Q3

2019

Ground Water Report

Smith, Cory, EMNRD

From: Smith, Cory, EMNRD
Sent: Tuesday, September 17, 2019 1:24 PM
To: Zach Stradling (zstradling@bmgdrilling.com)
Cc: 'Karen Lupton'; 'Elizabeth McNally'
Subject: RE: BMG O-9 Line Leak Groundwater Monitoring Report

Zach,

OCD has received the ground water report.

I have reviewed the case file for this site and it appears that there is no direction for remediation at this site.

Mr. Olson, requested additional delineation around MW5/7 in July 2002 and also requested that the source of impacts be identified etc.

Please review the site and during the next quarterly report include a plan and timelines to complete delineation activities at this site. This plan does not need to be formally approved by the OCD it must fully delineate both horizontally and vertically the impacts at this site.

In the meantime while additional information is generated BMG needs to at a minimum bail the NAPL from wells that have product on them during monitoring/sampling events or possible install ORC socks as described in the 2002 reports from AMEC.

The report and this email have been uploaded to AP-31

Cory Smith
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 115
cory.smith@state.nm.us

From: Karen Lupton <klupton@animasenvironmental.com>
Sent: Thursday, August 29, 2019 8:30 AM
To: Smith, Cory, EMNRD <Cory.Smith@state.nm.us>
Subject: [EXT] BMG O-9 Line Leak Groundwater Monitoring Report

Hi Cory:

Attached please find the Groundwater Monitoring and Sampling Report for the above referenced site.

Please let me know if you need any additional information.

Best wishes –

August 7, 2019

Zach Stradling
Benson-Montin-Greer Drilling Corp.
4900 College Blvd.
Farmington, New Mexico 87401

9/17/19

CS Review Sent email *Attached*

RE: Groundwater Monitoring and Sampling Report
O-9 Pipeline Release
NMOCD Order Number: AP-31
Rio Arriba County, New Mexico

Dear Mr. Stradling,

Animas Environmental Services, LLC (AES) has prepared this Groundwater Monitoring and Sampling Report detailing groundwater monitoring and sampling at the Benson-Montin Greer Drilling Corporation (BMG) O-9 release location in April 2019. A topographic site location map and an aerial site location map are included as Figures 1 and 2.

1.0 Site History

1.1 Initial Release and Investigation

Hydrocarbons were discovered in the vicinity of the O-9 pipeline in Santa Fe National Forest by BMG during the summer of 2000. BMG completed removal of approximately 2,800 cubic yards of hydrocarbon-impacted soils and backfilled the excavation with clean soil.

Philip Environmental Services Corporation (Philip) was contracted by BMG to perform a limited subsurface investigation of soil and groundwater from a crude oil pipeline spill. Ten soil borings were completed in August 2000 to assess environmental impacts from the O-9 Line Leak. Five of the soil borings were converted into monitoring wells (MW-1 through MW-5).

On September 20 and 21, 2001, AMEC Earth & Environmental, Inc. (AMEC) completed further site investigation activities. Seven soil borings were completed, of which three were converted into monitor wells (MW-6 through MW-8).

August 2000 to October 2001 depth to groundwater measurements and water quality data are summarized and presented in Table 1 and laboratory analytical results are presented in Table 2.

1.2 Abatement Plan

BMG submitted a Stage 1 and Stage 2 abatement plan to New Mexico Oil Conservation Division (NMOCD) on November 28, 2001. Public notice requirements were completed by March 11, 2002. Further information required to complete the abatement plan was submitted to NMOCD on August 26, 2002.

2.0 Groundwater Monitoring and Sampling, April 2019

AES conducted groundwater monitoring and sampling of eight monitor wells (MW-1 through MW-8) during the April sampling event.

All site monitor wells were gauged for depth to groundwater in order to monitor season groundwater fluctuations and calculate gradient. Samples were collected with new disposable bailers and transferred into 40-mL vials, which were labeled and stored at less than 6°C in an insulated cooler until delivered to Hall in Albuquerque, New Mexico. Groundwater samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) per U.S. Environmental Protection Agency (USEPA) Method 8260 as well as total petroleum hydrocarbons (TPH) as gasoline range organics (GRO) and diesel range organics (DRO) per USEPA Method 8015.

2.1 Groundwater Measurement and Water Quality Data

Based on data collected during the April 2019 sampling event, groundwater elevations decreased by approximately 0.42 ft across the site since the October 2001 sampling event. Groundwater elevations ranged between 7,486.90 ft above mean sea level (AMSL) in MW-5 and 7,492.48 ft AMSL in MW-4. Groundwater gradient was calculated to be in a southeasterly direction with a magnitude of 0.02 ft/ft and is indicative of losing stream characteristics. Residual non-aqueous phase liquid (NAPL) was detected in MW-5 and MW-7 (both 0.01 ft). A groundwater elevation contour map is included as Figure 3.

Depth to groundwater measurements and water quality data are summarized and presented in Table 1. Groundwater sample collection forms are attached.

2.2 Groundwater Analytical Results

April 2019 groundwater analytical results showed that dissolved phase BTEX concentrations were reported below laboratory detection limits and applicable WQCC standards in all wells except MW-5 (5.7 µg/L total xylenes). TPH as GRO was also detected only in MW-5, at 2.6 mg/L. TPH as DRO was detected in MW-5 (13 mg/L) and MW-7 (6.1 mg/L). Laboratory analytical results are included in Table 2, and contaminant concentrations are found on Figure 4. The laboratory analytical report is attached.

3.0 Scheduled Site Activities

The next sampling event is tentatively scheduled for early August 2019 and will include gauging and sampling of eight wells, MW-1 through MW-8, for laboratory analysis of BTEX per USEPA Method 8260/8021 and GRO and DRO per USEPA Method 8015.

If you have any questions about this report or site conditions, please feel free to contact Elizabeth McNally at (505) 564-2281.

Respectfully Submitted,

David J. Reese
Environmental Scientist

Elizabeth McNally, P.E.

Attachments:

Table 1. Groundwater Measurements and Water Quality Data
Table 2. Groundwater Laboratory Analytical Results
Figure 1. Topographic Site Location Map
Figure 2. Aerial Site Location Map with Monitor Well Locations
Figure 3. Groundwater Elevation Contours, April 2019
Figure 4. Groundwater Contaminant Concentrations, April 2019
Groundwater Sample Collection Forms
Laboratory Analytical Reports (Hall No. 1904285)

Cc: Cory Smith (*cory.smith@state.nm.us*)
New Mexico Oil Conservation Division
1000 Rio Brazos Road
Aztec, NM 87410

Files\2019 Client Projects\BMG\O-9 Release\Reports and Workplans\BMG O-9 Line Leak Groundwater Monitoring Report 080719.docx

Attachments

TABLE 1
SUMMARY OF GROUNDWATER MEASUREMENT AND WATER QUALITY DATA
BMG OJITO CANYON (O-9) RELEASE
Rio Arriba County, New Mexico

Well ID	*Date Measured*	*TOC Elevation* (ft amsl)*	*Depth to NAPL (ft)*	*Depth to Water (ft)*	*NAPL Thickness (ft)*	*Water Level Elevation (ft amsl)*	*Corrected GW Elev. (ft)*	*Temp. (° C)*	*Specific Conduct. (mS)*	*Dissolved Oxygen (mg/L)*	*pH*	*ORP (mV)*
MW-1	30-Aug-00	7507.22		16.69		7490.53		16.9	NM	NM	NM	NM
MW-1	06-Feb-01	7507.22		16.08		7491.14		7.6	0.862	NM	5.54	NM
MW-1	05-Oct-01	7507.22		16.15		7491.07		NM	NM	NM	NM	NM
MW-1	03-Apr-19	7507.22		16.74		7490.48		8.3	493.0	2.23	7.32	107.1
MW-2	30-Aug-00	7506.50		16.62		7489.88		15.2	NM	NM	NM	NM
MW-2	06-Feb-01	7506.50		15.91		7490.59		9.48	1.06	NM	5.9	NM
MW-2	05-Oct-01	7506.50		15.94		7490.56		NA	0.463	6.44	NM	226.7
MW-2	03-Apr-19	7506.50		16.30		7490.20		7.9	448.3	7.02	7.49	72.2
MW-3	30-Aug-00	7508.63		17.21		7491.42		14.3	NM	NM	NM	NM
MW-3	06-Feb-01	7508.63		16.88		7491.75		9.3	84.6	NM	4.97	NM
MW-3	05-Oct-01	7508.63		17.01		7491.62		NM	NM	NM	NM	NM
MW-3	03-Apr-19	7508.63		17.83		7490.80		8.6	446.3	1.55	7.25	134.9
MW-4	30-Aug-00	7507.10		15.51		7491.59		14.9	NM	NM	NM	NM
MW-4	06-Feb-01	7507.10		15.05		7492.05		7.02	0.77	NM	5.15	NM
MW-4	05-Oct-01	7507.10		15.14		7491.96		NM	NM	NM	NM	NM
MW-4	03-Apr-19	7507.10		14.62		7492.48		4.6	237.3	6.74	7.44	108.9
MW-5	30-Aug-00	7503.22		16.66		7486.56		12.6	NM	NM	NM	NM
MW-5	06-Feb-01	7503.22	16.23	17.41	1.18	7485.81	7486.73	NM - NAPL PRESENT				
MW-5	05-Oct-01	7503.22	16.26	16.74	0.48	7486.48	7486.85	NM - NAPL PRESENT				
MW-5	03-Apr-19	7503.22	16.92	16.93	0.01	7486.29	7486.30	NM - NAPL SHEEN PRESENT				
MW-6	05-Oct-01	TBS		15.81				NA	0.544	3.29	NM	213.9

TABLE 1
SUMMARY OF GROUNDWATER MEASUREMENT AND WATER QUALITY DATA
BMG OJITO CANYON (O-9) RELEASE
Rio Arriba County, New Mexico

Well ID	*Date Measured*	*TOC Elevation* (ft amsl)*	*Depth to NAPL (ft)*	*Depth to Water (ft)*	*NAPL Thickness (ft)*	*Water Level Elevation (ft amsl)*	*Corrected GW Elev. (ft)*	*Temp. (° C)*	*Specific Conduct. (mS)*	*Dissolved Oxygen (mg/L)*	*pH*	*ORP (mV)*
MW-6	03-Apr-19	TBS		16.04				7.3	209.5	8.09	7.63	140.5
MW-7	05-Oct-01	TBS		16.00				NA	0.547	3.10	NM	-65.9
MW-7	03-Apr-19	TBS	16.67	16.68	0.01			NM - NAPL SHEEN PRESENT				
MW-8	05-Oct-01	TBS		14.06				NM	NM	NM	NM	NM
MW-8	03-Apr-19	TBS		14.69				8.8	485.7	4.19	7.36	130.6

NOTES: * MW-6, MW7, and MW-8 Top of Casing elevations are relative to MW-1 as determined by AMEC in October 2001.
NA NOT AVAILABLE
NM NOT MEASURED
TOC TOP OF CASING

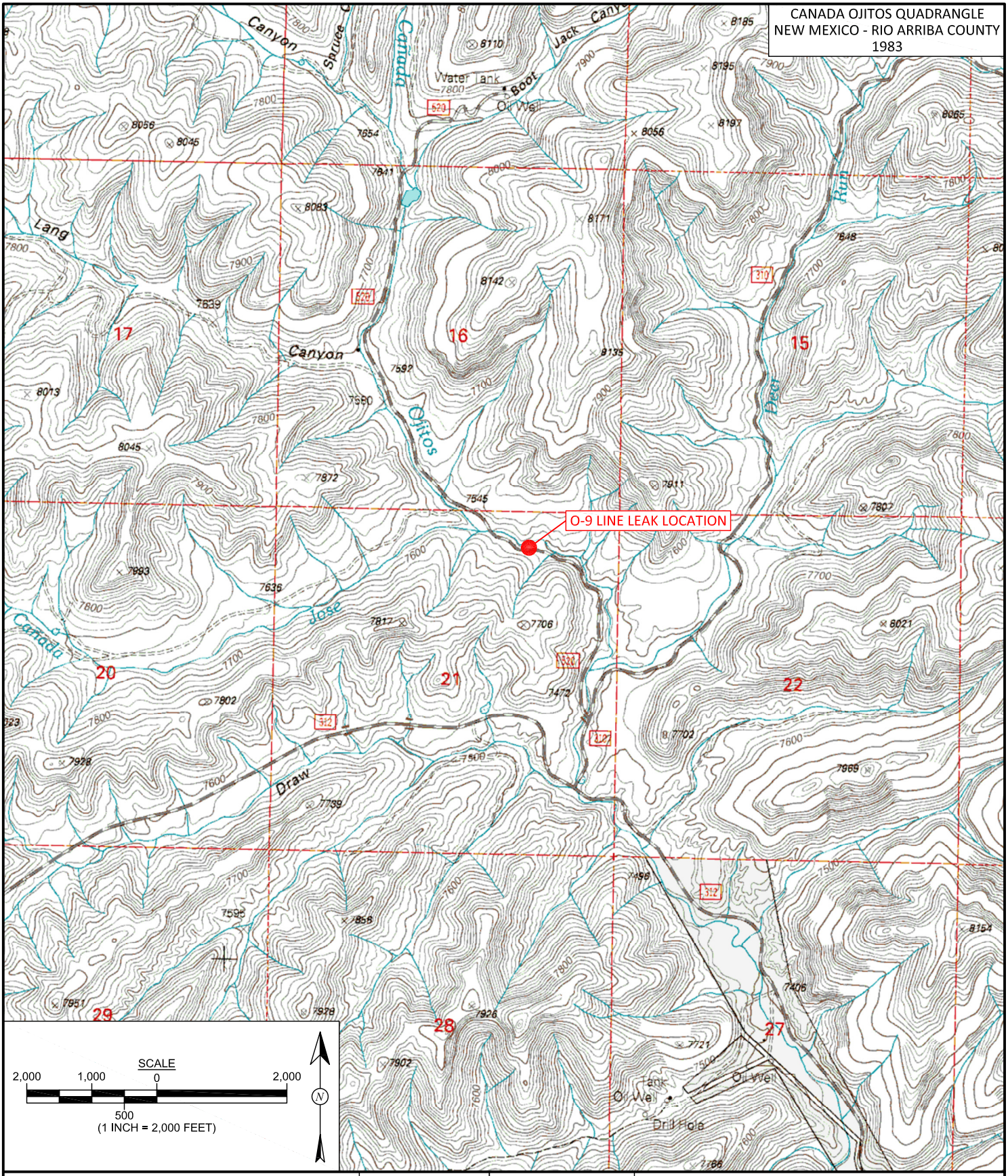
TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
BMG OJITO CANYON (O-9) RELEASE
Rio Arriba County, New Mexico

Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	GRO	DRO	MRO
		(µg/L)	*(µg/L)*	*(µg/L)*	*(µg/L)*	*(mg/L)*	*(mg/L)*	*(mg/L)*
Analytical Method		**8021B/ 8260B**	**8021B/ 8260B**	**8021B/ 8260B**	**8021B/ 8260B**	**8015B**	**8015B**	**8015B**
NM WQCC STANDARD		***5***	***1,000***	***700***	***620***	***NE***	***NE***	***NE***
MW-1	30-Aug-00	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	<1.0
MW-1	06-Feb-01	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	<1.0
MW-1	25-Sep-01	<0.5	<0.5	<0.5	<0.5	NA	NA	NA
MW-1	03-Apr-19	<1.0	<1.0	<1.0	<1.5	<0.050	<1.0	NA
MW-2	30-Aug-00	<0.5	<0.5	<0.5	2.1	<2.0	<1.0	<1.0
MW-2	06-Feb-01	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	<1.0
MW-2	05-Oct-01	<0.5	<0.5	<0.5	<0.5	NA	NA	NA
MW-2	03-Apr-19	<1.0	<1.0	<1.0	<1.5	<0.050	<1.0	NA
MW-3	30-Aug-00	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	<1.0
MW-3	06-Feb-01	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	<1.0
MW-3	25-Sep-01	<0.5	<0.5	<0.5	<0.5	NA	NA	NA
MW-3	03-Apr-19	<1.0	<1.0	<1.0	<1.5	<0.050	<1.0	NA
MW-4	30-Aug-00	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	<1.0
MW-4	06-Feb-01	<0.5	<0.5	<0.5	<0.5	<2.0	<1.0	<1.0
MW-4	25-Sep-01	<0.5	<0.5	<0.5	<0.5	NA	NA	NA
MW-4	03-Apr-19	<1.0	<1.0	<1.0	<1.5	<0.050	<1.0	NA
MW-5	30-Aug-00	**400**	56	79	260	<2.0	1.6	<1.0
MW-5	03-Apr-19	<2.0	<2.0	<2.0	5.7	2.6	13	NA
MW-6	05-Oct-01	**69**	<0.5	23	41	NA	NA	NA
MW-6	03-Apr-19	<1.0	<1.0	<1.0	<1.5	<0.050	<1.0	NA
MW-7	05-Oct-01	**350**	47	87	310	NA	NA	NA
MW-7	03-Apr-19	<1.0	<1.0	<1.0	<1.5	<0.050	6.1	NA
MW-8	25-Sep-01	<0.5	<0.5	<0.5	<0.5	NA	NA	NA
MW-8	03-Apr-19	<1.0	<1.0	<1.0	<1.5	<0.050	<1.0	NA

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
BMG OJITO CANYON (O-9) RELEASE
Rio Arriba County, New Mexico

Well ID	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	GRO	DRO	MRO
		(µg/L)	*(µg/L)*	*(µg/L)*	*(µg/L)*	*(mg/L)*	*(mg/L)*	*(mg/L)*
Analytical Method		**8021B/ 8260B**	**8021B/ 8260B**	**8021B/ 8260B**	**8021B/ 8260B**	**8015B**	**8015B**	**8015B**
NM WQCC STANDARD		***5***	***1,000***	***700***	***620***	***NE***	***NE***	***NE***

NOTE: NA = Not Analyzed
NE = Not Established
NS = Not Sampled
GRO = Gasoline Range Organics
DRO = Diesel Range Organics
MRO = Motor Oil Range Organics



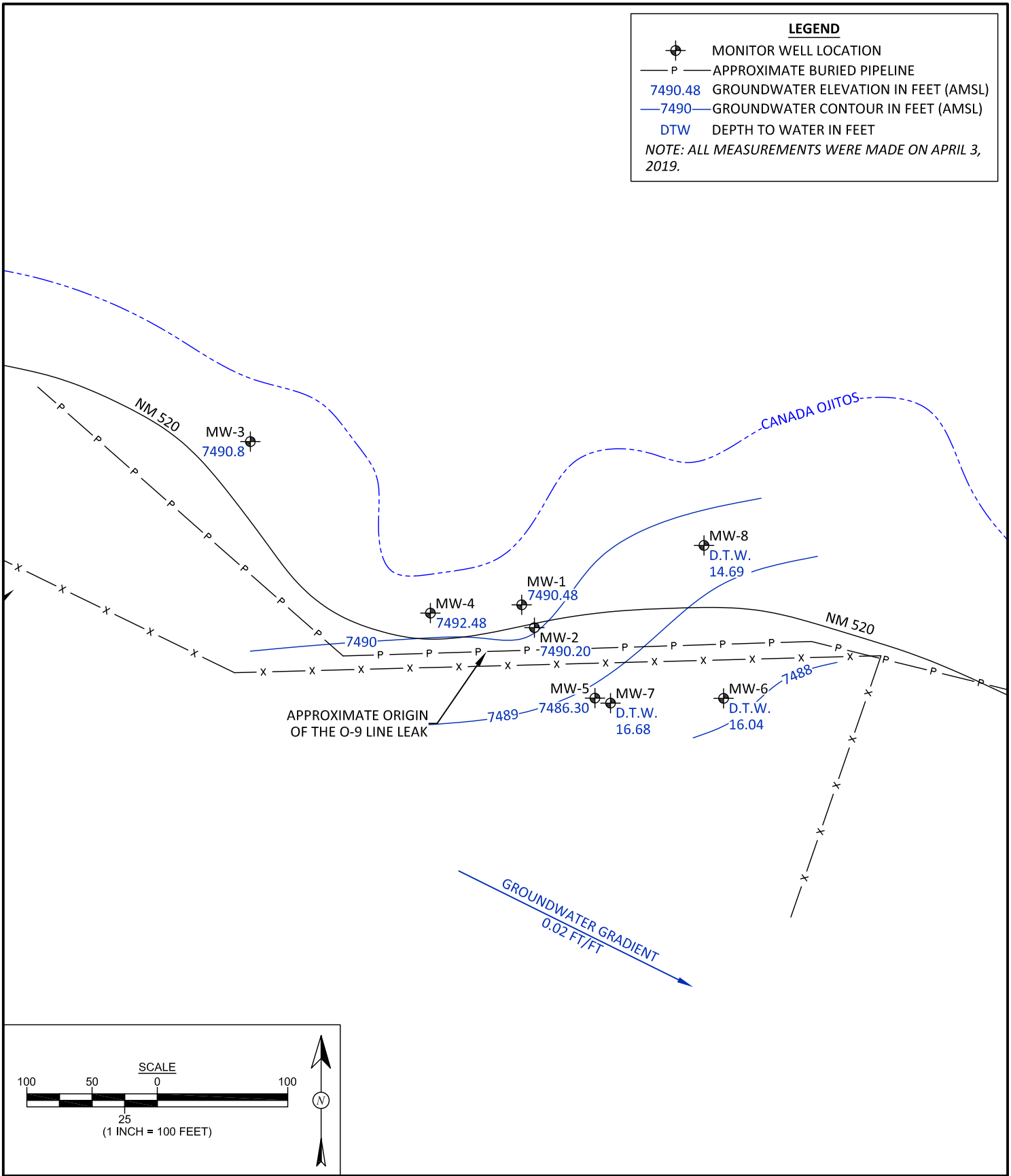
animas environmental services Farmington, NM • Durango, CO animasenvironmental.com	**DRAWN BY:** C. Lameman	**DATE DRAWN:** June 3, 2019	**FIGURE 1**
	REVISIONS BY: C. Lameman	**DATE REVISED:** June 17, 2019	**TOPOGRAPHIC SITE LOCATION MAP** BENSON-MONTIN-GREER O-9 LINE LEAK LOCATION N½ OF NE¼, SECTION 21, T26N, R1W RIO ARRIBA COUNTY, NEW MEXICO
	CHECKED BY: D. Reese	**DATE CHECKED:** June 17, 2019	
	APPROVED BY: E. McNally	**DATE APPROVED:** June 17, 2019	

animas environmental services
Farmington, NM • Durango, CO
animasenvironmental.com

DRAWN BY: C. Lameman	**DATE DRAWN:** June 3, 2019
REVISIONS BY: C. Lameman	**DATE REVISED:** June 17, 2019
CHECKED BY: D. Reese	**DATE CHECKED:** June 17, 2019
APPROVED BY: E. McNally	**DATE APPROVED:** June 17, 2019

FIGURE 2

AERIAL SITE LOCATION MAP AND MONITOR WELL LOCATIONS
BENSON-MONTIN-GREER
O-9 LINE LEAK LOCATION
N½ OF NE¼, SECTION 21, T26N, R1W
RIO ARRIBA COUNTY, NEW MEXICO

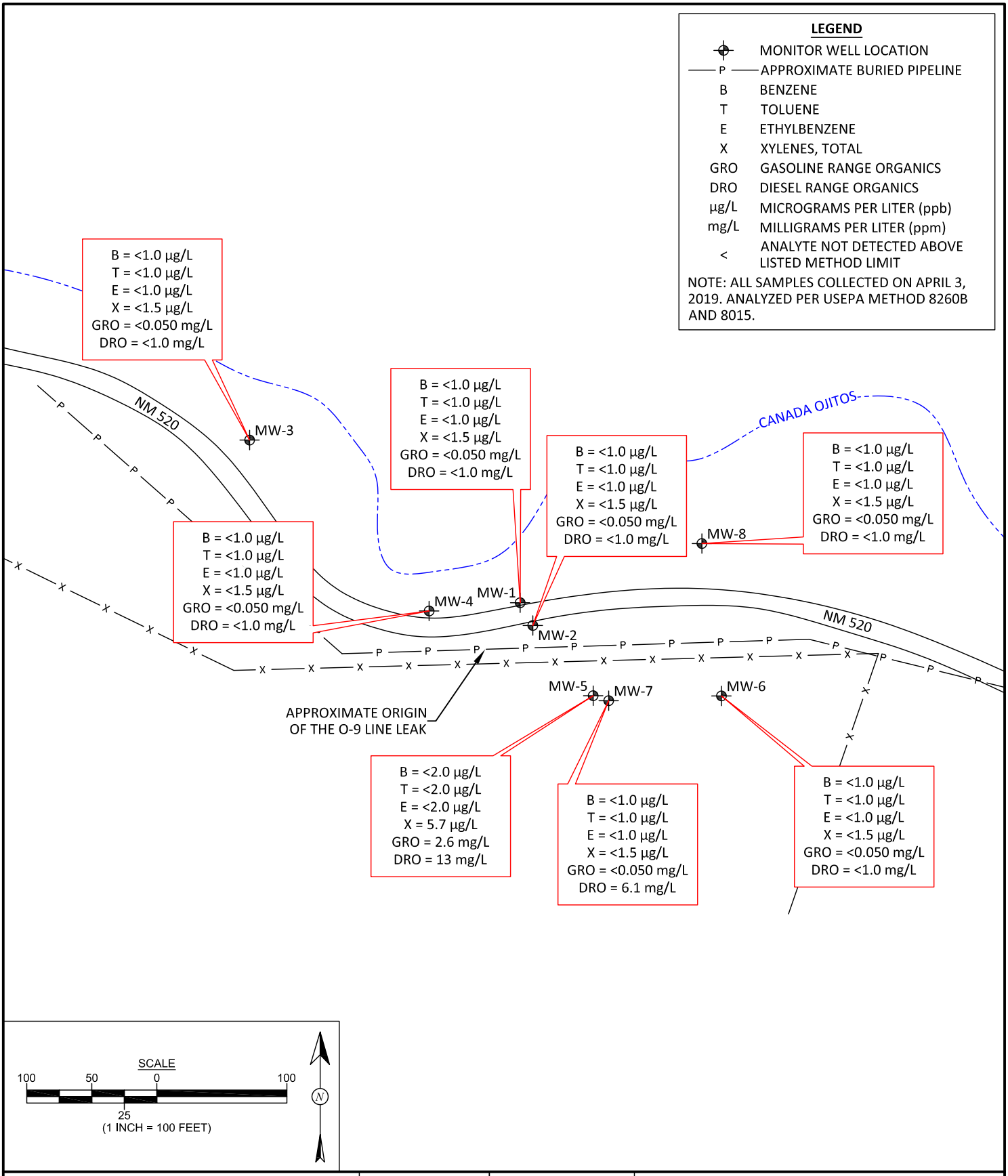


animas environmental services
Farmington, NM • Durango, CO
animasenvironmental.com

DRAWN BY: C. Lameman	**DATE DRAWN:** June 3, 2019
REVISIONS BY: C. Lameman	**DATE REVISED:** June 17, 2019
CHECKED BY: D. Reese	**DATE CHECKED:** June 17, 2019
APPROVED BY: E. McNally	**DATE APPROVED:** June 17, 2019

FIGURE 3

GROUNDWATER ELEVATIONS CONTOURS
APRIL 2019
BENSON-MONTIN-GREER
O-9 LINE LEAK LOCATION
N½ OF NE¼, SECTION 21, T26N, R1W
RIO ARRIBA COUNTY, NEW MEXICO



animas environmental services
Farmington, NM • Durango, CO
animasenvironmental.com

DRAWN BY: C. Lameman	**DATE DRAWN:** June 3, 2019
REVISIONS BY: C. Lameman	**DATE REVISED:** June 17, 2019
CHECKED BY: D. Reese	**DATE CHECKED:** June 17, 2019
APPROVED BY: E. McNally	**DATE APPROVED:** June 17, 2019

FIGURE 4

GROUNDWATER CONTAMINANT CONCENTRATIONS, APRIL 2019
BENSON-MONTIN-GREER
O-9 LINE LEAK LOCATION
N½ OF NE¼, SECTION 21, T26N, R1W
RIO ARRIBA COUNTY, NEW MEXICO

DEPTH TO GROUNDWATER MEASUREMENT FORM

Animas Environmental Services
604 W Pinon St, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Project: Groundwater Monitoring and Sampling
Site: BMG
Location: O-9
Tech: C. Lanceman, G. Brome

Project No.:
Date: 4-3-19
Time: 840-1300
Form: 1 of 1

Well I.D.	Time	Depth to NAPL (ft.)	Depth to Water (ft.)	NAPL Thickness (ft.)	Notes / Observations
MW-1	~~16.7~~ 9:22	—	16.74	—	2" well
MW-2	9:48	—	16.30	—	2" well
MW-3	10:22	—	17.83	—	2" well
MW-4	10:47	—	14.62	—	2" well
MW-5	9:14	14.92	14.93	0.01	2" well
MW-6	11:23	—	16.04	—	~~4~~ 2" well
MW-7	9:12	16.67	16.68	0.01	4" well
MW-8	11:04	—	14.49	—	4" well

Wells measured with KECK water level or KECK interface tape, decontaminated between each well measurement.

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-1

Animas Environmental Services
604 W Pinon St., Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: BMG
Location: O-9
Project: Groundwater Monitoring and Sampling
Sampling Technician: CL/GB
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): 16.73 **Time:** 8:58 *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 16.74 **Time:** 9:22 *(taken prior to purging well)*
Final D.T.W. (ft): 22.29 **Time:** 9:44 *(taken after sample collection)*
If NAPL Present: D.T.P.: — D.T.W.: — Thickness: — Time: —

Project No.:
Date: 4-3-19
Arrival Time: 9:20
Air Temp: 37°F Breezy, Cloudy
T.O.C. Elev. (ft): 7507.22
Total Well Depth (ft): 24.78

Water Quality Parameters - Recorded During Well Purging

YSI # 1 Calibrated by: GB 4-2-19

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
9:25	8.5	509	6.63	8.05	166.6	Initial	Clear / No Odor
9:29	7.9	499.7	6.28	7.64	159.6	1.0	Sl. Turbid Tan / No Odor
9:32	8.0	503	5.74	7.47	157.8	2.0	Turbid, Sed Tan Roots / No Odor
9:36	8.1	499.1	4.22	7.40	122.2	3.0	Turbid Tan / No Odor
9:39	8.3	493.0	2.23	7.32	107.1	4.0	V. Turbid Tan / No odor
9:41	—						Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

BTEX per EPA Method 8021 (3 - 40 mL Vials w/ HCl preserve)
GRO + DRO per EPA Method 8015M (250 mL Amber Glass)

Disposal of Purged Water: On Ground Evaporation
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: Well Casing and well in good condition. Locked. Bailer still inside.
Calculated purge volume = 4 Gallons
Too cloudy for GPS

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-2

Animas Environmental Services
604 W Pinon St., Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: BMG
Location: O-9
Project: Groundwater Monitoring and Sampling
Sampling Technician: CL / GB
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): 16.29 **Time:** 8:59 *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 16.30 **Time:** 9:48 *(taken prior to purging well)*
Final D.T.W. (ft): 19.87 **Time:** 10:15 *(taken after sample collection)*
If NAPL Present: D.T.P.: — **D.T.W.:** — **Thickness:** — **Time:** —

Project No.:
Date: 4-3-19
Arrival Time: 9:47
Air Temp: 40°F Breezy, Cloudy
T.O.C. Elev. (ft): 7506.5
Total Well Depth (ft): 22.10

Water Quality Parameters - Recorded During Well Purging

YSI # 1 Calibrated by: GB 4-2-19

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
10:01	7.9	434.6	7.09	7.54	25.9	Initial	Clear / Organics / No Odor Roots
10:03	7.5	356.7	7.33	7.52	49.5	1.0	Clear / Organics Roots / No Odor
10:05	7.7	404.5	7.21	7.45	62.2	2.0	Turbid, Roots / No Odor Pik Larvae Organic
10:11	7.9	448.3	7.02	7.49	72.2	3.0	Turbid Tan, Roots / No Odor
10:13	—	—	—	—	—	—	Samples Collected
							Wait for Recharge.

Analytical Parameters (include analysis method and number and type of sample containers)

BTEX per EPA Method 8021 (3 - 40 mL Vials w/ HCl preserve)
GRO + DRO per EPA Method 8015M (250 mL Amber Glass)

Disposal of Purged Water: On Ground Evaporation
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: Well Casing and well in good condition. Locked on arrival. Bailer Still inside. Calculated purge volume = 3 Gallons
Too cloudy for GPS

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-3

Animas Environmental Services
604 W Pinon St., Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: BMG
Location: O-9
Project: Groundwater Monitoring and Sampling
Sampling Technician: CL/GB
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): 17.83 **Time:** 9:02 *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 17.83 **Time:** 10:22 *(taken prior to purging well)*
Final D.T.W. (ft): 20.23 **Time:** 10:39 *(taken after sample collection)*
If NAPL Present: D.T.P.: — D.T.W.: — Thickness: — Time: —

Project No.:
Date: 4-3-19
Arrival Time: 10:18
Air Temp: 41°F Cloudy, Breezy
T.O.C. Elev. (ft): 7508.63
Total Well Depth (ft): 28.14

Water Quality Parameters - Recorded During Well Purging

YSI # 1 Calibrated by: GB 4-2-19

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
10:24	8.5	442.3	1.47	7.45	111.9	Initial	Clear / No Odor
10:26	8.3	440.3	2.14	7.38	117.2	1.0	Turbid Tan / No Odor
10:28	8.4	441.8	1.72	7.33	120.8	2.0	Turbid Tan / No Odor
10:30	8.4	442.6	1.80	7.29	126.4	3.0	Turbid Tan/Pink / No Odor
10:32	8.5	444.3	1.73	7.26	136.1	4.0	V. Turbid Brown / No Odor
10:34	8.6	446.3	1.55	7.25	134.9	5.0	V. Turbid Brown / No Odor
10:35							Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

BTEX per EPA Method 8021 (3 - 40 mL Vials w/ HCl preserve)
GRO + DRO per EPA Method 8015M (250 mL Amber Glass)

Disposal of Purged Water: On Ground Evap.
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: Well Casing and well condition good. Locked on arrival. Bailer inside.
Calculated purge volume ≈ 5 Gallons
36° 28' 34.00784", -106° 56' 39.58822

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-4

Animas Environmental Services
604 W Pinon St., Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: BMG
Location: O-9
Project: Groundwater Monitoring and Sampling
Sampling Technician: CA/GB
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): 14.60 **Time:** 9:18 *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 14.62 **Time:** 10:47 *(taken prior to purging well)*
Final D.T.W. (ft): 14.70 **Time:** 10:54 *(taken after sample collection)*
If NAPL Present: **D.T.P.:** — **D.T.W.:** — **Thickness:** — **Time:** —

Project No.:
Date: 4-3-19
Arrival Time: 10:42
Air Temp: 34°F Cloudy, Breezy
T.O.C. Elev. (ft): 7507.1
Total Well Depth (ft): 17.12

Water Quality Parameters - Recorded During Well Purging

YSI # 1 Calibrated by: GB 4-2-19

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
10:49	5.3	255.2	7.50	7.55	122.2	Initial	Clear / Roots / No odor
10:52	4.6	~~405~~ 237.3	6.74	7.44	108.9	1.0	Sl. Turbid Tan / No odor
10:53	—					—	Low Yield
							Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

BTEX per EPA Method 8021 (3 - 40 mL Vials w/ HCl preserve)
GRO + DRO per EPA Method 8015M (250 mL Amber Glass)

Disposal of Purged Water: On Ground Evaporation
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: Well casing and well in good condition. Locked on arrival. Ben did not have key, broke lock off. Bailer inside. Calculated purge volume ≥ 1.25
36° 28' 33.5736, -108° 56' 38.2584

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-5

Animas Environmental Services
604 W Pinon St., Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: BMG
Location: O-9
Project: Groundwater Monitoring and Sampling
Sampling Technician: CH/CB
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): ~~16.92~~ **Time:** —
Confirm D.T.W. (ft): — **Time:** —
Final D.T.W. (ft): — **Time:** —
If NAPL Present: **D.T.P.:** 16.92 **D.T.W.:** ~~16.16~~ 16.93 **Thickness:** 0.01 **Time:** 9:14

Project No.:
Date: 4-3-19
Arrival Time: 11:50
Air Temp: 33F Snowing
T.O.C. Elev. (ft): 7503.22
Total Well Depth (ft): 22.90
(taken at initial gauging of all wells)
(taken prior to purging well)
(taken after sample collection)

Water Quality Parameters - Recorded During Well Purging

YSI # — Calibrated by: —

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
		NO WATER QUALITY					
		READINGS					
		DUE TO SCREEN					
11:56	—	—	—	—	—	→	Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

BTEX per EPA Method 8021 (3 - 40 mL Vials w/ HCl preserve)
GRO + DRO per EPA Method 8015M (250 mL Amber Glass)

Disposal of Purged Water: On ground surface. Evaporation
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: Well Casing and Well in good condition. Locked on arrival. No Bailer

36° 28' 32.92395, -106° 52' 36.42298

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-6

Animas Environmental Services
604 W Pinon St., Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: BMG
Location: O-9
Project: Groundwater Monitoring and Sampling
Sampling Technician: CA/GB
Purge / No Purge: Purge
Well Diameter (in): 4
Initial D.T.W. (ft): 16.03 **Time:** 9:05 *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 16.04 **Time:** 11:23 *(taken prior to purging well)*
Final D.T.W. (ft): 20.05 **Time:** 11:36 *(taken after sample collection)*
If NAPL Present: **D.T.P.:** — **D.T.W.:** — **Thickness:** — **Time:** —

Project No.:
Date: 4-3-19
Arrival Time: 11:19
Air Temp: 35°F Cloudy
T.O.C. Elev. (ft):
Total Well Depth (ft): 23.41

Water Quality Parameters - Recorded During Well Purging

YSI # 1 Calibrated by: GB 4-2-19

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
11:25	7.0	216.6	8.45	7.66	134.3	Initial	Clear / No Odor
11:28	6.8	203.3	8.03	7.64	133.5	2.0	Sl. Turbid Tan / No Odor
11:30	6.8	204.4	8.06	7.62	138.5	4.0	Turbid Tan / No Odor
11:32	7.3	209.5	8.09	7.63	140.5	6.0	Turbid Tan / No Odor
11:35	—	—	—	—	—	—	Samples Collected
							Readings Stabilized

Analytical Parameters (include analysis method and number and type of sample containers)

BTEX per EPA Method 8021 (3 - 40 mL Vials w/ HCl preserve)
GRO + DRO per EPA Method 8015M (250 mL Amber Glass)

Disposal of Purged Water: On Ground Evaporation
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: Well and Casing in good condition. Locked on Arrival. Bailers inside
Calculated Purge Volume 2 1/4 Gallons
36° 28' 32.94759, -106° 56' 35.47655

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-7

Animas Environmental Services
604 W Pinon St., Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: BMG
Location: O-9
Project: Groundwater Monitoring and Sampling
Sampling Technician: CG/GB
Purge / No Purge: Purge
Well Diameter (in): 4
Initial D.T.W. (ft): — **Time:** — *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): — **Time:** — *(taken prior to purging well)*
Final D.T.W. (ft): — **Time:** — *(taken after sample collection)*
If NAPL Present: **D.T.P.:** 16.67 **D.T.W.:** 16.68 **Thickness:** 0.01 **Time:** 9:12

Project No.:
Date: 4-3-19
Arrival Time: 11:40
Air Temp: 39°F Snowing
T.O.C. Elev. (ft):
Total Well Depth (ft): 21.82

Water Quality Parameters - Recorded During Well Purging

YSI #___ Calibrated by:

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
	NO WATER QUALITY						
		SHEEN ON SURFACE					
11:46	—	—	—	—	—	—	Sample Collected
							Low Yield

Analytical Parameters (include analysis method and number and type of sample containers)

BTEX per EPA Method 8021 (3 - 40 mL Vials w/ HCl preserve)
GRO + DRO per EPA Method 8015M (250 mL Amber Glass)

Disposal of Purged Water: On Ground Surface
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: Well casing and well in good condition. Locked on arrival. Bailers inside

Box cloudy for GPS

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-8

Animas Environmental Services
604 W Pinon St., Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: BMG
Location: O-9
Project: Groundwater Monitoring and Sampling
Sampling Technician: CL/GB
Purge / No Purge: Purge
Well Diameter (in): 4
Initial D.T.W. (ft): 14.66 **Time:** 9:09 *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 14.69 **Time:** 11:04 *(taken prior to purging well)*
Final D.T.W. (ft): 17.92 **Time:** 11:14 *(taken after sample collection)*
If NAPL Present: D.T.P.: — **D.T.W.:** — **Thickness:** — **Time:** —

Project No.:
Date: 4-3-19
Arrival Time: 10:59
Air Temp: 32°F Snowing Cloudy
T.O.C. Elev. (ft):
Total Well Depth (ft): 22.68

Water Quality Parameters - Recorded During Well Purging

YSI # 1 Calibrated by: GB 4-2-19

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
11:06	8.7	467.6	3.39	7.26	125.5	Initial	Clear/No odor
11:07	8.7	479.5	3.59	7.31	123.3	1.0	Clear/Organics/Roots/No odor
11:08	8.7	483.4	4.62	7.33	123.1	2.0	Clear/organics/roots/No odor
11:09	8.7	484.4	4.64	7.35	126.3	3.0	Clear/No odor
11:11	8.8	485.7	4.19	7.36	130.6	4.0	Turbid Clear Tan/Roots No odor
11:13	—						Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

BTEX per EPA Method 8021 (3 - 40 mL Vials w/ HCl preserve)
GRO + DRO per EPA Method 8015M (250 mL Amber Glass)

Disposal of Purged Water: On Ground Evaporation
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or ~~Keck Interface Level~~, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: Well casing and well in good condition. No Lock.
Calculated Purge Volume ≈ 4 Gallons
36° 28' 34.08068", -106° 56' 35.55502"

revised: 08/10/09

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

April 16, 2019

Elizabeth McNally

Animas Environmental Services
604 Pinon Street
Farmington, NM 87401
TEL: (505) 564-2281
FAX (505) 324-2022

RE: BMG 0-9 OrderNo.: 1904285

Dear Elizabeth McNally:

Hall Environmental Analysis Laboratory received 9 sample(s) on 4/4/2019 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 #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-1
Project: BMG 0-9
Collection Date: 4/3/2019 9:41:00 AM
Lab ID: 1904285-001
Matrix: AQUEOUS
Received Date: 4/4/2019 8:14:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/8/2019 7:40:41 PM	44163
Surr: DNOP	109	70-130		%Rec	1	4/8/2019 7:40:41 PM	44163
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/12/2019 12:04:18 PM	G59111
Surr: BFB	93.9	72.8-125		%Rec	1	4/12/2019 12:04:18 PM	G59111
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	4/12/2019 1:59:00 PM	R59104
Toluene	ND	1.0		µg/L	1	4/12/2019 1:59:00 PM	R59104
Ethylbenzene	ND	1.0		µg/L	1	4/12/2019 1:59:00 PM	R59104
Xylenes, Total	ND	1.5		µg/L	1	4/12/2019 1:59:00 PM	R59104
Surr: 1,2-Dichloroethane-d4	96.6	70-130		%Rec	1	4/12/2019 1:59:00 PM	R59104
Surr: 4-Bromofluorobenzene	97.9	70-130		%Rec	1	4/12/2019 1:59:00 PM	R59104
Surr: Dibromofluoromethane	97.1	70-130		%Rec	1	4/12/2019 1:59:00 PM	R59104
Surr: Toluene-d8	93.1	70-130		%Rec	1	4/12/2019 1:59:00 PM	R59104

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

Qualifiers:

H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative 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 at testcode

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-2
Project: BMG 0-9
Collection Date: 4/3/2019 10:13:00 AM
Lab ID: 1904285-002 **Matrix:** AQUEOUS **Received Date:** 4/4/2019 8:14:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/8/2019 8:03:07 PM	44163
Surr: DNOP	107	70-130		%Rec	1	4/8/2019 8:03:07 PM	44163
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/12/2019 12:27:02 PM	G59111
Surr: BFB	89.5	72.8-125		%Rec	1	4/12/2019 12:27:02 PM	G59111
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	4/12/2019 2:23:00 PM	R59104
Toluene	ND	1.0		µg/L	1	4/12/2019 2:23:00 PM	R59104
Ethylbenzene	ND	1.0		µg/L	1	4/12/2019 2:23:00 PM	R59104
Xylenes, Total	ND	1.5		µg/L	1	4/12/2019 2:23:00 PM	R59104
Surr: 1,2-Dichloroethane-d4	100	70-130		%Rec	1	4/12/2019 2:23:00 PM	R59104
Surr: 4-Bromofluorobenzene	98.6	70-130		%Rec	1	4/12/2019 2:23:00 PM	R59104
Surr: Dibromofluoromethane	97.6	70-130		%Rec	1	4/12/2019 2:23:00 PM	R59104
Surr: Toluene-d8	93.8	70-130		%Rec	1	4/12/2019 2:23:00 PM	R59104

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

Qualifiers:

H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative 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 at testcode

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-3
Project: BMG 0-9
Collection Date: 4/3/2019 10:35:00 AM
Lab ID: 1904285-003 **Matrix:** AQUEOUS **Received Date:** 4/4/2019 8:14:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/8/2019 8:25:21 PM	44163
Surr: DNOP	105	70-130		%Rec	1	4/8/2019 8:25:21 PM	44163
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/12/2019 12:49:43 PM	G59111
Surr: BFB	89.0	72.8-125		%Rec	1	4/12/2019 12:49:43 PM	G59111
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	4/12/2019 2:48:00 PM	R59104
Toluene	ND	1.0		µg/L	1	4/12/2019 2:48:00 PM	R59104
Ethylbenzene	ND	1.0		µg/L	1	4/12/2019 2:48:00 PM	R59104
Xylenes, Total	ND	1.5		µg/L	1	4/12/2019 2:48:00 PM	R59104
Surr: 1,2-Dichloroethane-d4	99.6	70-130		%Rec	1	4/12/2019 2:48:00 PM	R59104
Surr: 4-Bromofluorobenzene	99.9	70-130		%Rec	1	4/12/2019 2:48:00 PM	R59104
Surr: Dibromofluoromethane	97.3	70-130		%Rec	1	4/12/2019 2:48:00 PM	R59104
Surr: Toluene-d8	92.8	70-130		%Rec	1	4/12/2019 2:48:00 PM	R59104

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

Qualifiers:

H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative 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 at testcode

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-4
Project: BMG 0-9
Collection Date: 4/3/2019 10:53:00 AM
Lab ID: 1904285-004
Matrix: AQUEOUS
Received Date: 4/4/2019 8:14:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/8/2019 8:47:50 PM	44163
Surr: DNOP	106	70-130		%Rec	1	4/8/2019 8:47:50 PM	44163
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/12/2019 1:12:21 PM	G59111
Surr: BFB	89.2	72.8-125		%Rec	1	4/12/2019 1:12:21 PM	G59111
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	4/12/2019 3:12:00 PM	R59104
Toluene	ND	1.0		µg/L	1	4/12/2019 3:12:00 PM	R59104
Ethylbenzene	ND	1.0		µg/L	1	4/12/2019 3:12:00 PM	R59104
Xylenes, Total	ND	1.5		µg/L	1	4/12/2019 3:12:00 PM	R59104
Surr: 1,2-Dichloroethane-d4	100	70-130		%Rec	1	4/12/2019 3:12:00 PM	R59104
Surr: 4-Bromofluorobenzene	98.7	70-130		%Rec	1	4/12/2019 3:12:00 PM	R59104
Surr: Dibromofluoromethane	99.7	70-130		%Rec	1	4/12/2019 3:12:00 PM	R59104
Surr: Toluene-d8	95.6	70-130		%Rec	1	4/12/2019 3:12:00 PM	R59104

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

Qualifiers:

H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative 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 at testcode

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-5
Project: BMG 0-9
Collection Date: 4/3/2019 11:56:00 AM
Lab ID: 1904285-005
Matrix: AQUEOUS
Received Date: 4/4/2019 8:14:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **lrm**	
Diesel Range Organics (DRO)	13	1.0		mg/L	1	4/8/2019 9:10:05 PM	44163
Surr: DNOP	111	70-130		%Rec	1	4/8/2019 9:10:05 PM	44163
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	2.6	0.050		mg/L	1	4/12/2019 1:34:57 PM	G59111
Surr: BFB	980	72.8-125	S	%Rec	1	4/12/2019 1:34:57 PM	G59111
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **RAA**	
Benzene	ND	2.0	D	µg/L	2	4/12/2019 3:36:00 PM	R59104
Toluene	ND	2.0	D	µg/L	2	4/12/2019 3:36:00 PM	R59104
Ethylbenzene	ND	2.0	D	µg/L	2	4/12/2019 3:36:00 PM	R59104
Xylenes, Total	5.7	3.0	D	µg/L	2	4/12/2019 3:36:00 PM	R59104
Surr: 1,2-Dichloroethane-d4	94.7	70-130	D	%Rec	2	4/12/2019 3:36:00 PM	R59104
Surr: 4-Bromofluorobenzene	98.7	70-130	D	%Rec	2	4/12/2019 3:36:00 PM	R59104
Surr: Dibromofluoromethane	92.9	70-130	D	%Rec	2	4/12/2019 3:36:00 PM	R59104
Surr: Toluene-d8	96.6	70-130	D	%Rec	2	4/12/2019 3:36:00 PM	R59104

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

Qualifiers:

H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative 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 at testcode

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-6
Project: BMG 0-9
Collection Date: 4/3/2019 11:35:00 AM
Lab ID: 1904285-006
Matrix: AQUEOUS
Received Date: 4/4/2019 8:14:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/8/2019 9:32:26 PM	44163
Surr: DNOP	111	70-130		%Rec	1	4/8/2019 9:32:26 PM	44163
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/12/2019 2:20:06 PM	G59111
Surr: BFB	89.7	72.8-125		%Rec	1	4/12/2019 2:20:06 PM	G59111
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	4/12/2019 4:00:00 PM	R59104
Toluene	ND	1.0		µg/L	1	4/12/2019 4:00:00 PM	R59104
Ethylbenzene	ND	1.0		µg/L	1	4/12/2019 4:00:00 PM	R59104
Xylenes, Total	ND	1.5		µg/L	1	4/12/2019 4:00:00 PM	R59104
Surr: 1,2-Dichloroethane-d4	99.6	70-130		%Rec	1	4/12/2019 4:00:00 PM	R59104
Surr: 4-Bromofluorobenzene	97.2	70-130		%Rec	1	4/12/2019 4:00:00 PM	R59104
Surr: Dibromofluoromethane	95.6	70-130		%Rec	1	4/12/2019 4:00:00 PM	R59104
Surr: Toluene-d8	93.3	70-130		%Rec	1	4/12/2019 4:00:00 PM	R59104

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

Qualifiers:

H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative 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 at testcode

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-7
Project: BMG 0-9
Collection Date: 4/3/2019 11:46:00 AM
Lab ID: 1904285-007
Matrix: AQUEOUS
Received Date: 4/4/2019 8:14:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **lrm**	
Diesel Range Organics (DRO)	6.1	1.0		mg/L	1	4/8/2019 9:54:44 PM	44163
Surr: DNOP	111	70-130		%Rec	1	4/8/2019 9:54:44 PM	44163
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/12/2019 2:42:45 PM	G59111
Surr: BFB	87.7	72.8-125		%Rec	1	4/12/2019 2:42:45 PM	G59111
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	2	4/12/2019 4:24:00 PM	R59104
Toluene	ND	1.0		µg/L	2	4/12/2019 4:24:00 PM	R59104
Ethylbenzene	ND	1.0		µg/L	2	4/12/2019 4:24:00 PM	R59104
Xylenes, Total	ND	1.5		µg/L	2	4/12/2019 4:24:00 PM	R59104
Surr: 1,2-Dichloroethane-d4	97.6	70-130		%Rec	2	4/12/2019 4:24:00 PM	R59104
Surr: 4-Bromofluorobenzene	95.3	70-130		%Rec	2	4/12/2019 4:24:00 PM	R59104
Surr: Dibromofluoromethane	96.4	70-130		%Rec	2	4/12/2019 4:24:00 PM	R59104
Surr: Toluene-d8	93.2	70-130		%Rec	2	4/12/2019 4:24:00 PM	R59104

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

Qualifiers:

H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative 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 at testcode

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-8
Project: BMG 0-9
Collection Date: 4/3/2019 11:13:00 AM
Lab ID: 1904285-008 **Matrix:** AQUEOUS **Received Date:** 4/4/2019 8:14:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	4/8/2019 10:17:00 PM	44163
Surr: DNOP	111	70-130		%Rec	1	4/8/2019 10:17:00 PM	44163
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/12/2019 3:28:08 PM	G59111
Surr: BFB	90.4	72.8-125		%Rec	1	4/12/2019 3:28:08 PM	G59111
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	4/12/2019 4:48:00 PM	R59104
Toluene	ND	1.0		µg/L	1	4/12/2019 4:48:00 PM	R59104
Ethylbenzene	ND	1.0		µg/L	1	4/12/2019 4:48:00 PM	R59104
Xylenes, Total	ND	1.5		µg/L	1	4/12/2019 4:48:00 PM	R59104
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	4/12/2019 4:48:00 PM	R59104
Surr: 4-Bromofluorobenzene	98.2	70-130		%Rec	1	4/12/2019 4:48:00 PM	R59104
Surr: Dibromofluoromethane	98.2	70-130		%Rec	1	4/12/2019 4:48:00 PM	R59104
Surr: Toluene-d8	92.8	70-130		%Rec	1	4/12/2019 4:48:00 PM	R59104

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

Qualifiers:

H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative 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 at testcode

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: Trip Blank
Project: BMG 0-9
Collection Date:
Lab ID: 1904285-009
Matrix: TRIP BLANK
Received Date: 4/4/2019 8:14:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	0.050		mg/L	1	4/12/2019 3:50:46 PM	G59111
Surr: BFB	90.2	72.8-125		%Rec	1	4/12/2019 3:50:46 PM	G59111
EPA METHOD 8260: VOLATILES SHORT LIST						Analyst: **RAA**	
Benzene	ND	1.0		µg/L	1	4/12/2019 5:11:00 PM	R59104
Toluene	ND	1.0		µg/L	1	4/12/2019 5:11:00 PM	R59104
Ethylbenzene	ND	1.0		µg/L	1	4/12/2019 5:11:00 PM	R59104
Xylenes, Total	ND	1.5		µg/L	1	4/12/2019 5:11:00 PM	R59104
Surr: 1,2-Dichloroethane-d4	98.3	70-130		%Rec	1	4/12/2019 5:11:00 PM	R59104
Surr: 4-Bromofluorobenzene	97.5	70-130		%Rec	1	4/12/2019 5:11:00 PM	R59104
Surr: Dibromofluoromethane	99.5	70-130		%Rec	1	4/12/2019 5:11:00 PM	R59104
Surr: Toluene-d8	93.4	70-130		%Rec	1	4/12/2019 5:11:00 PM	R59104

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

Qualifiers:

H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative 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 at testcode

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1904285**

16-Apr-19

Client: Animas Environmental Services

Project: BMG 0-9

Sample ID: **LCS-44163**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **LCSW**	Batch ID: **44163**	RunNo: **58966**
Prep Date: **4/5/2019**	Analysis Date: **4/8/2019**	SeqNo: **1984703** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.1	1.0	5.000	0	102	71.8	135			
Surr: DNOP	0.45		0.5000		89.2	70	130			

Sample ID: **MB-44163**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **PBW**	Batch ID: **44163**	RunNo: **58966**
Prep Date: **4/5/2019**	Analysis Date: **4/8/2019**	SeqNo: **1984704** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Surr: DNOP	1.0		1.000		99.6	70	130			

Qualifiers:

H	Holding times for preparation or analysis exceeded
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1904285**

16-Apr-19

Client: Animas Environmental Services

Project: BMG 0-9

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBW**	Batch ID: **G59111**	RunNo: **59111**
Prep Date:	Analysis Date: **4/12/2019**	SeqNo: **1990178** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	17		20.00		86.9	72.8	125			

Sample ID: **2.5UG GRO LCS**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSW**	Batch ID: **G59111**	RunNo: **59111**
Prep Date:	Analysis Date: **4/12/2019**	SeqNo: **1990179** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.45	0.050	0.5000	0	90.1	77.7	130			
Surr: BFB	19		20.00		95.8	72.8	125			

Qualifiers:

H	Holding times for preparation or analysis exceeded
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1904285**

16-Apr-19

Client: Animas Environmental Services

Project: BMG 0-9

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **R59104**	RunNo: **59104**
Prep Date:	Analysis Date: **4/12/2019**	SeqNo: **1990896** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	22	1.0	20.00	0	108	70	130			
Toluene	21	1.0	20.00	0	105	70	130			
Surr: 1,2-Dichloroethane-d4	9.6		10.00		95.6	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	9.5		10.00		95.3	70	130			
Surr: Toluene-d8	9.5		10.00		94.6	70	130			

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **R59104**	RunNo: **59104**
Prep Date:	Analysis Date: **4/12/2019**	SeqNo: **1990897** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.7		10.00		96.9	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		96.7	70	130			
Surr: Dibromofluoromethane	9.5		10.00		95.4	70	130			
Surr: Toluene-d8	9.4		10.00		93.7	70	130			

Qualifiers:

H	Holding times for preparation or analysis exceeded
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
ND	Not Detected at the Reporting Limit
RL	Reporting Detection Limit
W	Sample container temperature is out of limit as specified at testcode

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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: **Animas Environmental** Work Order Number: **1904285** RcptNo: **1**

Received By: **Yazmine Garduno** **4/4/2019 8:14:00 AM**

Completed By: **Erin Melendrez** **4/4/2019 12:22:15 PM**

Reviewed By: TWN 4-4-19

LB: JJC 4-4-19

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preserved added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☑ No ☑ No VOA Vials ☐ JJC 4-4-19
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. 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: LB 4/4/19

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.3	Good	Yes			
2	3.1	Good	Yes			

Chain-of-Custody Record

Client: **Animas Environmental Services**

Mailing Address: **604 W. Pinon**
Farmington, NM 87401

Phone #: 505-564-2281

Email or Fax#: emcnally@animasenvironmental.com

QA/QC Package:
X Standard ☐ Level 4 (Full Validation)

Accreditation:
☐ NELAP ☐ Other_____

☐ EDD (Type) _____

Turn-Around Time:
X Standard ☐ Rush_____

Project Name:
BMG O-9

Project #:

Project Manager:
Elizabeth McNally

Sampler: CL/GB

On Ice: ☑ Yes ☐ No

Sample Temperature: 2.3° 3.1°

HALL ENVIRONMENTAL ANALYSIS LABORATORY

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1904285	BTEX (8021)	TPH (GRO/DRO) (8015)							Air Bubbles (Y or N)
							Analysis Request								
4/3/19	9:41	H_2O	MW-1	3- 40 mL VOA 250 mL amber glass	3-HCl 1-cool	-001	x	x							
4/3/19	10:13	H_2O	MW-2	3- 40 mL VOA 250 mL amber glass	3-HCl 1-cool	-002	x	x							
4/3/19	10:35	H_2O	MW-3	3- 40 mL VOA 250 mL amber glass	3-HCl 1-cool	-003	x	x							
4/3/19	10:53	H_2O	MW-4	3- 40 mL VOA 250 mL amber glass	3-HCl 1-cool	-004	x	x							
4/3/19	11:56	H_2O	MW-5	3- 40 mL VOA 250 mL amber glass	3-HCl 1-cool	-005	x	x							
4/3/19	11:35	H_2O	MW-6	3- 40 mL VOA 250 mL amber glass	3-HCl 1-cool	-006	x	x							
4/3/19	11:46	H_2O	MW-7	3- 40 mL VOA 250 mL amber glass	3-HCl 1-cool	-007	x	x							
4/3/19	11:13	H_2O	MW-8	3- 40 mL VOA 250 mL amber glass	3-HCl 1-cool	-008	x	x							
			Trip blank	2 - 40 mL VOA		-009	x	x							

Date	Time	Relinquished by:	Received by:	Date	Time
4/3/19	1601			4/3/19	1601
4/3/19	1810		courier	4/4/19	8:14

Remarks: ~~8:15~~ YG 4/4/19

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.