800400-08)

TPH 8015M	mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/11/2018	ND	226	113	200	0.572	
DRO >C10-C28*	<10.0	10.0	02/11/2018	ND	221	111	200	2.83	
EXT DRO >C28-C36	<10.0	10.0	02/11/2018	ND					
<hr/>									
Surrogate: 1-Chlorooctane	79.3 %	41-142							
Surrogate: 1-Chlorooctadecane	80.0 %	37.6-147							

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 EOG Y RESOURCES, INC
 ROBERT ASHER
 105 SOUTH 4TH STREET
 ARTESIA NM, 88210
 Fax To: (575) 748-4131

Received:	02/07/2018	Sampling Date:	02/01/2018
Reported:	02/12/2018	Sampling Type:	Soil
Project Name:	BIG SKY ABY STATE #1 (SP-3,4; CP-1,2,	Sampling Condition:	Cool & Intact
Project Number:	30-005-21020	Sample Received By:	Tamara Oldaker
Project Location:	CHAVES COUNTY		

Sample ID: CP - 4.2 (H800400-09)

TPH 8015M	mg/kg	Analyzed By: MS							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/11/2018	ND	226	113	200	0.572	
DRO >C10-C28*	<10.0	10.0	02/11/2018	ND	221	111	200	2.83	
EXT DRO >C28-C36	<10.0	10.0	02/11/2018	ND					
<hr/>									
Surrogate: 1-Chlorooctane	77.6 %	41-142							
Surrogate: 1-Chlorooctadecane	77.8 %	37.6-147							

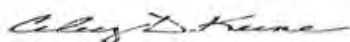
Sample ID: CP - 4.3 (H800400-10)

TPH 8015M	mg/kg	Analyzed By: MS							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/11/2018	ND	226	113	200	0.572	
DRO >C10-C28*	<10.0	10.0	02/11/2018	ND	221	111	200	2.83	
EXT DRO >C28-C36	<10.0	10.0	02/11/2018	ND					
<hr/>									
Surrogate: 1-Chlorooctane	85.9 %	41-142							
Surrogate: 1-Chlorooctadecane	86.5 %	37.6-147							

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
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

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Robert Asher

Company Name EOG Resources, Inc.

Company Address: 104 South 4th Street

City/State/Zip: Artesia, NM 88210

Telephone No: 575-748-4171

Sampler Signature:

Fax No:

e-mail:

boba@yatespetroleum.com

Report Format: ☒ Standard

☒ Standard ☐ TRRP

☐ NPDES

Project Name: **Big Sky ABY State #1** (SP-34-CP-1234)

Project #: 30-005-21020

Project Loc: Chaves County

PO #: 205632

ORDER #: H800 400

(lab use only)				Analyze For:																				
ORDER #: H800 400				TCLP:																				
				TOTAL:																				
LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total #. of Containers	Preservation & # of Containers						Matrix										
1 SP-3	3'	3'	2/1/2018	10:06 AM		1 X	X	DW=Drinking Water SL=Sludge GW = Groundwater S=Soil/Solid NP=Non-Potable Specify Other	S	X	TPH: 8015M Extended	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT	
2 SP-4	4'	4'	2/1/2018	10:09 AM		1 X	X		S	X														
3 CP-3.2	2'	2'	2/1/2018	10:16 AM		1 X	X		S	X														
4 CP-3.3	3'	3'	2/1/2018	10:21 AM		1 X	X		S	X														
5 CP-2.2	2'	2'	2/1/2018	10:25 AM		1 X	X		S	X														
6 CP-2.3	3'	3'	2/1/2018	10:27 AM		1 X	X		S	X														
7 CP-1.2	2'	2'	2/1/2018	10:31 AM		1 X	X		S	X														
8 CP-1.3	3'	3'	2/1/2018	10:33 AM		1 X	X		S	X														
9 CP-4.2	2'	2'	2/1/2018	10:36 AM		1 X	X		S	X														
10 CP-4.3	3'	3'	2/1/2018	10:38 AM		1 X	X		S	X														
Special Instructions:		TPH EXTENDED. Chlorides on Separate Results. ALL results in mg/kg. Thank you.																						
Relinquished by:		Date	Time	Received by:	Date	Time	Laboratory Comments:																	
Relinquished by: [Signature]		02/06/18	3:21 PM	[Signature]	2-7-18	11:30	Sample Containers Intact? N VOCs Free of Headspace? N Labels on container(s) N Custody seals on container(s) N Custody seals on cooler(s) N Sample Hand Delivered by Sampler/Client Rep.? Y by Courier? UPS DHL FedEx Lone Star																	
Relinquished by:		Date	Time	Received by ELDT:	Date	Time	Temperature Upon Receipt: 1.8°C																	
							[Signature] 2.05°C																	

February 12, 2018

ROBERT ASHER

EOG Y RESOURCES, INC

105 SOUTH 4TH STREET

ARTESIA, NM 88210

RE: BIG SKY ABY STATE #1 (SP-3,4; CP-1,2,3,4)

Enclosed are the results of analyses for samples received by the laboratory on 02/07/18 11:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. 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.

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,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

 EOG Y RESOURCES, INC
 ROBERT ASHER
 105 SOUTH 4TH STREET
 ARTESIA NM, 88210
 Fax To: (575) 748-4131

Received:	02/07/2018	Sampling Date:	02/01/2018
Reported:	02/12/2018	Sampling Type:	Soil
Project Name:	BIG SKY ABY STATE #1 (SP-3,4; CP-1,2,	Sampling Condition:	Cool & Intact
Project Number:	30-005-21020	Sample Received By:	Tamara Oldaker
Project Location:	CHAVES COUNTY		

Sample ID: CP - 3.2 (H800400-03)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	112	16.0	02/12/2018	ND	432	108	400	0.00	

Sample ID: CP - 3.3 (H800400-04)

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	02/12/2018	ND	432	108	400	0.00	

Sample ID: CP - 1.2 (H800400-07)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	752	16.0	02/12/2018	ND	432	108	400	0.00	

Sample ID: CP - 1.3 (H800400-08)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	688	16.0	02/12/2018	ND	432	108	400	0.00	

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

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

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager



ARDINAL LABORATORIES
101 East Marland, Hobbs, NM 88240

(505) 393-2326 FAX (505) 393-2476

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Robert Asher

Company Name: EOG Resources, Inc.

Company Address: 104 South 4th Street

City/State/Zip: Artesia, NM 88210

Telephone No: 575-748-4171

Sampler Signature: [Signature]

Fax No:

e-mail:

boba@yatespetroleum.com

Project Name: **Big Sky ABY State #1 (SP-3.4; CP-1.2,3.4)**

Project #: 30-005-21020

Project Loc: Chaves County

PO #: 205632

Report Format: ☒ Standard ☐ TRRP ☐ NPDES

(lab use only)

ORDER #: H800 400

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total #. of Containers	Preservation & # of Containers	Matrix	Analyze For:	TOTAL	RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
1	SP-3	3'	3'	2/1/2018	10:06 AM		1	X	S	TPH: 8015M Extended			X
2	SP-4	4'	4'	2/1/2018	10:09 AM		1	X	S	TPH: TX 1005 TX 1006			X
3	CP-3.2	2'	2'	2/1/2018	10:16 AM		1	X	S	Cations (Ca, Mg, Na, K)			X
4	CP-3.3	3'	3'	2/1/2018	10:21 AM		1	X	S	Anions (Cl)			X
5	CP-2.2	2'	2'	2/1/2018	10:25 AM		1	X	S	SAR / ESP / CEC			X
6	CP-2.3	3'	3'	2/1/2018	10:27 AM		1	X	S	Metals: As Ag Ba Cd Cr Pb Hg Se			X
7	CP-1.2	2'	2'	2/1/2018	10:31 AM		1	X	S	Volatiles			X
8	CP-1.3	3'	3'	2/1/2018	10:33 AM		1	X	S	Semivolatiles			X
9	CP-4.2	2'	2'	2/1/2018	10:36 AM		1	X	S	BTEX 8021B/5030 or BTEX 8260			X
10	CP-4.3	3'	3'	2/1/2018	10:38 AM		1	X	S	RCI			X
										N.O.R.M.			

TPH EXTENDED. Chlorides on Separate Results. ALL results in mg/kg. Thank you.

Relinquished by:

Date

Time

Received by:

Date

Time

Relinquished by:

Date

Time

Received by:

Date

Time

Relinquished by:

Date

Time

Received by ELDT:

Date

Time

Laboratory Comments:
Sample Containers Intact? ☒
VOOCs Free of Headspace? ☒
Labels on containers? ☒
Custody seals on container(s)? ☒
Custody seals on cooler(s)? ☒
Sample Hand Delivered by Sampler/Client Rep.? ☒
by Courier? ☒ UPS ☒ DHL ☒ FedEx ☒ Lone Star
Temperature Upon Receipt: 1.8°C
Collected 2.05 EPH

February 12, 2018

ROBERT ASHER

EOG Y RESOURCES, INC

105 SOUTH 4TH STREET

ARTESIA, NM 88210

RE: BIG SKY ABY STATE #1 (BG)

Enclosed are the results of analyses for samples received by the laboratory on 02/07/18 11:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. 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.

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,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

 EOG Y RESOURCES, INC
 ROBERT ASHER
 105 SOUTH 4TH STREET
 ARTESIA NM, 88210
 Fax To: (575) 748-4131

 Received: 02/07/2018
 Reported: 02/12/2018
 Project Name: BIG SKY ABY STATE #1 (BG)
 Project Number: 30-005-21020
 Project Location: CHAVES COUNTY

 Sampling Date: 02/01/2018
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: BG- SURFACE (H800396-01)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/09/2018	ND	2.25	113	2.00	11.8	
Toluene*	<0.050	0.050	02/09/2018	ND	2.28	114	2.00	12.8	
Ethylbenzene*	<0.050	0.050	02/09/2018	ND	2.30	115	2.00	14.6	
Total Xylenes*	<0.150	0.150	02/09/2018	ND	6.74	112	6.00	14.5	
Total BTEX	<0.300	0.300	02/09/2018	ND					

Surrogate: 4-Bromofluorobenzene (PIL) 114 % 72-148

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/08/2018	ND	214	107	200	13.9	
DRO >C10-C28*	<10.0	10.0	02/08/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	<10.0	10.0	02/08/2018	ND					

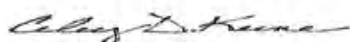
Surrogate: 1-Chlorooctane 71.7 % 41-142

Surrogate: 1-Chlorooctadecane 68.2 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Caley D. Keene, Lab Director/Quality Manager

Analytical Results For:

EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131

Received: 02/07/2018
Reported: 02/12/2018
Project Name: BIG SKY ABY STATE #1 (BG)
Project Number: 30-005-21020
Project Location: CHAVES COUNTY

Sampling Date: 02/01/2018
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: BG- 1 (H800396-02)

BTEX 80218		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/09/2018	ND	2.25	113	2.00	11.8	
Toluene*	<0.050	0.050	02/09/2018	ND	2.28	114	2.00	12.8	
Ethylbenzene*	<0.050	0.050	02/09/2018	ND	2.30	115	2.00	14.6	
Total Xylenes*	<0.150	0.150	02/09/2018	ND	6.74	112	6.00	14.5	
Total BTEX	<0.300	0.300	02/09/2018	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 117 % 72-148

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/08/2018	ND	214	107	200	13.9	
DRO >C10-C28*	<10.0	10.0	02/08/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	<10.0	10.0	02/08/2018	ND					

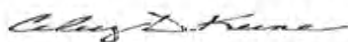
Surrogate: 1-Chlorooctane 59.2 % 41-142

Surrogate: 1-Chlorooctadecane 57.9 % 37.6-147

Cardinal Laboratories

* = Accredited Analyte

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Caley D. Keene, Lab Director/Quality Manager

Analytical Results For:EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131Received: 02/07/2018
Reported: 02/12/2018
Project Name: BIG SKY ABY STATE #1 (BG)
Project Number: 30-005-21020
Project Location: CHAVES COUNTYSampling Date: 02/01/2018
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker**Sample ID: BG- 2 (H800396-03)**

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/09/2018	ND	2.25	113	2.00	11.8	
Toluene*	<0.050	0.050	02/09/2018	ND	2.28	114	2.00	12.8	
Ethylbenzene*	<0.050	0.050	02/09/2018	ND	2.30	115	2.00	14.6	
Total Xylenes*	<0.150	0.150	02/09/2018	ND	6.74	112	6.00	14.5	
Total BTEX	<0.300	0.300	02/09/2018	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 118 % 72-148

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/08/2018	ND	214	107	200	13.9	
DRO >C10-C28*	<10.0	10.0	02/08/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	<10.0	10.0	02/08/2018	ND					

Surrogate: 1-Chlorooctane 64.9 % 41-142

Surrogate: 1-Chlorooctadecane 61.0 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131

Received: 02/07/2018
Reported: 02/12/2018
Project Name: BIG SKY ABY STATE #1 (BG)
Project Number: 30-005-21020
Project Location: CHAVES COUNTY

Sampling Date: 02/01/2018
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: BG- 3 (H800396-04)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/09/2018	ND	2.25	113	2.00	11.8	
Toluene*	<0.050	0.050	02/09/2018	ND	2.28	114	2.00	12.8	
Ethylbenzene*	<0.050	0.050	02/09/2018	ND	2.30	115	2.00	14.6	
Total Xylenes*	<0.150	0.150	02/09/2018	ND	6.74	112	6.00	14.5	
Total BTEX	<0.300	0.300	02/09/2018	ND					

Surrogate: 4-Bromofluorobenzene (PIL) 115 % 72-148

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/09/2018	ND	214	107	200	13.9	
DRO >C10-C28*	<10.0	10.0	02/09/2018	ND	225	112	200	18.6	
EXT DRO >C28-C36	<10.0	10.0	02/09/2018	ND					


Surrogate: 1-Chlorooctane 66.1 % 41-142

Surrogate: 1-Chlorooctadecane 62.2 % 37.6-147

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

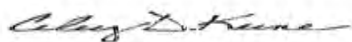
Notes and Definitions

QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
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

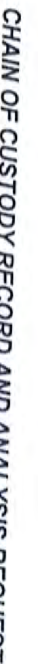
Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



NPDES

PO #: 205632

ORDER #: H800396

[illegible]

Special Instructions:

TPH EXTENDED. Chlorides on Separate Results. ALL results in mg/kg. Thank you.

Relinquished by:

Relinquished by:

Relinquished by:

Laboratory Comments:
Sample Containers Intact

VOICs Free of Headspace?

Labels on container(s)

Custody seals on container(s)

Custody seals on cooler(s)

Sample Hand Delivered

Sample/Client Data

by Copyright 1995

by Council of the
UPS
D

Temperature 11.0°C

Temperature Upon Receipt:

Chen

pon Receipt: 1.00 °C
Corrected 205.04 K

February 12, 2018

ROBERT ASHER

EOG Y RESOURCES, INC

105 SOUTH 4TH STREET

ARTESIA, NM 88210

RE: BIG SKY ABY STATE #1 (BG)

Enclosed are the results of analyses for samples received by the laboratory on 02/07/18 11:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. 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.

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,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

EOG Y RESOURCES, INC
ROBERT ASHER
105 SOUTH 4TH STREET
ARTESIA NM, 88210
Fax To: (575) 748-4131

Received: 02/07/2018
Reported: 02/12/2018
Project Name: BIG SKY ABY STATE #1 (BG)
Project Number: 30-005-21020
Project Location: CHAVES COUNTY

Sampling Date: 02/01/2018
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Tamara Oldaker

Sample ID: BG- SURFACE (H800396-01)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	02/12/2018	ND	416	104	400	3.77	

Sample ID: BG- 1 (H800396-02)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	02/12/2018	ND	416	104	400	3.77	

Sample ID: BG- 2 (H800396-03)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	02/12/2018	ND	416	104	400	3.77	

Sample ID: BG- 3 (H800396-04)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	02/12/2018	ND	416	104	400	3.77	

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

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

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



Project #: 30-005-21020

[illegible]

Appendix E

Form C-141 Initial

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 EOG Y Resources, Inc.	Contact Robert Asher
Address 104 S. 4 th Street Artesia, NM 88210	Telephone No. 575-748-1471
Facility Name Big Sky ABY State #1	Facility Type Well

Surface Owner State	Mineral Owner State	API No. 30-005-21020
------------------------	------------------------	-------------------------

LOCATION OF RELEASE

Unit Letter M	Section 26	Township 8S	Range 33E	Feet from the 660	North/South Line South	Feet from the 660	East/West Line West	County Chaves
------------------	---------------	----------------	--------------	----------------------	---------------------------	----------------------	------------------------	------------------

Latitude 33.58612 Longitude -103.54252

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 20 B/PW	Volume Recovered 8 B/PW
Source of Release Heater Treater	Date and Hour of Occurrence 08/06/2017; PM	Date and Hour of Discovery 08/06/2017; PM
Was Immediate Notice Given? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? N/A	RECEIVED By Olivia Yu at 5:42 pm, Aug 18, 2017
By Whom?	Date and Hour	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacted	

If a Watercourse was Impacted, Describe Fully.* N/A


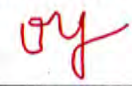
Describe Cause of Problem and Remedial Action Taken.*

Hole in heater treater from vandalism (gunshot), caused the release. Vacuum truck(s) and roustabout crews were called.

Describe Area Affected and Cleanup Action Taken.

An approximate area of 50'X35'. The well and valves were closed. Vacuum truck recovered remaining produced water. The impacted soils were excavated (1' depth) and hauled to an NMOC approved facility. Site check on 8/15/2017 and initial vertical and horizontal delineation samples were collected (8/15/2017) to be analyzed for TPH & BTEX (chlorides for documentation). Depth to Ground Water: >100' (approximately 157', Section 34, T8S-R33E, per NMOSE), Wellhead Protection Area: No, Distance to Surface Water Body: >1000', SITE RANKING IS 0.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOC 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 NMOC 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, NMOC 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: 	OIL CONSERVATION DIVISION	
Printed Name: Robert Asher	Approved by Environmental Specialist: 	
Title: Environmental Supervisor	Approval Date: 8/18/2017	Expiration Date:
E-mail Address: Robert_asher@eogresources.com	Conditions of Approval: see attached directive	Attached <input checked="" type="checkbox"/>
Date: August 16, 2017	Phone: 575-748-4217	

* Attach Additional Sheets If Necessary

1RP-4792

nOY1723064014

pOY1723064269



EOG Resources, Inc.
Artesia Division Office
104 S. 4th Street
Artesia, N. M. 88210

APPROVED

By Olivia Yu at 9:11 am, Dec 08, 2017

EOG Y Resources, Inc.

Characterization Plan

Big Sky ABY State #1

30-005-21020

Section 26, T8S-R33E

Chaves County, New Mexico

November 3, 2017

1RP-4792

NMOCD approves of the proposed delineation for 1RP-4792 with these modifications due the presence of a playa within 200 ft. of the release location:

- 1) RRAL is 20.
- 2) Vertically delineate to 5 ft. bgs.
- 3) Establish the background sample location in the pasture, West of the heater treater.

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 EOG Y Resources, Inc.	Contact Robert Asher
Address 104 S. 4 th Street Artesia, NM 88210	Telephone No. 575-748-1471
Facility Name Big Sky ABY State #1	Facility Type Well

Surface Owner State	Mineral Owner State	API No. 30-005-21020
------------------------	------------------------	-------------------------

LOCATION OF RELEASE

Unit Letter M	Section 26	Township 8S	Range 33E	Feet from the 660	North/South Line South	Feet from the 660	East/West Line West	County Chaves
------------------	---------------	----------------	--------------	----------------------	---------------------------	----------------------	------------------------	------------------

Latitude 33.58612 Longitude -103.54252

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 20 B/PW	Volume Recovered 8 B/PW
Source of Release Heater Treater	Date and Hour of Occurrence 08/06/2017; PM	Date and Hour of Discovery 08/06/2017; PM
Was Immediate Notice Given? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? N/A	RECEIVED By Olivia Yu at 5:42 pm, Aug 18, 2017
By Whom?	Date and Hour	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacted	

If a Watercourse was Impacted, Describe Fully.* N/A



Describe Cause of Problem and Remedial Action Taken.*

Hole in heater treater from vandalism (gunshot), caused the release. Vacuum truck(s) and roustabout crews were called.

Describe Area Affected and Cleanup Action Taken.

An approximate area of 50'X35'. The well and valves were closed. Vacuum truck recovered remaining produced water. The impacted soils were excavated (1' depth) and hauled to an NMOCD approved facility. Site check on 8/15/2017 and initial vertical and horizontal delineation samples were collected (8/15/2017) to be analyzed for TPH & BTEX (chlorides for documentation). Depth to Ground Water: >100' (approximately 157', Section 34, T8S-R33E, per NMOSE), Wellhead Protection Area: No, Distance to Surface Water Body: >1000', SITE RANKING IS 0.

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: 	OIL CONSERVATION DIVISION	
Printed Name: Robert Asher	Approved by Environmental Specialist: 	
Title: Environmental Supervisor	Approval Date: 8/18/2017	Expiration Date:
E-mail Address: Robert.asher@eogresources.com	Conditions of Approval: see attached directive	Attached <input checked="" type="checkbox"/>
Date: August 16, 2017	Phone: 575-748-4217	

* Attach Additional Sheets If Necessary

1RP-4792

nOY1723064014

pOY1723064269

Operator/Responsible Party,

The OCD has received the form C-141 you provided on 8/16/2017 regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number 1RP-4792 has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC. [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District 1 office in Hobbs on or before 9/18/2017. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.
- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C₆ thru C₃₆), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.
- Nominal detection limits for field and laboratory analyses must be provided.
- Composite sampling is not generally allowed.
- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

- Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

- If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

- Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

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