UNDERGROUND INJECTION CONTROL (UIC) PERMIT APPLICATION PACKAGE CLASS 2 & 3

Office of Oil and Gas
601 57th Street, SE
Charleston, WV 25304
Phone: (304) 926-0450

"Promoting a healthy environment"

CHECKLIST FOR FILING A UIC PERMIT APPLICATION

Please utilize this checklist to ensure you have prepared, completed, and enclosed all required documentation and payment to ensure a timely review of your submittal.

Operator	Danny Webb Construction, INC		
Existing UIC Permit ID Number	UIC2D0190508	UIC Well API Number	47-019-00508

Office of Oil and Gas Office Use Only	
Permit Reviewer	ZGS
Date Received	6/5/2014
Administratively Complete Date	6/5/2014
Approved Date	
Permit Issued	

Please check the fees and payment included.

Fees		Payment Type	
UIC Permit Fee: $500	☐	Check	✓
Groundwater Protection Plan (GPP) Fee: $50.00	✓	Electronic	☐
		Other	☐

Please check the items completed and enclosed.

- ✓ Checklist
- ✓ UIC-1
  - ✓ Section 1 – Facility Information
  - ✓ Section 2 – Operator Information
  - ✓ Section 3 – Application Information
  - ✓ Section 4 – Applicant/Activity Request and Type
  - ✓ Section 5 – Brief description of the Nature of the Business
  - ✓ CERTIFICATION
- ✓ Section 6 – Construction
  - ✓ Appendix A Injection Well Form
  - ✓ Appendix B Storage Tank Inventory
- ✓ Section 7 – Area of Review
  - ✓ Appendix C Wells Within the Area of Review

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- [x] Appendix D Public Service District Affidavit
- [x] Appendix E Water Sources
- [x] Appendix F Area Permit Wells
- [x] Section 8 – Geological Data on Injection and Confining Zones
- [x] Section 9 – Operating Requirements / Data
  - [x] Appendix G Wells Serviced by Injection Well
- [x] Section 10 – Monitoring
- [x] Section 11 – Groundwater Protection Plan (GPP)
  - [x] Appendix H Groundwater Protection Plan (GPP)
- [x] Section 12 – Plugging and Abandonment
- [x] Section 13 – Additional Bonding
- [x] Section 14 – Financial Responsibility
  - [x] Appendix I Financial Responsibility
- [x] Section 15 – Site Security Plan
  - [x] Appendix J Site Security for Commercial Wells
- [x] Section 16 – Additional Information
  - [x] Appendix K Other Permit Approvals

NOTE: For all 2D wells an additional bond in the amount of $5,000 is required.

Reviewed by (Print Name): Todd A. Huey

Reviewed by (Sign): [signature]

Date Reviewed: 6-11-2014

UIC-1
(4/25)

WEST VIRGINIA DEPARTMENT OF
ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS
601 57th Street, SE
Charleston, WV 25304
(304) 926-0450
www.dep.wv.gov/oil-and-gas

UNDERGROUND INJECTION CONTROL (UIC) PERMIT APPLICATION

UIC PERMIT ID # UIC2D01900508 API # 47-019-00508 WELL # 1A

Section I. Facility Information

Facility Name: North Hills Plant

Address: P.O Box 267

City: Lochgelly State: WV Zip: 25866

County: Fayette

Location description:

From the intersection of Rt 19 and Lochgelly Rd, take Lochgelly Rd. .75 mile west and the turn right onto Towne Hollow Rd. Follow Towne Hollow Rd. .75 mile to the North Hills Plant Facility, bear right on old haul road and follow .38 mile to well head.

Location of well(s) or approximate center of field/project in UTM NAD 83 (meters):

Northing: 4208396.9 Easting: 486871.2

Environmental Contact Information:

Name: Todd A. Huey Title: Operations Manager

Phone: (724) 840-7696 Email: toddhuey76@gmail.com

Section 2. Operator Information

Operator Name: Danny Webb Construction INC

Operator ID: 310364

Address: P.O Box 267

City: Lochgelly State: WV Zip: 25866

County: Fayette

Contact Name: Danny E. Webb Contact Title: President/Owner

Contact Phone: (304) 465-9448 Contact Email: dwebb1953@gmail.com

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Section 3. Applicant Information

Ownership Status: ■ PRIVATE ☐ PUBLIC ☐ FEDERAL ☐ STATE
☐ OTHER (explain):

SIC code: ■ 1311 (2D, 2H, 2R) ☐ 1479 (3S) ☐ OTHER (explain):

Section 4. Applicant / Activity Request and Type:

A. Apply for a new UIC Permit: ☐ 2D ☐ 2H ☐ 2R ☐ 3S
B. Reissue existing UIC Permit: ■ 2D ☐ 2H ☐ 2R ☐ 3S
C. Modify existing UIC Permit: ☐ 2D ☐ 2H ☐ 2R ☐ 3S
(Submit only documentation pertaining to the modification request)

2D COMMERCIAL FACILITY: ■ YES ☐ NO

Section 5. Briefly describe the nature of business and the activities to be conducted:

Future plans are to operate a 2D commercial oil and gas waste water injection well and facility employing the use of owned, leased and third party tanker trucks. To improving upon quality control standards while operating the facility in a safe environmentally friendly operation . Planed upgrades and improvements to the facility include but not limited to;reconditioning of the facility including structures, erosion and sedimentation controls, primary and secondary containments; filtration, pump and manifold systems; spill prevention and preparedness plans, emergency management plans, fluid analysis testing protocol, water manifest and fluid volume tracking; security improvements consisting of fencing, lock out tag out, security cameras and improved lighting.

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CERTIFICATION

All permit applications must be signed by a responsible corporate officer for a corporation, by a general partner for a partnership, by the proprietor of a sole proprietorship, or by a principal executive or ranking elected official for a public agency, or a [1]duly authorized representative in accordance with 47CSR13-13.11.b.

A. Name and title of person applying for permit:

Print Name: Danny E. Webb

Print Title: President/Owner

B. Signature and Date.

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature: [signature]

Date: June 5-14

[1] A person is a duly authorized representative if:

The authorization is made in writing by a person described in subdivision 47CSR13-13.11.a.

The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of the plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility.

The written authorization is submitted to the Director.

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SECTION 6 - CONSTRUCTION

The North Hills Facility operated by Danny Webb Construction, INC is located in Fayette County West Virginia just north west of the town of Lochgelly. The North Hills #1A was originally drilled and completed by Peake Petroleum Company in 1982 to a depth of 2806'. When drilled this well was cased with multiple strings of casing all of which were cemented into place using the displacement method. After initial completions it was found to be an unsuccessful project and classified as a dry hole with records showing the Weir Sandstone being perf'd in 1983 and the Ravencliff being plugged in 1986. In 2008 the well was worked over and converted into a Class 2D oil and gas waste water UIC well. In reviewing all available logs and completion reports for this well along with the past injection history and mechanical integrity tests there is no reason for concern at this point of the integrity of this well. This well and plant has been operating as a Class 2D injection facility for oil and gas waste fluids since 2002. There are a number of planned improvements and upgrades planned for the facility in the next six to eight months consisting of area grounds clean up, structure improvements, secondary containment upgrades, tank and manifold line upgrades. Please find the detailed well bore cross sectional schematic, facility layout and aerial photo of the facility along with Appendix A and B.

APPENDIX A
Injection Well Form

1) GEOLOGIC TARGET FORMATION Weir Sandstone

Depth 2650 Feet (top) 2722 Feet (bottom)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 2806 Feet

3) Approximate water strata depths: Fresh 50 Feet Salt 500 Feet

4) Approximate coal seam depths: Not Reported

5) Is coal being mined in the area? Yes ☐ No ☑

6) Virgin reservoir pressure in target formation 750 psig Source State Reports

7) Estimated reservoir fracture pressure 2677 psig (BHFP)

8) MAXIMUM PROPOSED INJECTION OPERATIONS:

Injection rate (bbl/hour)	120
Injection volume (bbl/day)	2880
Injection pressure (psig)	758
Bottom hole pressure (psig)	2046

9) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:

Oil and Gas waste fluids (produced fluids and flowback) corrosion inhibitor, bacteria control, HCl sticks

Temperature of injected fluid: (°F) Ambient temperature

10) FILTERS (IF ANY)

Fluids shall be filtered through first a hydraulic centrifuge removing heavy particulate matter, then a 50 micron bag type followed by a 20 micron cartridge filter and finally a 5 micron cartridge housing

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

Anode bags shall be installed on all subsurface lines with corrosion inhibitor administered at a rate of .25 gallon per thousand or equivalent.

APPENDIX A (cont.)

12. Casing and Tubing Program

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor	13 3/8	New			15	15	
Fresh Water	9 5/8	New			672	672	
Coal							
Intermediate 1	7	New			1430	1430	
Intermediate 2							
Production	4 1/2	New			2776	2776	
Tubing	2 3/8	New			2685	2685	
Liners							

TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor		13 3/8					Y
Fresh Water		9 5/8					Y
Coal							
Intermediate 1		7					Y
Intermediate 2							
Production		4 1/2					Y
Tubing	4	2 3/8					N/A
Liners							

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	Compression			
Sizes:	2 3/8" x 4"			
Depths Set:	2690			

APPENDIX B
Storage Tank Inventory

API #	Tank ID	Tank Location (UTM NAD 83 Meters)		Installation Date	Tank Age (Months)	Construction Material (Steel, plastic, etc.)	Capacity (gallons)	Type of Fluid Stored	Volume of Fluid Stored (gallons)	Tank Type Single/Double Wall
		Northing	Easting							
47-019-00508	1	4207522.5	486634.2	2002	144	Steel	20958	Unfiltered Fluid	18862	Single
47-019-00508	2	4207520.4	486636.5	2002	144	Steel	18984	Unfiltered Fluid	17085	Double
47-019-00508	3	4207517.3	486637.4	2002	144	Steel	18984	Unfiltered Fluid	17085	Double
47-019-00508	4	4207516.0	486640.9	2002	144	Steel	20034	Unfiltered Fluid	18030	Single
47-019-00508	5	4207514.3	486644.4	2002	144	Steel	8232	Unfiltered Fluid	7408	Single
47-019-00508	6	4207512.5	486670.7	2002	144	Steel	8232	Unfiltered Fluid	7408	Single
47-019-00508	7	4207510.2	486647.0	2002	144	Steel	8232	Unfiltered Fluid	7408	Single
47-019-00508	8	4207514.3	486648.3	2002	144	Steel	17598	Filtered Fluid	15838	Single
47-019-00508	9	4207503.9	486670.6	2002	144	Steel	8316	Crude Oil	7484	Single

WELL BORE CONSTRUCTION DIAGRAM

WELL NAME: North Hills #1A

LOCATION: Fayette County, Plateau District ,West Virginia
81.149224 / 38.022184

PREPARED BY: TODD A. HUEY

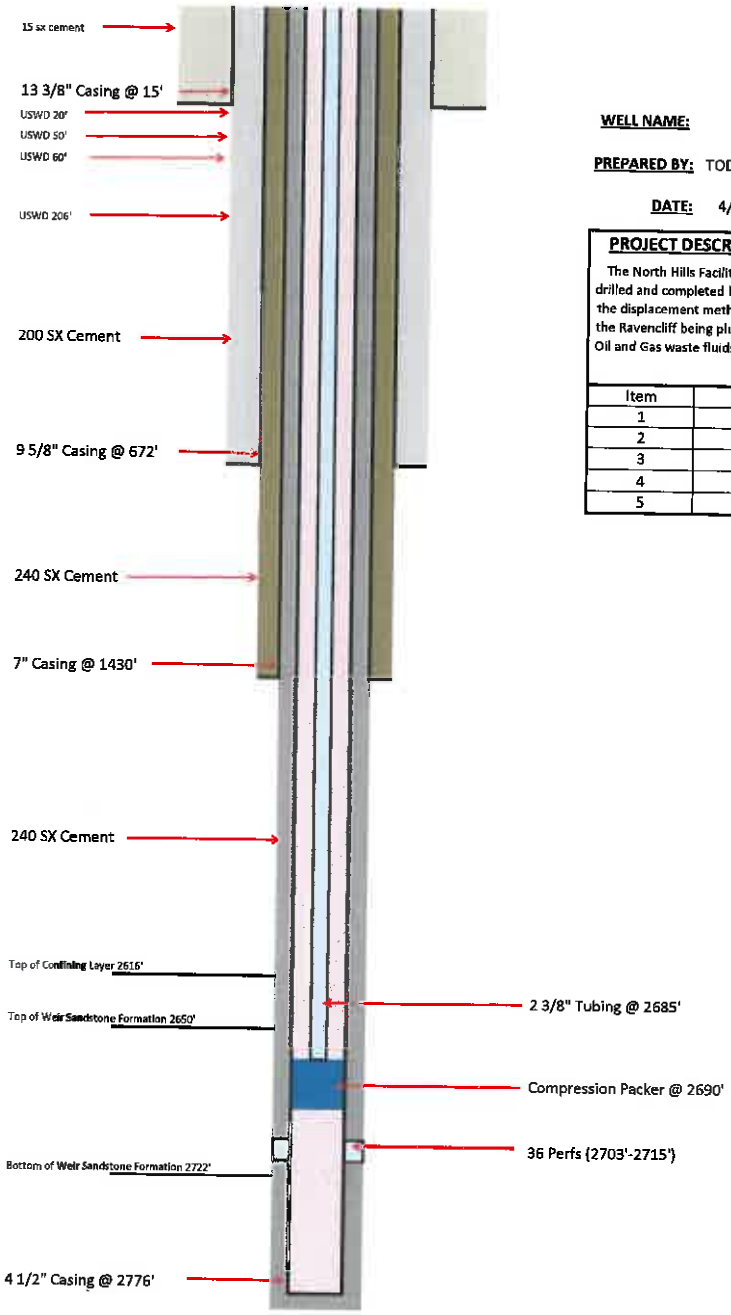
API # 47-019-00508

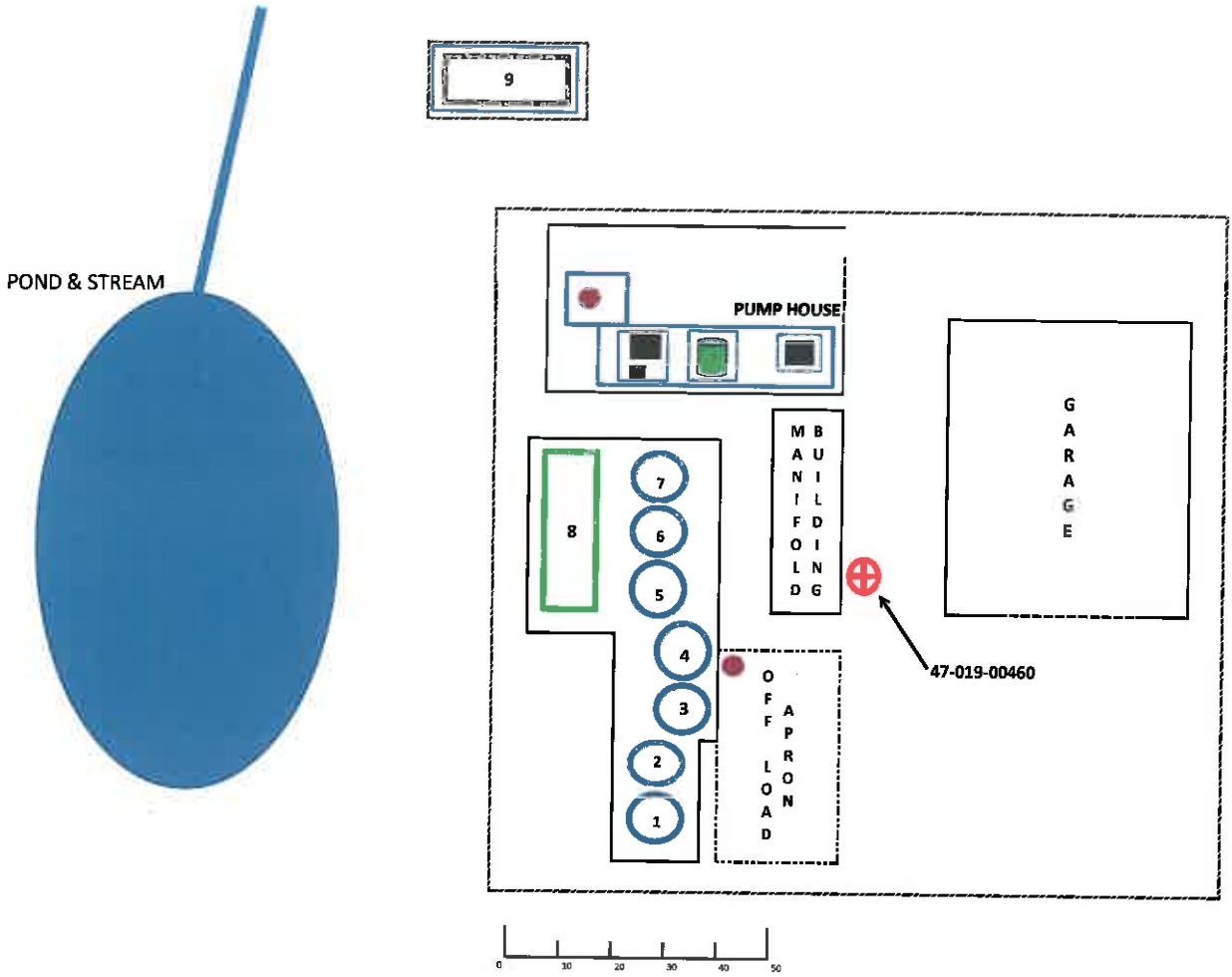
DATE: 4/26/2014

PROJECT DESCRIPTION:

The North Hills Facility operated by Danny Webb Construction, INC is located in Fayette County West Virginia just north west of the town of Lochgelly. The North Hills #1A was originally drilled and completed by Peake Petroleum Company in 1982 to a depth of 2806'. When drilled this well was cased with multiple strings of casing all of which were cemented into place using the displacement method. After initial completions it was found to be an unsuccessful project and classified as a dry hole with records showing the Weir Sandstone being perf'd in 1983 and the Ravencliff being plugged in 1986.. In 2008 the well was worked over and converted into a Class 2D oil and gas waste water UIC well. Project outlook is to continue commercially injecting Oil and Gas waste fluids utilizing both company owned, leased and third party trucks and injecting into the Weir formation maintaining a mechanically sound well, increasing spill prevention protocol, and improving the quality control of operations at the plant facility.

Item	Description	Weight	Length	Grade	Cement	Packers
1	13 3/8"	Unknown	15	Unknown	3 sx	
2	9 5/8"	Unknown	672	Unknown	200 sx	
3	7"	Unknown	1430	Unknown	240 sx	
4	4 1/2"	Unknown	2776	Unknown	240 sx	
5	2 3/8"	Unknown	2685	Unknown		Comp. Packer / 2690'





FILTER UNIT

INJECTION PUMP

WELL HEAD

SUMP

N

TANK #	Containmet Size	SIZE BBL	STORAGE
1	1512	499	UNFILTERED
2	1512	452	UNFILTERED
3	1512	452	UNFILTERED
4	1512	477	UNFILTERED
5	1512	196	UNFILTERED
6	1512	196	UNFILTERED
7	1512	196	UNFILTERED
8	1512	419	FILTERED
9	230	198	OIL

OFFICE

NORTH HILLS FACILITY

Containme	Containment Size	Containment Capacity	Tank #	Length		Diameter	
				Inches	Feet	Inches	Feet
1	156x305x47	230	1	281	23.45	148	12.3
1	156x305x47	230	2	281	23.4	141	11.75
2	341x574x47	948	3	357	29.75	125	10.4
2	341x574x47	948	4	372	31	126	10.5
2	341x574x47	948	5	258	21.5	97	8.1
2	341x574x47	948	6	258	21.5	97	8.1
2	341x574x47	948	7	258	21.5	97	8.1
3	144x479x47	334	8	444	37	108	9
4	372x123.6 half round	230	9	240	20	101	8.4

Containments 1,2 & 3 all connected = 1512bbl

BBL/In	BBL/Ft	Total	Storage
1.8	21.3	499	Unfiltered Brine
1.6	19.3	452	Unfiltered Brine
1.3	15.2	452	Unfiltered Brine
1.3	15.4	477	Unfiltered Brine
0.8	9.1	196	Unfiltered Brine
0.8	9.1	196	Unfiltered Brine
0.8	9.1	196	Unfiltered Brine
3.9	46.6	419	Filtered Brine
1.96	23.6	198	Oil

Danny Webb UIC Site
Permit 2D0190460 & 2D0190508
Lochgelly, Fayette County, West Virginia

SECONDARY CONTAINMENT VOLUME CALCULATION

Used Oil Tank Containment:

Earthen berm covered with plastic. Approximate dimensions, 1.67 ft. depth, top of berm dimensions are 27 ft. x 16 ft., bottom of containment berm dimensions are 22 ft. x 13 ft.

Used Oil Tank is 19.92 ft. long with a diameter of 8.5 ft.

Tank Volume = 3.14(pi) x r^2 x h = 3.14 x $(4.25 \text{ ft.})^2$ x 19.92 ft. = **1130.4 ft.^{3}**

Required Containment Volume = 110% of the tank volume = 1130.4 ft.^{3} x 1.10 = **1243.4 ft.^{3}**

Available Containment Volume = ((27 ft. x 16 ft.) + (22 ft. x 13 ft.)/2) x 1.67 ft. = **599.5 ft.^{3}**

Brine Tank Containment Area:

The brine tank containment consists of a concrete pad with cinder block walls and houses eight brine tanks. The containment area is divided into three cells. The block walls dividing the three cells have holes knocked into them, so the containment is the total of the three cells. The required containment volume is 110% of the largest tank volume.

Largest Tank Volume(30 ft. height & 10 ft. diameter) = 3.14(pi) x r^2 x height = 3.14 x $(5 \text{ ft.})^2$ x 30 ft.

Largest Tank Volume = 2356.2 ft.^{3}

Required Containment Volume = 110% x 2356.2 ft.^{3} = 2591.8 ft.^{3}

Containment Cell 1(Horizontal Brown Tank)

Containment Interior Dimensions = 38.58 ft.(length) x 11.33 ft.(width) x 3.65 ft.(depth)

Cell 1 Containment Volume = 38.58 ft. x 11.33 ft. x 3.65 ft. = 1595.5 ft^3

Containment Cell 2(5 blue tanks)

Containment Interior Dimensions = 46.5 ft.(length) x 14.67 ft.(width) x 3.65 ft.(depth)

Cell 2 Containment Volume = 46.5 ft.(length) x 14.67 ft.(width) x 3.65 ft.(depth) = 2489.9 ft.^{3}

Containment Cell 3(2 blue tanks)

Containment Interior Dimensions = 24.0 ft.(length) x 12.5 ft.(width) x 3.65 ft.(depth)

Cell 3 Containment Volume = 24.0 ft.(length) x 12.5 ft.(width) x 3.65 ft.(depth) = 1095.0

Total Available Containment Volume = 1595.5 ft.^{3} + 2489.9 ft.^{3} + 1095.0 ft.^{3} = 5180.4 ft.^{3}

Subtract Out Vertical Tank Volumes(except for largest tank)

3 10 ft. diameter tanks Volume = 3 x (3.14(pi) x (5 ft.)^2 x 3.65 ft.(depth in containment)) = 860.0 ft.^{3}

3 8 ft. diameter tanks Volume = 3 x (3.14(pi) x (4 ft.)^2 x 3.65 ft.(depth in containment)) = 550.4 ft.^{3}

Total Volume to Subtract from Containment Volume = 860.0 ft.^{3} + 550.4 ft.^{3} = 1410.4 ft.^{3}

Net Containment Volume = 5180.4 ft.^{3}– 1410.4 ft.^{3}= 3770.0 ft.^{3}

Required Containment Volume = 2591.8 ft.^{3} < Available Net Containment Volume = 3770.0 ft.^{3}

Containment Volume Notes

1. **I did not subtract out volume of brown horizontal tank in containment cell 1.**
2. **I did not add the volume of the largest tank that is below the walls of the containment back into net volume.**

DRAFT

Young, Steven A

From: Young, Steven A
Sent: Wednesday, February 26, 2014 10:53 AM
To: Belcher, David J; Smith, Gene C
Subject: DANNY WEBB USED OIL TANK & CONTAINMENT

REQUIRED CAPACITY FOR USED OIL TANK = 1243.4 CU. FT.(FROM 2012 ENGINEERING REPORT-110% OF TANK CAPACITY)

CURRENT USED OIL CONTAINMENT CAPACITY(HALF TANK) = 2410.4 CU. FT.

AVAILABLE USED OIL CONTAINMENT EXCEEDS REQUIRED CAPACITY FOR 110% OF 200 BBL. USED OIL TANK.

DOING REST OF CONTAINMENT NOW. I WILL LET YOU KNOW AS SOON AS I CALCULATE & WILL TYPE UP ALL AFTER CALCULATIONS.

Steve

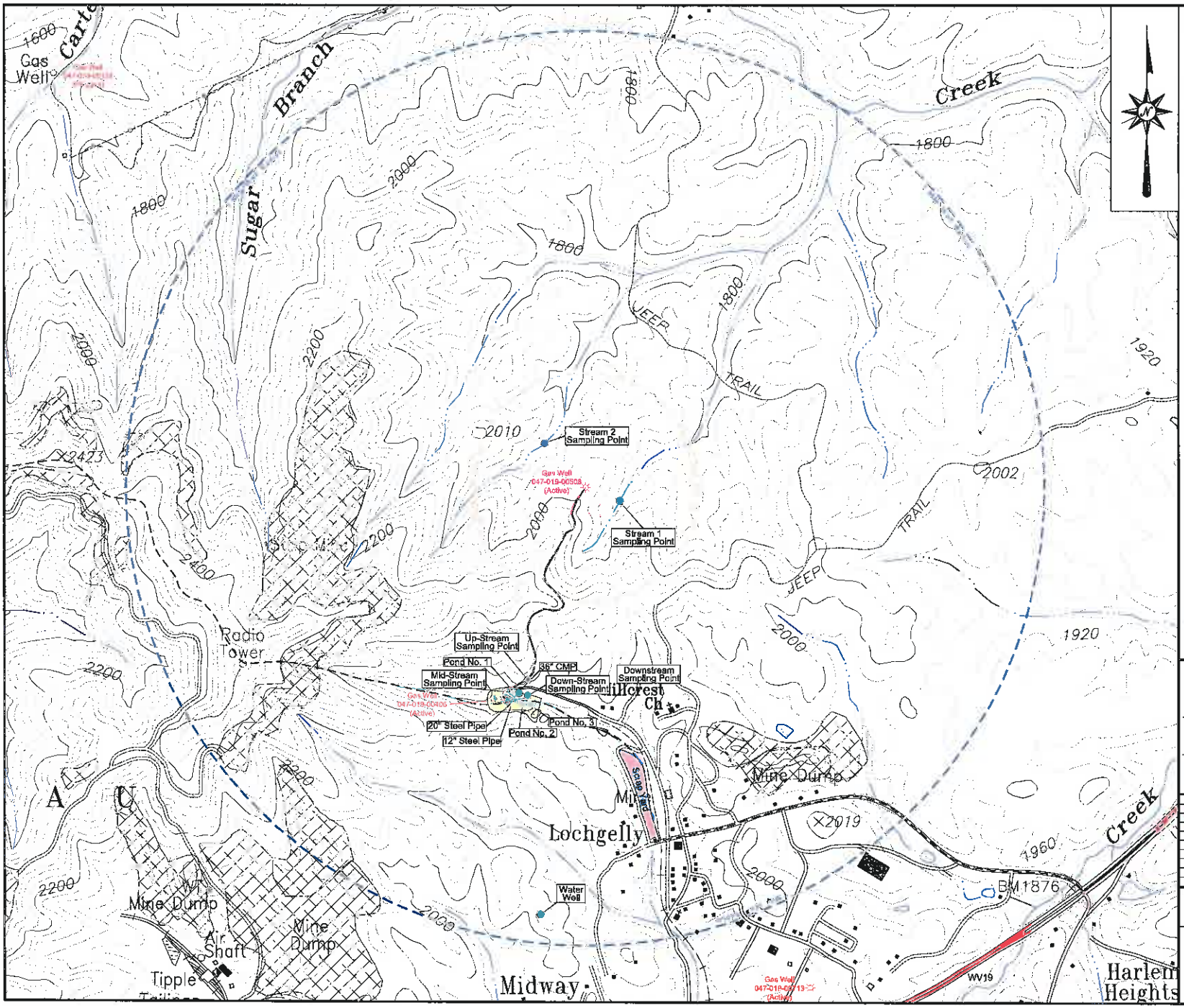
Steven A. Young, PE, PS
W. Va. Department of Environmental Protection
Office of Oil & Gas
Email: steven.a.young@wv.gov
Cell Phone: 304 395-1835

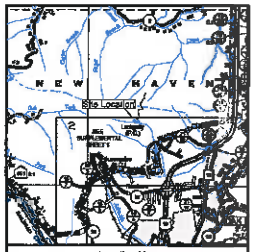
Google e
1996
Imagery Date: 9/5/2013 38°00'55.05" N 81°59'02.84" W elev 1989 ft eye alt

© 2014 Google
Imagery Date: 9/5/2013 38°01'06.21" N 81°09'00.55"

SECTION 7 – AREA OF REVIEW

The area of review (AOR) for this well was a fixed ¼ mile radius around the facility and well head, however in this AOR there were no oil and gas wells for reference and/or study, nor faulting or sub surface mining. This distance was extended out to 3.5 miles around the well for the collection of data for the geological review of the injection formation from area oil and gas wells. For USDW's in the ¼ fixed radius, one is suspected of being on the edge of the buffer area. This well is located at an older residence south east of the facility and is believed to be an old hand dug well from the early 1900's with an estimated depth of 20 feet. This well has since been capped off and cemented over with no way of verifying the condition or collecting a sample. There is also 1 UDWS with in 1 mile of the facility and has been located and water analyzed which is noted in the sampling Appendix "E" and marked on the AOR map. This well was drilled in February 2014 to a total depth of 206', 6 5/8"casing was installed and grouted into place to a depth of 20' with 200' of 4" liner installed. Upon the drilling and completion of this well a ¾ hp submersible pump was installed to a depth of 195', a 120' static water level was recorded with an estimated well yield of 15 gpm. Water samples were collected from this well by a third party analytical company for testing on 7-11-14 along with the presence of the well owner. At the time of the collection the well has had limited use, it is currently only connected to an outdoor spigot right beside the well head with a garden hose hooked up and is not used as a potable source. When collecting the samples the water was allowed to run for approximately 5 minutes to clean the lines and gather an accurate sample. The water at first came clear followed by heavy sedimentation with a dark orange tint with the test results showing very high iron content with sulfur and methane noted in the results. The water never cleared up and continued to hold the orange tint thought the sampling process Water samples were also gathered and analyzed from surface ground water sources which being small streams within close proximity of the facility. There are records of fresh water zones encountered on the well records for the 47-019-00460 encountering fresh water at 60' and for the 47-019-00508 at 50', this water is located in the Appalachian Plateau made up of mainly sedimentary rock and in this area fractured sandstone dating back to the Paleozoic Era, the Pennsylvanian Period producing out of the Dunkard group. USDW data is very limited in this area due to the lack of wells drilled into the strata and being unable to have a point of collection. Please find AOR map and appendix "C" through "F".





Location Map
West Virginia General Highway Map
Scale 1" = 1 mile
Pocahontas County
Pickens District
Bartow Quadrangle

Legend

- Site Location
- Gas Well
- Gas Line
- Road
- Water Sampling Point
- One Mile Well Radius
- 1/4 Mile Well Radius
- Pond
- Pipe
- Junk Yard Location

Note:
There is one (1) known gas wells located within the one mile radius of Gas Well No. 47-019-00508. That gas well is an active gas well, Gas Well No. 47-019-00406. There are no other known gas well that are within the one mile well radius of Gas Well No. 47-019-00508.

0' 500' 1000' 1500'

I, the undersigned, do hereby certify that this map is correct, and shows, to the best of my knowledge and belief, all the information required for the purpose of the UIC well permit application.

Taken, subscribed, and sworn before me

this _____ day of _____, 20__

Notary Public

Signature optional

The undersigned on this map certifies that it does not contain any information that is proprietary, confidential, or otherwise protected from disclosure under applicable laws. The undersigned further certifies that the information shown on this map is accurate, complete, and suitable for the purpose of obtaining a UIC permit, and that the undersigned has no knowledge of any other information which, if omitted or incorrect, would cause the permit to be denied or revoked. The undersigned further certifies that the information shown on this map is based on the best knowledge of the undersigned and is provided in good faith and without intent to deceive or defraud for any purpose.

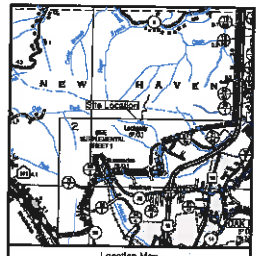
Date	Revision	By	Job No.	Job Title:	Date:
					09/05/14
				Drawn By: JBB	Checked By: CC
				File Name: UIC Well Permit Work_dwg	
				Scale: 1" = 500'	Sheet No.: 1 of 1
				Draft: Redmith	
				Static: Fleisner	
				Group: Fayne	

North Hill Group, Inc.
1932 Westmoreland Drive, Oak Hill, WV 25901

North Hills Facility

North Hill #1A
UIC Well Permit Application Map
Gas Well No. 47-019-00508

Contour Interval - 40'
WV South, NAD 83



Location Map
West Virginia General Highway Map
Scale 1" = 1 Mile
Fayette County
Fresno District
Beckwith Quadrangle

Legned

- Site Location
- Gas Well
- Gas Line
- Road
- Water Sampling Point
- One Mile Well Radius
- 1/4 Mile Well Radius
- Pond
- Pipe
- Junk Yard Location

Note:
There is one (1) known gas wells located within the one mile radius of Gas Well No. 47-019-00508. That gas well is an active gas well, Gas Well No. 47-019-00406. There are no other known gas well that are within the one mile well radius of Gas Well No. 47-019-00508.

0' 500' 1000' 1500'

I, the undersigned, do hereby certify that this map is correct, and shows, to the best of my knowledge and belief, all the information required for the preparing of the UIC well permit application.

Taken, subscribed, and sworn before me this _____ day of _____, 20__.

Notary Public

My commission expires _____

To wit:

Date	Revision	By	Job No.	Job Title:	Date: 08/05/14
				Drawn By: JBG	Checked By: CC
				File Name or Drawing: UIC Well Permit Work.dwg	
				Scale: 1" = 500'	Sheet No.: 1 of 1
				Quad: Beckwith	
				District: Plateau	
				County: Fayette	

North Hill Group, Inc.
1932 Westmoreland Drive, Oak Hill, WV 25901

North Hills Facility

North Hill #1A
UIC Well Permit Application Map - Aerial
Gas Well No. 47-019-00508

WV South, NAD 83

PublicHealth

Fayette County Health Department
202 Church Street
Fayetteville, WV 25840
Website: http://Fayette-wv-health-dept.com

Phone: 304-574-1617
Toll Free: 800-479-3090
Fax: (304) 574-1370

June 4, 2014

Danny Webb Construction Co., Inc.
PO Box 267 Lochgelly, WV 25688

Dear Mr. Webb,

Per your request via a FOIA letter, I have searched our records for drinking water wells in your area. So far I have only found one permitted well in your area. This is for:

Tom and Nina Omley
PO Box 188
Lochgelly, WV 25688

Any wells established prior to 1984 we would not have record of.

Please feel free to contact me should you have any questions.

Sincerely,

Philip Perone, Sanitarian
FCHD

APPENDIX D

Public Service District Affidavit

Underground Injection Control Permit applicants must identify all publically recorded drinking water sources within a one (1) mile radius of the proposed injection well facility. If no drinking water sources are present within this radius a written affidavit shall be supplied by the local Public Service District (PSD) as ample verification.

"I certify under penalty of law that (state name of business)

Danny Webb Construction Co Inc

has verified with the public service district (state name of PSD)

Fayette County Health Dept

that there are no such publically recorded sources.

Danny E Webb

(Signature of Authorized Representative)

Sworn and subscribed to before me this 4th **day of** June, **20** 14.

_____, **my commission expires** May 12, 2020

(Notary Signature)

Donna S. Ramsey

NOTARY PUBLIC OFFICIAL SEAL
DONNA S. RAMSEY
STATE OF WEST VIRGINIA
615 Summerice Ave.
Oak Hill, WV 25901
My Commission Expires May 12, 2020

APPENDIX C

Wells within the Area of Review

API #	Well Type	Well Status (Active, Abandoned, Shut-in, Plugged)	Northing (UTM NAD 83 Meters)	Easting (UTM NAD 83 Meters)	Penetrate Injection Zone (Y or N)	Penetrate Confining Zone (Y or N)	Total Vertical Depth	Surface Elevation
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Make as many copies as necessary and include page numbers as appropriate.

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: DANNYWEBCONST

Date/Time Received: 11-Sep-14 14:54

Work Order: 1409546

Received by: JAS

Checklist completed by Janet Smith (eSignature) 11-Sep-14 (Date)

Reviewed by: Rebecca Kerr (eSignature) 12-Sep-14 (Date)

Matrices:

Carrier name: Client

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☐	No ☑	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	10°C, 8°C	IR	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:			
Water - VOA vials have zero headspace?	Yes ☐	No ☑	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Samples received out of holding time for pH. Sample vials have headspace. Holland 3.4 C

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:

APPENDIX E
Water Sources

Operator: Danny Webb Construction Inc. Year 2014 UIC Permit # 2D0190460

		Source # ___	Source # ___	Source # ___	Source # ___
Water Source Name		USDW (water Well)			
Northing		4206750.4			
Easting		486758.7			
Parameter	Units				
TPH - GRO	mg/L	310			
TPH - DRO	mg/L	ND			
TPH - ORO	mg/L	ND			
BTEX	mg/L	ND			
Chloride	mg/L	26			
Sodium	mg/L	12			
Total Dissolved Solids (TDS)	mg/L	110			
Aluminum	mg/L				
Arsenic	mg/L				
Barium	mg/L	0.75			
Iron	mg/L	2.2			
Manganese	mg/L	1.9			
pH	SU	6.9			
Calcium	mg/L				
Sulfate	mg/L	15			
MBAS	mg/L	ND			
Dissolved Methane	mg/L	6.2			
Dissolved Ethane	mg/L	ND			
Dissolved Butane	mg/L	ND			
Dissolved Propane	mg/L	ND			
Bacteria (Total Coliform)	c/100mL	88			

Promoting a healthy environment.

dep

Stevison, Zachary G

From: Todd Huey <toddhuey76@gmail.com>
Sent: Monday, August 11, 2014 10:47 AM
To: Stevison, Zachary G
Subject: Re: 00508 AOR Aerial

Zac,

Below are the UTM Coordinates for the water well, I have also attached page 2 Appendix E for each application with the UTM coordinates in place. What is the current status of our permit applications how long do you anticipate until we can advertise for the public hearing?

N - 4206750.4
E - 486758.7

Thanks,
Todd

On Mon, Aug 11, 2014 at 7:06 AM, Stevison, Zachary G <Zachary.G.Stevison@wv.gov> wrote:

I received them, good deal. Could you send the UTM coordinates for water well sample

From: Todd Huey [mailto:toddhuey76@gmail.com]
Sent: Wednesday, August 06, 2014 3:55 PM
To: Stevison, Zachary G; Smith, Gene C; Bass, Thomas L
Subject: 00508 AOR Aerial

Zac,

Attached is the final AOR map for the 2 wells, this is the Aerial for the 47-019-00508. As in the first email we will be mailing over 36' maps for hard copies in the files. Once I have received the blank map showing well locations and API numbers I will get the Isopac map sent in, please let me know that you received these ok.

I was also wondering how the remainder of the review was going?

Thanks,

Todd

Rev. 3/02

ST/CO USE ONLY
DATE RECEIVED
MM DD YY
__ __ __

DATE THE WELL WAS COMPLETED
MM DD YY
2 11 14

PERMIT NO.
DW- 10-14-01

STATE OF WEST VIRGINIA WATER WELL COMPLETION REPORT

FORM SW-258
THIS REPORT MUST BE SUBMITTED WITHIN 30 DAYS AFTER WELL IS COMPLETED

FILL IN THIS FORM COMPLETELY
PLEASE PRINT OR TYPE

LOCATION OF WELL

Well Owner: Last Name Farley First Name Tom
Street/Road Lochelly Rd. County Fayette Zip Code 25866

Latitude: 38 Deg 00 Min 30 Sec
Longitude: 81 Deg 09 Min 03 Sec
Acquired By: ☒ GPS ☐ Topo ☐ Other

AREA NAME/LOCATION: Saddleback Ridge off Lochelly Rd.

TYPE OF WELL:
☑ Potable ☐ Public Water Supply
☐ Geothermal ☐ Industrial
☐ Commercial ☐ Dewatering
☐ Irrigation ☐ Test/Exploratory
☐ Other

WELL LOG

Depth From (ft.)	Depth To (ft.)	State the kind of formation penetrated, their color, caves, and if water bearing with estimate flow (GPM).
0	6	Yellow Clay
6	58	Brown Sandstone
58	120	Blue Shale
120	143	Black "
143	206	white Sandstone

If additional space is needed, use additional sheets and attach w/permit # at top.

DRILLING METHOD
☑ Cable Tool ☐ Rotary
☐ Rotary Hammer ☐ Other

Hole Diameter 6 (in)
Total depth 206 (ft)

CASINGS RECORD
MAIN CASING TYPE
☐ Steel ☑ Plastic
☐ Other
Casing Diameter 6 5/8 (in)
Wall Thickness .188 (in)
Casing Length 20 (ft)

Other Casing or Liner Used
Type ☐ Steel ☑ Plastic
☐ Other
Casing/Liner Diameter 4 (in)
Length 200 (ft) from 6 (ft) to 206 (ft)

SCREEN RECORD
☐ Not Installed ☐ Installed
Material: ☐ Bronze ☐ Plastic
Diameter of screen ____ (in)
Slot size ____
Length ____ (ft) from ____ (ft) to ____ (ft)

GRAVEL PACK RECORD
Gravel Pack: ☐ Yes ☐ No
From ____ (ft) to ____ (ft)

GROUTING RECORD
Grouting Material:
☑ Cement ☐ Bentonite Clay
Other
No. of Bags: 6
Installation Method: Gravity Placement

PUMP INSTALLED
By Driller ☑ Yes ☐ No

ESTIMATED WELL YIELD
Estimated at 15 G.P.M
Static Water Level 120 (ft)
*Pumping level below land surface ____ (ft) after ____ hrs. at ____ G.P.M. (Estimated)
*Note: For Public Water Supply wells please submit required yield and drawdown tests.

WELL HEAD COMPLETION
Casing height above grade 1 (ft)
Type Of Well Cap Installed: Royer

VARIANCE ISSUED ☐ Yes ☐ No
Request Number

COMMENTS BY INSTALLER:

I hereby certify that this well has been constructed in accordance with state rules and in conformance with all conditions stated in the above captioned permit, and that the information presented herein is accurate and complete to the best of my knowledge. James Green

Company Name Farley Drilling INC. WV Contractor No. 00 5144
Business Registration No. Master Well Driller Certification No. 147
Master Well Driller (print) Henry Duane Farley
Master Well Driller Signature Henry Duane Farley

SITE SUPERVISOR (SIGNATURE OF DRILLER OR JOURNEYMAN RESPONSIBLE FOR SITEWORK IF DIFFERENT FROM MASTER DRILLER.) James Green

Journeyman Well Driller Certification No. 113
Journeyman Well Driller (please print) James R Green
Apprentice and Name (s)

Rev 3/08 ST/CO USE ONLY DATE RECEIVED MM DD YY __ __ __	DATE OF PUMP INSTALLATION MM DD YY 2 11 14 WATER WELL PERMIT NO. DW- 10-14-01	**STATE OF WEST VIRGINIA WATER WELL PUMP INSTALLATION REPORT**	**FORM SW-262** THIS REPORT MUST BE SUBMITTED WITHIN 30 DAYS AFTER INSTALLATION IS COMPLETED FILL IN THIS FORM COMPLETELY PLEASE PRINT OR TYPE

PUMP INSTALLATION LOCATION

Owner: LAST NAME Farley FIRST NAME Tom

STREET/ROAD Lochelly Rd. COUNTY Fayette ZIP CODE 25866

AREA NAME/LOCATION: Saddleback Rdg. Lochelly Rd.

WATER SYSTEM USE: ☑ Potable ☐ Public Water Supply ☐ Geothermal ☐ Industrial ☐ Commercial ☐ Dewatering ☐ Irrigation ☐ Test/Exploratory ☐ Other ____

PUMPING EQUIPMENT

Type Pump: ☑ Submersible ☐ Jet ☐ Other (specify) ____

Pump Manufacturer: Goulds

Pump Model: 3/4 hp

INSTALLATION DETAILS

Well Diameter 6 inches

Well Depth 206 (Ft)

Static Water Level (from surface): 120 (Ft.)

Depth of pump: 195 (Ft.)

Riser Pipe: Material Black Polypipe

Pressure Rating 200 (psi)

INSTALLATION DETAILS (CONT.)

Pitless: ☑ Pitless Adapter ☐ Pitless Unit

Pitless Manufacturer: Harrod

Pitless Model: PT900

Method of Cutting Hole in Casing for Pitless: Hole Saw

Storage Tank Model: Challenger

Check Valves Locations: Well head & Pump

Well Disinfected: ☐ Yes ☑ No

By Whom: ____

COMMENTS BY INSTALLER

I hereby certify that this well has been constructed in accordance with state rules and that the information presented herein is accurate and complete to the best of my knowledge. James R Green

Pump Equipment Installed by :

Property Owner Name (Print) ____ Owner Signature ____

Pump Installation Test Passed on ____ / ____ / ____

Company Name Farley Drilling Inc. WV Contractor No. 005144 Business Franchise Number ____

Master Well Driller Certification No. 147 or Pump Installer Certification No. 983

Master Well Driller (print) Henry Duane Farley Master Well Driller Signature Henry Duane Farley

Pump Installer (print) James R. Green Pump Installer Signature James R Green

SITE SUPERVISOR (SIGNATURE OF DRILLER OR JOURNEYMAN RESPONSIBLE FOR SITEWORK IF DIFFERENT FROM MASTER DRILLER. James R Green

Journeyman Well Driller Certification No. 983

Journeyman Well Driller (please print) James R. Green

Apprentice Name(s) ____, ____, ____

ALS Environmental

10-Jun-2014

Ann Smith
Danny Webb Construction
P.O. Box 267
617 Towne Hollow Road
Lockgelly, WV 25866

Re: **#1 & 2 Streams 508** Work Order: **1406020**

Dear Ann,

ALS Environmental received 3 samples on 02-Jun-2014 03:06 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 27.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Rebecca Kiser

Electronically approved by: Rebecca Kiser

Rebecca Kiser
Project Manager

Certificate No: WV: 355

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

www.alsglobal.com
RIGHT SOLUTIONS RIGHT PARTNER

ALS Group USA, Corp

Date: 10-Jun-14

Client: Danny Webb Construction
Project: #1 & 2 Streams 508
Work Order: **1406020**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1406020-01	#1 Stream 508	Water		6/2/2014 09:10	6/2/2014 15:06	☐
1406020-02	#2 Stream 508	Water		6/2/2014 10:00	6/2/2014 15:06	☐
1406020-03	Trip Blank	Water		6/2/2014	6/2/2014 15:06	☐

ALS Group USA, Corp *Date: 10-Jun-14*

Client: Danny Webb Construction
Project: #1 & 2 Streams 508
Work Order: 1406020

Case Narrative

ALS Environmental
1740 Union Carbide Dr.
South Charleston, WV 25303

The following parameters were received and analyzed for WO# 1406020 at the ALS South Charleston facility under WVDEP Attachement I, Certificate No. 385:

Coliform, Total (MF) - SM9222 B-97

ALS Group USA, Corp

Date: 10-Jun-14

Client: Danny Webb Construction
Project: #1 & 2 Streams 508
WorkOrder: 1406020

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter
cfu/100ml	Colony Forming Units per 100 Milliliters
mg MBAS/L	Milligrams Methylene Blue Active Substances per Liter
mg/L	Milligrams per Liter
s.u.	Standard Units

ALS Group USA, Corp

Date: *10-Jun-14*

Client: Danny Webb Construction
Project: #1 & 2 Streams 508
Sample ID: #1 Stream 508
Collection Date: 6/2/2014 09:10 AM

Work Order: 1406020
Lab ID: 1406020-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep: SW3510 / 6/3/14	Analyst: **IT**
DRO (C10-C28)	ND		0.10	mg/L	1	6/4/2014 12:14 PM
ORO (C28-C40)	ND		0.10	mg/L	1	6/4/2014 12:14 PM
Surr: 4-Terphenyl-d14	*39.8*		*21-90*	*%REC*	1	6/4/2014 12:14 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015**			Analyst: **IT**
GRO (C6-C10)	ND		200	µg/L	1	6/4/2014 12:14 PM
Surr: Toluene-d8	*109*		*70-130*	*%REC*	1	6/4/2014 12:14 PM
METALS BY ICP-MS			**E200.8**		Prep: E200.8 / 6/4/14	Analyst: **ML**
Barium	**0.79**		**0.0050**	**mg/L**	1	6/7/2014 10:47 PM
Iron	**1.8**		**0.080**	**mg/L**	1	6/7/2014 10:47 PM
Manganese	**2.0**		**0.050**	**mg/L**	10	6/8/2014 07:38 PM
Sodium	**12**		**0.20**	**mg/L**	1	6/7/2014 10:47 PM
TOTAL COLIFORM, MF			**A9222B**			Analyst: **ARC**
Total Coliform, MF	*<10*		10	cfu/100ml	1	6/2/2014 04:40 PM
PH			**A4500-H B-96**			Analyst: **ARC**
pH (laboratory)	**6.8**		**0.020**	**s.u.**	1	6/2/2014 01:35 PM
GASES IN WATER			**RSK-175**			Analyst: **ALS**
Butane	ND		4.3	µg/L	1	6/3/2014 10:00 PM
Ethane	ND		3.3	µg/L	1	6/3/2014 10:00 PM
Methane	**8.3**		**1.5**	**µg/L**	1	6/3/2014 10:00 PM
Propane	ND		3.2	µg/L	1	6/3/2014 10:00 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260**			Analyst: **RS**
Benzene	ND		1.0	µg/L	1	6/4/2014 08:14 PM
Ethylbenzene	ND		1.0	µg/L	1	6/4/2014 08:14 PM
m,p-Xylene	ND		2.0	µg/L	1	6/4/2014 08:14 PM
o-Xylene	ND		1.0	µg/L	1	6/4/2014 08:14 PM
Toluene	ND		1.0	µg/L	1	6/4/2014 08:14 PM
Xylenes, Total	ND		3.0	µg/L	1	6/4/2014 08:14 PM
Surr: 1,2-Dichloroethane-d4	*109*		*75-120*	*%REC*	1	6/4/2014 08:14 PM
Surr: 4-Bromofluorobenzene	*80.3*		*80-110*	*%REC*	1	6/4/2014 08:14 PM
Surr: Dibromofluoromethane	*103*		*85-115*	*%REC*	1	6/4/2014 08:14 PM
Surr: Toluene-d8	*93.5*		*85-110*	*%REC*	1	6/4/2014 08:14 PM
ANIONS BY ION CHROMATOGRAPHY			**E300.0**			Analyst: **ED**
Chloride	**27**		**2.0**	**mg/L**	2	6/4/2014 10:38 AM
Sulfate	**15**		**2.0**	**mg/L**	2	6/4/2014 10:38 AM
ANIONIC SURFACTANTS AS MBAS			**A5540C**			Analyst: **KF**

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *10-Jun-14*

Client: Danny Webb Construction
Project: #1 & 2 Streams 508
Sample ID: #1 Stream 508
Collection Date: 6/2/2014 09:10 AM

Work Order: 1406020
Lab ID: 1406020-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Anionic Surfactants as MBAS	ND		0.40	mg MBAS/L	1	6/3/2014 01:30 PM
OIL AND GREASE			**E1664A**			Analyst: **ND**
Oil and Grease	ND		5.0	mg/L	1	6/3/2014 09:00 AM
TOTAL DISSOLVED SOLIDS			**A2540 C-97**		Prep: Water Ext. / 6/3/14	Analyst: **JI**
Total Dissolved Solids	120		20	mg/L	1	6/4/2014 08:23 AM
ORGANIC CARBON, TOTAL			**A5310C-96**			Analyst: **ED**
Organic Carbon, Total	3.4		0.50	mg/L	1	6/3/2014 11:44 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *10-Jun-14*

Client: Danny Webb Construction
Project: #1 & 2 Streams 508
Sample ID: #2 Stream 508
Collection Date: 6/2/2014 10:00 AM

Work Order: 1406020
Lab ID: 1406020-02
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep: SW3510 / 6/3/14	Analyst: **IT**
DRO (C10-C28)	ND		0.10	mg/L	1	6/4/2014 12:44 PM
ORO (C28-C40)	ND		0.10	mg/L	1	6/4/2014 12:44 PM
Surr: 4-Terphenyl-d14	*34.1*		*21-90*	*%REC*	1	6/4/2014 12:44 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015**			Analyst: **IT**
GRO (C6-C10)	ND		200	µg/L	1	6/4/2014 12:39 PM
Surr: Toluene-d8	*103*		*70-130*	*%REC*	1	6/4/2014 12:39 PM
METALS BY ICP-MS			**E200.8**		Prep: E200.8 / 6/4/14	Analyst: **ML**
Barium	**0.75**		**0.0050**	**mg/L**	1	6/7/2014 10:53 PM
Iron	**2.2**		**0.080**	**mg/L**	1	6/7/2014 10:53 PM
Manganese	**1.9**		**0.050**	**mg/L**	10	6/8/2014 07:44 PM
Sodium	**12**		**0.20**	**mg/L**	1	6/7/2014 10:53 PM
TOTAL COLIFORM, MF			**A9222B**			Analyst: **ARC**
Total Coliform, MF	**88**		**10**	**cfu/100ml**	1	6/2/2014 04:40 PM
PH			**A4500-H B-96**			Analyst: **ARC**
pH (laboratory)	**6.8**		**0.020**	**s.u.**	1	6/2/2014 01:35 PM
GASES IN WATER			**RSK-175**			Analyst: **ALS**
Butane	ND		4.3	µg/L	1	6/3/2014 10:17 PM
Ethane	ND		3.3	µg/L	1	6/3/2014 10:17 PM
Methane	**6.2**		**1.5**	**µg/L**	1	6/3/2014 10:17 PM
Propane	ND		3.2	µg/L	1	6/3/2014 10:17 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260**			Analyst: **AK**
Benzene	ND		1.0	µg/L	1	6/3/2014 07:38 PM
Ethylbenzene	ND		1.0	µg/L	1	6/3/2014 07:38 PM
m,p-Xylene	ND		2.0	µg/L	1	6/3/2014 07:38 PM
o-Xylene	ND		1.0	µg/L	1	6/3/2014 07:38 PM
Toluene	ND		1.0	µg/L	1	6/3/2014 07:38 PM
Xylenes, Total	ND		3.0	µg/L	1	6/3/2014 07:38 PM
Surr: 1,2-Dichloroethane-d4	*91.0*		*75-120*	*%REC*	1	6/3/2014 07:38 PM
Surr: 4-Bromofluorobenzene	*101*		*80-110*	*%REC*	1	6/3/2014 07:38 PM
Surr: Dibromofluoromethane	*97.2*		*85-115*	*%REC*	1	6/3/2014 07:38 PM
Surr: Toluene-d8	*97.7*		*85-110*	*%REC*	1	6/3/2014 07:38 PM
ANIONS BY ION CHROMATOGRAPHY			**E300.0**			Analyst: **ED**
Chloride	**26**		**2.0**	**mg/L**	2	6/4/2014 10:58 AM
Sulfate	**15**		**2.0**	**mg/L**	2	6/4/2014 10:58 AM
ANIONIC SURFACTANTS AS MBAS			**A5540C**			Analyst: **KF**

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *10-Jun-14*

Client: Danny Webb Construction
Project: #1 & 2 Streams 508
Sample ID: #2 Stream 508
Collection Date: 6/2/2014 10:00 AM

Work Order: 1406020
Lab ID: 1406020-02
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Anionic Surfactants as MBAS	ND		0.40	mg MBAS/L	1	6/3/2014 01:30 PM
OIL AND GREASE			**E1664A**			**Analyst: ND**
Oil and Grease	ND		5.0	mg/L	1	6/3/2014 09:00 AM
TOTAL DISSOLVED SOLIDS			**A2540 C-97**		Prep: Water Ext. / 6/3/14	**Analyst: JI**
Total Dissolved Solids	**110**		**20**	**mg/L**	1	6/4/2014 08:23 AM
ORGANIC CARBON, TOTAL			**A5310C-96**			**Analyst: ED**
Organic Carbon, Total	**5.0**		**0.50**	**mg/L**	1	6/4/2014 01:48 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *10-Jun-14*

Client: Danny Webb Construction
Project: #1 & 2 Streams 508
Sample ID: Trip Blank
Collection Date: 6/2/2014

Work Order: 1406020
Lab ID: 1406020-03
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GASES IN WATER			**RSK-175**			Analyst: **ALS**
Butane	ND		4.3	µg/L	1	6/3/2014 09:45 PM
Ethane	ND		3.3	µg/L	1	6/3/2014 09:45 PM
Methane	ND		1.5	µg/L	1	6/3/2014 09:45 PM
Propane	ND		3.2	µg/L	1	6/3/2014 09:45 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260**			Analyst: **AK**
Benzene	ND		1.0	µg/L	1	6/3/2014 05:35 PM
Ethylbenzene	ND		1.0	µg/L	1	6/3/2014 05:35 PM
m,p-Xylene	ND		2.0	µg/L	1	6/3/2014 05:35 PM
o-Xylene	ND		1.0	µg/L	1	6/3/2014 05:35 PM
Toluene	ND		1.0	µg/L	1	6/3/2014 05:35 PM
Xylenes, Total	ND		3.0	µg/L	1	6/3/2014 05:35 PM
Surr: 1,2-Dichloroethane-d4	*94.2*		*75-120*	*%REC*	1	6/3/2014 05:35 PM
Surr: 4-Bromofluorobenzene	*101*		*80-110*	*%REC*	1	6/3/2014 05:35 PM
Surr: Dibromofluoromethane	*96.2*		*85-115*	*%REC*	1	6/3/2014 05:35 PM
Surr: Toluene-d8	*94.6*		*85-110*	*%REC*	1	6/3/2014 05:35 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 10-Jun-14

Client: Danny Webb Construction
Work Order: 1406020
Project: #1 & 2 Streams 508

QC BATCH REPORT

Batch ID: **59249** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKW1-59249-59249** Units: **mg/L** Analysis Date: **6/3/2014 05:15 PM**
Client ID Run ID: **GC8_140603A** SeqNo: **2792808** Prep Date: **6/3/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	ND	0.10								
ORO (C28-C40)	ND	0.10								
Surr: 4-Terphenyl-d14	*0.04202*	0	*0.05*	0	*84*	*21-90*		0		

LCS Sample ID: **DLCSW1-59249-59249** Units: **mg/L** Analysis Date: **6/3/2014 05:45 PM**
Client ID: Run ID: **GC8_140603A** SeqNo: **2792809** Prep Date: **6/3/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	2.997	0.10	5	0	59.9	44-116		0		
ORO (C28-C40)	2.969	0.10	5	0	59.4	44-116		0		
Surr: 4-Terphenyl-d14	*0.03017*	0	*0.05*	0	*60.3*	*21-90*		0		

MS Sample ID: **14051412-03A MS** Units: **mg/L** Analysis Date: **6/3/2014 06:15 PM**
Client ID Run ID: **GC8_140603A** SeqNo: **2792810** Prep Date: **6/3/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	31.96	1.0	50	0.5133	62.9	44-116		0		
ORO (C28-C40)	31.33	1.0	50	1.5	59.7	44-116		0		
Surr: 4-Terphenyl-d14	*0.3288*	0	*0.5*	0	*65.8*	*21-90*		0		

MSD Sample ID: **14051412-03A MSD** Units: **mg/L** Analysis Date: **6/3/2014 06:45 PM**
Client ID: Run ID: **GC8_140603A** SeqNo: **2792811** Prep Date: **6/3/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	24.56	1.0	50	0.5133	48.1	44-116	31.96	26.2	30	
ORO (C28-C40)	24.69	1.0	50	1.5	46.4	44-1330	31.33	23.7	30	
Surr: 4-Terphenyl-d14	*0.2508*	0	*0.5*	0	*50.2*	*21-90*	0.3288	*26.9*	*30*	

The following samples were analyzed in this batch: 1406020-01E 1406020-02E

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1406020
Project: #1 & 2 Streams 508

QC BATCH REPORT

Batch ID: **R141948** Instrument ID **GC9** Method: **SW8015**

MBLK Sample ID: **GBLKW1-140603-R141948** Units: µg/L Analysis Date: **6/3/2014 01:04 PM**
Client ID: Run ID: **GC9_140603A** SeqNo:**2791885** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	ND	200								
Surr: Toluene-d8	*109*	0	*100*	0	*109*	*70-130*	0			

LCS Sample ID: **GLCSW1-140603-R141948** Units: µg/L Analysis Date: **6/3/2014 12:38 PM**
Client ID: Run ID: **GC9_140603A** SeqNo:**2791884** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	9295	200	10000	0	92.9	70-130	0			
Surr: Toluene-d8	*114.1*	0	*100*	0	*114*	*70-130*	0			

MS Sample ID: **14051541-13A MS** Units: µg/L Analysis Date: **6/4/2014 01:30 AM**
Client ID: Run ID: **GC9_140603A** SeqNo:**2792894** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	8060	200	10000	0	80.6	70-130	0			
Surr: Toluene-d8	*114.9*	0	*100*	0	*115*	*70-130*	0			

MSD Sample ID: **14051541-13A MSD** Units: µg/L Analysis Date: **6/4/2014 01:56 AM**
Client ID: Run ID: **GC9_140603A** SeqNo:**2792895** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	8023	200	10000	0	80.2	70-130	8060	0.461	30	
Surr: Toluene-d8	*103.8*	0	*100*	0	*104*	*70-130*	114.9	*10.1*	*30*	

The following samples were analyzed in this batch: 1406020-01H 1406020-02H

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1406020
Project: #1 & 2 Streams 508

QC BATCH REPORT

Batch ID: **59312** Instrument ID **ICPMS2** Method: **E200.8**

MBLK Sample ID: **MBLK-59312-59312** Units: mg/L Analysis Date: 6/7/2014 06:26 PM
Client ID Run ID: ICPMS2_140607A SeqNo:2798406 Prep Date: 6/4/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	ND	0.0050								
Iron	ND	0.080								
Manganese	ND	0.0050								
Sodium	ND	0.20								

LCS Sample ID: **LCS-59312-59312** Units: mg/L Analysis Date: 6/7/2014 06:32 PM
Client ID Run ID: ICPMS2_140607A SeqNo:2798407 Prep Date: 6/4/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.09545	0.0050	0.1	0	95.4	85-115	0			
Iron	10.09	0.080	10	0	101	85-115	0			
Manganese	0.09855	0.0050	0.1	0	98.6	85-115	0			
Sodium	10.26	0.20	10	0	103	85-115	0			

MS Sample ID: **14051518-04AMS** Units: mg/L Analysis Date: 6/7/2014 06:58 PM
Client ID Run ID: ICPMS2_140607A SeqNo:2798411 Prep Date: 6/4/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.1052	0.0050	0.1	0.007429	97.8	70-130	0			
Iron	10.37	0.080	10	0.3408	100	70-130	0			
Manganese	0.1244	0.0050	0.1	0.01744	107	70-130	0			
Sodium	35.79	0.20	10	25.55	102	70-130	0			

MS Sample ID: **14051544-02AMS** Units: mg/L Analysis Date: 6/7/2014 07:29 PM
Client ID Run ID: ICPMS2_140607A SeqNo:2798415 Prep Date: 6/4/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.116	0.0050	0.1	0.01923	96.8	70-130	0			
Iron	8.543	0.080	10	0.0178	85.3	70-130	0			
Manganese	0.112	0.0050	0.1	0.02383	88.2	70-130	0			

MSD Sample ID: **14051518-04AMSD** Units: mg/L Analysis Date: 6/7/2014 07:11 PM
Client ID: Run ID: ICPMS2_140607A SeqNo:2798412 Prep Date: 6/4/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.1028	0.0050	0.1	0.007429	95.4	70-130	0.1052	2.31	20	
Iron	10.21	0.080	10	0.3408	98.7	70-130	10.37	1.55	20	
Manganese	0.1212	0.0050	0.1	0.01744	104	70-130	0.1244	2.61	20	
Sodium	35.7	0.20	10	25.55	102	70-130	35.79	0.252	20	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1406020
Project: #1 & 2 Streams 508

QC BATCH REPORT

Batch ID: **59312** Instrument ID **ICPMS2** Method: **E200.8**

MSD	Sample ID: **14051544-02AMSD**				Units: **mg/L**			Analysis Date **6/8/2014 06:21 PM**		
Client ID		Run ID: **ICPMS2_140608A**			SeqNo: **2799026**			Prep Date: **6/4/2014**		DF: **1**
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.1187	0.0050	0.1	0.01923	99.5	70-130	0.116	2.3	20	
Iron	9.313	0.080	10	0.0178	93	70-130	8.543	8.62	20	
Manganese	0.1121	0.0050	0.1	0.02383	88.3	70-130	0.112	0.0892	20	

The following samples were analyzed in this batch: 1406020-01F 1406020-02F

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1406020
Project: #1 & 2 Streams 508

QC BATCH REPORT

Batch ID: **R141892** Instrument ID **WETCHEM** Method: **A4500-H B-96**

LCS Sample ID: **LCS-R141892-R141892** Units s.u. Analysis Date: **6/2/2014 01:35 PM**
Client ID: Run ID: **WETCHEM_140602O** SeqNo: **2790807** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH (laboratory)	4.1	0.020	4.4	0	93.2	90-110	0			

DUP Sample ID: **1406023-01D DUP** Units s.u. Analysis Date: **6/2/2014 01:35 PM**
Client ID: Run ID: **WETCHEM_140602O** SeqNo: **2790812** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH (laboratory)	6.64	0.020	0	0	0		6.63	0.151	20	

The following samples were analyzed in this batch: 1406020-01D 1406020-02D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1406020
Project: #1 & 2 Streams 508

QC BATCH REPORT

Batch ID: **R141991** Instrument ID **SUB** Method: **RSK-175**

MBLK Sample ID: **MB for HBN 11332 [SVGC/34439]-R14** Units: **µg/L** Analysis Date: **6/3/2014 03:51 PM**
Client ID: Run ID: **SUB_140604A** SeqNo: **2792901** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Butane	ND	4.3								
Ethane	ND	3.3								
Methane	ND	1.5								
Propane	ND	3.2								

The following samples were analyzed in this batch: 1406020-01J 1406020-02J 1406020-03B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1406020
Project: #1 & 2 Streams 508

QC BATCH REPORT

Batch ID: R141917A Instrument ID **VMS8** Method: **SW8260**

MBLK Sample ID: **VBLKW1-140603-R141917A** Units: µg/L Analysis Date: **6/3/2014 03:30 PM**
Client ID: Run ID: **VMS8_140603A** SeqNo: **2792687** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Ethylbenzene	ND	1.0								
m,p-Xylene	ND	2.0								
o-Xylene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*18.4*	0	*20*	0	*92*	*75-120*		0		
Surr: 4-Bromofluorobenzene	*19.89*	0	*20*	0	*99.4*	*80-110*		0		
Surr: Dibromofluoromethane	*19.24*	0	*20*	0	*96.2*	*85-115*		0		
Surr: Toluene-d8	*19.01*	0	*20*	0	*95*	*85-110*		0		

LCS Sample ID: **VLCSW1-140603-R141917A** Units: µg/L Analysis Date: **6/3/2014 01:52 PM**
Client ID: Run ID: **VMS8_140603A** SeqNo: **2792686** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.82	1.0	20	0	104	85-125		0		
Ethylbenzene	22.36	1.0	20	0	112	85-125		0		
m,p-Xylene	43.79	2.0	40	0	109	75-130		0		
o-Xylene	21.8	1.0	20	0	109	80-125		0		
Toluene	20.87	1.0	20	0	104	85-125		0		
Xylenes, Total	65.59	3.0	60	0	109	80-126		0		
Surr: 1,2-Dichloroethane-d4	*18.53*	0	*20*	0	*92.6*	*75-120*		0		
Surr: 4-Bromofluorobenzene	*20*	0	*20*	0	*100*	*80-110*		0		
Surr: Dibromofluoromethane	*20.03*	0	*20*	0	*100*	*85-115*		0		
Surr: Toluene-d8	*19.19*	0	*20*	0	*96*	*85-110*		0		

MS Sample ID: **14051504-03C MS** Units: µg/L Analysis Date: **6/4/2014 12:07 PM**
Client ID: Run ID: **VMS8_140603A** SeqNo: **2792699** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.84	1.0	20	0	99.2	85-125		0		
Ethylbenzene	20.15	1.0	20	0	101	85-125		0		
m,p-Xylene	39.58	2.0	40	0	99	75-130		0		
o-Xylene	19.42	1.0	20	0	97.1	80-125		0		
Toluene	19.79	1.0	20	0	99	85-125		0		
Xylenes, Total	59	3.0	60	0	98.3	80-126		0		
Surr: 1,2-Dichloroethane-d4	*18.66*	0	*20*	0	*93.3*	*75-120*		0		
Surr: 4-Bromofluorobenzene	*20.16*	0	*20*	0	*101*	*80-110*		0		
Surr: Dibromofluoromethane	*20.21*	0	*20*	0	*101*	*85-115*		0		
Surr: Toluene-d8	*19.04*	0	*20*	0	*95.2*	*85-110*		0		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1406020
Project: #1 & 2 Streams 508

QC BATCH REPORT

Batch ID: **R141917A** Instrument ID **VMS8** Method: **SW8260**

MSD Sample ID: **14051504-03C MSD** Units **µg/L** Analysis Date **6/4/2014 12:32 PM**
Client ID: Run ID **VMS8_140603A** SeqNo:**2792700** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.95	1.0	20	0	99.8	85-125	19.84	0.553	30	
Ethylbenzene	20.47	1.0	20	0	102	85-125	20.15	1.58	30	
m,p-Xylene	39.55	2.0	40	0	98.9	75-130	39.58	0.0758	30	
o-Xylene	19.53	1.0	20	0	97.6	80-125	19.42	0.565	30	
Toluene	20.02	1.0	20	0	100	85-125	19.79	1.16	30	
Xylenes, Total	59.08	3.0	60	0	98.5	80-126	59	0.136	30	
Surr: 1,2-Dichloroethane-d4	*18.56*	0	*20*	0	*92.8*	*75-120*	18.66	*0.537*	*30*	
Surr: 4-Bromofluorobenzene	*20.47*	0	*20*	0	*102*	*80-110*	20.16	*1.53*	*30*	
Surr: Dibromofluoromethane	*19.86*	0	*20*	0	*99.3*	*85-115*	20.21	*1.75*	*30*	
Surr: Toluene-d8	*19.39*	0	*20*	0	*97*	*85-110*	19.04	*1.82*	*30*	

The following samples were analyzed in this batch: 1406020-02I 1406020-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1406020
Project: #1 & 2 Streams 508

QC BATCH REPORT

Batch ID: R142045 Instrument ID **VMS9** Method: **SW8260**

MBLK Sample ID: **VBLKW1-140604-R142045** Units µg/L Analysis Date: **6/4/2014 06:10 PM**
Client ID: Run ID: **VMS9_140604A** SeqNo:2794296 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Ethylbenzene	ND	1.0								
m,p-Xylene	ND	2.0								
o-Xylene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*21.15*	0	*20*	0	*106*	*75-120*	0			
Surr: 4-Bromofluorobenzene	*16.81*	0	*20*	0	*84*	*80-110*	0			
Surr: Dibromofluoromethane	*20.16*	0	*20*	0	*101*	*85-115*	0			
Surr: Toluene-d8	*18.65*	0	*20*	0	*93.2*	*85-110*	0			

LCS Sample ID: **VLCSW1-140604-R142045** Units µg/L Analysis Date: **6/4/2014 04:06 PM**
Client ID: Run ID: **VMS9_140604A** SeqNo:2794295 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.08	1.0	20	0	105	85-125	0			
Ethylbenzene	20.04	1.0	20	0	100	85-125	0			
m,p-Xylene	41.05	2.0	40	0	103	75-130	0			
o-Xylene	19.72	1.0	20	0	98.6	80-125	0			
Toluene	21.69	1.0	20	0	108	85-125	0			
Xylenes, Total	60.77	3.0	60	0	101	80-126	0			
Surr: 1,2-Dichloroethane-d4	*19.75*	0	*20*	0	*98.8*	*75-120*	0			
Surr: 4-Bromofluorobenzene	*20.35*	0	*20*	0	*102*	*80-110*	0			
Surr: Dibromofluoromethane	*19.22*	0	*20*	0	*96.1*	*85-115*	0			
Surr: Toluene-d8	*19.74*	0	*20*	0	*98.7*	*85-110*	0			

MS Sample ID: **14051594-02A MS** Units µg/L Analysis Date: **6/5/2014 02:00 AM**
Client ID: Run ID: **VMS9_140604A** SeqNo:2794315 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.3	1.0	20	0	106	85-125	0			
Ethylbenzene	19.39	1.0	20	0	97	85-125	0			
m,p-Xylene	40.86	2.0	40	2.13	96.8	75-130	0			
o-Xylene	19.51	1.0	20	0	97.6	80-125	0			
Toluene	21.22	1.0	20	0	106	85-125	0			
Xylenes, Total	60.37	3.0	60	2.13	97.1	80-126	0			
Surr: 1,2-Dichloroethane-d4	*20.32*	0	*20*	0	*102*	*75-120*	0			
Surr: 4-Bromofluorobenzene	*19.61*	0	*20*	0	*98*	*80-110*	0			
Surr: Dibromofluoromethane	*19.95*	0	*20*	0	*99.8*	*85-115*	0			
Surr: Toluene-d8	*19.79*	0	*20*	0	*99*	*85-110*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1406020
Project: #1 & 2 Streams 508

QC BATCH REPORT

Batch ID: **R142045** Instrument ID **VMS9** Method: **SW8260**

MSD Sample ID: **14051594-02A MSD** Units **µg/L** Analysis Date: **6/5/2014 02:25 AM**
Client ID: Run ID: **VMS9_140604A** SeqNo **2794316** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.23	1.0	20	0	101	85-125	21.3	5.15	30	
Ethylbenzene	19.05	1.0	20	0	95.2	85-125	19.39	1.77	30	
m,p-Xylene	38.97	2.0	40	2.13	92.1	75-130	40.86	4.74	30	
o-Xylene	18.86	1.0	20	0	94.3	80-125	19.51	3.39	30	
Toluene	20.8	1.0	20	0	104	85-125	21.22	2	30	
Xylenes, Total	57.83	3.0	60	2.13	92.8	80-126	60.37	4.3	30	
Surr: 1,2-Dichloroethane-d4	*19.76*	0	*20*	0	*98.8*	*75-120*	20.32	*2.79*	*30*	
Surr: 4-Bromofluorobenzene	*19.68*	0	*20*	0	*98.4*	*80-110*	19.61	*0.356*	*30*	
Surr: Dibromofluoromethane	*19.06*	0	*20*	0	*95.3*	*85-115*	19.95	*4.56*	*30*	
Surr: Toluene-d8	*19.54*	0	*20*	0	*97.7*	*85-110*	19.79	*1.27*	*30*	

The following samples were analyzed in this batch: 1406020-01I

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1406020
Project: #1 & 2 Streams 508

QC BATCH REPORT

Batch ID: **59298** Instrument ID **TDS** Method: **A2540 C-97**

MBLK Sample ID: **MBLK-59298-59298** Units **mg/L** Analysis Date **6/4/2014 08:23 AM**
Client ID Run ID: **TDS_140604C** SeqNo:**2793952** Prep Date **6/3/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	ND	10								

LCS Sample ID: **LCS-59298-59298** Units **mg/L** Analysis Date **6/4/2014 08:23 AM**
Client ID Run ID: **TDS_140604C** SeqNo:**2793950** Prep Date **6/3/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	491	10	495	0	99.2	80-120	0			

DUP Sample ID: **14051561-05C DUP** Units **mg/L** Analysis Date **6/4/2014 08:23 AM**
Client ID: Run ID: **TDS_140604C** SeqNo:**2793932** Prep Date **6/3/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	388	20	0	0	0	0-0	378	2.61	20	

DUP Sample ID: **14051561-07C DUP** Units **mg/L** Analysis Date **6/4/2014 08:23 AM**
Client ID: Run ID: **TDS_140604C** SeqNo:**2793935** Prep Date **6/3/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	1194	20	0	0	0	0-0	1144	4.28	20	

The following samples were analyzed in this batch: 1406020-01D 1406020-02D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1406020
Project: #1 & 2 Streams 508

QC BATCH REPORT

Batch ID: **R141931** Instrument ID **WETCHEM** Method: **A5540C**

MBLK Sample ID: **WBLKW1-060314-R141931** Units **mg MBAS/L** Analysis Date **6/3/2014 01:30 PM**
Client ID: Run ID: **WETCHEM_140603G** SeqNo: **2791566** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Anionic Surfactants as MBAS	ND	0.40								

LCS Sample ID: **WLCSW1-060314-R141931** Units **mg MBAS/L** Analysis Date **6/3/2014 01:30 PM**
Client ID: Run ID: **WETCHEM_140603G** SeqNo: **2791567** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Anionic Surfactants as MBAS	0.45	0.40	0.5	0	90	75-125	0			

DUP Sample ID: **1406023-01B DUP** Units **mg MBAS/L** Analysis Date **6/3/2014 01:30 PM**
Client ID: Run ID: **WETCHEM_140603G** SeqNo: **2791571** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Anionic Surfactants as MBAS	ND	0.40	0	0	0	0-0	0	0	25	

The following samples were analyzed in this batch: 1406020-01B 1406020-02B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1406020
Project: #1 & 2 Streams 508

QC BATCH REPORT

Batch ID: **R141974** Instrument ID **O&G** Method: **E1664A**

MBLK Sample ID: **MB-R141974-R141974** Units **mg/L** Analysis Date **6/3/2014 09:00 AM**
Client ID: Run ID **O&G_140603A** SeqNo:**2792440** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	ND	5.0								

LCS Sample ID: **LCS-R141974-R141974** Units **mg/L** Analysis Date **6/3/2014 09:00 AM**
Client ID: Run ID **O&G_140603A** SeqNo:**2792441** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	37.4	5.0	40	0	93.5	78-114	0			

MS Sample ID: **1406030-02A MS** Units **mg/L** Analysis Date **6/3/2014 09:00 AM**
Client ID: Run ID **O&G_140603A** SeqNo:**2792458** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	34.56	5.0	40	0.33	85.6	78-114	0			

DUP Sample ID: **1406030-04A DUP** Units **mg/L** Analysis Date **6/3/2014 09:00 AM**
Client ID: Run ID **O&G_140603A** SeqNo:**2792460** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	ND	5.0	0	0	0	0-0	0	0	18	

The following samples were analyzed in this batch: 1406020-01A 1406020-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1406020
Project: #1 & 2 Streams 508

QC BATCH REPORT

Batch ID: **R141993a** Instrument ID **TOC2** Method: **A5310C-96**

MBLK Sample ID: **WBLKW1-140603-R141993a** Units **mg/L** Analysis Date **6/3/2014 09:39 PM**
Client ID Run ID: **TOC2_140603A** SeqNo:**2792930** Prep Date DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	ND	0.50								

LCS Sample ID: **WLCSW1-140603-R141993a** Units **mg/L** Analysis Date **6/3/2014 10:10 PM**
Client ID Run ID: **TOC2_140603A** SeqNo:**2792932** Prep Date DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	5.208	0.50	5	0	104	90-110	0			

MS Sample ID: **1406020-01GMS** Units **mg/L** Analysis Date **6/4/2014 12:46 AM**
Client ID: **#1 Stream 508** Run ID: **TOC2_140603A** SeqNo:**2792941** Prep Date: DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	8.964	2.0	5	3.752	104	85-120	0			

MSD Sample ID: **1406020-01GMSD** Units **mg/L** Analysis Date **6/4/2014 01:17 AM**
Client ID: **#1 Stream 508** Run ID: **TOC2_140603A** SeqNo:**2792943** Prep Date: DF: **4**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	8.884	2.0	5	3.752	103	85-120	8.964	0.896	20	

The following samples were analyzed in this batch: 1406020-01G 1406020-02G

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1406020
Project: #1 & 2 Streams 508

QC BATCH REPORT

Batch ID: **R142034** Instrument ID **IC4** Method: **E300.0**

MBLK Sample ID: **CCB/MBLK-R142034** Units: mg/L Analysis Date: **6/4/2014 07:40 AM**
Client ID: Run ID: **IC4_140604A** SeqNo: **2793786** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.1721	1.0								J
Sulfate	ND	1.0								

LCS Sample ID: **LCS-R142034** Units: mg/L Analysis Date: **6/4/2014 08:00 AM**
Client ID: Run ID: **IC4_140604A** SeqNo: **2793808** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	10.18	1.0	10	0	102	90-110	0			
Sulfate	10.68	1.0	10	0	107	90-110	0			

MS Sample ID: **14051465-03E MS** Units: mg/L Analysis Date: **6/4/2014 09:21 AM**
Client ID: Run ID: **IC4_140604A** SeqNo: **2793812** Prep Date: DF: **200**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	3190	200	1000	2094	110	80-120	0			
Sulfate	1038	200	1000	17.42	102	80-120	0			

MSD Sample ID: **14051465-03E MSD** Units: mg/L Analysis Date: **6/4/2014 09:42 AM**
Client ID: Run ID: **IC4_140604A** SeqNo: **2793813** Prep Date: DF: **200**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	3167	200	1000	2094	107	80-120	3190	0.712	20	
Sulfate	1029	200	1000	17.42	101	80-120	1038	0.923	20	

The following samples were analyzed in this batch: 1406020-01D 1406020-02D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

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Chain of Custody Form

Page ____ of ____

COC ID: 19255

Customer Information	Project Information	Parameter/Method Request for Analysis
	#1+2 Stream 508	Oil + Grease
		Surfactants (MBAS)
Danny Webb Construction Co	Danny Webb Construction Co	T. Coliform (MF)
Danny Webb Construction Co	Ann Smith	pH, Cl, SO4, TDS
PO Box 267	PO Box 267	TPH DRO, ORO
		T. Ba, Na, Fe, Mn
Lochgelly, WV 25866	Lochgelly, WV 25866	TOC
304-465-9448	304-465-9448	TPH GRO
304-465-9448	304-465-9448	BTEX
danywebbconstruction@aol.com	dannywebbconstruction@aol.com	Dissolved Gases (RSK-175)

Sample Identification	Date	Time	Matrix	Container	Volume												
#1 Stream 508 Lat 38.021347 Long -81.147965	6-2-14	9:10 AM	W	1,2,3,8	15	X	X	X	X	X	X	X	X	X	X		
#2 Stream 508 Lat 38.023234 Long -81.150633	6-2-14	10:00 AM	W	1,2,3,8	15	X	X	X	X	X	X	X	X	X	X		
Trip Blank				1,8	L									X	X		

Shipment Method: FEDEX

Relinquished by:	Date:	Time:	Received by:	Notes:
[signature]	6/2/14	1506	[signature]	on ice
[signature]	6/2/14	1730	[signature] 6/3/14 1100	

Received by (Laboratory):

- ☐ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other _____
- ☐ TRRP Checklist
- ☐ TRRP Level IV

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **DANNYWEBCONST**

Date/Time Received: **02-Jun-14 15:06**

Work Order: **1406020**

Received by: **JAS**

Checklist completed by Janet Smith (eSignature) 02-Jun-14 (Date)

Reviewed by: Rebecca Kiser (eSignature) 03-Jun-14 (Date)

Matrices: Water

Carrier name: Client

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☐	No ☑	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	10C	IR	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:			
Water - VOA vials have zero headspace?	Yes ☐	No ☑	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Samples rec3eived out of hold for pH. Samples received on ice. Sample VOA vials have headspace. Holland 3.6 C

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:

22-Jul-2014

Ann Smith
Danny Webb Construction
P.O. Box 267
617 Towne Hollow Road
Lockgelly, WV 25866

Re: **North Hills Facility** Work Order: **1407595**

Dear Ann,

ALS Environmental received 2 samples on 11-Jul-2014 01:39 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 23.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Rebecca Kiser

Electronically approved by: Rebecca Kiser

Rebecca Kiser
Project Manager

Certificate No: WV: 355

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
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ALS Group USA, Corp

Date: 22-Jul-14

Client: Danny Webb Construction
Project: North Hills Facility
Work Order: 1407595

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1407595-01	Water Well	Water		7/11/2014 11:46	7/11/2014 13:39	☐
1407595-01	Water Well	Water		7/11/2014 11:46	7/12/2014 10:30	☐
1407595-02	Trip Blank	Water		7/11/2014	7/11/2014 13:39	☐
1407595-02	Trip Blank	Water		7/11/2014	7/12/2014 10:30	☐

Client: Danny Webb Construction
Project: North Hills Facility
Work Order: 1407595

Case Narrative

ALS Environmental
1740 Union Carbide Dr.
South Charleston, WV 25303

The following parameters were received and analyzed for WO# 1407595 at the ALS South Charleston facility under WVDEP Attachement I, Certificate No. 385:

Coliform, Total (MF) - SM9222 B-97

ALS Group USA, Corp

Date: 22-Jul-14

Client: Danny Webb Construction
Project: North Hills Facility
WorkOrder: 1407595

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter
cfu/100ml	Colony Forming Units per 100 Milliliters
mg MBAS/L	Milligrams Methylene Blue Active Substances per Liter
mg/L	Milligrams per Liter
s.u.	Standard Units

ALS Group USA, Corp

Date: *22-Jul-14*

Client: Danny Webb Construction
Project: North Hills Facility
Sample ID: Water Well
Collection Date: 7/11/2014 11:46 AM

Work Order: 1407595
Lab ID: 1407595-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PH (FIELD)			**A4500-H B**			Analyst: **ARC**
pH (field)	5.70			s.u.	1	7/11/2014
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep: SW3510 / 7/17/14	Analyst: **IT**
DRO (C10-C28)	ND		0.10	mg/L	1	7/18/2014 10:23 PM
ORO (C28-C40)	ND		0.10	mg/L	1	7/18/2014 10:23 PM
Surr: 4-Terphenyl-d14	*64.5*		*21-90*	*%REC*	1	7/18/2014 10:23 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015**			Analyst: **IT**
GRO (C6-C10)	310		200	µg/L	1	7/16/2014 02:44 PM
Surr: Toluene-d8	*95.8*		*70-130*	*%REC*	1	7/16/2014 02:44 PM
METALS BY ICP-MS			**E200.8**		Prep: E200.8 / 7/17/14	Analyst: **RH**
Aluminum	2.4		0.010	mg/L	1	7/18/2014 08:17 PM
Arsenic	0.34		0.0050	mg/L	1	7/18/2014 08:17 PM
Barium	0.64		0.0050	mg/L	1	7/18/2014 08:17 PM
Calcium	20		0.50	mg/L	1	7/18/2014 08:17 PM
Iron	280		0.80	mg/L	10	7/18/2014 08:11 PM
Manganese	0.89		0.0050	mg/L	1	7/18/2014 08:17 PM
Sodium	3.6		0.20	mg/L	1	7/18/2014 08:17 PM
TOTAL COLIFORM, MF			**A9222B**			Analyst: **ARC**
Total Coliform, MF	620		2.0	cfu/100ml	1	7/11/2014 03:37 PM
GASES IN WATER			**RSK-175**			Analyst: **ALS**
Butane	ND		4.3	µg/L	1	7/14/2014 08:16 PM
Ethane	ND		3.3	µg/L	1	7/14/2014 08:16 PM
Methane	40		1.5	µg/L	1	7/14/2014 08:16 PM
Propane	ND		3.2	µg/L	1	7/14/2014 08:16 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260**			Analyst: **BG**
Benzene	ND		1.0	µg/L	1	7/17/2014 10:30 AM
Ethylbenzene	ND		1.0	µg/L	1	7/17/2014 10:30 AM
m,p-Xylene	ND		2.0	µg/L	1	7/17/2014 10:30 AM
o-Xylene	ND		1.0	µg/L	1	7/17/2014 10:30 AM
Toluene	ND		1.0	µg/L	1	7/17/2014 10:30 AM
Xylenes, Total	ND		3.0	µg/L	1	7/17/2014 10:30 AM
Surr: 1,2-Dichloroethane-d4	*99.4*		*75-120*	*%REC*	1	7/17/2014 10:30 AM
Surr: 4-Bromofluorobenzene	*98.2*		*80-110*	*%REC*	1	7/17/2014 10:30 AM
Surr: Dibromofluoromethane	*100*		*85-115*	*%REC*	1	7/17/2014 10:30 AM
Surr: Toluene-d8	*99.0*		*85-110*	*%REC*	1	7/17/2014 10:30 AM
ANIONS BY ION CHROMATOGRAPHY			**E300.0**			Analyst: **ED**

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Jul-14*

Client: Danny Webb Construction
Project: North Hills Facility
Sample ID: Water Well
Collection Date: 7/11/2014 11:46 AM

Work Order: 1407595
Lab ID: 1407595-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloride	1.9		1.0	mg/L	1	7/15/2014 04:10 PM
Sulfate	43		10	mg/L	10	7/15/2014 03:50 PM
ANIONIC SURFACTANTS AS MBAS			A5540C			Analyst: JB
Anionic Surfactants as MBAS	ND		0.40	mg MBAS/L	1	7/12/2014 04:30 PM
TOTAL DISSOLVED SOLIDS			A2540 C-97		Prep: Water Ext. / 7/15/14	Analyst: AT
Total Dissolved Solids	95		50	mg/L	1	7/15/2014 08:19 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *22-Jul-14*

Client: Danny Webb Construction
Project: North Hills Facility
Sample ID: Trip Blank
Collection Date: 7/11/2014

Work Order: 1407595
Lab ID: 1407595-02
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
GASES IN WATER			**RSK-175**			Analyst: **ALS**
Butane	ND		4.3	µg/L	1	7/14/2014 07:40 PM
Ethane	ND		3.3	µg/L	1	7/14/2014 07:40 PM
Methane	ND		1.5	µg/L	1	7/14/2014 07:40 PM
Propane	ND		3.2	µg/L	1	7/14/2014 07:40 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260**			Analyst: **BG**
Benzene	ND		1.0	µg/L	1	7/16/2014 04:09 PM
Ethylbenzene	ND		1.0	µg/L	1	7/16/2014 04:09 PM
m,p-Xylene	ND		2.0	µg/L	1	7/16/2014 04:09 PM
o-Xylene	ND		1.0	µg/L	1	7/16/2014 04:09 PM
Toluene	ND		1.0	µg/L	1	7/16/2014 04:09 PM
Xylenes, Total	ND		3.0	µg/L	1	7/16/2014 04:09 PM
Surr: 1,2-Dichloroethane-d4	*95.6*		*75-120*	*%REC*	1	7/16/2014 04:09 PM
Surr: 4-Bromofluorobenzene	*94.6*		*80-110*	*%REC*	1	7/16/2014 04:09 PM
Surr: Dibromofluoromethane	*95.9*		*85-115*	*%REC*	1	7/16/2014 04:09 PM
Surr: Toluene-d8	*98.4*		*85-110*	*%REC*	1	7/16/2014 04:09 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Client: Danny Webb Construction
Work Order: 1407595
Project: North Hills Facility

Date: 22-Jul-14

QC BATCH REPORT

Batch ID: **60673** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKW1-60673-60673** Units **mg/L** Analysis Date: **7/18/2014 08:22 PM**
Client ID: Run ID: **GC8_140718A** SeqNo: **2854579** Prep Date: **7/17/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	ND	0.10								
ORO (C28-C40)	ND	0.10								
Surr: 4-Terphenyl-d14	*0.04177*	0	*0.05*	0	*83.5*	*21-90*		0		

LCS Sample ID: **DLCSW1-60673-60673** Units **mg/L** Analysis Date: **7/18/2014 08:52 PM**
Client ID: Run ID: **GC8_140718A** SeqNo: **2854581** Prep Date: **7/17/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	3.412	0.10	5	0	68.2	44-116		0		
ORO (C28-C40)	3.284	0.10	5	0	65.7	44-116		0		
Surr: 4-Terphenyl-d14	*0.03041*	0	*0.05*	0	*60.8*	*21-90*		0		

MS Sample ID: **1407595-01E MS** Units **mg/L** Analysis Date: **7/18/2014 09:23 PM**
Client ID: **Water Well** Run ID: **GC8_140718A** SeqNo: **2854583** Prep Date: **7/17/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	31.56	1.0	50	0	63.1	44-116		0		
ORO (C28-C40)	30.32	1.0	50	0	60.6	44-116		0		
Surr: 4-Terphenyl-d14	*0.2952*	0	*0.5*	0	*59*	*21-90*		0		

MSD Sample ID: **1407595-01E MSD** Units **mg/L** Analysis Date: **7/18/2014 09:53 PM**
Client ID: **Water Well** Run ID: **GC8_140718A** SeqNo: **2854586** Prep Date: **7/17/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	35.36	1.0	50	0	70.7	44-116	31.56	11.4	30	
ORO (C28-C40)	34.84	1.0	50	0	69.7	44-1330	30.32	13.9	30	
Surr: 4-Terphenyl-d14	*0.3443*	0	*0.5*	0	*68.9*	*21-90*	0.2952	*15.4*	*30*	

The following samples were analyzed in this batch: 1407595-01E

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1407595
Project: North Hills Facility

QC BATCH REPORT

Batch ID: **R144568** Instrument ID **GC9** Method: **SW8015**

MBLK Sample ID: **GBLKW1-140716-R144568** Units µg/L Analysis Date **7/16/2014 01:53 PM**
Client ID Run ID **GC9_140716A** SeqNo **2851298** Prep Date DF **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	ND	200								
Surr: Toluene-d8	*111.5*	0	*100*	0	*112*	*70-130*		0		

LCS Sample ID: **GLCSW1-140716-R144568** Units µg/L Analysis Date **7/16/2014 01:28 PM**
Client ID Run ID **GC9_140716A** SeqNo **2851297** Prep Date DF **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	10380	200	10000	0	104	70-130		0		
Surr: Toluene-d8	*85.79*	0	*100*	0	*85.8*	*70-130*		0		

MS Sample ID: **1407537-01E MS** Units µg/L Analysis Date **7/16/2014 03:35 PM**
Client ID Run ID **GC9_140716A** SeqNo **2851301** Prep Date DF **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	12520	200	10000	0	125	70-130		0		
Surr: Toluene-d8	*87.83*	0	*100*	0	*87.8*	*70-130*		0		

MSD Sample ID: **1407537-01E MSD** Units µg/L Analysis Date **7/16/2014 04:21 PM**
Client ID Run ID **GC9_140716A** SeqNo **2851302** Prep Date DF **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	11960	200	10000	0	120	70-130	12520	4.57	30	
Surr: Toluene-d8	*89*	0	*100*	0	*89*	*70-130*	*87.83*	*1.32*	*30*	

The following samples were analyzed in this batch: 1407595-01F

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1407595
Project: North Hills Facility

QC BATCH REPORT

Batch ID: 60662 Instrument ID ICPMS2 Method: E200.8

MBLK Sample ID: MBLK-60662-60662
Client ID: Run ID: ICPMS2_140718A Units: mg/L SeqNo: 2854569 Analysis Date: 7/18/2014 05:28 PM Prep Date: 7/17/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	ND	0.010								
Arsenic	ND	0.0050								
Barium	0.001749	0.0050								
Calcium	0.02672	0.50								J
Iron	ND	0.080								J
Manganese	0.0001168	0.0050								
Sodium	ND	0.20								J

LCS Sample ID: LCS-60662-60662
Client ID: Run ID: ICPMS2_140718A Units: mg/L SeqNo: 2854570 Analysis Date: 7/18/2014 05:35 PM Prep Date: 7/17/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1093	0.010	0.1	0	109	85-115	0			
Arsenic	0.0955	0.0050	0.1	0	95.5	85-115	0			
Barium	0.09626	0.0050	0.1	0	96.3	85-115	0			
Calcium	10.63	0.50	10	0	106	85-115	0			
Iron	10.04	0.080	10	0	100	85-115	0			
Manganese	0.1038	0.0050	0.1	0	104	85-115	0			
Sodium	10.58	0.20	10	0	106	85-115	0			

MS Sample ID: 1407563-16CMS
Client ID: Run ID: ICPMS2_140717A Units: mg/L SeqNo: 2852745 Analysis Date: 7/18/2014 04:44 AM Prep Date: 7/17/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.1488	0.0050	0.1	0.05746	91.3	70-130	0			
Sodium	43.51	0.20	10	31.43	121	70-130	0			

MS Sample ID: 1407571-06CMS
Client ID: Run ID: ICPMS2_140717A Units: mg/L SeqNo: 2852752 Analysis Date: 7/18/2014 05:09 AM Prep Date: 7/17/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.2595	0.010	0.1	0.08362	176	70-130	0			S
Barium	0.1635	0.0050	0.1	0.06683	96.7	70-130	0			
Manganese	0.1087	0.0050	0.1	0.01494	93.8	70-130	0			
Sodium	12.25	0.20	10	2.438	98.1	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1407595
Project: North Hills Facility

QC BATCH REPORT

Batch ID: 60662 Instrument ID ICPMS2 Method: E200.8

MS Sample ID: 1407563-16CMS Units mg/L Analysis Date 7/18/2014 06:59 PM
Client ID Run ID ICPMS2_140718A SeqNo:2854574 Prep Date 7/17/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.3632	0.010	0.1	0.2746	88.6	70-130	0			
Arsenic	0.1015	0.0050	0.1	0.0003356	101	70-130	0			
Calcium	83.34	0.50	10	79.43	39.1	70-130	0			SO
Iron	10.33	0.080	10	0.1387	102	70-130	0			
Manganese	1.195	0.0050	0.1	1.174	21	70-130	0			SO

MS Sample ID: 1407571-06CMS Units: mg/L Analysis Date 7/18/2014 07:59 PM
Client ID Run ID ICPMS2_140718A SeqNo 2854603 Prep Date 7/17/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09897	0.0050	0.1	0.0004059	98.6	70-130	0			
Calcium	25.34	0.50	10	15.86	94.8	70-130	0			
Iron	10.24	0.080	10	0.1304	101	70-130	0			

MSD Sample ID: 1407563-16CMSD Units mg/L Analysis Date 7/18/2014 04:50 AM
Client ID Run ID ICPMS2_140717A SeqNo 2852747 Prep Date 7/17/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.1473	0.0050	0.1	0.05746	89.8	70-130	0.1488	1.01	20	
Sodium	42.54	0.20	10	31.43	111	70-130	43.51	2.25	20	

MSD Sample ID: 1407571-06CMSD Units mg/L Analysis Date: 7/18/2014 05:15 AM
Client ID: Run ID: ICPMS2_140717A SeqNo 2852754 Prep Date: 7/17/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.2412	0.010	0.1	0.08362	158	70-130	0.2595	7.31	20	S
Barium	0.1664	0.0050	0.1	0.06683	99.6	70-130	0.1635	1.76	20	
Manganese	0.1069	0.0050	0.1	0.01494	92	70-130	0.1087	1.67	20	
Sodium	12.15	0.20	10	2.438	97.1	70-130	12.25	0.82	20	

MSD Sample ID: 1407563-16CMSD Units: mg/L Analysis Date: 7/18/2014 07:46 PM
Client ID Run ID: ICPMS2_140718A SeqNo 2854600 Prep Date 7/17/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.3701	0.010	0.1	0.2746	95.5	70-130	0.3632	1.88	20	
Arsenic	0.1014	0.0050	0.1	0.0003356	101	70-130	0.1015	0.0986	20	
Calcium	82.57	0.50	10	79.43	31.4	70-130	83.34	0.928	20	SO
Iron	10.37	0.080	10	0.1387	102	70-130	10.33	0.386	20	
Manganese	1.119	0.0050	0.1	1.174	-55	70-130	1.195	6.57	20	SO

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1407595
Project: North Hills Facility

QC BATCH REPORT

Batch ID: **60662** Instrument ID **ICPMS2** Method: **E200.8**

MSD Sample ID: **1407571-06CMSD** Units: **mg/L** Analysis Date: **7/18/2014 08:05 PM**
Client ID: Run ID: **ICPMS2_140718A** SeqNo: **2854605** Prep Date: **7/17/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09765	0.0050	0.1	0.0004059	97.2	70-130	0.09897	1.34	20	
Calcium	26.45	0.50	10	15.86	106	70-130	25.34	4.29	20	
Iron	10.28	0.080	10	0.1304	101	70-130	10.24	0.39	20	

The following samples were analyzed in this batch: 1407595-01C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1407595
Project: North Hills Facility

QC BATCH REPORT

Batch ID: **R144500** Instrument ID **WETCHEM** Method: **A9222B**

MBLK Sample ID: **MBLK1-R144500-R144500** Units: **cfu/100ml** Analysis Date: **7/11/2014 03:37 PM**
Client ID: Run ID: **WETCHEM_140711[** SeqNo: **2849926** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Coliform, MF	ND	2.0								

MBLK Sample ID: **MBLK2-R144500-R144500** Units: **cfu/100ml** Analysis Date: **7/11/2014 03:37 PM**
Client ID: Run ID: **WETCHEM_140711[** SeqNo: **2849935** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Coliform, MF	ND	2.0								

DUP Sample ID: **1407595-01D DUP** Units: **cfu/100ml** Analysis Date: **7/11/2014 03:37 PM**
Client ID: **Water Well** Run ID: **WETCHEM_140711[** SeqNo: **2849930** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Coliform, MF	560	2.0	0	0	0		620	10.2	20	

The following samples were analyzed in this batch: 1407595-01D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1407595
Project: North Hills Facility

QC BATCH REPORT

Batch ID: **R144507** Instrument ID **SUB** Method: **RSK-175**

MBLK Sample ID: **MB for HBN 18026 [SVGC/34864]-R14** Units **µg/L** Analysis Date **7/14/2014 02:30 PM**
Client ID: Run ID **SUB_140716A** SeqNo **2850281** Prep Date **7/14/2014** DF **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Butane	ND	4.3								
Ethane	ND	3.3								
Methane	ND	1.5								
Propane	ND	3.2								

The following samples were analyzed in this batch: 1407595-01H 1407595-02B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1407595
Project: North Hills Facility

QC BATCH REPORT

Batch ID: **R144521A** Instrument ID **VMS6** Method: **SW8260**

MBLK Sample ID: **VBLKW1-140716-R144521A** Units µg/L Analysis Date: **7/16/2014 01:28 PM**
Client ID: Run ID: **VMS6_140716A** SeqNo: **2851598** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Ethylbenzene	ND	1.0								
m,p-Xylene	ND	2.0								
o-Xylene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*19.33*	0	*20*	0	*96.6*	*75-120*		0		
Surr: 4-Bromofluorobenzene	*19.33*	0	*20*	0	*96.6*	*80-110*		0		
Surr: Dibromofluoromethane	*19.47*	0	*20*	0	*97.4*	*85-115*		0		
Surr: Toluene-d8	*19.42*	0	*20*	0	*97.1*	*85-110*		0		

LCS Sample ID: **VLCSW1-140716-R144521A** Units µg/L Analysis Date: **7/16/2014 12:07 PM**
Client ID: Run ID: **VMS6_140716A** SeqNo: **2851597** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.07	1.0	20	0	95.4	85-125		0		
Ethylbenzene	19.81	1.0	20	0	99	85-125		0		
m,p-Xylene	39.34	2.0	40	0	98.4	75-130		0		
o-Xylene	19.68	1.0	20	0	98.4	80-125		0		
Toluene	19.33	1.0	20	0	96.6	85-125		0		
Xylenes, Total	59.02	3.0	60	0	98.4	80-126		0		
Surr: 1,2-Dichloroethane-d4	*19.22*	0	*20*	0	*96.1*	*75-120*		0		
Surr: 4-Bromofluorobenzene	*19.8*	0	*20*	0	*99*	*80-110*		0		
Surr: Dibromofluoromethane	*20.03*	0	*20*	0	*100*	*85-115*		0		
Surr: Toluene-d8	*19.7*	0	*20*	0	*98.5*	*85-110*		0		

MS Sample ID: **1407646-02A MS** Units µg/L Analysis Date: **7/16/2014 10:24 PM**
Client ID: Run ID: **VMS6_140716A** SeqNo: **2851615** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.67	1.0	20	0	98.4	85-125		0		
Ethylbenzene	20.88	1.0	20	0	104	85-125		0		
m,p-Xylene	40.75	2.0	40	0	102	75-130		0		
o-Xylene	19.82	1.0	20	0	99.1	80-125		0		
Toluene	19.71	1.0	20	0	98.6	85-125		0		
Xylenes, Total	60.57	3.0	60	0	101	80-126		0		
Surr: 1,2-Dichloroethane-d4	*19.06*	0	*20*	0	*95.3*	*75-120*		0		
Surr: 4-Bromofluorobenzene	*19.55*	0	*20*	0	*97.8*	*80-110*		0		
Surr: Dibromofluoromethane	*19.58*	0	*20*	0	*97.9*	*85-115*		0		
Surr: Toluene-d8	*19.66*	0	*20*	0	*98.3*	*85-110*		0		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1407595
Project: North Hills Facility

QC BATCH REPORT

Batch ID: **R144521A** Instrument ID **VMS6** Method: **SW8260**

MSD Sample ID: **1407646-02A MSD** Units: µg/L Analysis Date: **7/16/2014 10:50 PM**
Client ID: Run ID: **VMS6_140716A** SeqNo: **2851616** Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	18.94	1.0	20	0	94.7	85-125	19.67	3.78	30	
Ethylbenzene	19.81	1.0	20	0	99	85-125	20.88	5.26	30	
m,p-Xylene	39.77	2.0	40	0	99.4	75-130	40.75	2.43	30	
o-Xylene	19.57	1.0	20	0	97.8	80-125	19.82	1.27	30	
Toluene	19.34	1.0	20	0	96.7	85-125	19.71	1.9	30	
Xylenes, Total	59.34	3.0	60	0	98.9	80-126	60.57	2.05	30	
Surr: 1,2-Dichloroethane-d4	*19.15*	0	*20*	0	*95.8*	*75-120*	19.06	*0.471*	*30*	
Surr: 4-Bromofluorobenzene	*19.66*	0	*20*	0	*98.3*	*80-110*	19.55	*0.561*	*30*	
Surr: Dibromofluoromethane	*19.86*	0	*20*	0	*99.3*	*85-115*	19.58	*1.42*	*30*	
Surr: Toluene-d8	*19.6*	0	*20*	0	*98*	*85-110*	19.66	*0.306*	*30*	

The following samples were analyzed in this batch: 1407595-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1407595
Project: North Hills Facility

QC BATCH REPORT

Batch ID: **R144575A** Instrument ID **VMS5** Method: **SW8260**

MBLK Sample ID: **VBLKW2-140716-R144575A** Units µg/L Analysis Date: **7/17/2014 02:01 AM**
Client ID: Run ID: **VMS5_140716B** SeqNo: **2851989** Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Ethylbenzene	ND	1.0								
m,p-Xylene	ND	2.0								
o-Xylene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*20.74*	0	*20*	0	*104*	*75-120*		0		
Surr: 4-Bromofluorobenzene	*19.77*	0	*20*	0	*98.8*	*80-110*		0		
Surr: Dibromofluoromethane	*20.43*	0	*20*	0	*102*	*85-115*		0		
Surr: Toluene-d8	*19.66*	0	*20*	0	*98.3*	*85-110*		0		

LCS Sample ID: **VLCSW3-140716-R144575A** Units µg/L Analysis Date: **7/17/2014 06:23 AM**
Client ID: Run ID: **VMS5_140716B** SeqNo: **2851998** Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.99	1.0	20	0	110	85-125		0		
Ethylbenzene	21.83	1.0	20	0	109	85-125		0		
m,p-Xylene	44.15	2.0	40	0	110	75-130		0		
o-Xylene	21.77	1.0	20	0	109	80-125		0		
Toluene	21.59	1.0	20	0	108	85-125		0		
Xylenes, Total	65.92	3.0	60	0	110	80-126		0		
Surr: 1,2-Dichloroethane-d4	*19.73*	0	*20*	0	*98.6*	*75-120*		0		
Surr: 4-Bromofluorobenzene	*20.32*	0	*20*	0	*102*	*80-110*		0		
Surr: Dibromofluoromethane	*20.35*	0	*20*	0	*102*	*85-115*		0		
Surr: Toluene-d8	*19.92*	0	*20*	0	*99.6*	*85-110*		0		

MS Sample ID: **1407755-02A MS** Units µg/L Analysis Date: **7/17/2014 10:55 AM**
Client ID: Run ID: **VMS5_140716B** SeqNo: **2852005** Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.72	1.0	20	0	104	85-125		0		
Ethylbenzene	21.25	1.0	20	0	106	85-125		0		
m,p-Xylene	42.99	2.0	40	0	107	75-130		0		
o-Xylene	20.95	1.0	20	0	105	80-125		0		
Toluene	20.71	1.0	20	0	104	85-125		0		
Xylenes, Total	63.94	3.0	60	0	107	80-126		0		
Surr: 1,2-Dichloroethane-d4	*19.67*	0	*20*	0	*98.4*	*75-120*		0		
Surr: 4-Bromofluorobenzene	*20.58*	0	*20*	0	*103*	*80-110*		0		
Surr: Dibromofluoromethane	*19.97*	0	*20*	0	*99.8*	*85-115*		0		
Surr: Toluene-d8	*20.06*	0	*20*	0	*100*	*85-110*		0		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1407595
Project: North Hills Facility

QC BATCH REPORT

Batch ID: **R144575A** Instrument ID **VMS5** Method: **SW8260**

MSD Sample ID: **1407755-02A MSD** Units: µg/L Analysis Date: **7/17/2014 11:20 AM**
Client ID: Run ID: **VMS5_140716B** SeqNo: **2852006** Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.08	1.0	20	0	100	85-125	20.72	3.14	30	
Ethylbenzene	21.75	1.0	20	0	109	85-125	21.25	2.33	30	
m,p-Xylene	43.53	2.0	40	0	109	75-130	42.99	1.25	30	
o-Xylene	21.34	1.0	20	0	107	80-125	20.95	1.84	30	
Toluene	20.47	1.0	20	0	102	85-125	20.71	1.17	30	
Xylenes, Total	64.87	3.0	60	0	108	80-126	63.94	1.44	30	
Surr: 1,2-Dichloroethane-d4	*19.54*	0	*20*	0	*97.7*	*75-120*	19.67	*0.663*	*30*	
Surr: 4-Bromofluorobenzene	*20.76*	0	*20*	0	*104*	*80-110*	20.58	*0.871*	*30*	
Surr: Dibromofluoromethane	*19.94*	0	*20*	0	*99.7*	*85-115*	19.97	*0.15*	*30*	
Surr: Toluene-d8	*19.82*	0	*20*	0	*99.1*	*85-110*	20.06	*1.2*	*30*	

The following samples were analyzed in this batch: 1407595-01G

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1407595
Project: North Hills Facility

QC BATCH REPORT

Batch ID: **60567** Instrument ID **TDS** Method: **A2540 C-97**

MBLK Sample ID: **MBLK-60567-60567** Units **mg/L** Analysis Date **7/15/2014 08:19 AM**
Client ID: Run ID **TDS_140715B** SeqNo **2848187** Prep Date **7/15/2014** DF **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	ND	10								

LCS Sample ID: **LCS-60567-60567** Units **mg/L** Analysis Date **7/15/2014 08:19 AM**
Client ID Run ID **TDS_140715B** SeqNo **2848185** Prep Date **7/15/2014** DF **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	492	10	495	0	99.4	80-120	0			

DUP Sample ID: **1407579-04B DUP** Units **mg/L** Analysis Date **7/15/2014 08:19 AM**
Client ID Run ID **TDS_140715B** SeqNo **2848174** Prep Date **7/15/2014** DF **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	917	10	0	0	0	0-0	931	1.52	20	

DUP Sample ID: **1407595-01A DUP** Units **mg/L** Analysis Date **7/15/2014 08:19 AM**
Client ID **Water Well** Run ID **TDS_140715B** SeqNo **2848178** Prep Date **7/15/2014** DF **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	110	50	0	0	0	0-0	95	14.6	20	

The following samples were analyzed in this batch: 1407595-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1407595
Project: North Hills Facility

QC BATCH REPORT

Batch ID: **R144272** Instrument ID **WETCHEM** Method: **A5540C**

MBLK Sample ID: **WBLKW1-140712-R144272** Units **mg MBAS/L** Analysis Date **7/12/2014 04:30 PM**
Client ID Run ID: **WETCHEM_140712B** SeqNo **2845436** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Anionic Surfactants as MBAS	ND	0.40								

LCS Sample ID: **WLCSW1-140712-R144272** Units **mg MBAS/L** Analysis Date: **7/12/2014 04:30 PM**
Client ID Run ID: **WETCHEM_140712B** SeqNo **2845437** Prep Date DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Anionic Surfactants as MBAS	0.45	0.40	0.5	0	90	75-125	0			

DUP Sample ID: **1407595-01B DUP** Units **mg MBAS/L** Analysis Date **7/12/2014 04:30 PM**
Client ID **Water Well** Run ID: **WETCHEM_140712B** SeqNo **2845439** Prep Date DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Anionic Surfactants as MBAS	ND	0.40	0	0	0	0-0	0	0	25	

The following samples were analyzed in this batch: 1407595-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1407595
Project: North Hills Facility

QC BATCH REPORT

Batch ID: **R144529** Instrument ID **IC3** Method: **E300.0**

MBLK Sample ID: **CCB/MBLK-R144529**
Client ID: Run ID: **IC3_140715B** Units: **mg/L** Analysis Date: **7/15/2014 01:36 PM**
SeqNo: **2850709** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	1.0								
Sulfate	ND	1.0								

LCS Sample ID: **LCS-R144529**
Client ID: Run ID: **IC3_140715B** Units: **mg/L** Analysis Date: **7/15/2014 01:56 PM**
SeqNo: **2850710** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	9.668	1.0	10	0	96.7	90-110	0			
Sulfate	9.936	1.0	10	0	99.4	90-110	0			

MS Sample ID: **1407590-01A MS**
Client ID: Run ID: **IC3_140715B** Units: **mg/L** Analysis Date: **7/15/2014 03:07 PM**
SeqNo: **2850715** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1802	100	500	1192	122	80-120	0			S
Sulfate	1371	100	500	835.1	107	80-120	0			

MSD Sample ID: **1407590-01A MSD**
Client ID: Run ID: **IC3_140715B** Units: **mg/L** Analysis Date: **7/15/2014 03:27 PM**
SeqNo: **2850716** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1764	100	500	1192	114	80-120	1802	2.11	20	
Sulfate	1367	100	500	835.1	106	80-120	1371	0.278	20	

The following samples were analyzed in this batch: 1407595-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

☑ ALS Environmental
1740 Union Carbide Drive
South Charleston, WV 25303
(Tel) 304.356.3168

Chain of Custody Form

Page 1 of 1

☐ ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
(Tel) 616.399.6070
(Fax) 616.399.6185

ALS Project Manager:

ALS Work Order #: 1M01595

Customer Information		Project Information	
Purchase Order		Project Name	North Hills Facility
Work Order		Project Number	Keenan Well #1
Company Name	Danny Webb Construction	Bill To Company	DWC.
Send Report To	Ann Smith	Invoice Attn.	
Address	PO Box 267 617 Towne Hollow Road	Address	Po Box 267,
City/State/Zip	Lochgelly, WV 25866	City/State/Zip	Lochgelly WV 25866
Phone	304-465-9448	Phone	304-465-9448
Fax		Fax	
e-Mail Address	toddhuey76@gmail.com		

Parameter/Method Request for Analysis

A Chloride, Sulfate, TDS, pH
B Surfactants (MBAS)
C Ba, Na, Fe, Mn, Al, As, Ca
D T. Coliform (MF)
E TPH DRO/ORO
F TPH GRO
G BTEX (624)
H Dissolved Butane, Ethane, Methane, Propane
I Field pH 5.70 @ 19.5°C
J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Water Well	7.11.14	11:46	W	1,2,3,8	15	X	X	X	X	X	X	X	X			
2	Trip Blank			W	1,8	4							X	X			
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	

Sampler(s): Please Print & Sign: Ariel Crockett

Shipment Method:

Required Turnaround Time: ☐ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Cooler Temp:	Notes:
	7-11-14	15:39		Acetic 10°C	
Relinquished by:	Date:	Time:	Received by:		
	7/11/14	1730	FED EX		
Relinquished by:	Date:	Time:	Received by:	Cooler Temp:	QC Package: (Check Box Below)
FED EX	7/12/14	1030		ALS(W) 2°C	
Relinquished by:	Date:	Time:	Received by (Laboratory):		
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):		

Level II: Standard QC
Level III: Standard QC + Raw Data
Level IV: SW846 Methods/CLP
Other:

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS

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ALS Group USA, Corp

Sample Receipt Checklist

Client Name: DANNYWEBCONST

Date/Time Received: 11-Jul-14 13:39

Work Order: 1407595

Received by: JAS

Checklist completed by Janet Smith (eSignature) 11-Jul-14 (Date)

Reviewed by: Rebecca Kiser (eSignature) 11-Jul-14 (Date)

Matrices: Water

Carrier name: Courier

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1C	IR	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:			
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Received at ALS Holland 7/12/14 10:30 AM - 2.6 c.

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:

ALS Environmental

19-Sep-2014

Ann Smith
Danny Webb Construction
P.O. Box 267
617 Towne Hollow Road
Lockgelly, WV 25866

Re: **D Well**

Work Order: **1409546**

Dear Ann,

ALS Environmental received 3 samples on 11-Sep-2014 02:54 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 24.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Rebecca Kiser

Electronically approved by: Rebecca Kiser

Rebecca Kiser
Project Manager

Certificate No: WV: 355

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental www.alsglobal.com
RIGHT SOLUTIONS RIGHT PARTNER

ALS Group USA, Corp

Date: 19-Sep-14

Client: Danny Webb Construction
Project: D Well
Work Order: 1409546

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1409546-01	Upstream	Water		9/11/2014 11:30	9/11/2014 14:54	☐
1409546-01	Upstream	Water		9/11/2014 11:30	9/12/2014 09:30	☐
1409546-01	Upstream	Water		9/11/2014 11:30	9/12/2014 09:30	☐
1409546-02	Downstream	Water		9/11/2014 11:46	9/11/2014 14:54	☐
1409546-02	Downstream	Water		9/11/2014 11:46	9/12/2014 09:30	☐
1409546-02	Downstream	Water		9/11/2014 11:46	9/12/2014 09:30	☐
1409546-03	Trip Blank	Water		9/11/2014	9/12/2014 09:30	☐

Client: Danny Webb Construction
Project: D Well
Work Order: 1409546

Case Narrative

ALS Environmental
1740 Union Carbide Dr.
South Charleston, WV 25303

The following parameters were received and analyzed for WO# 1409546 at the ALS South Charleston facility under WVDEP Attachement I, Certificate No. 385:

pH - SM4500H B11
Coliform, Total (MF) - SM9222 B-97

ALS Group USA, Corp

Date: 19-Sep-14

Client: Danny Webb Construction
Project: D Well
WorkOrder: 1409546

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter
cfu/100ml	Colony Forming Units per 100 Milliliters
mg MBAS/L	Milligrams Methylene Blue Active Substances per Liter
mg/L	Milligrams per Liter
s.u.	Standard Units

ALS Group USA, Corp

Date: *19-Sep-14*

Client: Danny Webb Construction
Project: D Well
Sample ID: Upstream
Collection Date: 9/11/2014 11:30 AM

Work Order: 1409546
Lab ID: 1409546-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep: SW3511 / 9/15/14	Analyst: IT
DRO (C10-C28)	ND		0.10	mg/L	1	9/16/2014 12:13 PM
ORO (C28-C40)	ND		0.10	mg/L	1	9/16/2014 12:13 PM
Surr: 4-Terphenyl-d14	*95.3*		*31-176*	*%REC*	1	9/16/2014 12:13 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015**			Analyst: IT
GRO (C6-C10)	ND		200	µg/L	1	9/12/2014 11:56 PM
Surr: Toluene-d8	*101*		*70-130*	*%REC*	1	9/12/2014 11:56 PM
METALS BY ICP-MS			**E200.8**		Prep: E200.8 / 9/15/14	Analyst: RH
Barium	**0.16**		**0.0050**	**mg/L**	1	9/16/2014 03:53 PM
Iron	**1.3**		**0.080**	**mg/L**	1	9/16/2014 03:53 PM
Manganese	**0.20**		**0.0050**	**mg/L**	1	9/16/2014 03:53 PM
Sodium	**2.5**		**0.20**	**mg/L**	1	9/16/2014 03:53 PM
TOTAL COLIFORM, MF			**A9222B**			Analyst: ARC
Total Coliform, MF	**420**		**2.0**	**cfu/100ml**	1	9/11/2014 04:05 PM
PH			**A4500-H B-96**			Analyst: ARC
pH (laboratory)	**6.5**		**0.020**	**s.u.**	1	9/11/2014 03:32 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260**			Analyst: RS
Benzene	ND		1.0	µg/L	1	9/18/2014 07:13 PM
Ethylbenzene	ND		1.0	µg/L	1	9/18/2014 07:13 PM
m,p-Xylene	ND		2.0	µg/L	1	9/18/2014 07:13 PM
o-Xylene	ND		1.0	µg/L	1	9/18/2014 07:13 PM
Toluene	ND		1.0	µg/L	1	9/18/2014 07:13 PM
Xylenes, Total	ND		3.0	µg/L	1	9/18/2014 07:13 PM
Surr: 1,2-Dichloroethane-d4	*99.0*		*75-120*	*%REC*	1	9/18/2014 07:13 PM
Surr: 4-Bromofluorobenzene	*93.8*		*80-110*	*%REC*	1	9/18/2014 07:13 PM
Surr: Dibromofluoromethane	*99.2*		*85-115*	*%REC*	1	9/18/2014 07:13 PM
Surr: Toluene-d8	*97.6*		*85-110*	*%REC*	1	9/18/2014 07:13 PM
ANIONS BY ION CHROMATOGRAPHY			**E300.0**			Analyst: ED
Chloride	**2.2**		**1.0**	**mg/L**	1	9/15/2014 03:27 PM
Sulfate	**11**		**1.0**	**mg/L**	1	9/15/2014 03:27 PM
ANIONIC SURFACTANTS AS MBAS			**A5540C**			Analyst: KF
Anionic Surfactants as MBAS	ND		0.40	mg MBAS/L	1	9/12/2014 11:33 AM
OIL AND GREASE			**E1664A**			Analyst: ND
Oil and Grease	ND		5.0	mg/L	1	9/16/2014 12:00 PM
TOTAL DISSOLVED SOLIDS			**A2540 C-97**		Prep: Water Ext. / 9/17/14	Analyst: YM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Sep-14*

Client: Danny Webb Construction
Project: D Well
Sample ID: Upstream
Collection Date: 9/11/2014 11:30 AM

Work Order: 1409546
Lab ID: 1409546-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Total Dissolved Solids	56		20	mg/L	1	9/17/2014 08:40 AM
ORGANIC CARBON, TOTAL			**A5310C-96**			Analyst: ED
Organic Carbon, Total	3.6		2.0	mg/L	4	9/16/2014 11:48 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Sep-14*

Client: Danny Webb Construction
Project: D Well
Sample ID: Downstream
Collection Date: 9/11/2014 11:46 AM

Work Order: 1409546
Lab ID: 1409546-02
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep: SW3511 / 9/15/14	Analyst: IT
DRO (C10-C28)	ND		0.10	mg/L	1	9/16/2014 12:41 PM
ORO (C28-C40)	ND		0.10	mg/L	1	9/16/2014 12:41 PM
Surr: 4-Terphenyl-d14	*99.0*		*31-176*	*%REC*	1	9/16/2014 12:41 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015**			Analyst: IT
GRO (C6-C10)	ND		200	µg/L	1	9/13/2014 12:22 PM
Surr: Toluene-d8	*105*		*70-130*	*%REC*	1	9/13/2014 12:22 PM
METALS BY ICP-MS			**E200.8**		Prep: E200.8 / 9/15/14	Analyst: RH
Barium	**0.22**		**0.0050**	**mg/L**	1	9/16/2014 05:32 PM
Iron	**2.6**		**0.080**	**mg/L**	1	9/16/2014 05:32 PM
Manganese	**0.28**		**0.0050**	**mg/L**	1	9/16/2014 05:32 PM
Sodium	**2.1**		**0.20**	**mg/L**	1	9/16/2014 05:32 PM
TOTAL COLIFORM, MF			**A9222B**			Analyst: ARC
Total Coliform, MF	**580**		**2.0**	**cfu/100ml**	1	9/11/2014 04:05 PM
PH			**A4500-H B-96**			Analyst: ARC
pH (laboratory)	**6.5**		**0.020**	**s.u.**	1	9/11/2014 03:32 PM
VOLATILE ORGANIC COMPOUNDS			**SW8260**			Analyst: RS
Benzene	ND		1.0	µg/L	1	9/18/2014 07:38 PM
Ethylbenzene	ND		1.0	µg/L	1	9/18/2014 07:38 PM
m,p-Xylene	ND		2.0	µg/L	1	9/18/2014 07:38 PM
o-Xylene	ND		1.0	µg/L	1	9/18/2014 07:38 PM
Toluene	ND		1.0	µg/L	1	9/18/2014 07:38 PM
Xylenes, Total	ND		3.0	µg/L	1	9/18/2014 07:38 PM
Surr: 1,2-Dichloroethane-d4	*99.2*		*75-120*	*%REC*	1	9/18/2014 07:38 PM
Surr: 4-Bromofluorobenzene	*93.2*		*80-110*	*%REC*	1	9/18/2014 07:38 PM
Surr: Dibromofluoromethane	*96.8*		*85-115*	*%REC*	1	9/18/2014 07:38 PM
Surr: Toluene-d8	*96.5*		*85-110*	*%REC*	1	9/18/2014 07:38 PM
ANIONS BY ION CHROMATOGRAPHY			**E300.0**			Analyst: ED
Chloride	**1.1**		**1.0**	**mg/L**	1	9/15/2014 03:07 PM
Sulfate	**10**		**1.0**	**mg/L**	1	9/15/2014 03:07 PM
ANIONIC SURFACTANTS AS MBAS			**A5540C**			Analyst: KF
Anionic Surfactants as MBAS	ND		0.40	mg MBAS/L	1	9/12/2014 11:33 AM
OIL AND GREASE			**E1664A**			Analyst: ND
Oil and Grease	ND		5.0	mg/L	1	9/16/2014 12:00 PM
TOTAL DISSOLVED SOLIDS			**A2540 C-97**		Prep: Water Ext. / 9/17/14	Analyst: YM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Sep-14*

Client: Danny Webb Construction
Project: D Well
Sample ID: Downstream
Collection Date: 9/11/2014 11:46 AM

Work Order: 1409546
Lab ID: 1409546-02
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Total Dissolved Solids	46		20	mg/L	1	9/17/2014 08:40 AM
ORGANIC CARBON, TOTAL			**A5310C-96**			Analyst: ED
Organic Carbon, Total	4.3		2.0	mg/L	4	9/17/2014 12:19 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *19-Sep-14*

Client: Danny Webb Construction
Project: D Well
Sample ID: Trip Blank
Collection Date: 9/11/2014

Work Order: 1409546
Lab ID: 1409546-03
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**			Analyst: RS
Benzene	ND		1.0	µg/L	1	9/18/2014 06:24 PM
Ethylbenzene	ND		1.0	µg/L	1	9/18/2014 06:24 PM
m,p-Xylene	ND		2.0	µg/L	1	9/18/2014 06:24 PM
o-Xylene	ND		1.0	µg/L	1	9/18/2014 06:24 PM
Toluene	ND		1.0	µg/L	1	9/18/2014 06:24 PM
Xylenes, Total	ND		3.0	µg/L	1	9/18/2014 06:24 PM
Surr: 1,2-Dichloroethane-d4	*97.8*		*75-120*	*%REC*	1	9/18/2014 06:24 PM
Surr: 4-Bromofluorobenzene	*94.2*		*80-110*	*%REC*	1	9/18/2014 06:24 PM
Surr: Dibromofluoromethane	*97.6*		*85-115*	*%REC*	1	9/18/2014 06:24 PM
Surr: Toluene-d8	*95.8*		*85-110*	*%REC*	1	9/18/2014 06:24 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Client: Danny Webb Construction
Work Order: 1409546
Project: D Well

Date: 19-Sep-14

QC BATCH REPORT

Batch ID: 62756 Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: DBLKW1-62756-62756

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	ND	0.10								
ORO (C28-C40)	ND	0.10								
Surr: 4-Terphenyl-d14	*0.114*	0	*0.1143*	0	*99.7*	*31-176*		0		

LCS Sample ID: DLCSW1-62756-62756

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	7.786	0.10	11.43	0	68.1	35-95		0		
ORO (C28-C40)	6.693	0.10	11.43	0	58.6	44-77		0		
Surr: 4-Terphenyl-d14	*0.1187*	0	*0.1143*	0	*104*	*31-176*		0		

MS Sample ID: 1409546-01B MS

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	7.814	0.10	11.43	0	68.4	29-96		0		
ORO (C28-C40)	7.038	0.10	11.43	0	61.6	41-84		0		
Surr: 4-Terphenyl-d14	*0.1198*	0	*0.1143*	0	*105*	*31-176*		0		

MSD Sample ID: 1409546-01B MSD

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	7.43	0.10	11.43	0	65	29-96	7.814	5.04	30	
ORO (C28-C40)	6.853	0.10	11.43	0	60	41-84	7.038	2.67	30	
Surr: 4-Terphenyl-d14	*0.1197*	0	*0.1143*	0	*105*	*31-176*	0.1198	*0.0955*	*30*	

The following samples were analyzed in this batch: 1409546-01B 1409546-02B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1409546
Project: D Well

QC BATCH REPORT

Batch ID: R148100 **Instrument ID GC9** **Method: SW8015**

MBLK Sample ID: [illegible]

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	ND	200								
Surr: Toluene-d8	*109.9*	0	*100*	0	*110*	*70-130*		0		

LCS Sample ID: [illegible]

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	9350	200	10000	0	93.5	70-130		0		
Surr: Toluene-d8	*109.1*	0	*100*	0	*109*	*70-130*		0		

MS Sample ID: [illegible]

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	11080	200	10000	0	111	70-130		0		
Surr: Toluene-d8	*117.9*	0	*100*	0	*118*	*70-130*		0		

MSD Sample ID: [illegible]

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	10570	200	10000	0	106	70-130	11080	4.74	30	
Surr: Toluene-d8	*118.2*	0	*100*	0	*118*	*70-130*	*117.9*	*0.33*	*30*	

The following samples were analyzed in this batch: 1409546-01H 1409546-02H

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1409546
Project: D Well

QC BATCH REPORT

Batch ID: 62770 Instrument ID ICPMS2 Method: E200.8

MBLK Sample ID: MBLK-62770-62770

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	ND	0.0050								
Iron	0.009918	0.080								J
Manganese	ND	0.0050								
Sodium	ND	0.20								

LCS Sample ID: LCS-62770-62770

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.1863	0.0050	0.2	0	93.2	85-115		0		
Iron	19.35	0.080	20	0	96.8	85-115		0		
Manganese	0.1911	0.0050	0.2	0	95.6	85-115		0		
Sodium	19.32	0.20	20	0	96.6	85-115		0		

MS Sample ID: 1409493-02AMS

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.4835	0.0050	0.2	0.293	95.2	70-130		0		
Iron	18.93	0.080	20	0.1493	93.9	70-130		0		
Manganese	0.2022	0.0050	0.2	0.01149	95.4	70-130		0		

MS Sample ID: 1409493-02AMS

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	1455	2.0	20	1375	400	70-130		0		SO

MS Sample ID: 1409500-03CMS

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.1863	0.0050	0.2	-0.00004833	93.2	70-130		0		
Iron	19.14	0.080	20	0.004922	95.7	70-130		0		
Manganese	0.1928	0.0050	0.2	0.00002887	96.4	70-130		0		
Sodium	19.31	0.20	20	0.0989	96.1	70-130		0		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1409546
Project: D Well

QC BATCH REPORT

Batch ID: 62770 Instrument ID ICPMS2 Method: E200.8

MSD Sample ID: 1409493-02AMSD

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.4923	0.0050	0.2	0.293	99.6	70-130	0.5016	1.87	20	
Iron	19.18	0.080	20	0.1493	95.2	70-130	20.15	4.93	20	
Manganese	0.2063	0.0050	0.2	0.01149	97.4	70-130	0.1922	7.08	20	

MSD Sample ID: 1409493-02AMSD

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	1491	2.0	20	1375	580	70-130	1455	2.44	20	SO

MSD Sample ID: 1409500-03CMSD

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.1891	0.0050	0.2	-0.00004833	94.6	70-130	0.1863	1.49	20	
Iron	19.67	0.080	20	0.004922	98.3	70-130	19.14	2.73	20	
Manganese	0.1962	0.0050	0.2	0.00002887	98.1	70-130	0.1928	1.75	20	
Sodium	19.64	0.20	20	0.0989	97.7	70-130	19.31	1.69	20	

The following samples were analyzed in this batch: 1409546-01C 1409546-02C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1409546
Project: D Well

QC BATCH REPORT

Batch ID: R148024 **Instrument ID WETCHEM** **Method: A4500-H B-96**

LCS Sample ID: LCS-R148024-R148024

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH (laboratory)	3.97	0.020	4	0	99.2	90-110		0		

DUP Sample ID: 1409546-02D DUP

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH (laboratory)	6.55	0.020	0	0	0		6.54	0.153	20	

The following samples were analyzed in this batch: 1409546-01D 1409546-02D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1409546
Project: D Well

QC BATCH REPORT

Batch ID: **R148087** Instrument ID **WETCHEM** Method: **A9222B**

MBLK Sample ID: MBLK1-R148087-R148087

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Coliform, MF	ND	2.0								

MBLK Sample ID: MBLK2-R148087-R148087

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Coliform, MF	ND	2.0								

DUP Sample ID: 1409546-01G DUP

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Coliform, MF	480	2.0	0	0	0		420	13.3	20	

The following samples were analyzed in this batch: 1409546-01G 1409546-02G

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1409546
Project: D Well

QC BATCH REPORT

Batch ID: R148401A Instrument ID **VMS9** Method: **SW8260**

MBLK Sample ID: VBLKW1-140918-R148401A

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Ethylbenzene	ND	1.0								
m,p-Xylene	ND	2.0								
o-Xylene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	*19.57*	0	*20*	0	*97.8*	*75-120*		0		
Surr: 4-Bromofluorobenzene	*19.13*	0	*20*	0	*95.6*	*80-110*		0		
Surr: Dibromofluoromethane	*19.17*	0	*20*	0	*95.8*	*85-115*		0		
Surr: Toluene-d8	*19.09*	0	*20*	0	*95.4*	*85-110*		0		

LCS Sample ID: VLCSW1-140918-R148401A

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.16	1.0	20	0	101	85-125		0		
Ethylbenzene	18.6	1.0	20	0	93	85-125		0		
m,p-Xylene	37.37	2.0	40	0	93.4	75-130		0		
o-Xylene	18.7	1.0	20	0	93.5	80-125		0		
Toluene	18.31	1.0	20	0	91.6	85-125		0		
Xylenes, Total	56.07	3.0	60	0	93.4	80-126		0		
Surr: 1,2-Dichloroethane-d4	*18.84*	0	*20*	0	*94.2*	*75-120*		0		
Surr: 4-Bromofluorobenzene	*20.76*	0	*20*	0	*104*	*80-110*		0		
Surr: Dibromofluoromethane	*19.36*	0	*20*	0	*96.8*	*85-115*		0		
Surr: Toluene-d8	*19.39*	0	*20*	0	*97*	*85-110*		0		

MS Sample ID: 1409656-01A MS

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	22.51	1.0	20	0	113	85-125		0		
Ethylbenzene	19.94	1.0	20	0	99.7	85-125		0		
m,p-Xylene	41.25	2.0	40	0	103	75-130		0		
o-Xylene	19.82	1.0	20	0	99.1	80-125		0		
Toluene	19.87	1.0	20	0	99.4	85-125		0		
Xylenes, Total	61.07	3.0	60	0	102	80-126		0		
Surr: 1,2-Dichloroethane-d4	*19.5*	0	*20*	0	*97.5*	*75-120*		0		
Surr: 4-Bromofluorobenzene	*20.43*	0	*20*	0	*102*	*80-110*		0		
Surr: Dibromofluoromethane	*19.44*	0	*20*	0	*97.2*	*85-115*		0		
Surr: Toluene-d8	*19.64*	0	*20*	0	*98.2*	*85-110*		0		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1409546
Project: D Well

QC BATCH REPORT

Batch ID: R148401A **Instrument ID VMS9** **Method: SW8260**

MSD Sample ID: 1409546-01A MSD

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	22.34	1.0	20	0	112	85-125	22.51	0.758	30	
Ethylbenzene	19.6	1.0	20	0	98	85-125	19.94	1.72	30	
m,p-Xylene	39.48	2.0	40	0	98.7	75-130	41.25	4.38	30	
o-Xylene	19.53	1.0	20	0	97.6	80-125	19.82	1.47	30	
Toluene	19.56	1.0	20	0	97.8	85-125	19.87	1.57	30	
Xylenes, Total	59.01	3.0	60	0	98.4	80-126	61.07	3.43	30	
Surr: 1,2-Dichloroethane-d4	*19.44*	0	*20*	0	*97.2*	*75-120*	19.5	*0.308*	*30*	
Surr: 4-Bromofluorobenzene	*20.61*	0	*20*	0	*103*	*80-110*	20.43	*0.877*	*30*	
Surr: Dibromofluoromethane	*19.88*	0	*20*	0	*99.4*	*85-115*	19.44	*2.24*	*30*	
Surr: Toluene-d8	*19.58*	0	*20*	0	*97.9*	*85-110*	19.64	*0.306*	*30*	

The following samples were analyzed in this batch: 1409546-01I 1409546-02I 1409546-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1409546
Project: D Well

QC BATCH REPORT

Batch ID: 62831 **Instrument ID TDS** **Method: A2540 C-97**

MBLK Sample ID: MBLK-62831-62831

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	ND	10								

LCS Sample ID: LCS-62831-62831

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	493	10	495	0	99.6	80-120		0		

DUP Sample ID: 1409546-01D DUP

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	50	20	0	0	0	0-0	56	11.3	20	

DUP Sample ID: 1409558-03B DUP

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	143	10	0	0	0	0-0	147	2.76	20	

The following samples were analyzed in this batch: 1409546-01D 1409546-02D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1409546
Project: D Well

QC BATCH REPORT

Batch ID: R148036 **Instrument ID WETCHEM** **Method: A5540C**

MBLK Sample ID: WBLKW1-140912-R148036

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Anionic Surfactants as MBAS	ND	0.40								

LCS Sample ID: WLCSW1-140912-R148036

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Anionic Surfactants as MBAS	0.5	0.40	0.5	0	100	75-125		0		

DUP Sample ID: 1409546-01F DUP

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Anionic Surfactants as MBAS	ND	0.40	0	0	0	0-0	0	0	25	

The following samples were analyzed in this batch: 1409546-01F 1409546-02F

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1409546
Project: D Well

QC BATCH REPORT

Batch ID: R148201 Instrument ID **IC4** Method: **E300.0**

MBLK Sample ID: CCB/MBLK-R148201

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.4152	1.0								
Sulfate	ND	1.0								J

LCS Sample ID: LCS-R148201

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	9.297	1.0	10	0	93	90-110		0		
Sulfate	9.523	1.0	10	0	95.2	90-110		0		

MS Sample ID: 1409500-02A MS

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	596.8	100	500	145.8	90.2	80-120		0		
Sulfate	1294	100	500	814	96	80-120		0		

MSD Sample ID: 1409500-02A MSD

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	602	100	500	145.8	91.2	80-120	596.8	0.881	20	
Sulfate	1307	100	500	814	98.7	80-120	1294	1.01	20	

The following samples were analyzed in this batch: 1409546-01D 1409546-02D

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1409546
Project: D Well

QC BATCH REPORT

Batch ID: R148268 **Instrument ID** O&G **Method:** E1664A

MBLK Sample ID: MB-R148268-R148268

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	ND	5.0								

LCS Sample ID: LCS-R148268-R148268

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	37.6	5.0	40	0	94	78-114		0		

MS Sample ID: 1409557-5A MS

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	40.53	5.0	40	1	98.8	78-114		0		

DUP Sample ID: 1409559-02A DUP

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	6.56	5.0	0	0	0	0-0	6.11	7.1	18	

The following samples were analyzed in this batch: 1409546-01A 1409546-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 1409546
Project: D Well

QC BATCH REPORT

Batch ID: R148320a Instrument ID TOC2 Method: **A5310C-96**

MBLK Sample ID: WBLKW1-140918-R148320a

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	ND	0.50								

LCS Sample ID: WLCSW1-140918-R148320a

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	5.24	0.50	5	0	105	91-110		0		

MS Sample ID: 1409546-02EMS

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	9.808	2.0	5	4.316	110	87-120		0		

MSD Sample ID: 1409546-02EMSD

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	9.648	2.0	5	4.316	107	87-120	9.808	1.64	5	

The following samples were analyzed in this batch: 1409546-01E 1409546-02E

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

Cincinnati, OH +1 513 733 5336 | Fort Collins, CO +1 970 490 1511 | Everett, WA +1 425 356 2600 | Helena, MT +1 406 [illegible] 6070 | Houston, TX +1 281 530 5656 | Middletown, PA +1 717 944 5541 | Spring City, PA +1 610 948 4903 | Salt Lake City, UT +1 801 268 7700 | South Charleston, WV +1 304 356 3168 | York, PA +1 717 505 5280

Chain of Custody Form

Page ____ of ____

COC ID: 06763

Customer Information	Project Information	Parameter/Method Request for Analysis
Dawn Webb Construction Dawn Webb Construction P.O. Box 267 Lockwell, WV 25866 304-465-9448 304-465-9448	D Well Dawn Webb Construction P.O. Box 267 Lockwell, WV 25866 304 465 9448 304 465 9448	Oil + Grease DRO/ORO T Ba Mn Fe Mn Cl, SO4, TDS, pH TOC Surfactants T. Coliform (MF) TPH GRO BTEX

Up Stream	9-11-14	11:30 AM			15	X	X	X	X	X	X	X	X	X		
Down Stream	9-11-14	11:40 AM			15	X	X	X	X	X	X	X	X	X		
Trip Blank	9/11/14													X		

Shipment Method

Relinquished by	Date	Time	Received by	Date	Time
[illegible]	9-11-14	1401	[illegible]		
[illegible]	9/11/14	1730	[illegible]	09/12/14	0930

Broker: ontice

☐ Level II Std QC
☐ Level III Std QC/Raw Data
☐ Level IV SW846/CLP
☐ Other

☐ TRRP Checklist
☐ TRRP Level IV

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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SECTION 8 – GEOLOGIC DATA ON INJECTION AND CONFINING ZONE

A detailed geological review was conducted over the area; the ¼ mile fixed radius was unable to be used in the case due to the lack of wells being drilled and completed in the area. The information for this study was gathered from well records, drilling reports and well logs from the WVGES along with a detailed study of an abstract paper written by McCord and Eckard. This paper was a detailed report of the lithology and reservoir properties of the Big Lime, Big Injun and Weir Sandstone formations in WV. The formation being utilized for injection purposes' on the North Hills #1A (47-019-00508) is the Weir sandstone formation. The Weir Sandstone is part of the Mississippian group, Peirce/Pocono formation and is located just above the Sunbury Shale and below and below the McCrady Shale and Big Lime. In reviewing all the data this formation is found to be an average of 70 ft thick and an average subsea depth of -780' an average gamma ray count of 50 API units 10% porosity and 2.5 grams/cc density showing this zone to having a higher permeability <1md and optimum for disposal purposes'. A key to keeping this formation compatible with the fluids being injected is to maintain a clean filtered fluid clear of solids and fine clays to prevent from plugging the pore spaces and decreasing the natural permeability. This area has multiple confining layers for the Weir formation first is the McCrady shale dense very low permeable shale that lies directly above the Weir sandstone. The second is the Big Lime, this is a large lime sections with extremely low permeability and porosity averaging just over 300' of thickness and this leaves multiple impermeable layers of protection. In review of this shale and lime sections, it was found that it is an ideal cap for the injection zone along with the Sunbury shale below having very low permeability and porosity thus completely isolating the Weir sandstone. Upon reviewing all of this data together it is concluded that the size of the reservoir area and confining layers that they are more than adequate to confine the injections fluids and ultimate plume predictions for this interval. On additional pages you will be able to note the area reviewed along with a list of wells, drilling and completion reports referenced and log sections evaluated in this study.

Upon review of a number of wells drilled in the area, that data gives no reason to believe there is any faulting in this section, being the subsea elevations of the formation sections of the Weir Sandstone, Big Injun, Big Lime and Sunbury Shale remain very consistent. In researching numerous geological maps, fault investigations on the WVGES site and correlating offset well formation depths to evaluate the presence of any possible faulting in this section relative to any areas of concern. To aid in a trending pattern of faults; folds, anticlines, synclines and stress trends were studied in the area adding additional support to our conclusion. In conclusion there is no evidence of the presence of any faults in any strata above or below the Weir sandstone. Additional information has been added to this section on following pages consisting of structures contours of the Devonian Shale contours, Ordovician structure contours, Onodaga fold axes, known Devonian shale faults and additional known faulting.

The following is and estimation of the fluid migration over time in the North Hills #1 given the information acquired in the study of the Weir formation in this and surrounding wells. The calculation utilized is the volumetric method of determining reservoir fill up from injection operations. This calculation uses the reservoir height, porosity percent and saturation displacement percent to calculate fluid migration from the well bore over a given amount of fluid pumped. Below is the formula used for this calculation and the fluid migration distance from the well bore with other volumes and the respective values. As you will see the lateral fluid migration from the well bore versus the amount of fluid injected is very minimal.

R = sqrt of Q x 5.615(ft3 / bbl) / 3.14 x P x H x Sd

R = Lateral Distance of Fluid Bank from wellbore (ft)

Q = Cumulative Volume (bbls)

P = Porosity Average (%)

H= Reservoir Height (ft)

Sd = Saturation Displacement (%)

357 ft = sqrt of 100,000 x 5.615 (70 *3* / 100,000) / 3.14 x .10 x 70 x .25

Q = 250,000 bbls	**R = 505 ft**
Q = 500,000 bbls	**R = 715 ft**
Q = 1,000,000 bbls	**R = 1010 ft**

WEST VIRGINIA
GEOLOGICAL AND ECONOMIC SURVEY

1 Mont Chateau Road
Morgantown, WV 26508-8079

Earl Ray Tomblin, *Governor*
Kelley Goes, *Secretary, Department of Commerce*
Michael Ed. Hohn, *Director and State Geologist*

Phone (304) 594-2331
Fax (304) 594-2575
E-mail info@geosrv.wvnet.edu
Web Site http://www.wvgs.wvnet.edu

June 25, 2014

IN REPLY REFER TO:
OG/8999/0021/177/14

Mr. Zachary G. Stevison
Geologist
Office of Oil and Gas
601 57th Street
Charleston, WV 25304

Dear Mr. Stevison:

I have reviewed the proposal submitted by Danny Webb Construction Inc. requesting permission to continue waste water injection into well ID # UIC2D0190508 (API# 47-019-00508) and well ID# 2D0190460 (API# 47-019-00460).

Most of the production in the area of interest comes from formations other than the Weir Sandstone; therefore, continued injection of waste fluids into these wells should not negatively affect production of other wells in the immediate area. Two wells still producing from the Weir are located up-dip of the injection wells, so it's possible their production could be affected. In addition, based on currently available data, there appears to be a low risk of the reactivation of existing faults.

Due to the long injection history of the 19-508 well, degradation of the pore space by mineralization may occur, so careful attention to the injection pressure should be practiced, so as not to compromise the integrity of the confining layer.

To avoid mixing of formation waters, which can have different chemical compositions, it is recommended to inject fluids into the same or deeper zone from which they are produced. Some of the waste water in this project is sourced from the Marcellus, which is significantly deeper than the injection zone.

I hope this review aids you in the permitting process. If you have any questions, please feel free to contact me for further information.

Sincerely,

J. Eric Lewis
Geologist III
Oil and Gas Section
e-mail: elewis@geosrv.wvnet.edu

Darcy's Law for radial flow

$K = (Q \times B \times u \times \ln(r_e/r_w))/(7.08 \times h \times (p_e - p_w))$

K = perm, darcys
Q = flow rate BPD
B = Formation volume factor, STB/res barrels
u = viscosity, centapoise
r_e = reservoir radius, ft.
r_w = wellbore radius, ft.
h = formation thickness, ft.
p_e = reservoir pressure, psi
p_w = flowing pressure, psi

Injection rate =	400	
B =	1	
u =	1	
wellbore radius =	0.4	
reservoir radius =	1000	
h =	80	
Reservoir pressure =	724	
Injection pressure =	1240.8	depth x fluid gradient, assuming 9 ppg fluid a
K=	0.0107	Darcies
	10.692	md.

nd depth = 2640'

west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304
(304) 926-0450

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

MEMORANDUM

To: File

From: Zachary Stevison

Date: 9/16/2014

Subject: Telephone/Verbal Update – Todd Huey, Danny Webb Construction UIC permit application representative

I spoke with Todd Huey September 16, 2014 at 11:14 am regarding the status of the proposed maintenance/acid treatment of UIC wells 47-019-00460 and 47-019-00508. He is currently waiting for a response from his servicing contractor and has not performed any well maintenance operations to date. I asked Todd the current fluid level of both injection wells. He said, that well 47-019-00460 is currently static at the top of the wellhead with zero flow back, and 47-019-00508 has dropped to level below visibility at the wellhead. Lastly, I asked Todd about drill cuttings and/or mud that was injected into 47-019-00460 by Danny Webb. He stated that he was never told directly by Danny Webb but was informed of the matter by an unnamed third party contractor. This allegedly took place approximately 2 years ago however we have no supporting evidence to validate such claim.

API	County Name	Latitude	Longitude	UTM Northing	UTM Easting	Logs Available	Suffix	Chap Year	Farm Name	Well Num	Operator Name	Elevation	Total Depth	Confining Layer 8IG LIME Top	Confining Layer 8IG LIME Bottom	Strata Thickness	Subsea Depth	Weir Sandstone Top	Weir Sandstone Bottom	Strata Thickness	Subsea Depth	Deepest Fm	Well Type	Distance from UIC	Fresh Water
47-019-00508	Fayette	38.021799	-81.195382	4208238.3	486871	N		1982	North Hills	1A	Danny Webb Construction Co. INC	1985		2145	2453	308	-160	2650	2712	72	-665	Weir	UIC	0.49	50
47-019-00220	Fayette	38.00711	-81.151223	4206614.7	488724.3	Y		1978	North Hills	1	Appalachian Exploration & Development Inc.	1960	1584			0	0					Ravencliff/Avis SS	P&A (1981)	0.55	
47-019-00713	Fayette	38.006095	-81.14004	4206500.6	487705.9	N		1993	George Burgess	1A	Exco Resources	1962	1655			0	0					Ravencliff/Avis SS	Gas	0.91	55, 140
47-019-00617	Fayette	38.004935	-81.164504	4206375.3	485549.2	N		1989	Wildwood Realty INC	1	Hurt, Clint and Associates	2010	3500			0	0	2720	2753	33	-730	Gordon	P&A (1989)	0.96	139, 265, 655
47-019-00609	Fayette	38.012042	-81.122756	4207158.3	489224.3	N		1988	Berwind	3A	Exco Resources	2005	1623			0	0					Ravencliff/Avis SS	Gas	1.63	
47-019-00611	Fayette	38.006966	-81.122997	4206995	489207.5	N		1988	Luther E Bodkin et al	4A	Exco Resources	2014	1592			0	0					Ravencliff/Avis SS	Gas	1.69	
47-019-00159	Fayette	38.014814	-81.170711	4209691.5	485019.1	Y		1965	New River Co	4	Peake Operating Co	1515	2444	1857	2184	127	-342	2263	2375	112	-748	Weir SS	P&A (1989)	1.71	100
47-019-00647	Fayette	38.017989	-81.12111	4207817.9	489369.5	N		1990	Imre Szilagyi	7A	Exco Resources	1968	1507			0	0					Ravencliff/Avis SS	Gas	2.72	128
47-019-00075	Fayette	37.991548	-81.17455	4204891.6	484673.2	N		1948	Oak Hill Investment	2	Cabot Godfrey	2057	3532	2290	2640	350	-233	3075	3150	75	-1018	Sunbury Shale	P&A (1948)	2.02	
47-019-00595	Fayette	38.013493	-81.13469	4207318.3	489932.3	N		1987	Berwind Land Co	1A	Exco Resources	1988	2782	2166	2501	335	-178	2590	2636	46	-602	Weir SS	Gas	2.06	120
47-019-00598	Fayette	38.02089	-81.112453	420126.2	490126.2	N		1987	Helen Richards	70-AR	Exco Resources	1869	1697	2101	2417	316	-232	2509	2591	82	-640	Weir SS	Gas	2.22	100
47-019-00616	Fayette	38.017845	-81.08825	4207800.5	490447.8	N		1989	Berwind Land Co	5A	Exco Resources	1937	1572			0	0					Ravencliff/Avis SS	Gas	2.39	
47-019-00711	Fayette	38.160972	-81.191847	4223692.9	483193.2	N		1992	Mijal L Farha	1	Excel Energy	681	1700	1298	1559	261	-637					Big Injun	Gas	2.51	166
47-019-00871	Fayette	38.032494	-81.112131	4209426.3	490158.5	N		2004	Mark D White/C White	8B	Exco Resources	1854	1464			0	0					Ravencliff/Avis SS	Gas	2.52	90
47-019-00072	Fayette	37.974502	-81.166493	4203553.7	485378.3	N		1948	Oak Hill Investment	1	Cabot Godfrey	1987	2723	2255	2600	345	-268	2650	2695	45	-663	Weir SS	P&A (1963)	2.56	80
47-019-00444	Fayette	37.003596	-81.197655	4206010.8	482646.8	N		1981	Treadway	1	Peake Operating Co	1680	792			0	0					Mauch Chunk	P&A (1981)	2.62	226, 320, 382
47-019-00892	Fayette	38.027128	-81.101127	4206829.7	491124.6	N		1999	Barbra Joseph Mumma	3	Exco Resources	1943	1590			0	0					Ravencliff/Avis SS	Gas	2.68	100
47-019-00710	Fayette	38.03525	-81.106631	4209731.5	490642.6	N		1992	David Akers	8B	Exco Resources	1875	1500			0	0					Ravencliff/Avis SS	Gas	2.86	65
47-019-1008	Fayette	37.979805	-81.12054	4203581.2	489414.1	N		2006	Berwind Land Co	3	Cabot O&G	1866	3035	2081	2425	394	-165	2679	2690	11	-813	Berea SS	P&A (2006)	3	
47-019-00621	Fayette	38.039747	-81.10168	4210229.9	491077.5	N		1989	Berwind	5A	Exco Resources	1929	1547			0	0					Ravencliff/Avis SS	Gas	3.25	70
47-019-00990	Fayette	37.976468	-81.190864	4203221.2	483237.3	N		2003	White Oak Lumber Co	44	Exco Resources	2049	3850	2354	2714	360	-305	2763	2882	129	-714	Weir SS	Gas	3.38	115
47-019-0473	Fayette	38.052247	-81.203731	4211631.7	482135.7	Y		1982	Pocahontas Ind	36	Ashland Exploration	1982	6760	2584	2816	232	522	2974	3024	50	992	Huron	Gas	3.8	
47-019-0155	Fayette	38.056465	-81.091045	4212083.8	492012.6	N		1965	Berwind White	2	Berwind White Coal Mining Co	1811	2598	2065	2365	300	-254	2457	2498	41	-646	Weir SS	Gas	4.4	
47-019-0901	Fayette	38.079671	-81.162627	4214667.3	485737.2	N		1999	Poca Land Corp	47	EQT	1431	2514	1887	2182	295	-456	2250	2370	120	-819	Weir SS	Gas	4.5	
47-019-0289	Fayette	38.07677	-81.19255	4214350.4	483112.2	Y		1976	Poca Land	33	EQT	1733	2817	2243	2556	313	-500	2598	2712	114	-865	Weir SS	Gas	4.8	
47-019-0449	Fayette	38.04018	-81.140441	4210400.4	478901.5	Y		1980	Poca Land	35	Ashland Exploration	1744	3615	2314	2644	330	570	2794	2844	50	1050	Gordon	P&A (1984)	5.08	
47-019-0948	Fayette	38.077205	-81.200624	4214400.2	482404	N		2002	Poca Land Corp	508177	EQT	1909	2505	1950	2160	210	-541	2253	2354	101	-844	Weir	Gas	5.1	
47-019-0458	Fayette	37.982548	-81.279314	4209315.5	475471.2	Y		1981	HT Smark et al	1	Ashland Exploration	1679	5998	2092	2414	322	414	2615	2684	69	-936	Cashaqua Shale	Gas	7.2	
47-019-0463	Fayette	37.944656	-81.013557	4199674.6	498808.8	N		1981	Berwind Land	1	Amoco Production Co	2393	3872	2162	2466	304	231	2860	2918	58	-467	Weir	P&A (1983)	9	

Proposed UIC Well

Logs Inserted Into Application

*** ALL WELL LOGS AVALIBLE REVIEWED***

FAY 121

PRINTED IN U.S.A.

SCHLUMBERGER

GAMMA RAY - NEUTRON

COUNTY FAYETTE
FIELD or LOCATION WILDCAT
WELL EASTERN GAS & FUEL
COMPANY UNITED PRODUCING
COMPANY & UNION CARBIDE

COMPANY UNITED PRODUCING COMPANY & UNION CARBIDE
WELL EASTERN GAS & FUEL #17
FIELD WILDCAT
COUNTY FAYETTE STATE WEST VIRGINIA

Location: MOLLY KINCAID BRANCH OF LOUP CREEK
Sec. Twp. Rge.

Other Services: IND-GG-TEMP.

Permanent Datum: G.L. ; Elev.: 1254
Log Measured From K.B. , 8 Ft. Above Perm. Datum
Drilling Measured From K.B.

Elev.: K.B. 1262
D.F.
G.L. 1254

Date	11-11-61
Run No.	ONE
Type Log	GRN
Depth—Driller	2740
Depth—Logger	2728
Bottom logged interval	2726
Top logged interval	1800
Type fluid in hole	EMPTY
Salinity, PPM Cl.	
Density	
Level	
Max rec. temp., deg F.	
Operating rig time	2½ HOURS
Recorded by	RINNERT
Witnessed by	BEARDSLEY

BEST COPY AVAILABLE

RUN No.	BORE-HOLE RECORD Bit	From	To	CASING RECORD Size	Wgt.	From	To
1	7 7/8	1150	T.D.	8 5/8	24	SURF.	1150

FOLD HERE

THIS HEADING AND LOG CONFORMS TO API RP 33

EQUIPMENT DATA

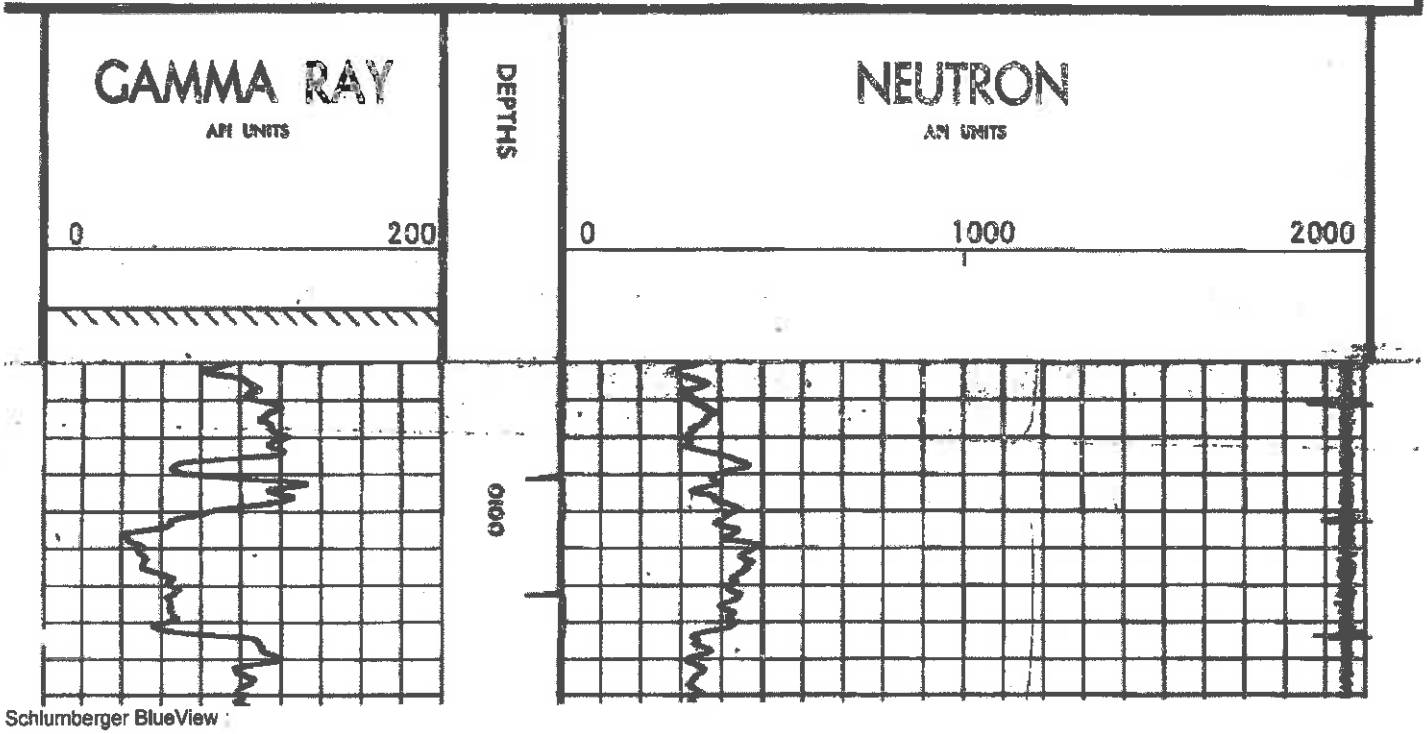
'Gamma Ray		Neutron	
Run No.	ONE	Run No.	ONE
Tool Model No.	GNT-G	Log Type	N & GR
Diameter	3 7/8"	Tool Model No.	GNT-G
Det'r Model No.	SGD-E	Diameter	3 7/8"
Type	SCINT.	Det'r Model No.	NLD-D
Length	8"	Type	G.M.
Dist. to N. Source	100 3/4"	Length	6"
		Source Model No.	NLS-C
General		Serial No.	X12
Hoist Truck No.	2943	Spacing	27.5"
Inst. Truck No.	2943	Type	PUBE
Tool Serial No.	GNT-G*	Strength	5 C
Location	HTGN.		

LOGGING DATA

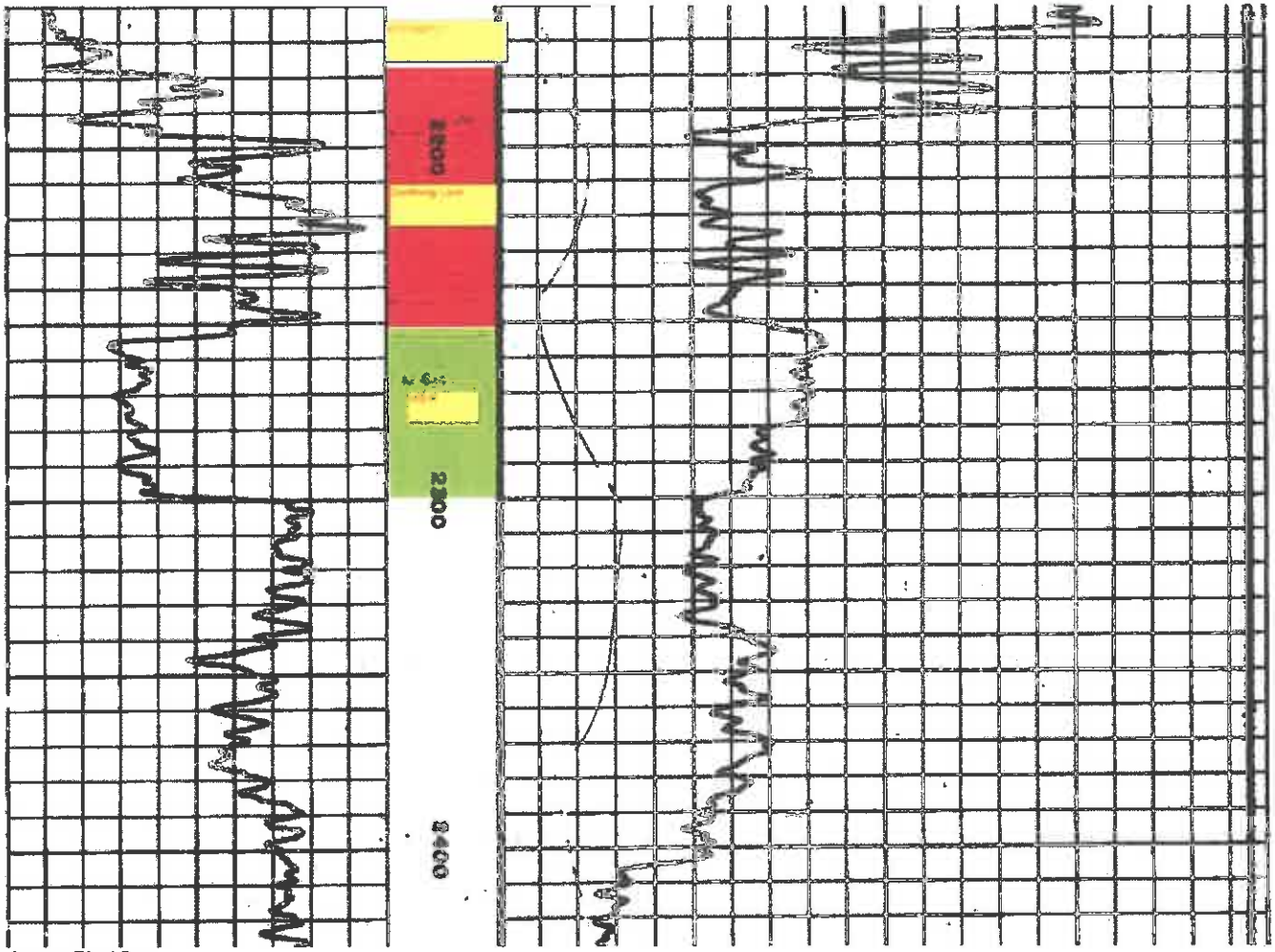
General Run No.	Depths From	To	Speed Ft/Min.	T.C. Sec.	Gamma Ray Sens. Settings	Zero Div. L or R	API G.R. Units per Log Div.	Neutron T.C. Sec.	Sens. Settings	Zero Div. L or R	API N. Units per Log Div.
1	1800	2726	60	1	500	0	20	1	500	0	100

Reference Literature:	*GNC-F-X13	NLS-C-X12
	SGD-F-266	NCT-B-27
	NDH-B-73	T.S. #155
	NLD-D-58	

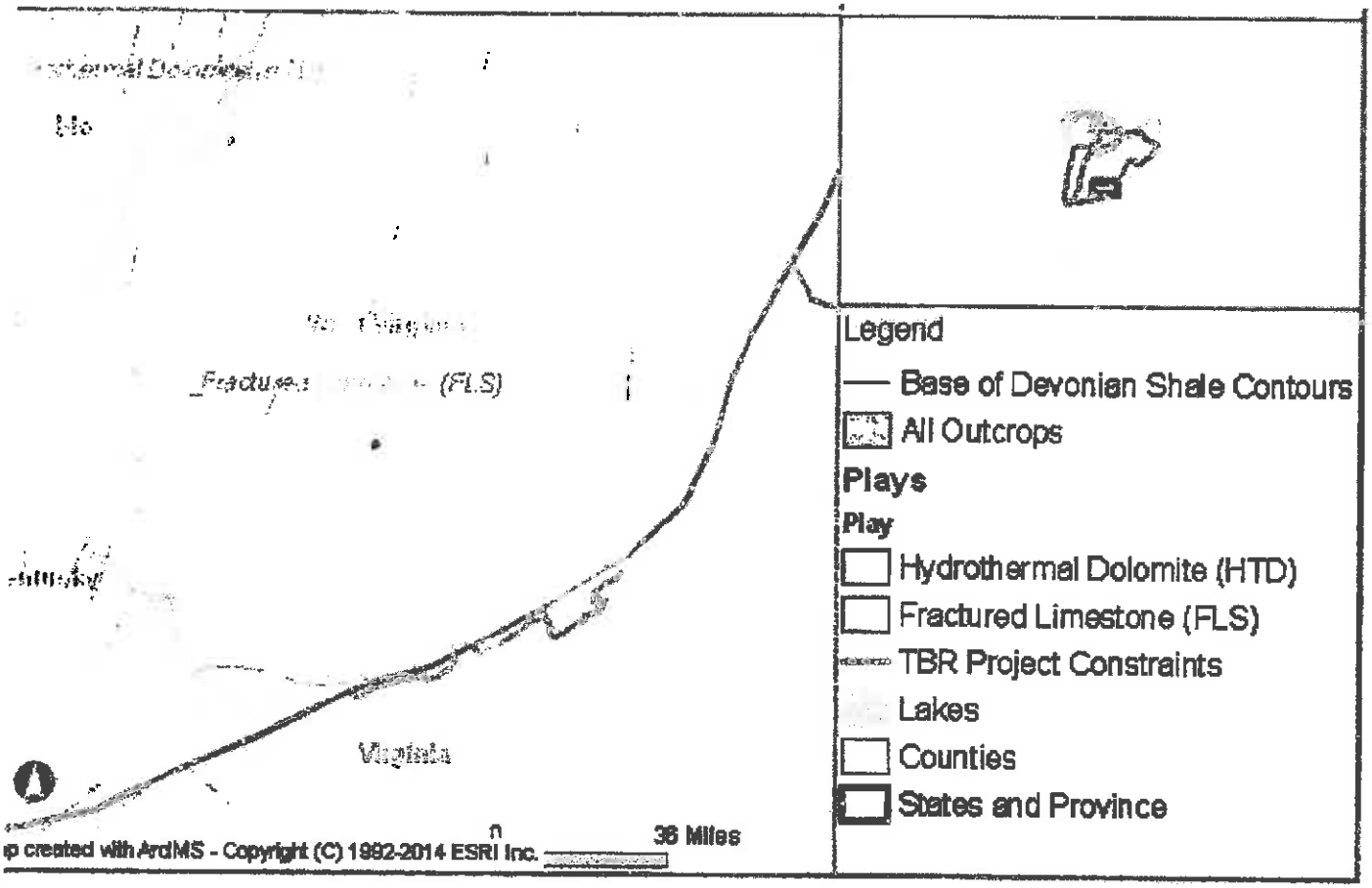
Remarks: HOLE MAKING SOME WATER

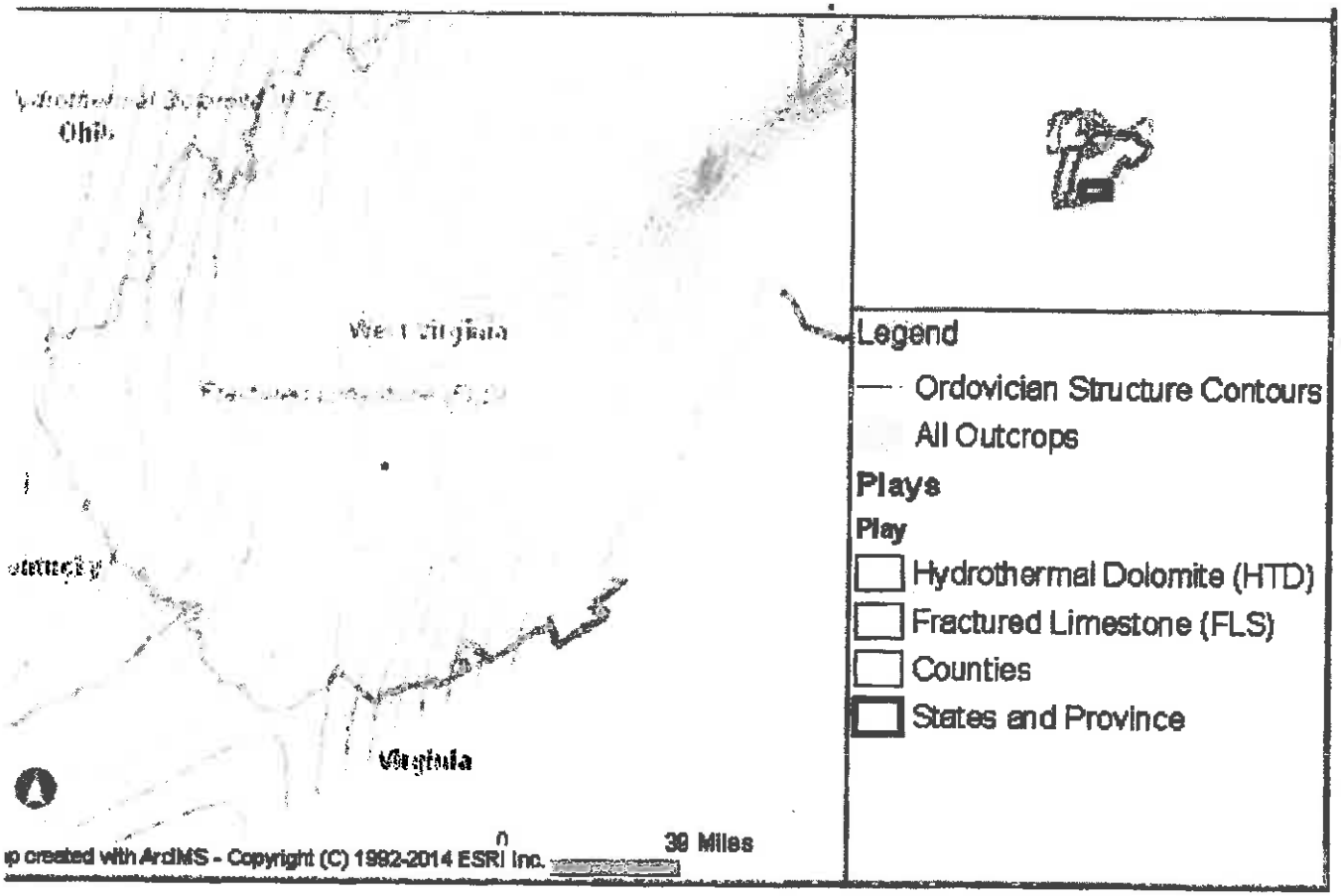


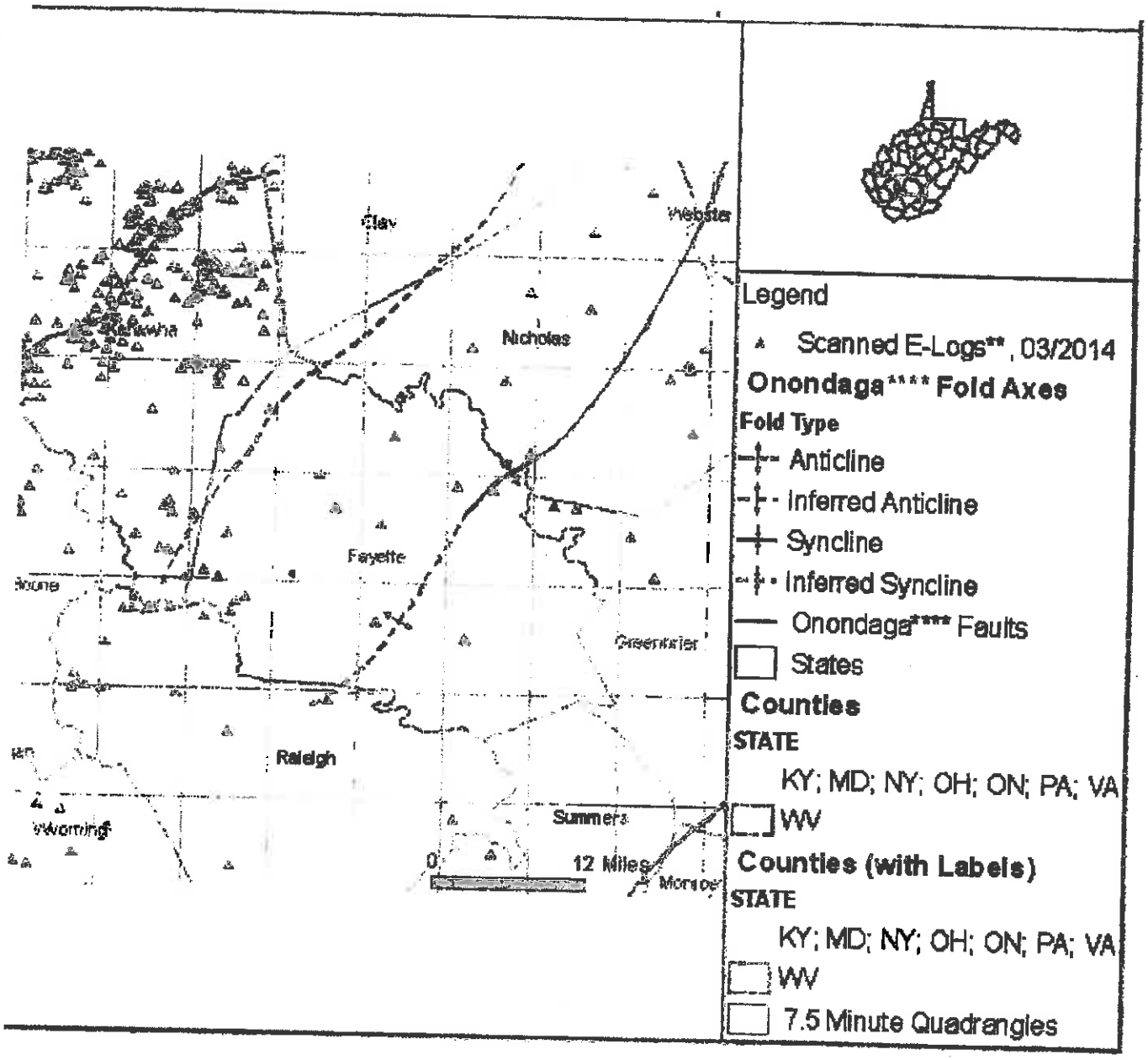
Schlumberger BlueView

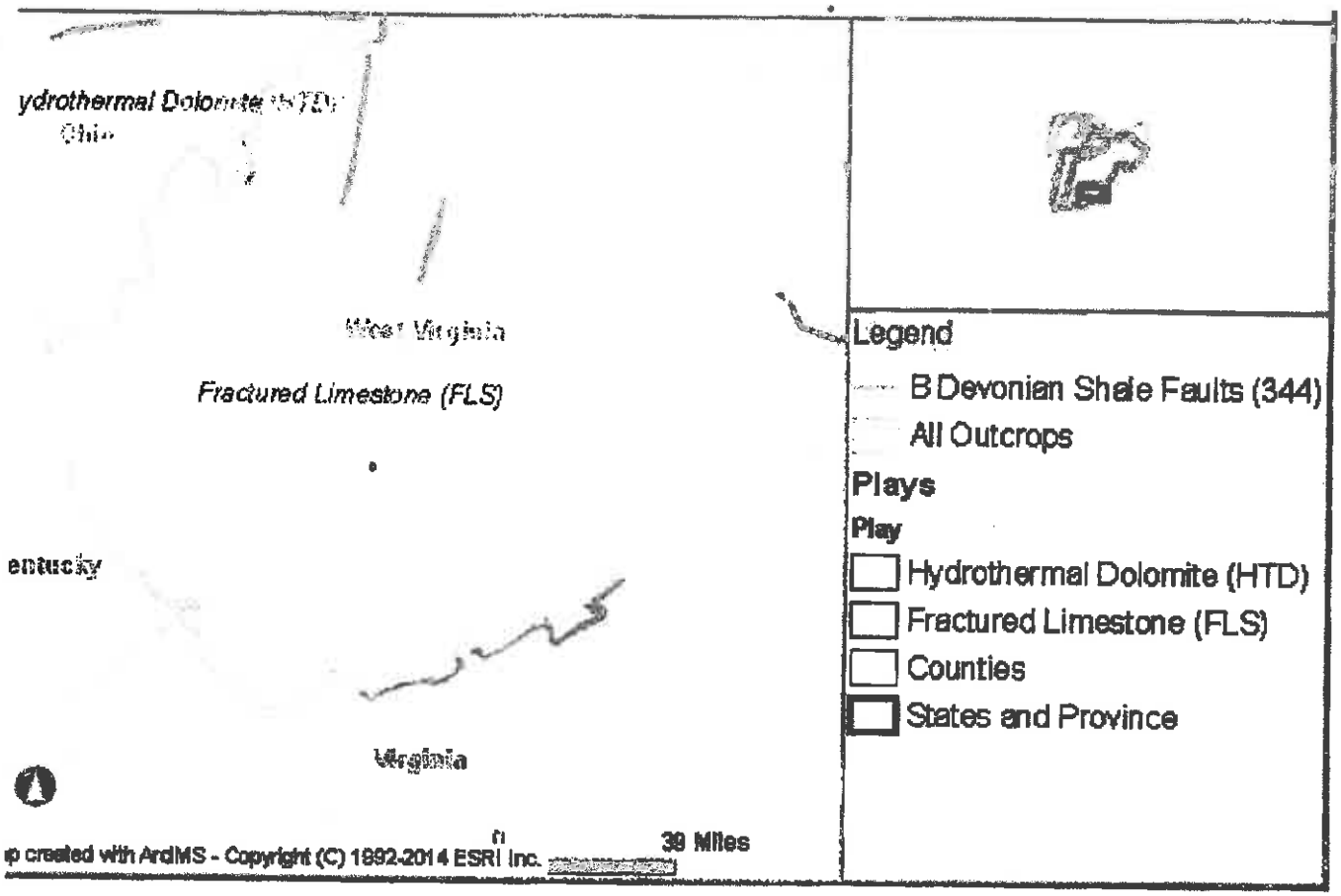


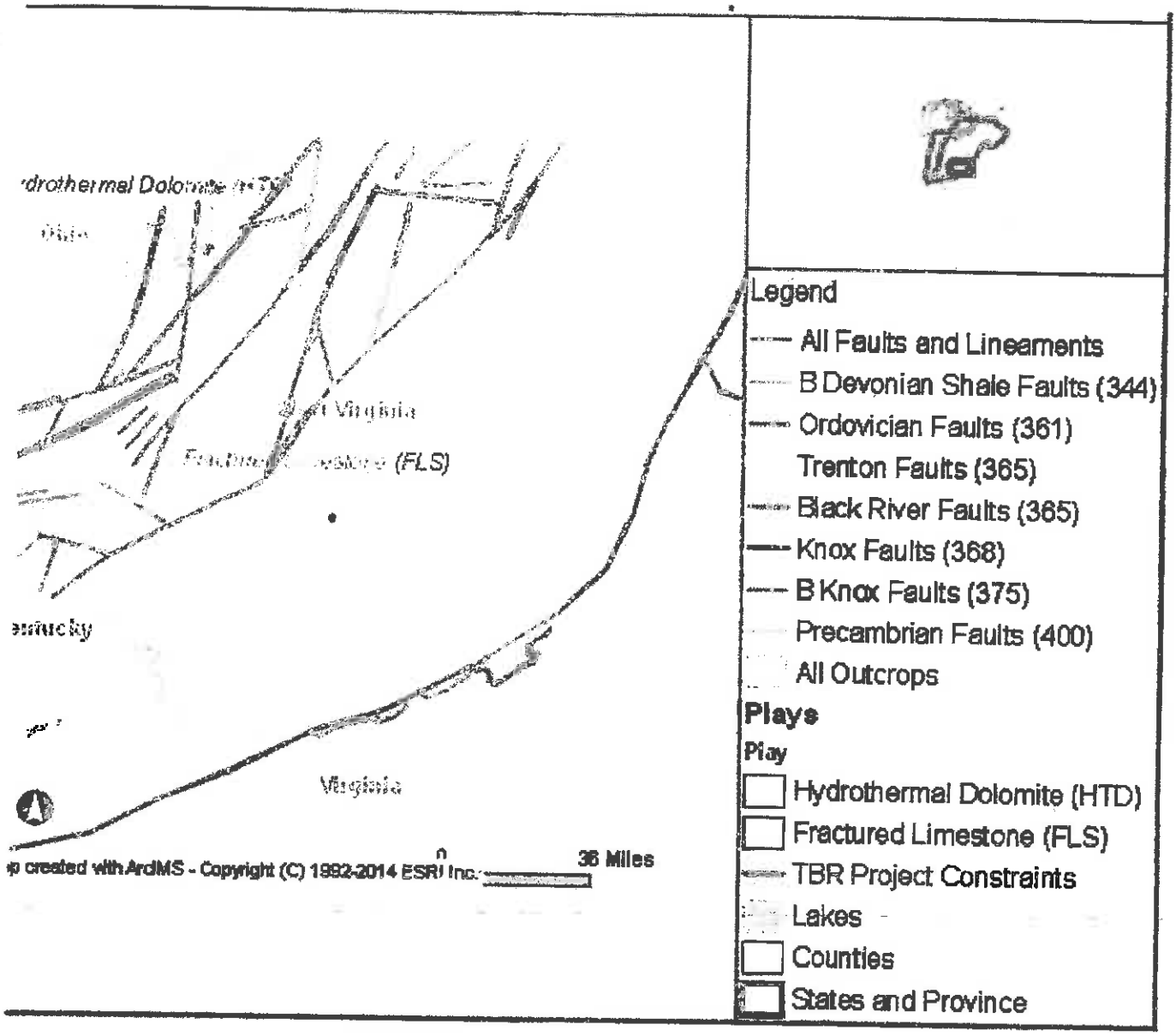
Schlumberger BlueView

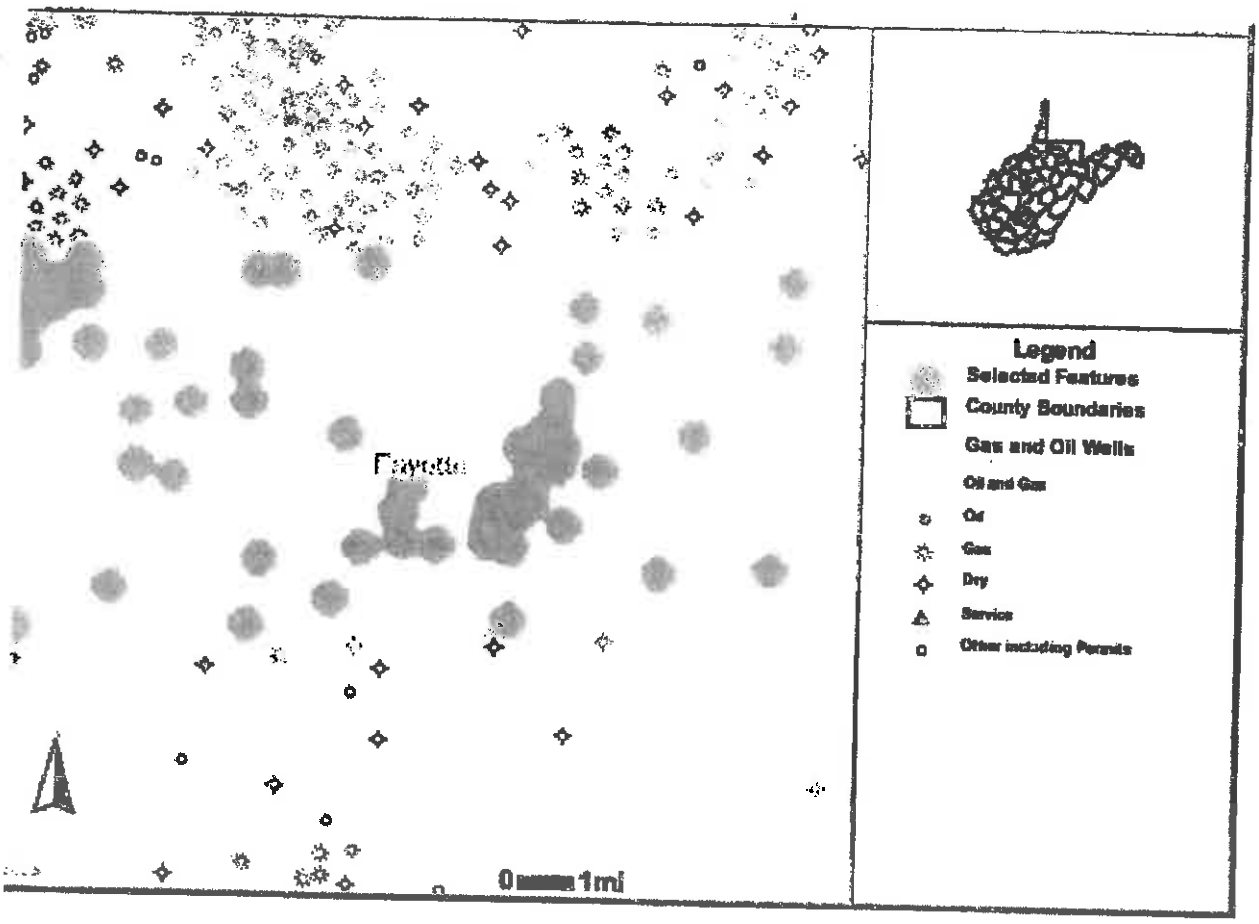

Legend
Base of Devonian Shale Contours
All Outcrops
Plays
Play
Hydrothermal Dolomite (HTD)
Fractured Limestone (FLS)
TBR Project Constraints
Lakes
Counties
States and Province
Virginia
36 Miles
p created with ArcIMS - Copyright (C) 1992-2014 ESRI Inc.


Ohio
Virginia
Legend
Ordovician Structure Contours
All Outcrops
Plays
Play
Hydrothermal Dolomite (HTD)
Fractured Limestone (FLS)
Counties
States and Province
0
39 Miles
p created with ArcIMS - Copyright (C) 1992-2014 ESRI Inc.


Clay
Webster
Nicholas
Fayette
Raleigh
Summers
Monroe
0
12 Miles
Legend
Scanned E-Logs**, 03/2014
Onondaga**** Fold Axes
Fold Type
Anticline
Inferred Anticline
Syncline
Inferred Syncline
Onondaga**** Faults
States
Counties
STATE
KY; MD; NY; OH; ON; PA; VA
WV
Counties (with Labels)
STATE
KY; MD; NY; OH; ON; PA; VA
WV
7.5 Minute Quadrangles


ydrothermal Dolomite (HTD)
Ohio
West Virginia
Fractured Limestone (FLS)
entucky
Virginia
39 Miles
p created with ArcIMS - Copyright (C) 1992-2014 ESRI Inc.
Legend
B Devonian Shale Faults (344)
All Outcrops
Plays
Play
Hydrothermal Dolomite (HTD)
Fractured Limestone (FLS)
Counties
States and Province


drothermal Dolomite
Ohio
Virginia
(FLS)
entucky
Virginia
p created with ArcIMS - Copyright (C) 1992-2014 ESRI Inc.
0
36 Miles
Legend
All Faults and Lineaments
B Devonian Shale Faults (344)
Ordovician Faults (361)
Trenton Faults (365)
Black River Faults (365)
Knox Faults (368)
B Knox Faults (375)
Precambrian Faults (400)
All Outcrops
Plays
Play
Hydrothermal Dolomite (HTD)
Fractured Limestone (FLS)
TBR Project Constraints
Lakes
Counties
States and Province


Fayette
0 1 mi
Legend
Selected Features
County Boundaries
Gas and Oil Wells
Oil and Gas
Oil
Gas
Dry
Service
Other including Permits

FAY 127

SCHLUMBERGER

FORMATION DENS OG

COUNTY FAYETTE
FIELD or LOCATION LOUP CREEK
WELL LOUP CREEK 11
COMPANY UNION CARBIDE OLEFINS

COMPANY UNION CARBIDE OLEFINS

WELL LOUP CREEK COMPANY #11

FIELD LOUP CREEK

COUNTY FAYETTE 127 STATE WEST VIRGINIA

Location: OPEN FORK OF LOUP CREEK FAY. 127

Sec. ____ Twp. ____ Rge. ____

Other Services: IND.

Permanent Datum: G.L. ; Elev.: 1391.87
Log Measured From D.F. , Ft. Above Perm. Datum
Drilling Measured From D.F.

Elev.: K.B. [redacted]
D.F.
G.L. 1391.87

Date	5-30-63	
Run No.	ONE	
Type Log	FDL	
Depth—Driller	2803	
Depth—Logger	2817	
Bottom logged interval	2816	
Top logged interval	100	
Type fluid in hole	EMPTY	
Salinity, PPM Cl.	---	
Density	---	
Level	---	
Max rec. temp., deg F.	--	
Operating rig time	2 HOURS	
Recorded by	HARRIS	
Witnessed by	MOORE	

BEST COPY available

RUN No.	BORE-HOLE RECORD Bit	From	To	CASING RECORD Size	Wgt.	From	To
ONE	8"	CSG	T.D.	8"		SURF	1334

FOLD HERE

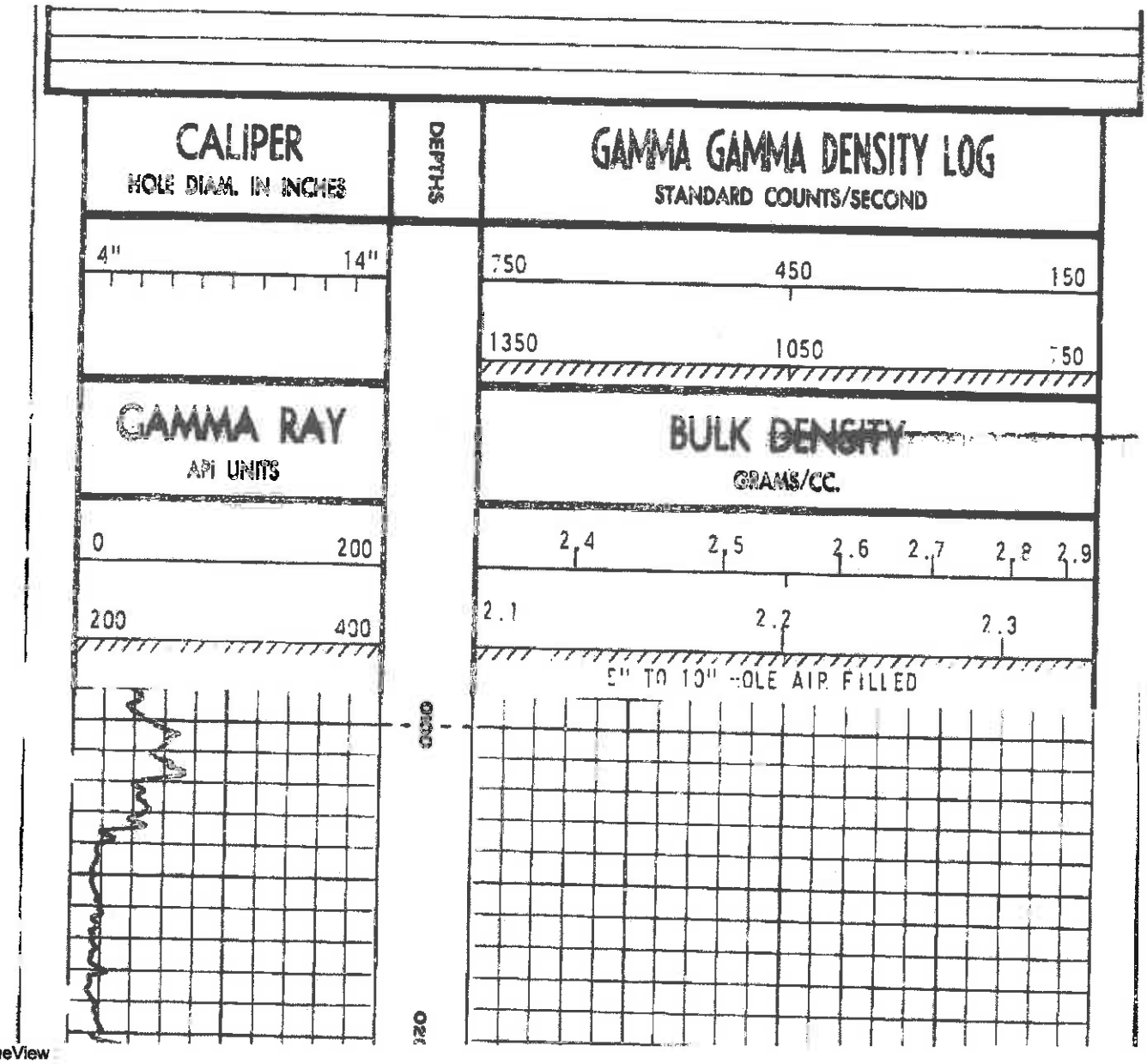
EQUIPMENT DATA

	Gamma-Gamma	General
Run No.	ONE	ONE
Tool Model No.	PGT C	
Diameter	3-7/8"	
Det'r Model No.	PGD-C	
Type	SCINT	
Run No.		
Hoist Truck No.		2926
Inst. Truck No.		2926
Tool Serial No.		
Location		HUNTINGTON

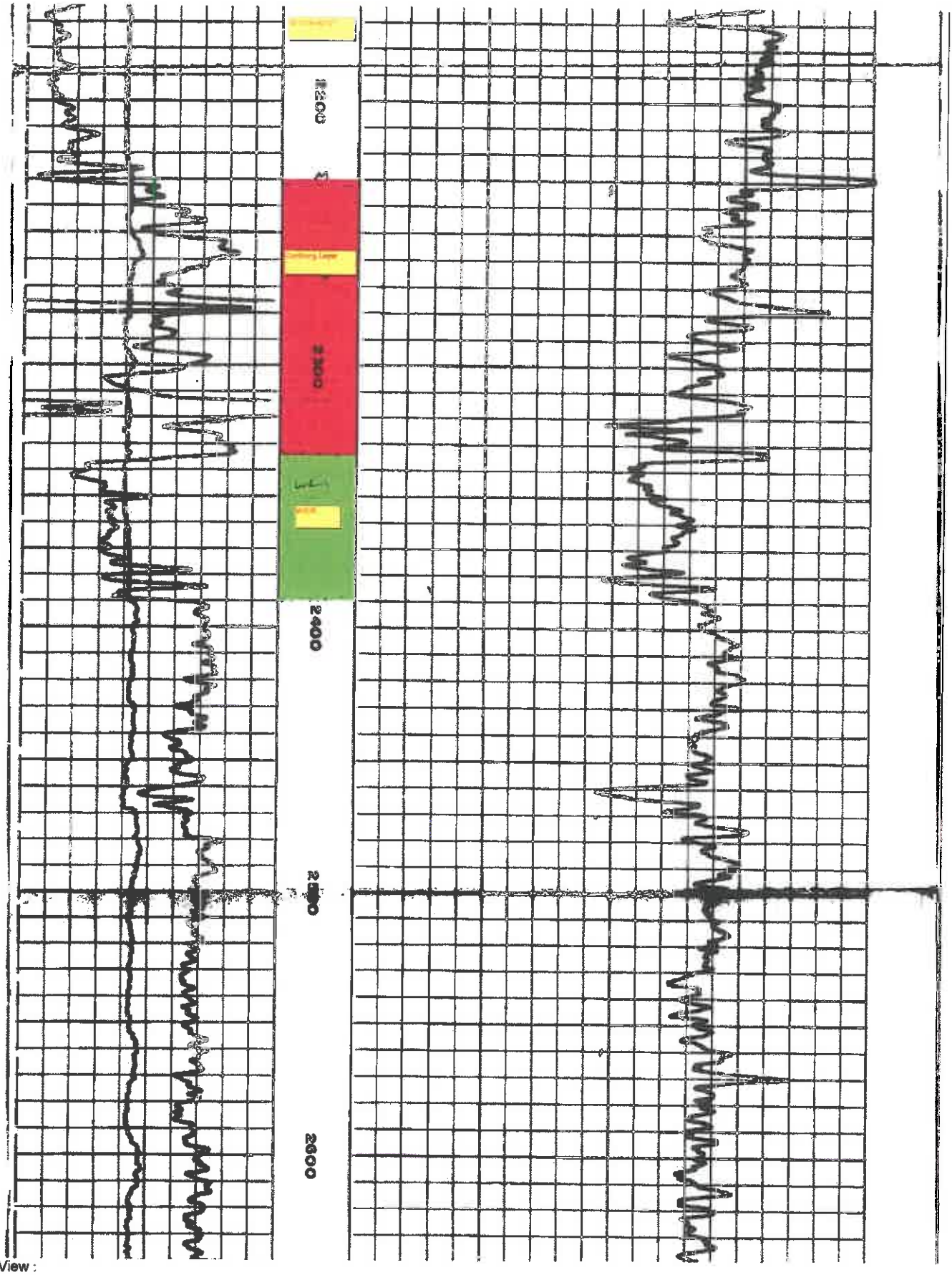
LOGGING DATA

General Run No.	Depths From	To	Speed Ft/Min.	T.C. Sec.	Gamma Ray Sens. Settings	Zero Div. L or R	API Units per Log Div.	T.C. Sec.	Gamma-Gamma Sens. Settings	Zero: Div. R. of Zero of Track III	Standard CPS per Log Div.
ONE	CSG.	T.D.	30	2	500	0	20	2	300	25	30
	100	CSG.	60	1	500	0	20				

Remarks:



Schlumberger BlueView


2500
2400
2300
2200
2100

FAY 139

Birdwell

Density Log

COMPANY Ashland Oil and Refining Co.

WELL Eastern Gas and Fuel # 34

FIELD Powellton

COUNTY Fayette STATE W. Va.

LOCATION:

BEST COPY available

SEC. TWP. RGE.

OTHER SERVICES: Temp. Gamma Neutron

ELEVATIONS: KB. 2250' DF. GL. 2247'

PERMANENT DATUM Ground level ELEV. 2247'

LOG MEASURED FROM K.B. 12 ft. above perm. datum

DRILLING MEASURED FROM K.B. 12' A.P.D.

DATE	2 Aug. 1964
RUN NO.	1
TYPE LOG	Density
DEPTH – DRILLER	3308'
DEPTH – LOGGER	3313'
BOTTOM LOGGED INTERVAL	3313'
TOP LOGGED INTERVAL	2900'
TYPE FLUID IN HOLE	Dry
SALINITY PPM Cl.	–
DENSITY LB./GAL.	–
LEVEL	–
MAX. REC. TEMP. – DEG. F	86.5°
OPERATING RIG TIME	2½ Hrs
RECORDED BY	Mullins
WITNESSED BY	Milsen
LOCATION	#7 St. Albans, W. Va.

RUN NO.	BORE HOLE RECORD BIT #	FROM	TO	CASING RECORD SIZE	WGT.	FROM	TO
	6¾	2403'	T.D.	7"	N/A	0	2403'

SSC 647

FIELD PRINT

EQUIPMENT DATA	GAMMA-GAMMA	GENERAL	
RUN NO.	1	HOIST TRUCK NO.	
TOOL MODEL NO.		INST. TRUCK NO.	
DIAMETER	3 5/8"	TOOL SERIAL NO.	
DETECT. MODEL NO.		LOCATION	
TYPE	LM		

LOGGING DATA

GENERAL

RUN NO.	DEPTHS FROM	TO	SPEED FT/MIN
1	3313'	2400'	20

GAMMA-GAMMA

CALIBRATION DATA	T.C. SEC.	SENS. SETTINGS	ZERO DIV. L OR R	COUNTS PER MIN. PER LOG DIV.
BLOCK TYPE	3	60K		
DENSITY - GMS./CC				
K COUNTS PER MINUTE – BLOCK				
CONVERSION CURVE				
GENERATOR FREQUENCY				

REFERENCE LITERATURE: Well Records

REMARKS:

Survey Run for purpose of formation evaluation

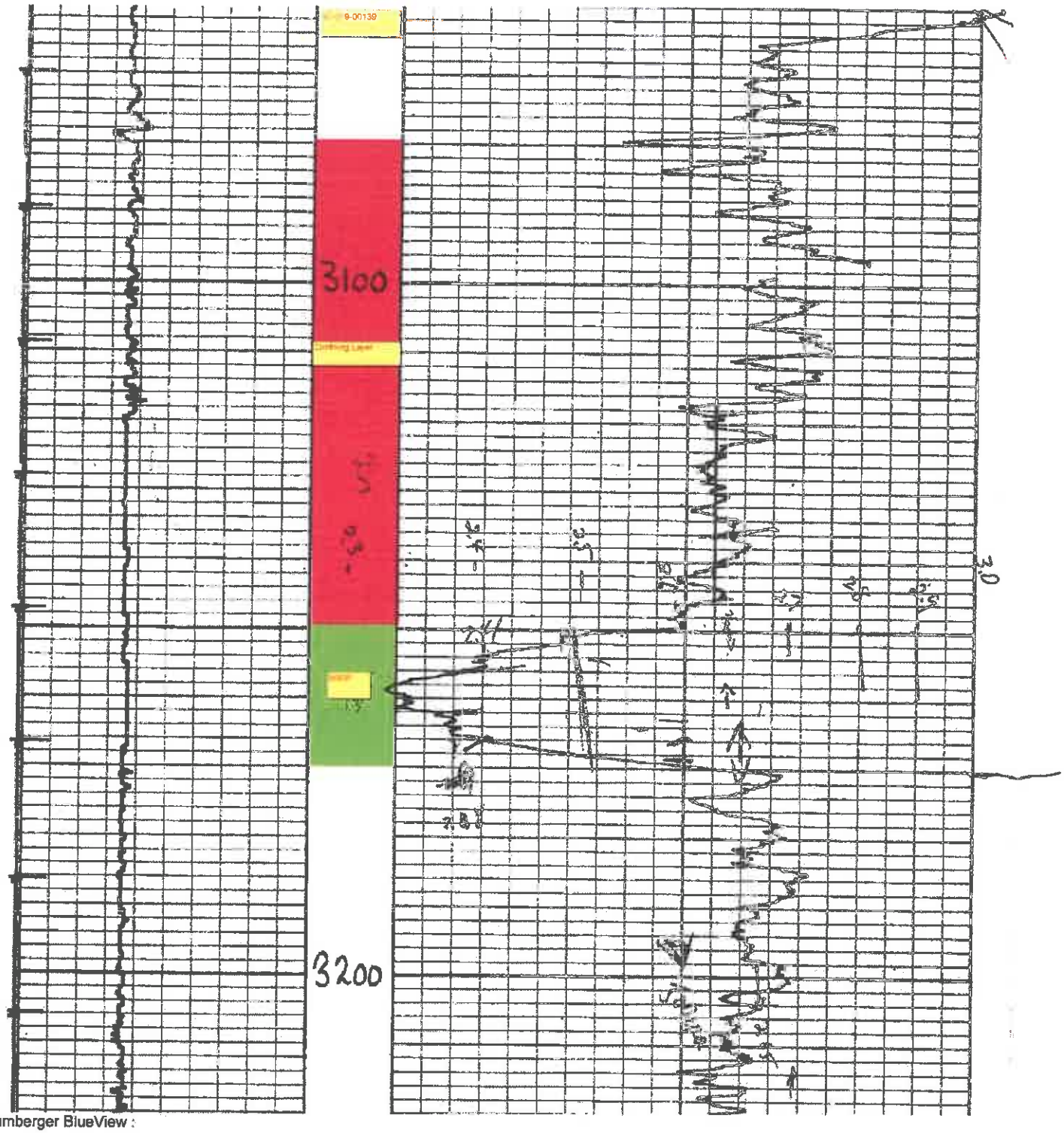
PROXIMITY INDEX	DEPTHS	BULK DENSITY
SEPARATION INCHES 1 MIN. TIME MARKERS		GRAMS/CC.

After log Calibrations
id S.T.C.

13K CPM
26 Divisions
Zero 7 Divisions Right This Line →

0 1'

Schlumberger BlueView :



Schlumberger BlueView :

FAY 141

Birdwell

Density Log

10 MMcf

BEST COPY available

COMPANY Ashland Oil and Refining Co.

WELL Eastern Gas and Fuel # 36

FIELD Powellton

COUNTY Fayette STATE W. Va.

LOCATION: Loup Creek

SEC. _____ TWP. _____ RGE. _____

OTHER SERVICES: Temp. Gamma Density

ELEVATIONS: KB. 2284' DF. 2282 GL. 2272'

PERMANENT DATUM Ground level, ELEV. 2272

LOG MEASURED FROM K.B. 12 ft. above perm. datum

DRILLING MEASURED FROM K.B. 12' A.P.D.

DATE	31 Aug. 1964
RUN NO.	1
TYPE LOG	Density
DEPTH – DRILLER	3290'
DEPTH – LOGGER	3292'
BOTTOM LOGGED INTERVAL	3286'
TOP LOGGED INTERVAL	2400'
TYPE FLUID IN HOLE	Dry
SALINITY PPM. CL.	–
DENSITY LB./GAL.	–
LEVEL	–
MAX. REC. TEMP. – DEG. F	73°
OPERATING RIG TIME	1½ Hours
RECORDED BY	Mullins
WITNESSED BY	Milner
LOCATION	#17 St. Albans, W. Va.

RUN NO.	BORE HOLE RECORD BIT	FROM	TO	CASING RECORD SIZE	WGT.	FROM	TO
	6¾"	2430'	T.D.	7"	20	0	2430'
				*7"	20	0	2428'

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SSC 647

EQUIPMENT DATA

GAMMA-GAMMA		GENERAL	
RUN NO.	1	HOIST TRUCK NO.	
TOOL MODEL NO.	LAHA	INST. TRUCK NO.	
DIAMETER	5"	TOOL SERIAL NO.	
DETECT. MODEL NO.	N/A	LOCATION	
TYPE	Scint.		

LOGGING DATA

GAMMA-GAMMA

GENERAL DEPTHS RUN NO.	FROM	TO	SPEED FT/MIN	CALIBRATION DATA	T. C. SEC.	SENS. SETTINGS	ZERO DIV. L OR R	COUNTS PER MIN. PER LOG DIV.
1	2400'	3286'	20	BLOCK TYPE	3	60K		1000
				DENSITY - GMS./CC				
				K COUNTS PER MINUTE – BLOCK				
				CONVERSION CURVE				
				GENERATOR FREQUENCY				

REFERENCE LITERATURE: Well Records

REMARKS:

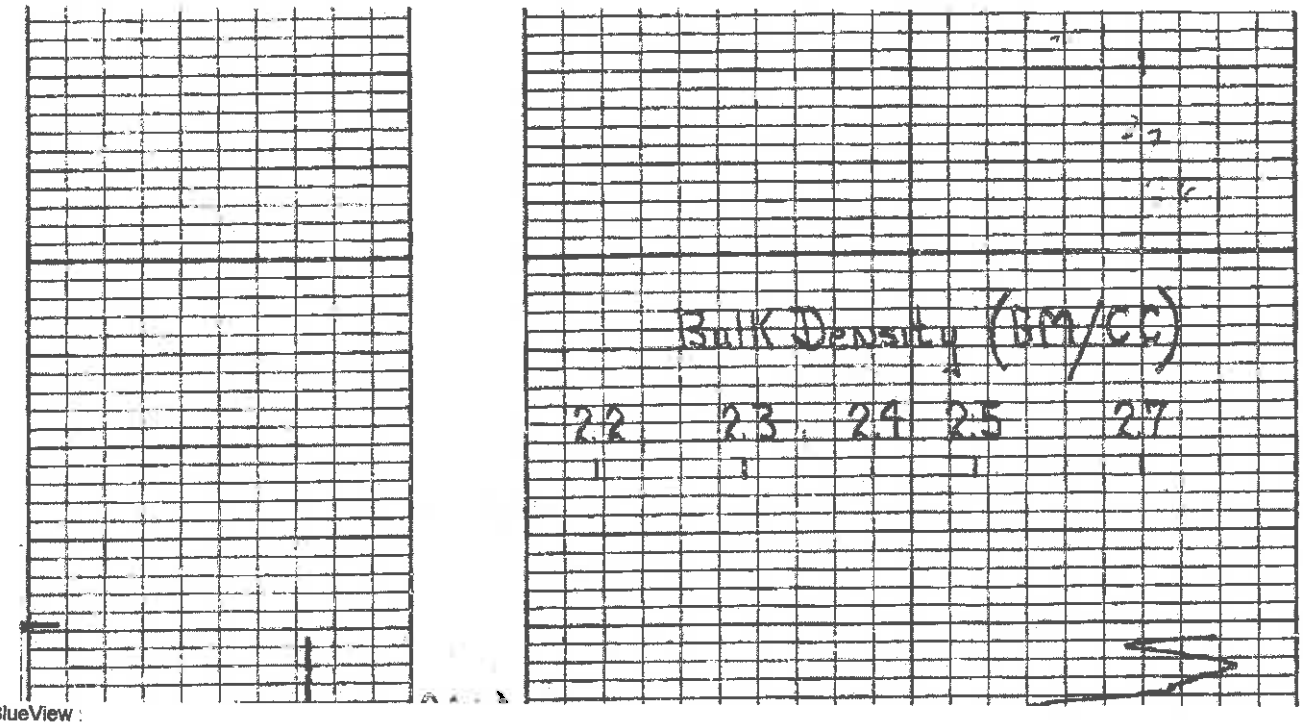
PROXIMITY INDEX	DEPTHS	BULK DENSITY
SEPARATION INCHES 1 MIN. TIME MARKERS		GRAMS/CC.

After log Calibrations 3 S.I.C

60 CPS
36 Divisions
Zero 7 Divisions Right This Line →

0 1"

23K



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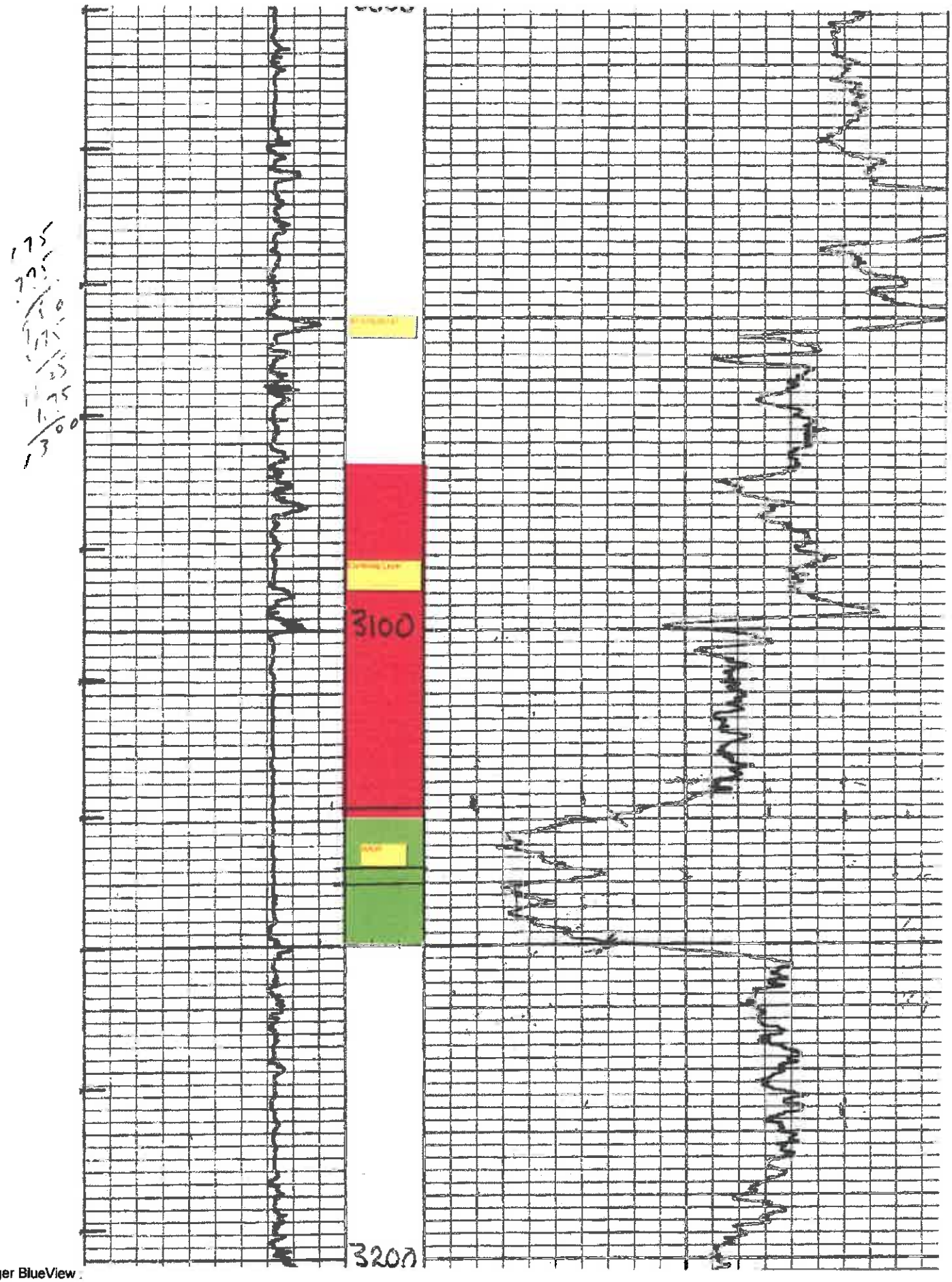

Schlumberger BlueView

FAY 144

SCHLUMBERGER

FORMATION DENSITY LOG

Gamma-Gamma

SCHLUMBERGER WELL SURVEYING CORPORATION

Houston, Texas

COUNTY / FIELD or LOCATION / WELL / COMPANY

COMPANY OLEFINS Division of Union Carbide

WELL Loup Creek #16

FIELD Page

COUNTY Fayette STATE W. VA

Location: ON waters of Loup Creek

Sec. ____ Twp. ____ Rge. ____

Other Services: END, Temp com

Permanent Datum: GL ; Elev.: 1483

Log Measured From DF , 5 Ft. Above Perm. Datum

Drilling Measured From DF

Elev.: K.B. ____ D.F. ____ G.L. 1483

Date	1/24/65
Run No.	ONE
Type Log	GR-FDL
Depth—Driller	2570
Depth—Logger	2563
Bottom logged interval	2562
Top logged interval	1600
Type fluid in hole	MT
Salinity, PPM Cl.	
Density	
Level	
Max rec. temp., deg F.	
Operating rig time	4 hrs
Recorded by	MALONE / CUTHBERT
Witnessed by	Moore

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RUN No.	BORE-HOLE RECORD Bit	From	To	CASING RECORD Size	Wgt.	From	To
ONE	~~6 3/4~~ 7"	SURF	TD	7		SURF	1520

FOLD HERE

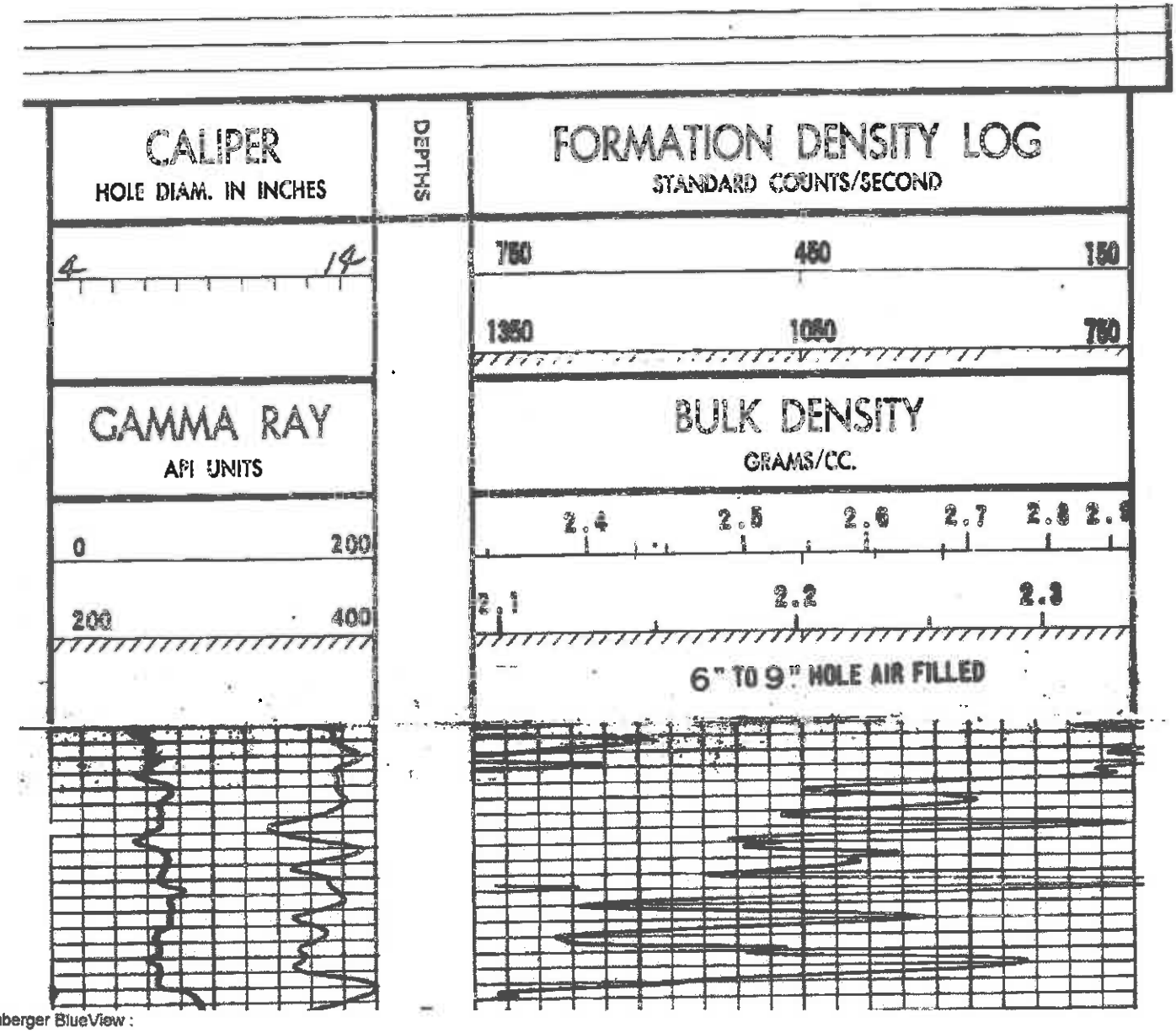
EQUIPMENT DATA

	Gamma-Gamma	General
Run No.	ONE	ONE
Hoist Truck No.	C	290
Inst. Truck No.		
Tool Serial No.	4 1/8	36
Location	0	HUNT
Type	SCINT	

LOGGING DATA

General Run No.	Depths From	Depths To	Speed Ft/Min.	T.C. Sec.	Sens. Settings	Gamma Ray Zero Div. L or R	API Units per Log Div.	T.C. Sec.	Sens. Settings	Gamma-Gamma Zero: Div. R. of Zero of Track II	Standard CPS per Log Div.
ONE	TD	SURF	30	2	500	Zero	20	2	300	25	30

Remarks:



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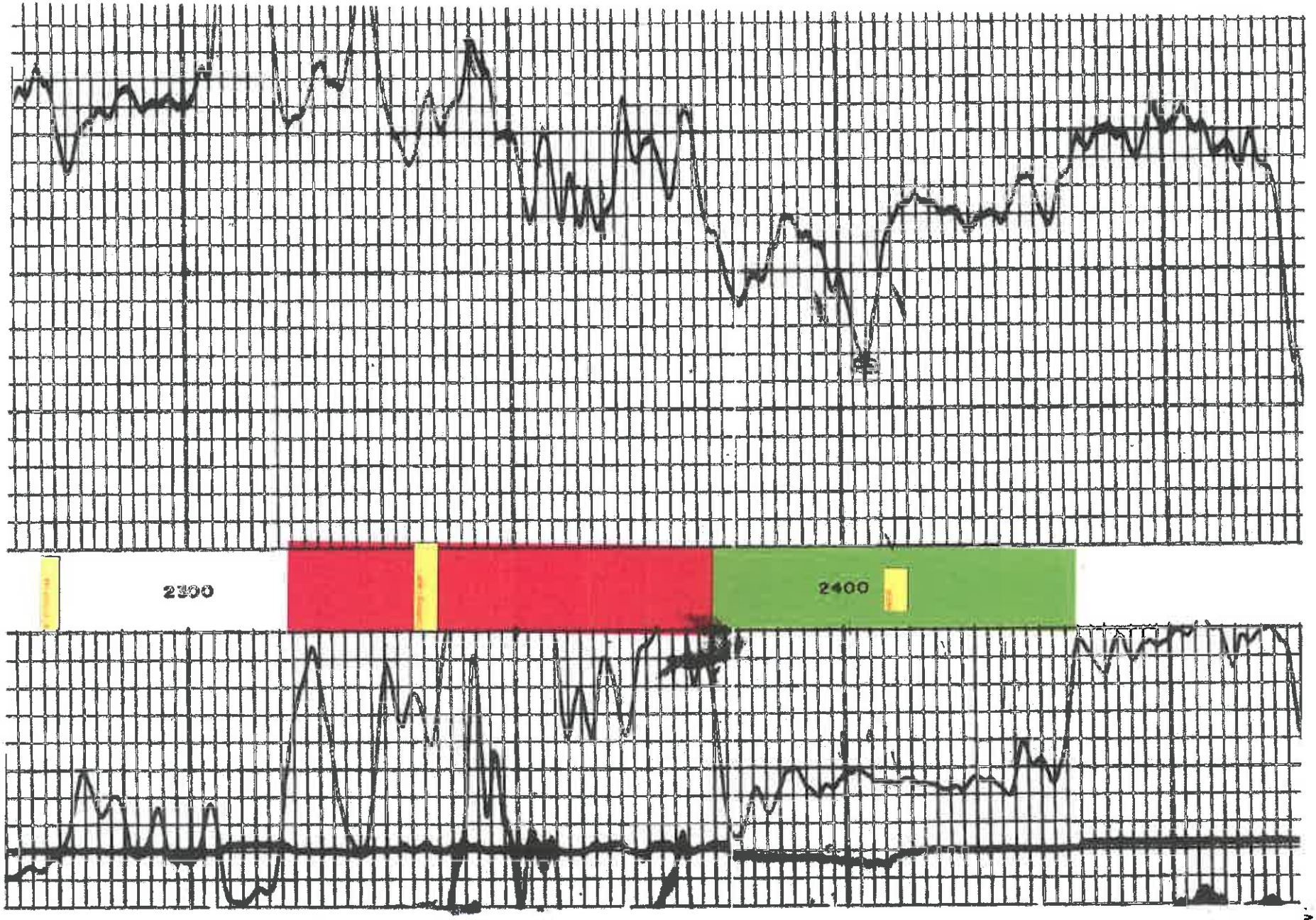

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BEST COPY available

Birdwell

Density Log

COMPANY Ashland Oil And Refining Co.

WELL Costera Gas And Fuel # 39

FIELD Buellton

COUNTY Fayette STATE W. Va.

LOCATION: Loup Creek

OTHER SERVICES: Temp. Gamma Neutron

ELEVATIONS: K.B. 1356 D.F. 1354 G.L. 1354

SEC. TWP. RGE.

PERMANENT DATUM: Ground Level ELEV. 1354'

MEASURED FROM: K.B. 12 ft above perm. datum

NO MEASURED FROM: K.B. 12 ft above perm. datum

DATE: 13 Nov. 1964

RUN NO.: 1

LOG: Density

1 - CABLE: 2506'

RM LOGGED INTERVAL: 2506' 2503'

LOGGED INTERVAL: 2503' 1500'

FLUID IN HOLE: Dry

DENSITY PPM CL.: -1

DENSITY LB./GAL.: -1

BHT: 82.5°

MAX. TEMP. - DEGR. F

RECORDING TIME

RECORDED BY: Mullins

WITNESSED BY: Kuschelos

LOCATION: #7 St. Albans, W. Va.

BORE HOLE RECORD

BIT	FROM	TO
6 1/4"	1535'	T.D.

CASING RECORD

SIZE	WGT.	FROM	TO
7"	20	0	1535'

FIELD PRINT

SSC 647

EQUIPMENT DATA

GAMMA-GAMMA				GENERAL			
RUN NO.	1			HOIST TRUCK NO.	1656		
TOOL MODEL NO.	4AHB			INST. TRUCK NO.	1656		
DIAMETER	5"			TOOL SERIAL NO.	1		
DETECT. MODEL NO.	N/A			LOCATION	#7, St. Albans, W. Va.		
TYPE	Scint.						

LOGGING DATA

GENERAL				GAMMA-GAMMA				
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN	CALIBRATION DATA		T. C. SEC.	SENS. SETTINGS	ZERO DIV. L OR R	COUNTS PER MIN. PER LOG DIV.
1	1500'	2503	20	BLOCK TYPE	Alum.	3	60K	8R	1008
				DENSITY - GMS./CC	2.7				
				K COUNTS PER MINUTE – BLOCK	17				
				CONVERSION CURVE					
				GENERATOR FREQUENCY	61 CPS				

REFERENCE LITERATURE: Well Records

REMARKS: Survey Run for purpose of formation evaluation

N/A Information Not Available

* Birdwell Measurements

PROXIMITY INDEX | DEPTHS | BULK DENSITY

SEPARATION INCHES
1 MIN. TIME MARKERS

GRAMS/CC.

1 0 2.3 2.4 2.5 2.6 2.7 2.8 2.9

After Log Calibrations

37.2 Divisions
61 CPS
Zero 8 Divisions Right This Line

BIRDWELL DIV., S.S.C.

Schlumberger BlueView

CHART NO. 5-100B BIRDWELL DIV., S.S.C. CHART NO. 5-100B

FAY 146

SCHLUMBERGER

GAMMA RAY - NE

COUNTY FAYETTE
FIELD or LOCATION WILDCAT
WELL BERWIND-WHITE NO. 1
COMPANY BERWIN-WHITE COAL MINING COMPANY

COMPANY BERWIND- WHITE COAL MINING COMPANY
WELL BERWIND- WHITE COAL NO. 1
FIELD WILDCAT
COUNTY FAYETTE 146 STATE WEST VIRGINIA

Location:
Sec. ____ Twp. ____ Rge. ____

Other Services:
FDL
IND
TEMP

Permanent Datum: GROUND LEVEL ; Elev.: 2100
Log Measured From K.B. , 7 Ft. Above Perm. Datum
Drilling Measured From K.B.

Elev.: K.B. 2107
D.F.
G.L. 2100

Date	12-18-64
Run No.	ONE
Type Log	GRN
Depth—Driller	3250
Depth—Logger	3251
Bottom logged interval	3250
Top logged interval	00
Type fluid in hole	EMPTY
Salinity, PPM Cl.	
Density	
Level	206 (BEHIND 7")
Max rec. temp., deg F.	81
Operating rig time	1 HOUR
Recorded by	KELLY
Witnessed by	TRITTIPO

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RUN No.	BORE-HOLE RECORD Bit	From	To	CASING RECORD Size	Wgt.	From	To
ONE	6 1/4	CASING	T.D.	7"		0	1726

EQUIPMENT DATA

	Gamma Ray	Neutron
Run No.	ONE	ONE
Tool Model No.	GNT-G	N-GR
Diameter	3 7/8	GNT-G
Det'r Model No.	SGD-F	3 7/8
Type	SCINT	NLD-E
Length	8"	GM
Dist. to N. Source	84"	6"
Source Model No.		NLS-C
Serial No.		190
Spacing		31.5" S-D
Type		PU BE
Strength		5.1 CURIE

General

Hoist Truck No.	608
Inst. Truck No.	608
Tool Serial No.	H-214
Location	COLUMBUS

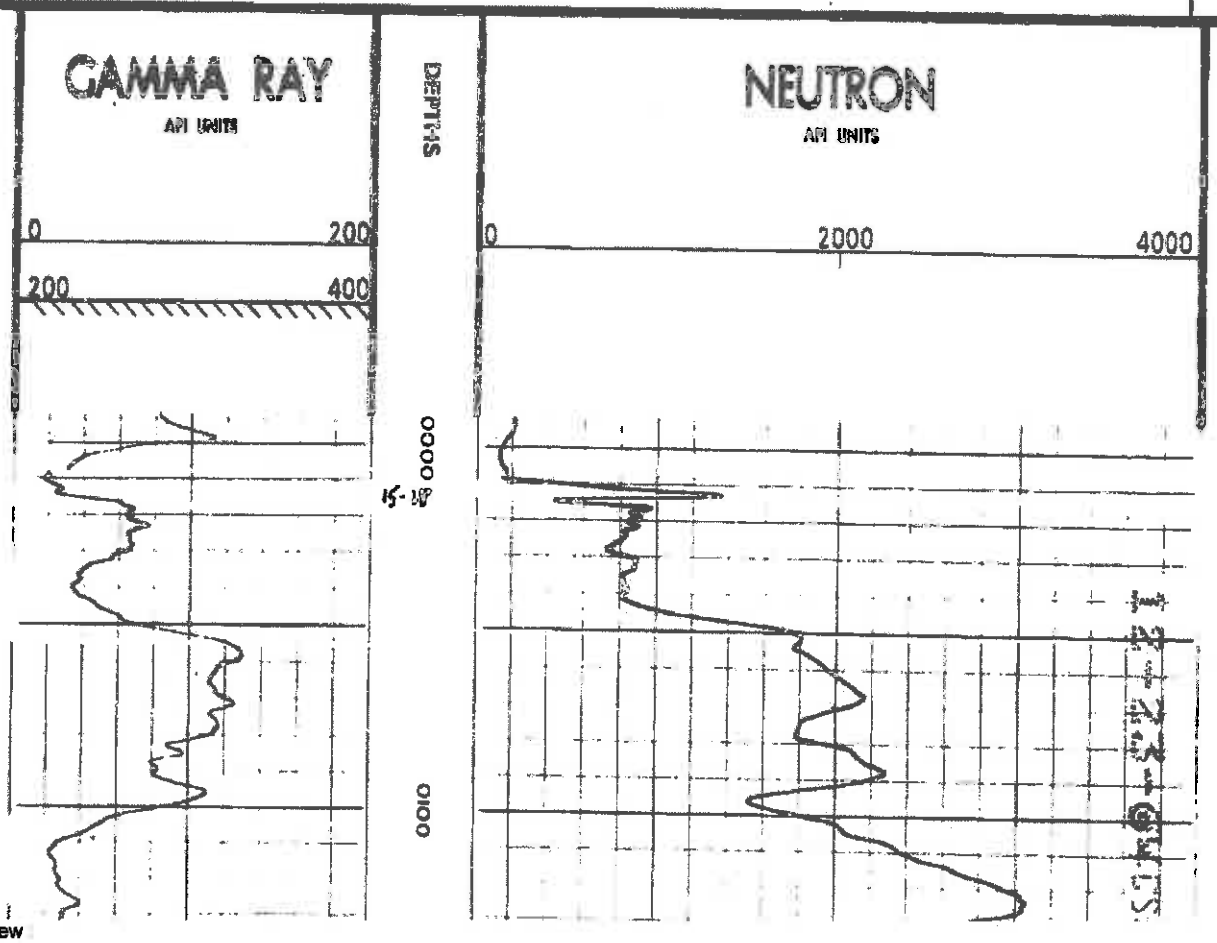
LOGGING DATA

Run No.	General Depths From	To	Speed Ft/Min.	T.C. Sec.	Sens. Settings	Zero Div. L or R	API G.R. Units per Log Div.	T.C. Sec.	Sens. Settings	Zero Div. L or R	API N. Units per Log Div.

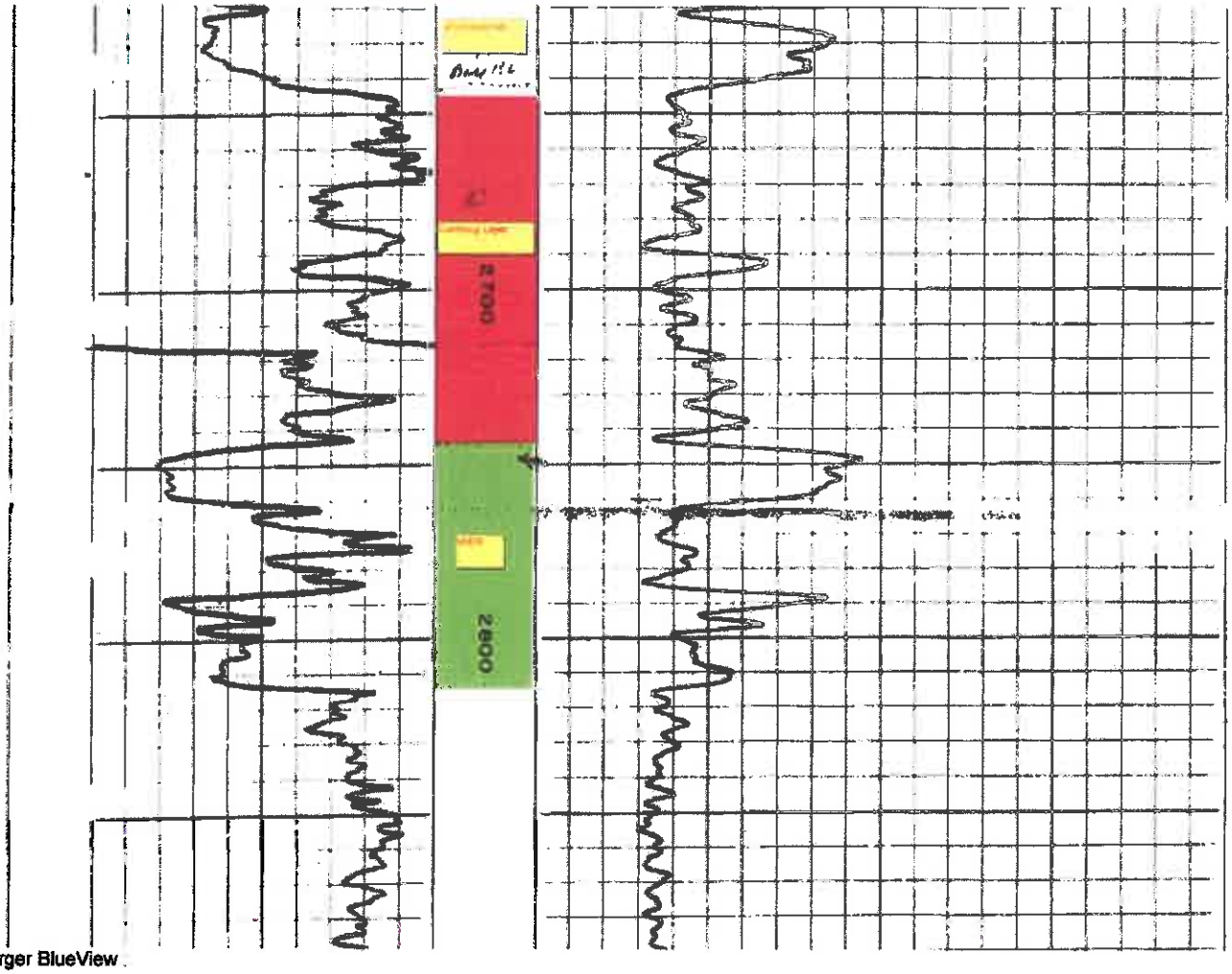
1	0	1.0	60	1	400	0	20	1	200	0	200		

Reference Literature:

Remarks:



Schlumberger BlueView



Schlumberger BlueView

PLANET ENERGY

FILE NO

COMPANY PEAKE PETROLEUM COMPANY

WELL NEW RIVER CO. DILLON LANDS #4-15B

FIELD

COUNTY FAYETTE STATE WEST VIRGINIA

LOCATION PERMIT NO. FAY-159

SEC TWP RGE

Other Services: I/L TEMP

Permanent Datum GROUND LEVEL Elev. 1514.98 Elev.: K.B. 1528.28
Log Measured from KELLY BUSHING 12 Ft. Above Permanent Datum D.F.
Drilling Measured from KELLY BUSHING G.L. 1514.98

Date	6-2-65
Run No.	ONE
Type Log	GGC
Depth-Driller	2443
Depth-Logger	2443
Bottom Logged Interval	2441
Top Logged Interval	1000
Type Fluid in Hole	DRY
Salinity, P.P.M. Cl.	
Density lb./gal.	
Level	
Max. Rec. Temp. Deg. F	
Est. Cem. Top	
Equipment Location	BS
Recorded By	HAS
Witnessed By	MR. DONATO
	SHAW

Casing Record

	Size	Wgt.	From	To
Surface	7"		SURFACE	128'
Prod.				

Bore Hole Record

Bit No.	Size	From	To
1	6 1/4	128'	T.D.

FOLD HERE

Gamma Ray		Equipment Data		Neutron	
Run No.	ONE	Run No.	ONE		
Tool Model No.	1304	Log Type	GGC		
Diam.	3 5/8"	Tool Model No.	22038		
Detect. Model No.	DG61	Diam.	4 1/2"		
Type	SCINT	Detect. Model No.	L 6 6		
Length	4"	Type	GEIGER		
Dist. to N. Source		Length	4"		
		Source Model No.	S3E10		
General		Serial No.	C-4		
Hoist Truck No.	L 1082	Spacing	11"		
Inst. Truck No.	L 1082	Type	CS-137		
Tool Serial No.	13	Strength	1 CURIE		

Logging Data

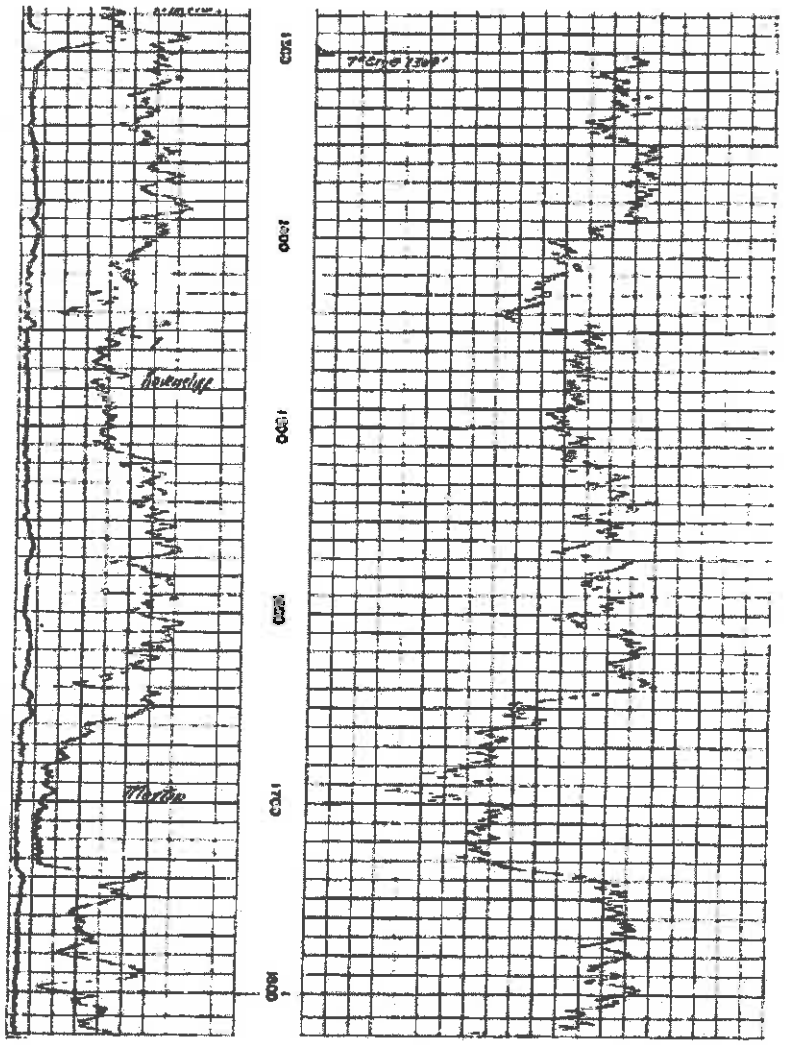
General				Gamma Ray			Neutron		
Run No.	Depths From	Depths To	Speed Ft./Min.	T.C. Sec.	Sens. Settings	Zero Div. L or R	API G.R. Units Per Log Div.	T.C. Sec.	Sens. Settings	Zero Div. L or R	API N Units Per Log Div.
	2439	1000	800	3	525	0	20	3	600	138	12 [illegible]

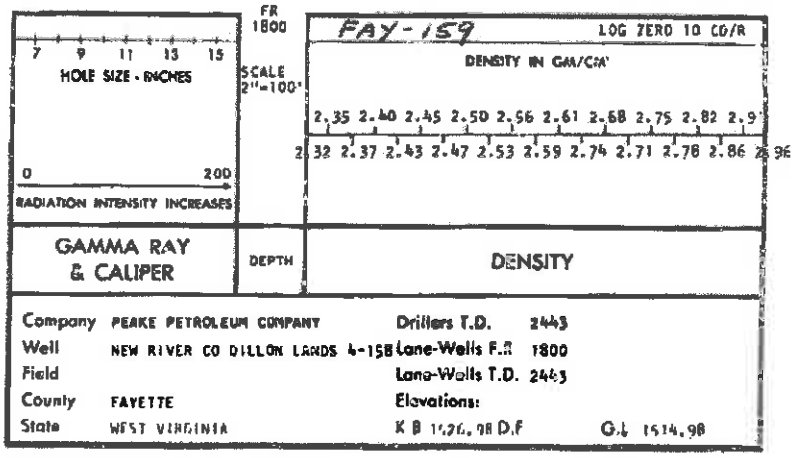
Remarks

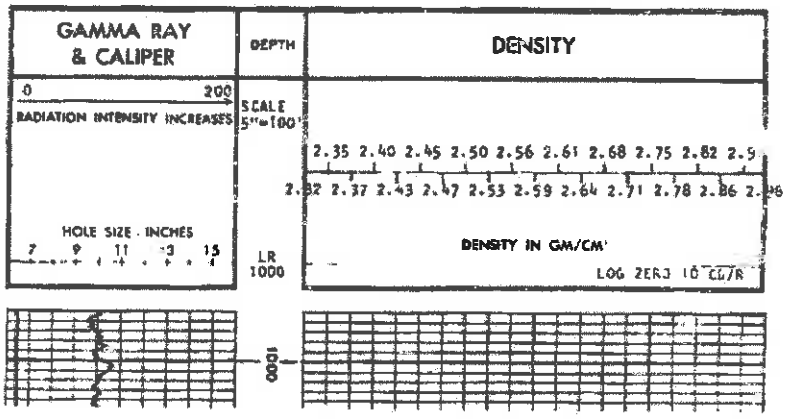
Reference Literature

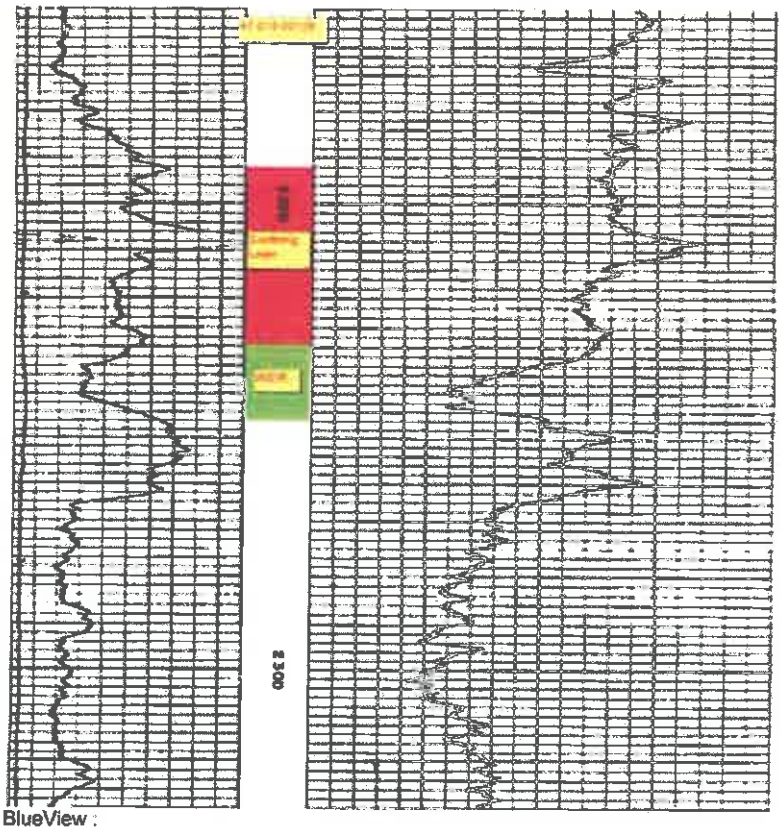
BEST COPY available

GAMMA RAY & CALIPER	DEPTH	DENSITY
0 — 200 RADIATION INTENSITY INCREASES	SCALE 2"=100'	2.35 2.40 2.45 2.50 2.56 2.61 2.68 2.75 2.83 2.91
		2.32 2.37 2.43 2.47 2.53 2.59 2.74 2.71 2.78 2.86 2.96
HOLE SIZE - INCHES 7 9 11 13 15	LR 1050'	DENSITY IN GM/CM³
		LOG ZERO IS CD/R


1800
1900
2000
2100
2200
2300
Riverside
Martin


FR
1800
FAY-159
LOG ZERO IO CO/R
7 9 11 13 15
HOLE SIZE - INCHES
SCALE
2"=100'
DENSITY IN GM/CM'
2.35 2.40 2.45 2.50 2.56 2.61 2.68 2.75 2.82 2.9
2.32 2.37 2.43 2.47 2.53 2.59 2.74 2.71 2.78 2.86
0
200
RADIATION INTENSITY INCREASES
GAMMA RAY & CALIPER
DEPTH
DENSITY
Company PEAKE PETROLEUM COMPANY
Drillers T.D. 2443
Well NEW RIVER CO DILLON LANDS 4-158
Lane-Wells F.R 1800
Field
Lane-Wells T.D. 2443
County FAYETTE
Elevations:
State WEST VIRGINIA
K B 1526.98 D.F
G.L 1514.98


GAMMA RAY & CALIPER
DEPTH
DENSITY
0
200
RADIATION INTENSITY INCREASES
SCALE
5"=100'
2.35 2.40 2.45 2.50 2.56 2.61 2.68 2.75 2.82 2.9
2.32 2.37 2.43 2.47 2.53 2.59 2.64 2.71 2.78 2.86
HOLE SIZE - INCHES
7 9 11 13 15
LR
1000
DENSITY IN GM/CM'
LOG ZERO IO CO/R
1000



Schlumberger BlueView :

Schlumberger

COMPENSATED FORMATION DENSITY LOG

Gamma Gamma

BEST COPY available

COUNTY ____ FIELD or LOCATION ____ WELL ____ COMPANY ____

COMPANY ASHLAND OIL, INCORPORATED

WELL POCAHONTAS LAND CORPORATION #31

FIELD WILDCAT

COUNTY FAYETTE STATE WEST VIRGINIA

Location: FAY 252
2100'S OF 38°00'
600'E OF 81°15'

Other Services: DIL

Permanent Datum: GROUND LEVEL ; Elev.: 2080.7
Log Measured From KB , 10 Ft. Above Perm. Datum
Drilling Measured From KB

Elev.: K.B. 2090.7
D.F. -
G.L. 2080.7

Date	9/10/74			
Run No.	ONE			
Depth—Driller	3435			
Depth—Logger	3425			
Btm. Log Interval	3424			
Top Log Interval	100			
Casing - Driller	7" @ 2032	@	@	@
Casing—Logger	2028			
Bit Size	6 1/4 "			
Type Fluid in Hole	AIR			
Fluid Level	NIL			
Dens. / Visc.	- / -	/	/	/
pH / Fluid Los	- / - ml	/ ml	/ ml	/ ml
Source of Sample	-			
R_m @ Meas. Temp.	- @ - °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	- @ - °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	- @ - °F	@ °F	@ °F	@ °F
Source: R_{mf} / R_{mc}	- / -	/	/	/
R_m @ BHT	- @ - °F	@ °F	@ °F	@ °F
Time Since Circ.	NC			
Max. Rec. Temp.	87° °F	°F	°F	°F
Equip / Location	3873 / WOOSTER	/	/	/
Recorded By	T.R. ETTER			
Witnessed By	MR. CATHY			

SWS 1513-F

FOLD HERE

The well name, location and borehole reference data were furnished by the customer.

CHANGES IN MUD TYPE OR ADDITIONAL SAMPLES

Date	Sample No.	Depth - Driller	Type Fluid	Source of Sample	R_m @ Meas. Temp.	R_{mf} @ Meas. Temp.	R_{mc} @ Meas. Temp.	R_m @ BHT	Dens. / Visc.	pH / Fluid Loss
					@ °F	@ °F	@ °F	@ °F	/	/ ml
					@ °F	@ °F	@ °F	@ °F	/	/ ml

% Water by Vol.
% Oil by Vol.
% Solids by Vol.
Solids Av. Sp. Gr.

SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole

LOGGING DATA

FDC Selectors

Liquid Density	Grain Density	Hole Fluid	Porosity Scale	From	To	
1.0	2.68	LIQUID	30/10/-10	3224	3320	RPT
1.0	2.68	AIR	30/10/-10	3424	3030	RPT
1.0	2.71	AIR	30/10/-10	3424	2028	LOG

EQUIPMENT DATA

Run No. ONE

Panel No. PGP-E-672

Cart No.	PGC-8321
Skid No.	PDH-D-1081
Sonde No.	PGS-E-74
Source	2758
Calibrator	126
GR Cart.	GNC-H
TTR	-
Mem Panel	MMP-B-308

REMARKS

Service Order No. - 99304

NOTE: EXAMPLE OF SONDE TILT ON LOG WHICH CLEARS UP @ 3150'. I.E. E IS GREATER BUT EB SAME AS TOOL COMPENSATES FOR TILTED PAD.

BIT SIZE/CASING DATA

Bit	From	To	Csg. Size	Csg. Wt.	From	To

CALIBRATION DATA

Run No.	Gamma Ray			FDC — Before Log — ACPS		FDC — After Log — ACPS	
	API Scale	Background CPS	Total CPS	P_1	P_2	P_1	P_2
1	200	90	500	380	680	380	680
2							
3							
4							

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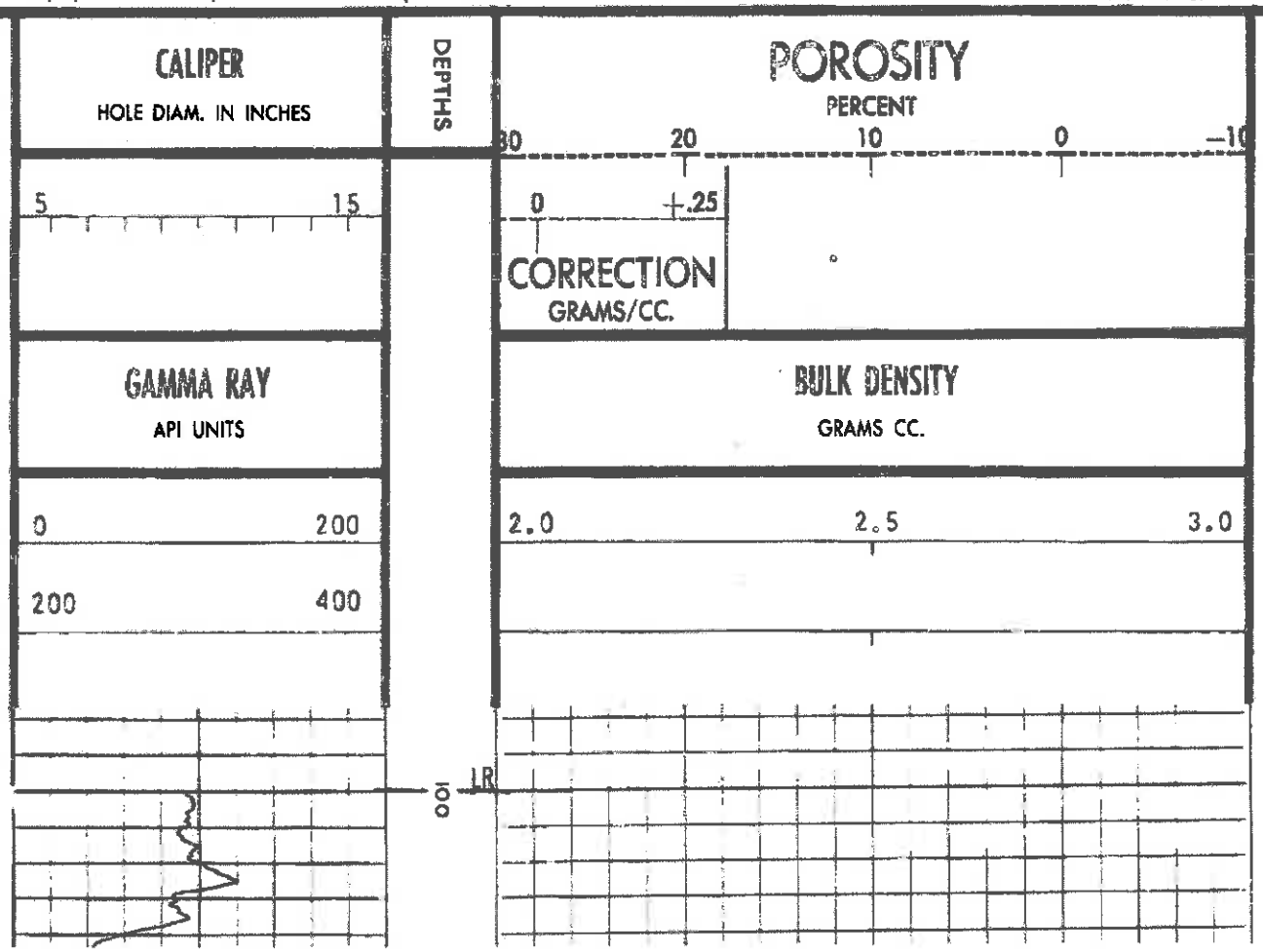

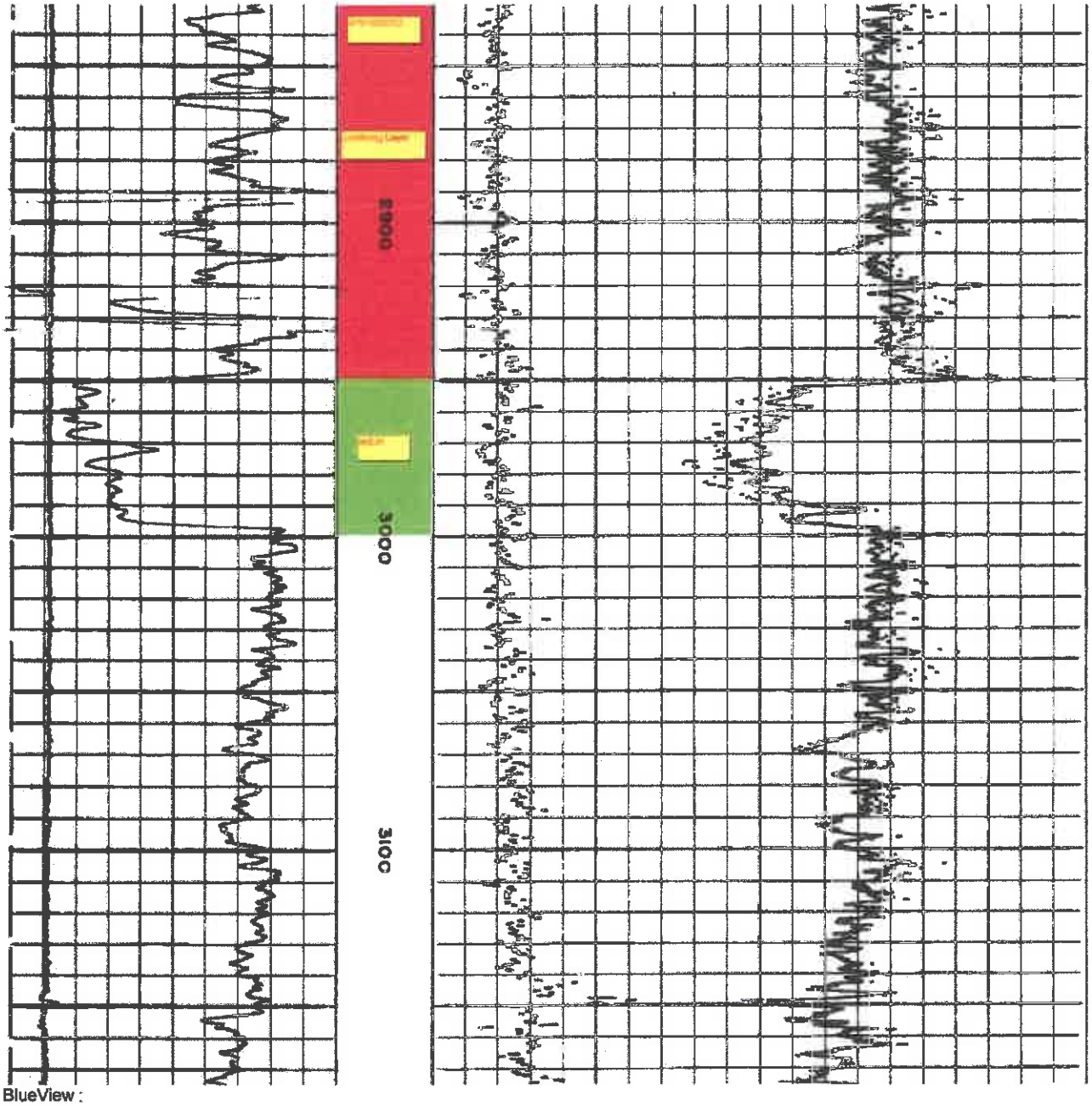

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COMPENSATED FORMATION DENSITY LOG

Gamma-Gamma

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COUNTY
FIELD or LOCATION
WELL
COMPANY

COMPANY ASHLAND EXPLORATION

WELL POCAHONTAS LAND CORP. #32

FIELD KANAWHA DIST

COUNTY FAYETTE STATE WEST VIRGINIA

Location: PERMIT #292
4700' S 38°5' X 2150' W 81°15'
QUAD POWELLTON (7½) MONTGOMERY (15)
Sec. Twp. Rge.

Other Services:
TEMP
DIL

Permanent Datum: G.L. ; Elev.: 1200
Log Measured From K.B. , 7 Ft. Above Perm. Datum
Drilling Measured From K.B.

Elev.: K.B. 1207
D.F.
G.L. 1200

Date	22 AUG 76			
Run No.	ONE			
Depth—Driller	2317			
Depth—Logger	2325			
Btm Log Interval	2324			
Top Log Interval	1368			
Casing—Driller	8⅝ @ 1363	@	@	@
Casing—Logger	1368			
Bit Size	7⅞			
Type Fluid in Hole	AIR			
Fluid Level	-----			
Dens. / Visc.	--- / ---			
pH / Fluid Los	--- / --- ml	ml	ml	ml
Source of Sample	NONE			
R_m @ Meas. Temp.	--- @ --- °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	--- @ --- °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	--- @ --- °F	@ °F	@ °F	@ °F
Source: R_{mf} / R_{mc}	--- / ---			
R_m @ BHT	--- @ --- °F	@ °F	@ °F	@ °F
Time Since Circ.	-----			
Max. Rec. Temp.	NA °F	°F	°F	°F
Equip. / Location	7699 / PAINTSVILLE			
Recorded By	PURCELL			
Witnessed By	MR CATHEY			

FOLD HERE

The well name, location and borehole reference data were furnished by the customer.

CHANGES IN MUD TYPE OR ADDITIONAL SAMPLES

Date / Sample No.				
Depth - Driller				
Type Fluid				
Source of Sample				
R_m @ Meas. Temp.	@ °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	@ °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	@ °F	@ °F	@ °F	@ °F
R_m @ BHT	@ °F	@ °F	@ °F	@ °F
Dens. / Visc.				
ph / Fluid Loss	ml	ml	ml	ml
% Water by Vol.				
% Oil by Vol.				
% Solids by Vol.				
Solids Av. Sp. Gr.				

SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole

LOGGING DATA

FDC Selectors

Liquid Density	Grain Density	Hole Fluid	Porosity Scale	From	To
1.0	2.68	AIR	20PU/TK	2324	2075
1.0	2.71	AIR	20PU/TK	2075	1650
1.0	2.68	AIR	20PU/TK	1650	1368

EQUIPMENT DATA

Run No.	ONE						
Panel No.	187						
Cart No.	227						
Skid No.	1016						
Sonde No.	120						
Source	50CR						

REMARKS

Service Order No. - 34132

Calibrator	532
GR Cart.	422
TTR	---
Mem Panel	218

BIT SIZE/CASING DATA

Bit	From	To	Csg. Size	Csg Wt.	From	To
7 7/8	1363	2317	8 5/8		SURF	1363

CALIBRATION DATA

Run No.	Gamma Ray			FDC — Before Log — ACPS		FDC — After Log — ACPS	
	API Scale	Background CPS	Total CPS	P_1	P_2	P_1	P_2
1	0-200	800	400	840	1160	840	1160
2							
3							
4							

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CALIPER
HOLE DIAM. IN INCHES

6 — 16

DEPTHS

POROSITY—%
30 — 20 — 10 — 0 — -10
GRAIN DENSITY—2.68 GM/CC FLUID DENSITY—1.00 GM/CC

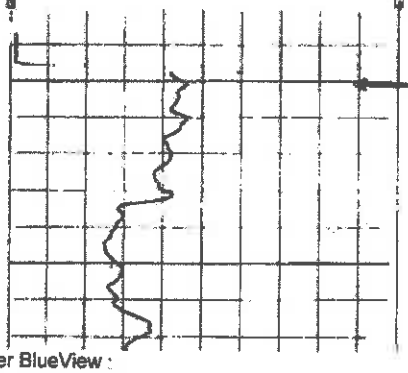
0 — +.25
CORRECTION
GRAMS/CC.

GAMMA RAY
API UNITS

0 — 200
200 — 400

BULK DENSITY
GRAMS CC.

2.0 — 2.5 — 3.0
1.0 — 1.5 — 2.0



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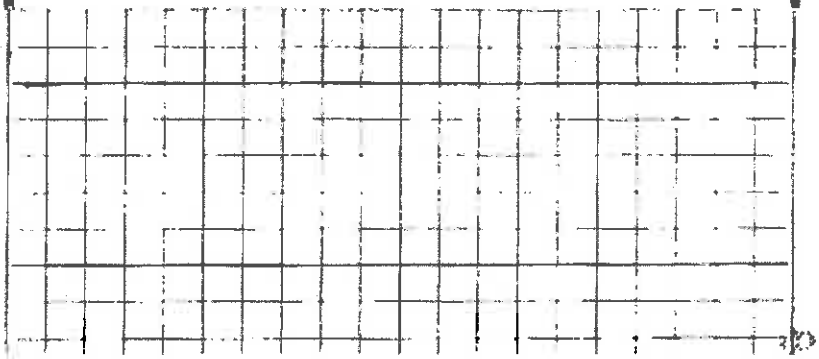

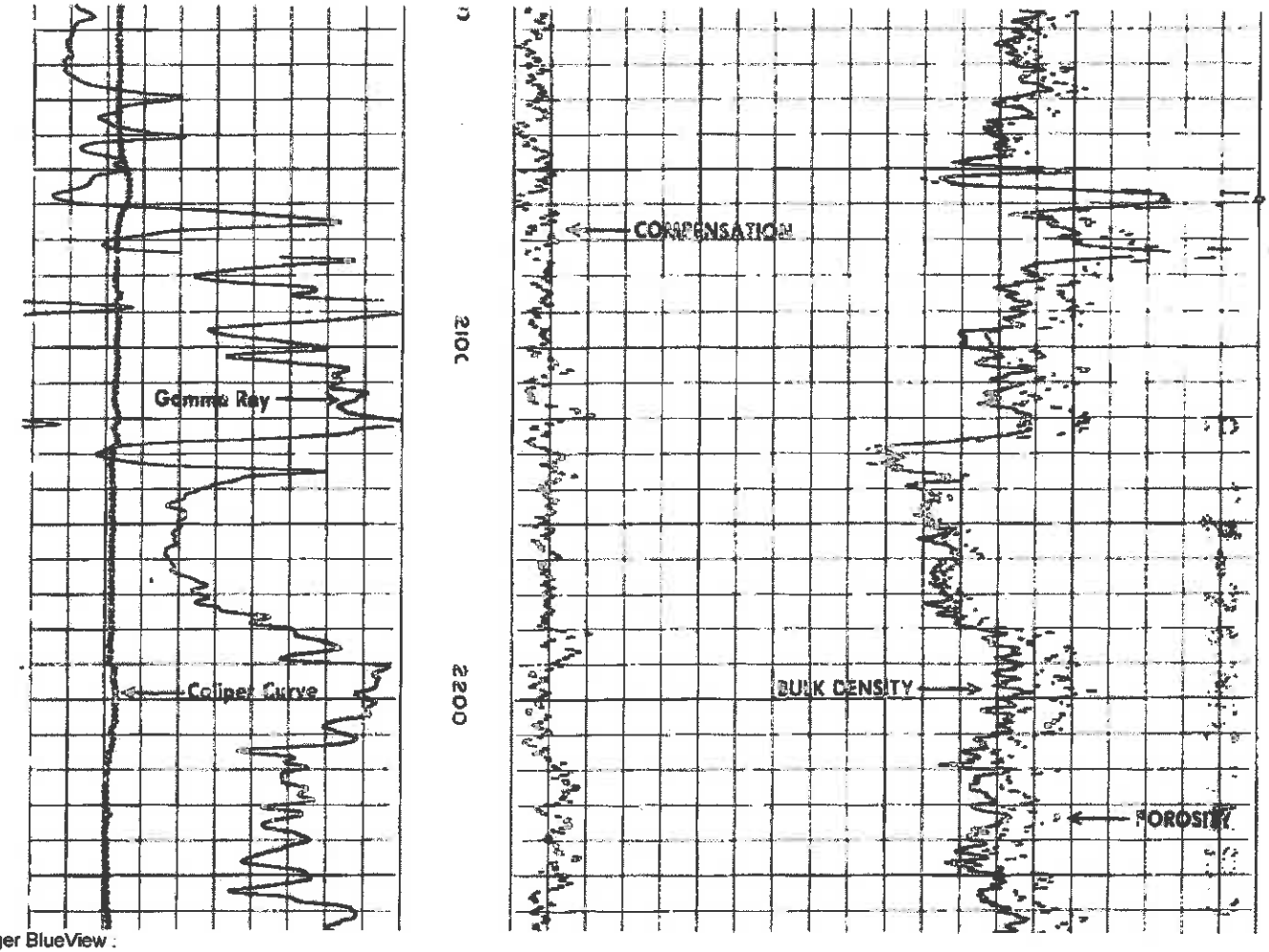

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GDI

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COMPENSATED FORMATION DENSITY LOG INDUCTION LOG

COMPANY ARCO PRODUCTION CO

WELL NORTH HILLS GROUP

FIELD WILD HORSE

COUNTY LAMPASAS STATE TEXAS

TEMP 3rd Other

REPRODUCED BY
Petroleum Information
WICHITA, TEXAS 76301

REFERENCE # 88774

14 COMPLETION RECORD

SPUD DATE

COMP DATE

DST RECORD

API NO.

CASING RECORD

PERFORATING RECORD

ACID FRAC SHOT

I P

GOR GR

T P C P

REMARKS

(7) REPRODUCTION FOR RESALE PROHIBITED

RUN NO.

REMARKS

REMARKS

CALIPER

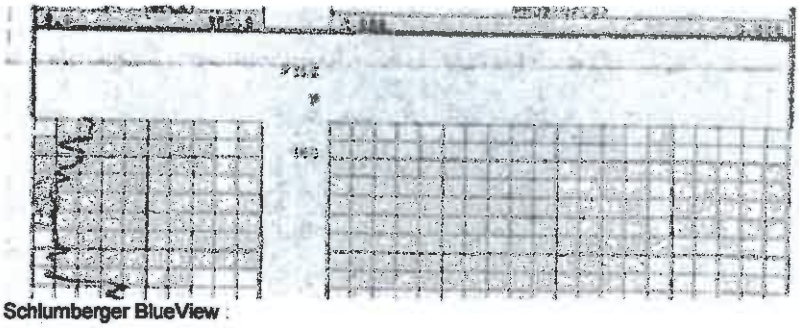
COMPENSATED NEUTRON

GAMMA RAY API UNITS

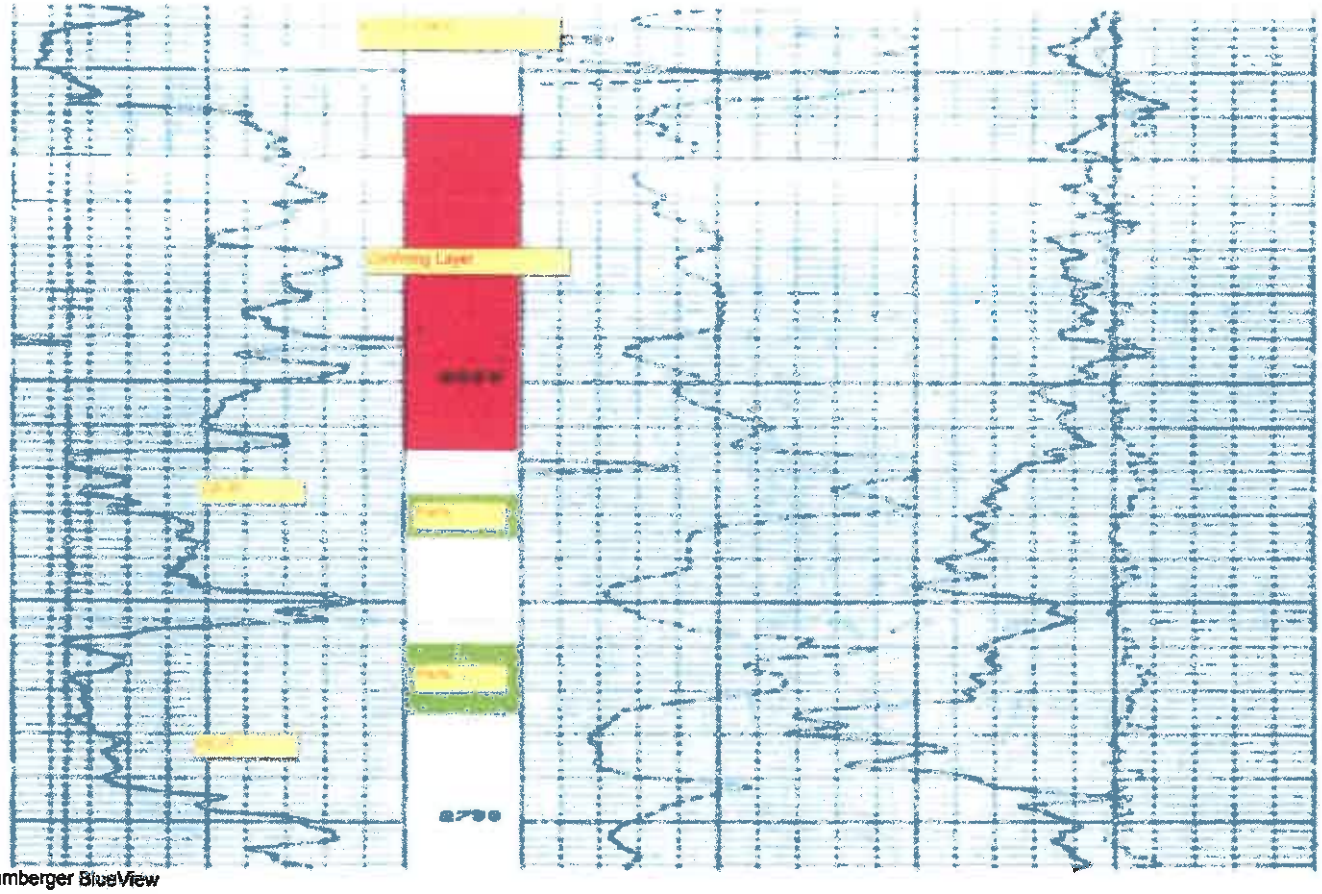
BULK DENSITY GRAMS/CC

RESISTIVITY

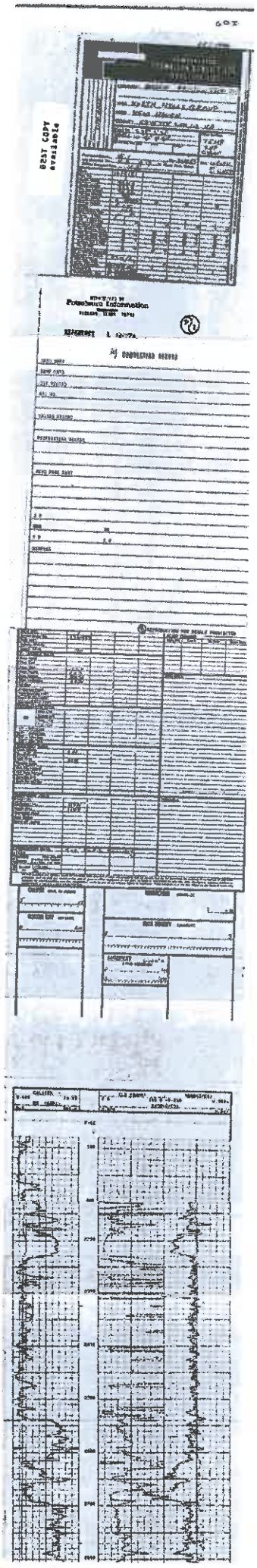
CALI(IN)		ILD (OHMM)	DRHO(G/C3)
5.000 15.00		0.0 100.0	-0.250 0.2500



Schlumberger BlueView



Schlumberger BlueView



COMPANY PANAL PETROLEUM COMPANY
WELL NEW RIVER CO. DILLON LANDS #1-158
FIELD
COUNTY FAYETTE STATE WEST VIRGINIA
PERMIT NO. FAY-159
BEST COPY available
GAMMA RAY & CALIPER
DEPTH
DENSITY
HOLE SIZE - INCHES
DENSITY IN GM/CM³
LOG ZERO IS CB/R
1000
1500
2000
2500
3000
3500

Schlumberger COMPENSATED FORMATION DENSITY LOG

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COUNTY ____ FIELD or LOCATION ____ WELL ____ COMPANY ____

COMPANY ASHLAND OIL, INCORPORATED

WELL POCAHONTAS LAND CORPORATION #31

FIELD WILDCAT

COUNTY FAYETTE STATE WEST VIRGINIA

Location: FAY 252
2100'S OF 38°00'
600'E OF 81°15'

Other Services: DIL

Permanent Datum: GROUND LEVEL, Elev.: 2080.7
Log Measured From: KB, 10 Ft. Above Perm. Datum
Drilling Measured From: KB

Elev.: K.B. 2090.7, D.F. -, G.L. 2080.7

Date	9/10/74			
Run No.	ONE			
Depth—Driller	3435			
Depth—Logger	3425			
Btm. Log Interval	3424			
Top Log Interval	100			
Casing-Driller	7" @ 2032	@	@	@
Casing—Logger	2028			
Bit Size	6 1/4 "			
Type Fluid in Hole	AIR			
Fluid Level	NIL			
Dens. / Visc.	- / -			
pH / Fluid Loss	- / - ml	ml	ml	ml
Source of Sample	-			
R_m @ Meas. Temp.	- @ - °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	- @ - °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	- @ - °F	@ °F	@ °F	@ °F
Source: R_{mf} / R_{mc}	- / -			
R_m @ BHT	- @ - °F	@ °F	@ °F	@ °F
Time Since Circ.	NC			
Max. Rec. Temp.	87° °F	°F	°F	°F
Equip. / Location	3873 / WOOSTER			
Recorded By	T.R. ETTER			
Witnessed By	MR. CATHY			

FOLD HERE The well name, location and borehole reference data were furnished by the customer.

CHANGES IN MUD TYPE OR ADDITIONAL SAMPLES

Date / Sample No.		
Depth - Driller		
Type Fluid		
Source of Sample		
R_m @ Meas. Temp.	@ °F	@ °F
R_{mf} @ Meas. Temp.	@ °F	@ °F
R_{mc} @ Meas. Temp.	@ °F	@ °F
R_m @ BHT	@ °F	@ °F
Dens. / Visc.		
ph / Fluid Loss	ml	ml
% Water by Vol.		
% Oil by Vol.		
% Solids by Vol.		
Solids Av. Sp. Gr.		

SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole

LOGGING DATA

Liquid Density	Grain Density	FDC Selectors: Hole Fluid	Porosity Scale	From	To	
1.0	2.68	LIQUID	30/10/-10	3224	3320	RPT
1.0	2.68	AIR	30/10/-10	3424	3030	RPT
1.0	2.71	AIR	30/10/-10	3424	2028	LOG

EQUIPMENT DATA

Run No.	ONE
Panel No.	PGP-E-672
Cart No.	PGC-8321
Skid No.	PDH-D-1081
Sonde No.	PGS-E-74
Source	2758
Calibrator	126
GR Cart.	GNC-H
TTR	-
Mem Panel	MHP-B-308

REMARKS

Service Order No. - 99304

NOTE: EXAMPLE OF SONDE TILT ON LOG WHICH CLEARS UP @ 3150'. I.E. E IS GREATER BUT Eb SAME AS TOOL COMPENSATES FOR TILTED PAD.

BIT SIZE/CASING DATA

Bit	From	To	Csg. Size	Csg. Wt.	From	To

CALIBRATION DATA

Run No.	Gamma Ray: API Scale	Background CPS	Total CPS	FDC — Before Log — ACPS: P_1	P_2	FDC — After Log — ACPS: P_1	P_2
1	200	90	500	380	680	380	680
2							
3							
4							

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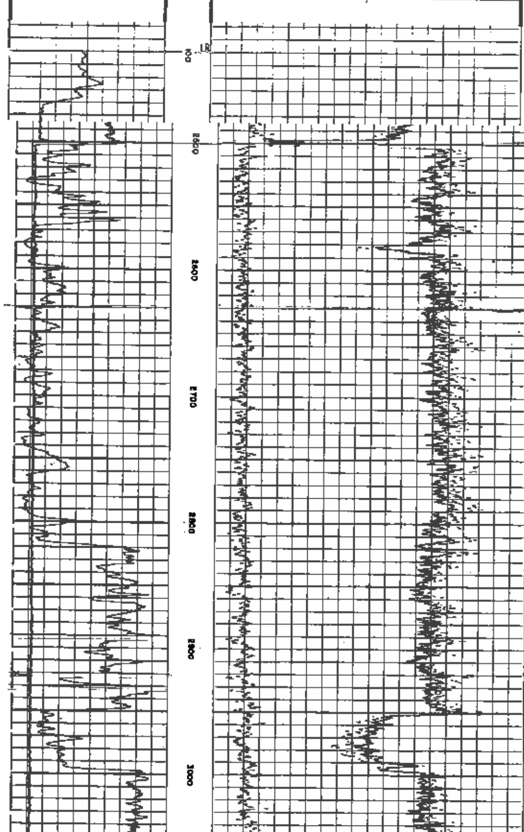
CALIPER HOLE DIAM. IN INCHES 5 15 | DEPTHS | POROSITY PERCENT 30 20 10 0 -10

CORRECTION GRAMS/CC. 0 +.25

GAMMA RAY API UNITS 0 200 / 200 400 | BULK DENSITY GRAMS CC. 2.0 2.5 3.0



252

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COMPENSATED FORMATION DENSITY LOG

Best copy available

COMPANY	ASHLAND EXPLORATION
WELL	POCAHONTAS LAND CORP. #32
FIELD	KANAWHA DIST
COUNTY	FAYETTE
STATE	WEST VIRGINIA
Location	PERMIT #292; 4700' S 38°5' X 2150' W 81°15'; QUAD POWELLTON (7½) MONTGOMERY (15)
Sec. / Twp. / Rge.	
Other Services	TEMP, DIL
Permanent Datum	G.L.; Elev. 1200
Log Measured From	K.B., 7 Ft. Above Perm. Datum
Drilling Measured From	K.B.
Elev.: K.B.	1207
D.F.	
G.L.	1200

Date	22 AUG 76		
Run No.	ONE		
Depth—Driller	2317		
Depth—Logger	2325		
Btm. Log Interval	2324		
Top Log Interval	1368		
Casing—Driller	8⅝ @ 1363	@	@
Casing—Logger	1368		
Bit Size	7⅞		
Type Fluid in Hole	AIR		
Fluid Level	-----		
Dens. | Visc.	--- | ---		
pH | Fluid Loss	--- | --- ml	ml	ml
Source of Sample	NONE		
R_m @ Meas. Temp.	--- @ --- °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	--- @ --- °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	--- @ --- °F	@ °F	@ °F
Source: R_{mf} | R_{mc}	--- | ---		
R_m @ BHT	--- @ --- °F	@ °F	@ °F
Time Since Circ.	-----		
Max. Rec. Temp.	NA °F	°F	°F
Equip. | Location	7699 | PAINTSVILLE		
Recorded By	PURCELL		
Witnessed By	MR CATHEY		

FOLD HERE — The well name, location and borehole reference data were furnished by the customer.

CHANGES IN MUD TYPE OR ADDITIONAL SAMPLES

Date	Sample No.		
Depth - Driller			
Type Fluid			
Source of Sample			
R_m @ Meas. Temp.		@ °F	@ °F
R_{mf} @ Meas. Temp.		@ °F	@ °F
R_{mc} @ Meas. Temp.		@ °F	@ °F
R_m @ BHT		@ °F	@ °F
Dens. | Visc.			
ph | Fluid Loss		ml	ml
% Water by Vol.			
% Oil by Vol.			
% Solids by Vol.			
Solids Av. Sp. Gr.			

SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole

LOGGING DATA

Liquid Density	Grain Density	Hole Fluid	FDC Selectors: Porosity Scale	From	To
1.0	2.68	AIR	20PU/TK	2324	2075
1.0	2.71	AIR	20PU/TK	2075	1650
1.0	2.68	AIR	20PU/TK	1650	1368

EQUIPMENT DATA

Run No.	ONE
Panel No.	187
Cart No.	227
Shld No.	1016
Sonde No.	120
Source	5058
Calibrator	532
GR Cart.	522
TTR	----
Mem Panel	218

REMARKS

Service Order No. - 34132

BIT SIZE/CASING DATA

Bit	From	To	Csg. Size	Csg. Wt.	From	To
7⅞	1363	2317	8⅝		SURF	1363

CALIBRATION DATA

Run No.	Gamma Ray: API Scale	Background CPS	Total CPS	FDC — Before Log — ACPS: P_1	P_2	FDC — After Log — ACPS: P_1	P_2
1	0-200	600	400	840	1160	840	1160
2							
3							
4							

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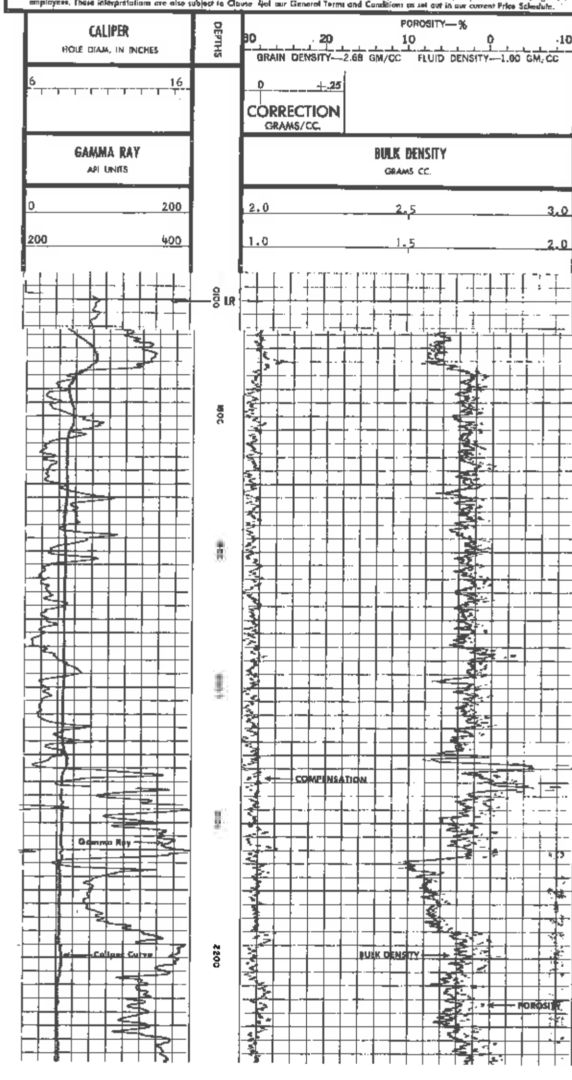

COMPENSATED FORMATION DENSITY LOG

Schlumberger

COMPANY ASHLAND EXPLORATION COMPANY

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WELL POCAHONTAS LAND CORP. #32

FIELD LOUP CREEK

COUNTY FAYETTE STATE WEST VIRGINIA

Location: 2700' S OF 8 MILE; 750' W OF BT 118

Sec. Twp. Rge.

Other Services: DIL; BHC; CNL

Elev.: K.B. 1360; D.F. ; G.L. 1346

Date: 31 AUG 76

Run No.: ONE

Depth-Driller: 2817

Depth-Logger: 2825

Bottom Log Interval: 2822

Top Log Interval: SURF

Casing-Driller: 8 5/8 @ 1813

Casing-Logger: @

Bit Size: 7 7/8

Type Fluid in Hole: AIR

Dens.: ---

Visc.: ---

pH: ---

Fluid Loss: ---

Source of Sample: ---

Rm @ Meas. Temp.: @ °F

Rmf @ Meas. Temp.: @ °F

Rmc @ Meas. Temp.: @ °F

Source: Rmf: ---; Rmc: ---

Rm @ BHT: @ °F

Circulation Stopped: ---

Time Logger on Bottom: ---

Unit Number: 1360

Witnessed by: MR. CARTER / MR. BEES

Equipment: LAIRDHT

Truck No.: 1360

Recorded by: A. L. ZIMMERMAN

Witnessed by: MR. CARTER

Elev.: K.B. 1376; D.F. ; G.L. 1369

Date: 31 AUG 76

Run No.: ONE

Depth-Driller: 2817

Depth-Logger: 2825

Bottom Log Interval: 2822

Top Log Interval: SURF

Casing-Driller: 8 5/8 @ 1813

Casing-Logger: @

Bit Size: 7 7/8

Type Fluid in Hole: AIR

Dens.: ---

Visc.: ---

pH: ---

Fluid Loss: ---

Source of Sample: ---

Rm @ Meas. Temp.: @ °F

Rmf @ Meas. Temp.: @ °F

Rmc @ Meas. Temp.: @ °F

Source: Rmf: ---; Rmc: ---

Rm @ BHT: @ °F

Circulation Stopped: ---

Time Logger on Bottom: ---

Unit Number: 1360

Witnessed by: MR. CARTER / MR. BEES

Equipment: LAIRDHT

Truck No.: 1360

Recorded by: A. L. ZIMMERMAN

Witnessed by: MR. CARTER

File name: The well name, location and borehole reference data were furnished by the customer.

CHANGES IN MUD TYPE OR ADDITIONAL SAMPLES

Date	Sample No.			
Depth - Driller				
Type Fluid				
Source of Sample				
R_m @ Meas. Temp.	@ °F		@ °F	
R_{mf} @ Meas. Temp.	@ °F		@ °F	
R_{mc} @ Meas. Temp.	@ °F		@ °F	
R_m @ BHT	@ °F		@ °F	
Dens. / Visc.				
pH / Fluid Loss		ml		ml
% Water by Vol.				
% Oil by Vol.				
% Solids by Vol.				
Solids Av. Sp. Gr.				

SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole

EQUIPMENT DATA

Run No.	ONE
Panel No.	314
Cart No.	285
Skid No.	1095
Sonde No.	279
Source	5031
Calibrator	BCP-84
GR Cart.	475
TTR	
Main Panel	219

LOGGING DATA

Liquid Density	Grain Density	Hole Fluid	FDC Selectors: Porosity Scale	From	To
1.00	2.65	AIR	00,-10	2817	2550
1.00	2.71	AIR	00,-10	2550	2100
1.00	2.68	AIR	00,-10	2100	1813

BIT SIZE/CASING DATA

Bit	From	To	Csg. Size	Csg. Wt.	From	To
7 8	2817	1813	8 5/8		1813	SURF

REMARKS

Service Order No. - 15155

CALIBRATION DATA

Run No.	Gamma Ray: API Scale	Background CPS	Total CPS	FDC — Before Log — ACPS: P_1	P_2	FDC — After Log — ACPS: P_1	P_2
1	0-200	84	380	835	1677	830	1675
2							
3							
4							

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019-0449

COMPENSATED FORMATION DENSITY LOG

COUNTY	FAYETTE
FIELD	
LOCATION	
WELL	POCAHONTAS LAND CORP. #35
COMPANY	ASHLAND EXP. INC.

COMPANY ASHLAND EXPLORATION INC.

WELL POCAHONTAS LAND CORP. #35

FIELD WILDCAT

COUNTY FAYETTE STATE WEST VIRGINIA

LOCATION: 14600'S 38° x 2900'E / 81° 15'

Other Services: TEMP 15

API SERIAL NO. FAY 419 | SEC. | TWP. | RANGE

Permanent Datum GL, Elev. 1744

Log Measured From KB 9 Ft. Above Perm. Datum

Drilling Measured From KB

Elev.: K.B. 1753 D.F. G.L. 1744

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Date	NOV. 10, 80			
Run No.	ONE			
Depth—Driller	3815			
Depth—Logger	3816			
Btm. Log Interval	3810			
Top Log Interval	100			
Casing—Driller	8 5/8 @ 1970	@	@	@
Casing—Logger	1975			
Bit Size	7 7/8			
Type Fluid in Hole	GAS/AIR			
Dens. | Visc.	-			
pH | Fluid Loss	- ml	ml	ml	ml
Source of Sample	-			
Rm @ Meas. Temp.	- @ °F	@ °F	@ °F	@ °F
Rmf @ Meas. Temp.	- @ °F	@ °F	@ °F	@ °F
Rmc @ Meas. Temp.	- @ °F	@ °F	@ °F	@ °F
Source: Rmf | Rmc	-			
Rm @ BHT	- @ °F	@ °F	@ °F	@ °F
Time: Circulation Stopped	-			
Time: Logger on Bottom	-			
Max. Rec. Temp.	85 °F	°F	°F	°F
Equip. | Location	7200 | ST. ALBANS			
Recorded By	S. GRAYSON			
Witnessed By Mr.	A. CATHEY			

RUN NO.	ONE			
Service Order No.	137237			
Fluid Level	-			
Salinity, PPM CL.	-			
Speed - FPM	60			
EQUIPMENT DATA				
Dens. Panel	31			
Dens. Cart.	225			
Dens. Skid	277			
Dens. Sonde	363			
Dens. Source	5673			
Dens. Calibrator	DIGICAL			
GR Cart.	2531			
Memorizer Panel	219			
Tape Recorder (TR)	-			
Depth Encoder (DE)	-			
Pressure Wheel (CPW)	-			
CALIBRATION DATA				
BKG. CPS	45			
Source CPS	265			
OR Sens. - Cal	200			
T. C. - Cal	1			
F — Before Log	156			
N — Before Log	261			
F — After Log	156			
N — After Log	261			
LOGGING DATA				
Grain Density	2.68/2.71			
Liquid Density	1.0			
Hole Fluid	AIR			
Porosity Scale	30 -10			
G.R. T.C. Logged				
G.R. Sens. Logged	200			
Zero Div. Left	0			
Scale Per 100 Div.	200			

SCALE CHANGES

Type Log	Depth	Up Hole	Down Hole
80	2620	2.71	2.68
80	2169	2.68	2.71

REMARKS:

CALIPER DIAM. IN INCHES 6 — 16

GAMMA RAY API UNITS 0 — 200; 200 — 400

CORRECTION GRAMS/CC

Use this scale when correction curve is presented in Track 2: 0 — +.25

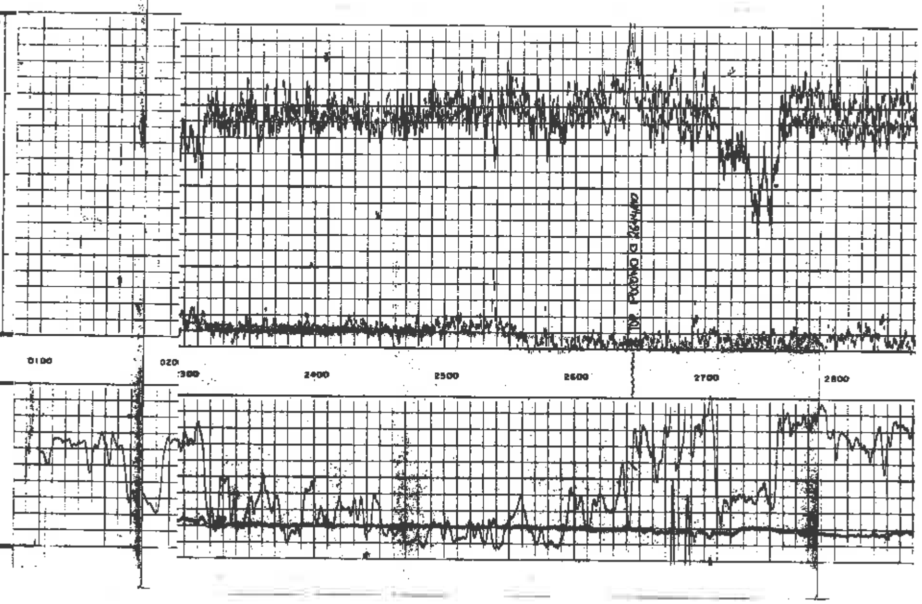
OR

Use this scale when correction curve is presented in Track 3: -.25 — 0 — +.25

BULK DENSITY GRAMS/CC 2.0 — 2.5 — 3.0; 1.0 — 1.5 — 2.0

FORMATION FACTOR ______ MATRIX

DENSITY POROSITY INDEX % 2.68/2.71 MATRIX: 30 20 10 0 -10



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Petroleum Information

27 COMPLETION RECORD

SPUD DATE

DATE DATE

CSG RECORD

API NO.

EST PT RECORD

PERFORATION RECORD

ACID FRAC DATA

I.P.

GOR GR

I.P. GP

REMARKS

REPRODUCTION FOR RESALE PROHIBITED

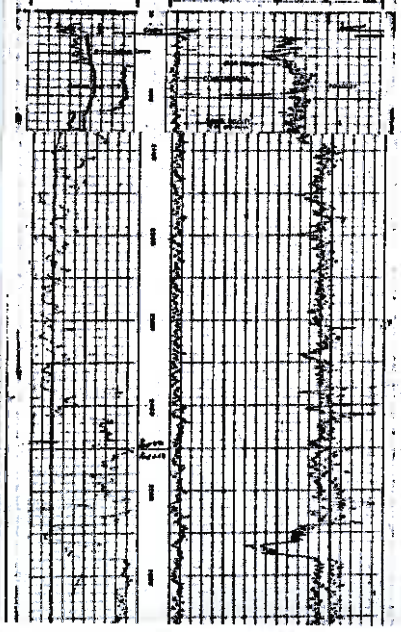
CALIPER

GAMMA RAY

CORRECTION

BULK DENSITY

FORMATION FACTOR



COMPENSATED FORMATION DENSITY LOG

Schlumberger

COMPANY ASHLAND EXPLORATION

SERIAL NUMBER 0938&1

WELL PRESBYTERIAN LAND CORPORATION # 36

FIELD LAUREL CREEK

COUNTY MINGO STATE WEST VIRGINIA

Other Services: TEMP, SGR, AMS10

Permanent Datum: GL
Log Measured From: KB
Drilling Measured From: KB

Elev. (ft.): KB 1992, DF, GL 1982

Date: 9/11/81
Run No.: ONE
Depth-Driller: 6365
Depth-Logger: 6358
Btm. Log Interval: 6357
Top Log Interval: 2000
Casing-Driller: 8 5/8 @ 2017
Casing-Logger: 2017
Bit Size: 7 7/8
Type Fluid in Hole: GEL
pH: 10.0
Source of Sample: -
Rm @ Meas. Temp.: -
Rmf @ Meas. Temp.: -
Rmc @ Meas. Temp.: -
Rm @ BHT: -
Circulation Stopped: -
Logger on Bottom: 18:30
Max. Rec. Temp.: 125 °F
Equipment Location: MARTINSBURG
Recorded By: R. PRESTWOOD
Witnessed By: CARL MANN

Elev. KB 1992 ft. Above Perm. Datum

LOCATION: 660' FSL & 1320' FEL

COUNTY: FIELD: LOCATION: WELL: COMPANY:

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RUN

Service Order No.	220955			
Fluid Level	—			
Salinity, PPM Cl.	—			
Speed - FPM	30			

EQUIPMENT DATA

Dens. Panel	DGP-7A	11		
Dens. Cart.	DGC-3A	619		
Dens. Skid.	DSU-A	684		
Dens. Sonde	DGS-NB	300		
Dens. Source	GSR-5	5295		
Dens. Calibrator	DIGICAL			
GR Cart.	SGT-E	546		
Monitor Panel	LLP-CA	812		
Tape Recorder (TTR)	—			
Depth Encoder (DRR)	—			
Pressure Wheel (CFW)	—			

CALIBRATION DATA

GR	BKG. CPS	35.6±2		
	Source CPS	265.6±2		
	Sens. - Cal	200		
	T. C. - Cal	2		
DC	P1 — Before Log	135.8±4	CALIBC:	164±4
	P2 — Before Log	265.3±4		292±4
	P1 — After Log	136.8±4		164±4
	P2 — After Log	266.3±4		292±4

LOGGING DATA

Grain Density	2.71	See Scale Changes
Liquid Density	1.00	
Hole Fluid	AIR	
Porosity Scale	30 -10	
G.R. T.C. Logged	2	
G.R. Sens. Logged	200	
Zero Qtr. Left	0	
Scale Per 100 Div.	200	

SCALE CHANGES

Type Log	Depth	Up Hole	Down Hole
Density	5700	2.68	2.71
Density	5150	2.71	2.68
Density	3900	2.68	2.71

REMARKS

All interpretations are opinions based on inferences from electrical or other measurements, and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our General Terms and Conditions as set out in our current Price Schedule.

CALIPER DIAM. IN INCHES 6 — 16

GAMMA RAY API UNITS 0 — 200; 200 — 400 Back Up

CORRECTION GRAMS/CC

Use this scale when correction curve is presented in Track 2: 0 — +.25

OR

Use this scale when correction curve is presented in Track 3: -.25 — 0 — +.25

BULK DENSITY GRAMS/CC 2.0 — 2.5 — 3.0; 1.0 — 2.0 Back Up

FORMATION FACTOR _____ MATRIX

DENSITY POROSITY INDEX % 2.71 MATRIX See Scale Changes 30 — 20 — 10 — 0 — -10

02-Apr-2014

Ann Smith
Danny Webb Construction
P.O. Box 267
617 Towne Hollow Road
Lockgelly, WV 25866

Re: Grab (Pit) Work Order: 14031103

Dear Ann,

ALS Environmental received 2 samples on 25-Mar-2014 01:57 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 22.

If you have any questions regarding this report, please feel free to contact me

Sincerely,

Electronically approved by: Rebecca Kiser

Rebecca Kiser
Project Manager

Certificate No: MN 532788

Report of Laboratory Analysis

ALS Group USA, Corp

Date: 02-Apr-14

Client: Danny Webb Construction
Project: Grab (Pit)
Work Order: 14031103

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
14031103-01	Grab (Pit)	Water		3/25/2014 09:30	3/25/2014 13:57	
14031103-02	Trip Blank	Water		3/25/2014	3/25/2014 13:57	

ALS Group USA, Corp

Date: 02-Apr-14

Client: Danny Webb Construction
Project: Grab (Pit)
WorkOrder: 14031103

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter
mg MBAS/L	Milligrams Methylene Blue Active Substances per Liter
mg/L	Milligrams per Liter
s u	Standard Units

ALS Group USA, Corp

Date: *02-Apr-14*

Client: Danny Webb Construction
Project: Grab (Pit)
Sample ID: Grab (Pit)
Collection Date: 3/25/2014 09:30 AM

Work Order: 14031103
Lab ID: 14031103-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			SW8015M		Prep: SW3510 / 3/28/14	Analyst: IT
DRO (C10-C28)	1.9		0.10	mg/L	1	3/29/2014 08:28 AM
ORO (C28-C40)	1.3		0.15	mg/L	1	3/29/2014 08:28 AM
Surr: 4-Terphenyl-d14	*46.9*		*21-90*	*%REC*	1	3/29/2014 08:28 AM
GASOLINE RANGE ORGANICS BY GC-FID			SW8015			Analyst: IT
GRO (C6-C10)	ND		200	µg/L	1	3/27/2014 09:01 PM
Surr: Toluene-d8	*107*		*70-130*	*%REC*	1	3/27/2014 09:01 PM
METALS BY ICP-MS			E200.8		Prep: E200.8 / 3/27/14	Analyst: RH
Barium	160		0.60	mg/L	100	3/28/2014 08:51 PM
Iron	14		0.980	mg/L	1	3/28/2014 03:53 AM
Manganese	0.44		0.0050	mg/L	1	3/28/2014 03:53 AM
Sodium	1,400		2.8	mg/L	10	3/28/2014 01:29 PM
PH			A4500-H B-96			Analyst: JC
pH (laboratory)	6.9		0.020	s.u.	1	3/25/2014 04:05 PM
BTEX			E624			Analyst: BG
Benzene	ND		1.0	µg/L	1	3/28/2014 05:54 PM
Ethylbenzene	ND		1.0	µg/L	1	3/28/2014 05:54 PM
m,p-Xylene	5.3		2.0	µg/L	1	3/28/2014 05:54 PM
o-Xylene	1.8		1.0	µg/L	1	3/28/2014 05:54 PM
Toluene	1.2		1.0	µg/L	1	3/28/2014 05:54 PM
Xylenes, Total	7.1		3.0	µg/L	1	3/28/2014 05:54 PM
Surr: 1,2-Dichloroethane-d4	*99.6*		*70-130*	*%REC*	1	3/28/2014 05:54 PM
Surr: 4-Bromofluorobenzene	*99.4*		*70-130*	*%REC*	1	3/28/2014 05:54 PM
Surr: Dibromofluoromethane	*97.2*		*70-130*	*%REC*	1	3/28/2014 05:54 PM
Surr: Toluene-d8	*98.0*		*70-130*	*%REC*	1	3/28/2014 05:54 PM
ANIONS BY ION CHROMATOGRAPHY			E300.0			Analyst: ED
Chloride	3,200		400	mg/L	400	3/28/2014 06:45 PM
Sulfate	4.4		4.0	mg/L	4	3/28/2014 06:05 PM
ANIONIC SURFACTANTS AS MBAS			A5540C			Analyst: KF
Anionic Surfactants as MBAS	ND		0.40	mg MBAS/L	1	3/26/2014 12:30 PM
OIL AND GREASE			E1664A			Analyst: ND
Oil and Grease	ND		5.0	mg/L	1	3/28/2014 09:00 AM
TOTAL DISSOLVED SOLIDS			A2540 C-97		Prep: Water Ext / 3/31/14	Analyst: AT
Total Dissolved Solids	5,400		33	mg/L	1	3/31/2014 10:02 AM
ORGANIC CARBON, TOTAL			A5310C-96			Analyst: ED

Note: See Qualifiers page for a list of qualifiers and their definitions

ALS Group USA, Corp

Date: *02-Apr-14*

Client: Danny Webb Construction
Project: Grab (Pit)
Sample ID: Grab (Pit)
Collection Date: 3/25/2014 09:30 AM

Work Order: 14031103
Lab ID: 14031103-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Organic Carbon, Total	7.8		2.0	mg/L	4	3/30/2014 07:58 PM

Note: See Qualifiers page for a list of qualifiers and their definitions

ALS Group USA, Corp

Date: *02-Apr-14*

Client: Danny Webb Construction
Project: Grab (Pit)
Sample ID: Trip Blank
Collection Date: 3/25/2014

Work Order: 14031103
Lab ID: 14031103-02
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
BTEX			**E624**			**Analyst: RS**
Benzene	ND		1.0	µg/L	1	3/27/2014 05:42 PM
Ethylbenzene	ND		1.0	µg/L	1	3/27/2014 05:42 PM
m,p-Xylene	ND		2.0	µg/L	1	3/27/2014 05:42 PM
o-Xylene	ND		1.0	µg/L	1	3/27/2014 05:42 PM
Toluene	ND		1.0	µg/L	1	3/27/2014 05:42 PM
Xylenes, Total	ND		3.0	µg/L	1	3/27/2014 05:42 PM
Surr: 1,2-Dichloroethane-d4	*102*		*70-130*	*%REC*	1	3/27/2014 05:42 PM
Surr: 4-Bromofluorobenzene	*94.6*		*70-130*	*%REC*	1	3/27/2014 05:42 PM
Surr: Dibromofluoromethane	*98.0*		*70-130*	*%REC*	1	3/27/2014 05:42 PM
Surr: Toluene-d8	*102*		*70-130*	*%REC*	1	3/27/2014 05:42 PM

Note: See Qualifiers page for a list of qualifiers and their definitions

ALS Group USA, Corp

Date: 02-Apr-14

Client: Danny Webb Construction
Work Order: 14031103
Project: Grab (Pit)

QC BATCH REPORT

Batch ID: 56975 Instrument ID GC8 Method: SW8015M

MBLK Sample ID: DBLKW1-56975-56975 Units: mg/L Analysis Date: 3/28/2014 06:29 AM
Client ID: Run ID: GC8_140328A SeqNo:2691264 Prep Date: 3/28/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	ND	0.10								
ORO (C28-C40)	ND	0.10								
Surr: 4-Terphenyl-d14	*0.03025*	0	*0.05*	0	*60.5*	*21-90*		0		

LCS Sample ID: DLCSW1-56975-56975 Units: mg/L Analysis Date: 3/28/2014 06:59 AM
Client ID: Run ID: GC8_140328A SeqNo:2691266 Prep Date: 3/28/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	3.206	0.10	5	0	64.1	44-116		0		
ORO (C28-C40)	3.355	0.10	5	0	67.1	44-116		0		
Surr: 4-Terphenyl-d14	*0.02661*	0	*0.05*	0	*53.2*	*21-90*		0		

MS Sample ID: 14031103-01F MS Units: mg/L Analysis Date: 3/28/2014 07:28 AM
Client ID: Grab (Pit) Run ID: GC8_140328A SeqNo:2691267 Prep Date: 3/28/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	28.28	1.0	50	1.907	52.7	44-116		0		
ORO (C28-C40)	31.23	1.0	50	1.281	59.9	44-116		0		
Surr: 4-Terphenyl-d14	*0.2395*	0	*0.5*	0	*47.9*	*21-90*		0		

MSD Sample ID: 14031103-01F MSD Units: mg/L Analysis Date: 3/28/2014 07:58 AM
Client ID: Grab (Pit) Run ID: GC8_140328A SeqNo:2691269 Prep Date: 3/28/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	29.12	1.0	50	1.907	54.4	44-116	28.28	2.92	30	
ORO (C28-C40)	31.38	1.0	50	1.281	60.2	44-1930	31.23	0.473	30	
Surr: 4-Terphenyl-d14	*0.2362*	0	*0.5*	0	*47.2*	*21-90*	0.2395	*1.39*	*30*	

The following samples were analyzed in this batch: 14031103-01F

Note: See Qualifiers Page for a list of Qualifiers and their explanation

Client: Danny Webb Construction
Work Order: 14031103
Project: Grab (Pit)

QC BATCH REPORT

Batch ID: R137895 Instrument ID GC9 Method: SW8015

MBLK Sample ID: GBLKW1-140327-R137895
Client ID: Run ID: GC9_140327A Units: µg/L SeqNo: 2688226 Prep Date: Analysis Date: 3/27/2014 06:28 PM DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	ND	200								
Surr: Toluene-d8	*112*	0	*100*	0	*112*	*70-130*	0			

LCS Sample ID: GLCSW1-140327-R137895
Client ID: Run ID: GC9_140327A Units: µg/L SeqNo: 2688225 Prep Date: Analysis Date: 3/27/2014 06:03 PM DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	11070	200	10000	0	111	70-130	0			
Surr: Toluene-d8	*89.24*	0	*100*	0	*89.2*	*70-130*	0			

MS Sample ID: 14031136-01A MS
Client ID: Run ID: GC9_140327A Units: µg/L SeqNo: 2688269 Prep Date: Analysis Date: 3/28/2014 04:38 AM DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	9810	200	10000	0	98.1	70-130	0			
Surr: Toluene-d8	*93.51*	0	*100*	0	*93.5*	*70-130*	0			

MSD Sample ID: 14031136-01A MSD
Client ID: Run ID: GC9_140327A Units: µg/L SeqNo: 2688273 Prep Date: Analysis Date: 3/28/2014 05:04 AM DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	10150	200	10000	0	102	70-130	9810	3.42	30	
Surr: Toluene-d8	*91.88*	0	*100*	0	*91.9*	*70-130*	93.51	*1.76*	*30*	

The following samples were analyzed in this batch: 14031103-01G

Note: See Qualifiers Page for a list of Qualifiers and their explanation

Client: Danny Webb Construction
Work Order: 14031103
Project: Grab (Pit)

QC BATCH REPORT

Batch ID: 69955 Instrument ID ICPMS2 Method: E200.8

MBLK Sample ID: MBLK-69955-69955 Units: mg/L Analysis Date: 3/28/2014 02:46 AM
Client ID: Run ID: ICPMS2_140327A SeqNo:2690596 Prep Date: 3/27/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.00007636	0.0050								J
Iron	0.01175	0.080								J
Manganese	0.00009621	0.0050								J

MBLK Sample ID: MBLK-69955-69955 Units: mg/L Analysis Date: 3/28/2014 12:38 PM
Client ID: Run ID: ICPMS2_140328A SeqNo:2690005 Prep Date: 3/27/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	ND	0.20								

LCS Sample ID: LCS-69955-69955 Units: mg/L Analysis Date: 3/28/2014 02:52 AM
Client ID: Run ID: ICPMS2_140327A SeqNo:2690597 Prep Date: 3/27/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.09822	0.0050	0.1	0	98.2	85-115	0			
Iron	9.698	0.080	10	0	97	85-115	0			
Manganese	0.09718	0.0050	0.1	0	97.2	85-115	0			
Sodium	9.58	0.20	10	0	95.8	85-115	0			B

MS Sample ID: 14031091-02CMS Units: mg/L Analysis Date: 3/28/2014 03:03 AM
Client ID: Run ID: ICPMS2_140327A SeqNo:2690599 Prep Date: 3/27/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.1061	0.0050	0.1	0.01003	96.1	70-130	0			
Iron	10.06	0.080	10	0.3109	97.5	70-130	0			
Manganese	0.3198	0.0050	0.1	0.2283	91.5	70-130	0			
Sodium	55.88	0.20	10	46.64	92.4	70-130	0			BO

MS Sample ID: 1403963-02CMS Units: mg/L Analysis Date: 3/28/2014 01:01 PM
Client ID: Run ID: ICPMS2_140328A SeqNo:2690012 Prep Date: 3/27/2014 DF: 10

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.2055	0.050	0.1	0.1073	98.2	70-130	0			
Iron	9.697	0.80	10	-0.0963	98	70-130	0			
Manganese	0.09915	0.050	0.1	-0.002427	91.6	70-130	0			
Sodium	95.79	2.0	10	82.28	135	70-130	0			SO

Note: See Qualifiers Page for a list of Qualifiers and their explanation

Client: Danny Webb Construction
Work Order: 14031103
Project: Grab (Pit)

QC BATCH REPORT

Batch ID: 58965 Instrument ID ICPMS2 Method: E200.8

MSD Sample ID: 14031091-02CMSD
Client ID: Units:mg/L Analysis Date: 3/28/2014 03:26 AM
Run ID: ICPMS2_140327A SeqNo:2888873 Prep Date: 3/27/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Iron	10 14	0 050	10	0.3109	98 3	70-130	10 06	0 792	20	
Manganese	0 3215	0.0050	0 1	0 2283	93.2	70-130	0 3186	0 63	20	
Sodium	58 74	0.20	10	48 64	101	70-130	55 88	1.53	20	SO

MSD Sample ID: 14031091-02CMSD
Client ID: Units:mg/L Analysis Date: 3/28/2014 12:44 PM
Run ID: ICPMS2_140328A SeqNo:2890009 Prep Date: 3/27/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0 1068	0 0050	0.1	0 01003	96 8	70-130	0 1061	0 658	20	

MSD Sample ID: 1403063-02CMSD
Client ID: Units:mg/L Analysis Date: 3/28/2014 01:06 PM
Run ID: ICPMS2_140328A SeqNo:2890013 Prep Date: 3/27/2014 DF: 10

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0 2047	0.050	0 1	0 1073	97 4	70-130	0 2055	0.39	20	
Iron	9 899	0 50	10	-0 0983	98	70-130	9 867	0 0208	20	
Manganese	0 08899	0 050	0.1	-0.002427	91 4	70-130	0 08915	0.18	20	
Sodium	96 14	2 0	10	82.28	139	70-130	95 79	0 365	20	SO

The following samples were analyzed in this batch: 14031103-01D

Note: See Qualifiers Page for a list of Qualifiers and their explanation

Client: Danny Webb Construction
Work Order: 14031103
Project: Grab (Pit)

QC BATCH REPORT

Batch ID: R137899 Instrument ID WETCHEM Method: A4500-H B-96

LCS Sample ID: LCS-R137899-R137899 Units: s.u. Analysis Date: 3/25/2014 04:06 PM
Client ID: Run ID: WETCHEM_140326U SeqNo: 2688366 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH (laboratory)	4.02	0.020	4.4	0	91.4	90-110	0			

DUP Sample ID: 14031103-01B DUP Units: s.u. Analysis Date: 3/25/2014 04:06 PM
Client ID: Grab (Pit) Run ID: WETCHEM_140326U SeqNo: 2688372 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH (laboratory)	6.96	0.020	0	0	0		6.94	0.288	20	

The following samples were analyzed in this batch: 14031103-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation

Client: Danny Webb Construction
Work Order: 14031103
Project: Grab (Pit)

QC BATCH REPORT

Batch ID: R137881B Instrument ID VMS9 Method: E624

MBLK Sample ID: VBLKW1-140327-R137881B Units: µg/L Analysis Date: 3/27/2014 05:18 PM
Client ID: Run ID: VMS9_140327A SeqNo: 2888322 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Ethylbenzene	ND	1.0								
m,p-Xylene	ND	2.0								
o-Xylene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	20.67	0	20	0	103	70-130		0		
Surr: 4-Bromofluorobenzene	18.78	0	20	0	93.9	70-130		0		
Surr: Dibromofluoromethane	19.28	0	20	0	96.4	70-130		0		
Surr: Toluene-d8	20.83	0	20	0	104	70-130		0		

LCS Sample ID: VLCSW1-140327-R137881B Units: µg/L Analysis Date: 3/27/2014 04:04 PM
Client ID: Run ID: VMS9_140327A SeqNo: 2888321 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.09	1.0	20	0	105	80-120		0		
Ethylbenzene	21.98	1.0	20	0	110	80-120		0		
m,p-Xylene	44.82	2.0	40	0	112	80-120		0		
o-Xylene	22.16	1.0	20	0	111	80-120		0		
Toluene	21.51	1.0	20	0	108	80-120		0		
Surr: 1,2-Dichloroethane-d4	19.94	0	20	0	99.7	70-130		0		
Surr: 4-Bromofluorobenzene	20.47	0	20	0	102	70-130		0		
Surr: Dibromofluoromethane	19.31	0	20	0	96.6	70-130		0		
Surr: Toluene-d8	20.78	0	20	0	104	70-130		0		

MS Sample ID: 14031094-15A MS Units: µg/L Analysis Date: 3/28/2014 01:51 AM
Client ID: Run ID: VMS9_140327A SeqNo: 2888334 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.28	1.0	20	0	106	70-130		0		
Toluene	21.14	1.0	20	0	106	70-130		0		
Surr: 1,2-Dichloroethane-d4	20.61	0	20	0	103	70-130		0		
Surr: 4-Bromofluorobenzene	20.49	0	20	0	102	70-130		0		
Surr: Dibromofluoromethane	20.18	0	20	0	101	70-130		0		
Surr: Toluene-d8	20.75	0	20	0	104	70-130		0		

Note: See Qualifiers Page for a list of Qualifiers and their explanation

Client: Danny Webb Construction
Work Order: 14031103
Project: Grab (Pit)

QC BATCH REPORT

Batch ID: R137881B Instrument ID VM89 Method: E624

MSD Sample ID: 14031094-16A MSD Units: µg/L Analysis Date: 3/28/2014 02:16 AM
Client ID: Run ID: VM89_140327A SeqNo:2888325 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.06	1.0	20	0	105	70-130	21.28	1.04	30	
Toluene	21.44	1.0	20	0	107	70-130	21.14	1.41	30	
Surr: 1,2-Dichloroethane-d4	*19.54*	0	20	0	*97.7*	*70-130*	20.81	*5.33*	30	
Surr: 4-Bromofluorobenzene	*20.52*	0	20	0	*103*	*70-130*	20.49	*0.146*	30	
Surr: Dibromofluoromethane	*19.49*	0	20	0	*97.4*	*70-130*	20.18	*3.48*	30	
Surr: Toluene-d8	*20.91*	0	20	0	*105*	*70-130*	20.75	*0.768*	30	

The following samples were analyzed in this batch: 14031103-01H 14031103-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation

Client: Danny Webb Construction
Work Order: 14031103
Project: Grab (Pit)

QC BATCH REPORT

Batch ID: R137952B Instrument ID VMS6 Method: E624

MBLK Sample ID: VBLKW1-140328-R137952B Units: µg/L Analysis Date: 3/28/2014 04:09 PM
Client ID: Run ID: VMS6_140328A SeqNo:2691568 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	1.0								
Ethylbenzene	ND	1.0								
m,p-Xylene	ND	2.0								
o-Xylene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	3.0								
Surr: 1,2-Dichloroethane-d4	19.65	0	20	0	98.2	70-130	0			
Surr: 4-Bromofluorobenzene	19.67	0	20	0	98.4	70-130	0			
Surr: Dibromofluoromethane	19.68	0	20	0	98.4	70-130	0			
Surr: Toluene-d8	19.51	0	20	0	97.6	70-130	0			

LCS Sample ID: VLCSW1-140328-R137952B Units: µg/L Analysis Date: 3/28/2014 03:17 PM
Client ID: Run ID: VMS6_140328A SeqNo:2691565 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.49	1.0	20	0	107	80-120	0			
Ethylbenzene	19.88	1.0	20	0	99.4	80-120	0			
m,p-Xylene	39.84	2.0	40	0	99.6	80-120	0			
o-Xylene	19.86	1.0	20	0	99.3	80-120	0			
Toluene	19.81	1.0	20	0	99	80-120	0			
Surr: 1,2-Dichloroethane-d4	19.79	0	20	0	99	70-130	0			
Surr: 4-Bromofluorobenzene	20	0	20	0	100	70-130	0			
Surr: Dibromofluoromethane	20.06	0	20	0	100	70-130	0			
Surr: Toluene-d8	19.43	0	20	0	97.2	70-130	0			

MS Sample ID: 14031103-01H MS Units: µg/L Analysis Date: 3/28/2014 12:51 PM
Client ID: Grab (Pit) Run ID: VMS6_140328A SeqNo:2691569 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.9	1.0	20	0	104	70-130	0			
Toluene	20.57	1.0	20	1.25	96.6	70-130	0			
Surr: 1,2-Dichloroethane-d4	19.37	0	20	0	96.8	70-130	0			
Surr: 4-Bromofluorobenzene	20.32	0	20	0	102	70-130	0			
Surr: Dibromofluoromethane	19.65	0	20	0	98.2	70-130	0			
Surr: Toluene-d8	19.68	0	20	0	98.4	70-130	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation

Client: Danny Webb Construction
Work Order: 14031103
Project: Grab (Pit)

QC BATCH REPORT

Batch ID: R137952B Instrument ID VMS5 Method: E624

MSD Sample ID: 14031103-01H MSD Units: pg/L Analysis Date: 3/28/2014 01:17 AM

Client ID: Grab (Pit) Run ID: VMS5_140328A SeqNo:2691868 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.45	1.0	20	0	102	70-130	20.9	2.18	30	
Toluene	19.82	1.0	20	1.25	92.8	70-130	20.57	3.71	30	
Surr: 1,2-Dichloroethane-d4	*19.68*	0	*20*	0	*98.4*	*70-130*	19.37	*1.59*	*30*	
Surr: 4-Bromofluorobenzene	*20.37*	0	*20*	0	*102*	*70-130*	20.32	*0.246*	*30*	
Surr: Dibromofluoromethane	*19.54*	0	*20*	0	*97.7*	*70-130*	19.65	*0.561*	*30*	
Surr: Toluene-d8	*19.65*	0	*20*	0	*98.2*	*70-130*	19.68	*0.153*	*30*	

The following samples were analyzed in this batch: , 14031103-01H

Notes: See Qualifiers Page for a list of Qualifiers and their explanation

Client: Danny Webb Construction
Work Order: 14031103
Project: Grab (Pit)

QC BATCH REPORT

Batch ID: 57046 Instrument ID TDS Method: A2540 C-97

MBLK Sample ID: MBLK-57046-57046 Units: mg/L Analysis Date: 3/31/2014 10:02 AM
Client ID: Run ID: TDS_140331B SeqNo: 2692808 Prep Date: 3/31/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	ND	10								

LCS Sample ID: LCS-57046-57046 Units: mg/L Analysis Date: 3/31/2014 10:02 AM
Client ID: Run ID: TDS_140331B SeqNo: 2692809 Prep Date: 3/31/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	474	10	495	0	95.8	80-120	0			

DUP Sample ID: 14031103-01A DUP Units: mg/L Analysis Date: 3/31/2014 10:02 AM
Client ID: Grab (Pit) Run ID: TDS_140331B SeqNo: 2692811 Prep Date: 3/31/2014 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	5643	25	0	0	0	0-0	5450	3.49	20	

The following samples were analyzed in this batch: 14031103-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation

Client: Danny Webb Construction
Work Order: 14031103
Project: Grab (Pit)

QC BATCH REPORT

Batch ID: R137769 Instrument ID WETCHEM Method: A5540C

MBLK Sample ID: WBLKW1-140326-R137769 Units: mg MBAS/L Analysis Date: 3/26/2014 12:30 PM
Client ID: Run ID: WETCHEM_140326J SeqNo:2685749 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Anionic Surfactants as MBAS	ND	0.40								

LCS Sample ID: WLCSW1-140326-R137769 Units: mg MBAS/L Analysis Date: 3/26/2014 12:30 PM
Client ID: Run ID: WETCHEM_140326J SeqNo:2685748 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Anionic Surfactants as MBAS	0.45	0.40	0.5	0	90	75-125		0		

DUP Sample ID: 14031103-01C DUP Units: mg MBAS/L Analysis Date: 3/26/2014 12:30 PM
Client ID: Grab (Pit) Run ID: WETCHEM_140326J SeqNo:2685751 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Anionic Surfactants as MBAS	ND	0.40	0	0	0	0-0	0	0	25	

The following samples were analyzed in this batch: 14031103-01C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Danny Webb Construction
Work Order: 14031103
Project: Grab (Pit)

QC BATCH REPORT

Batch ID: R137942 Instrument ID O&G Method: E1664A

MBLK Sample ID: MB-R137942-R137942 Units: mg/L Analysis Date: 3/28/2014 09:00 AM
Client ID: Run ID: O&G_140328A SeqNo:2689506 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	ND	5 0								

LCS Sample ID: LCS-R137942-R137942 Units: mg/L Analysis Date: 3/28/2014 09:00 AM
Client ID: Run ID: O&G_140328A SeqNo:2689507 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	32 9	5 0	40	0	82 2	78-114		0		

MS Sample ID: 14031283-02A MS Units: mg/L Analysis Date: 3/28/2014 09:00 AM
Client ID: Run ID: O&G_140328A SeqNo:2689523 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	39 89	5 0	40	0 67	98	78-114				

DUP Sample ID: 14031283-04A DUP Units: mg/L Analysis Date: 3/28/2014 09:00 AM
Client ID: Run ID: O&G_140328A SeqNo:2689525 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	ND	5 0	0	0	0	0-0	0 22	0	18	

The following samples were analyzed in this batch: 14031103-01J

Note: See Qualifiers Page for a list of Qualifiers and their explanation

Client: Danny Webb Construction
Work Order: 14031103
Project: Grab (Pit)

QC BATCH REPORT

Batch ID: R138005 Instrument ID IC3 Method: E300.0

MBLK Sample ID: CCB/MBLK-R138005 Units: mg/L Analysis Date: 3/28/2014 11:42 AM
Client ID: Run ID: IC3_140328B SeqNo:2690528 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	1.0								
Sulfate	ND	1.0								

LCS Sample ID: LCS-R138005 Units: mg/L Analysis Date: 3/28/2014 12:02 PM
Client ID: Run ID: IC3_140328B SeqNo:2690529 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	9.719	1.0	10	0	97.2	90-110	0			
Sulfate	10.17	1.0	10	0	102	90-110	0			

MS Sample ID: 14031254-01B MS Units: mg/L Analysis Date: 3/28/2014 02:02 PM
Client ID: Run ID: IC3_140328B SeqNo:2690530 Prep Date: DF: 20

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	350	20	50	308.2	83.7	80-120	0			O
Sulfate	251.1	20	50	200.2	102	80-120	0			O

MSD Sample ID: 14031254-01B MSD Units: mg/L Analysis Date: 3/28/2014 02:22 PM
Client ID: Run ID: IC3_140328B SeqNo:2690531 Prep Date: DF: 20

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	346.9	20	50	308.2	77.4	80-120	350	0.905	20	SO
Sulfate	245.8	20	50	200.2	91.1	80-120	251.1	2.13	20	O

The following samples were analyzed in this batch: 14031103-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation

Client: Danny Webb Construction
Work Order: 14031103
Project: Grab (Pit)

QC BATCH REPORT

Batch ID: R138035a **Instrument ID** TOC2 **Method:** A5310C-96

MBLK **Sample ID:** WBLKW1-140330-R138035a **Units:** mg/L **Analysis Date:** 3/30/2014 06:54 PM
Client ID: **Run ID:** TOC2_140330A **SeqNo:** 2891573 **Prep Date:** **DF:** 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	ND	0.50								

LCS **Sample ID:** WLCSW1-140330-R138035a **Units:** mg/L **Analysis Date:** 3/30/2014 07:26 PM
Client ID: **Run ID:** TOC2_140330A **SeqNo:** 2891574 **Prep Date:** **DF:** 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	5.255	0.50	5	0	105	90-110	0			

MS **Sample ID:** 14031103-01BMS **Units:** mg/L **Analysis Date:** 3/30/2014 10:01 PM
Client ID **Run ID:** TOC2_140330A **SeqNo:** 2891579 **Prep Date:** **DF:** 500

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	3237	250	1250	1938	104	85-120	0			

MSD **Sample ID:** 14031103-01BMSD **Units:** mg/L **Analysis Date:** 3/30/2014 10:32 PM
Client ID: **Run ID:** TOC2_140330A **SeqNo:** 2891580 **Prep Date:** **DF:** 500

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	3208	250	1250	1938	101	85-120	3237	0.978	20	

The following samples were analyzed in this batch: 14031103-01E

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

☑ ALS Environmental
1740 Union Carbide Drive
South Charleston, WV 25303
(Tel) 304-356-3168
(Fax) 304-205-6262

Chain of Custody Form

Page ____ of ____

☐ ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
(Tel) 616.399.6070
(Fax) 616.399.6185

ALS Project Manager:

ALS Work Order #: 14031103

Customer Information		Project Information		Parameter/Method Required for Analysis	
Purchase Order		Project Name		A	Chloride, Sulfate, TDS, pH, Surfactants (MBAS)
Work Order		Project Number		B	Barium, Sodium, Iron, Manganese
Company Name	Danny Webb Construction	Bill To Company		C	TOC
Send Report To	Ann Smith	Invoice Attn.		D	TPH DRO/ORO
Address	PO Box 267 617 Towns Hollow Road	Address		E	TPH GRO
				F	BTEX (8260)
City/State/Zip	Lochgelly, WV 25866	City/State/Zip		G	Oil and Grease
Phone	304-465-9449	Phone		H	
Fax		Fax		I	
e-Mail Address				J	

No.	Sample Description	Date	Time	Matrix	Preservative Number	# Bottles	A	B	C	D	E	F	G	H	I	J	Other
1	Grab (pH)	3-25-14	9:30AM	W	1,2,3,8	14	X	X	X	X	X	X					
2	Trip Blank			W	1	2						X					
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign: Danny E Webb

Shipment Method:

Required Turnaround Time: (Check Box) ☐ 10 Wk Days ☐ 5 Wk Days ☐ 3 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other ____

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:	Notes:
Danny E Webb	3/25/14	1357				Rec'd 3/26/14 1000 3.8°C
Relinquished by:	Date:	Time:	Received by (Laboratory):	Date:	Time:	
				3/25/14	1357	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):			

ALS Cooler ID	Cooler Temp
	5.7

QC Package: (Check Box Below)
☐ Level II: Standard QC ☐ Level III: Raw Data
☐ TRRP LRC ☐ TRRP Level IV
☐ Level IV: SW846 Methods/CLP file
☐ Other: ____

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS.

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Sample Receipt Checklist

Client Name: DANNYWEBCONST

Date/Time Received: 25-Mar-14 13:57

Work Order: 14031193

Received by: JAS

Checklist completed by Janet Smith (eSignature) 25-Mar-14 (Date)

Reviewed by: Rebecca Kiser (eSignature) 26-Mar-14 (Date)

Matrices: Water

Carrier name: Client

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☐	No ☑	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☐	No ☑	
Temperature(s)/Thermometer(s):	6.7C	IR	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:			
Water - VOA vials have zero headspace?	Yes	No ✓	No VOA vials submitted
Water - pH acceptable upon receipt?	Yes ✓	No ☐	N/A ☐
pH adjusted?	Yes	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Sample vials received with headspace.

Client Contacted

Date Contacted:

Person Contacted

Contacted By:

Regarding:

Comments:

CorrectiveAction:

Comprehensive Oilfield Water Analysis

Chemical Customer:	X-Chem	Analysis Number:	11062801
Production Customer:	Triana	Date Sampled:	June 25, 2011
Lease/Field:	Currey #1H Separator	Date Received:	June 28, 2011
Sample Point:	nr	Date Completed:	July 5, 2011

PHYSICAL PROPERTIES

pH:	7.04 *(Lab)*	Total Hardness:	41,245 *mg/l*
Density:	9.08 *lbs/gal*	Total Dissolved Solids:	122,809 *mg/l*
Specific Gravity:	1.087 *g/ccm*	Dissolved H_2S (Field):	0.5 *mg/L*
System Temperature:	74 *°F*	Dissolved CO_2 (Field):	39.50 *mg/L*
System Pressure:	14.7 *psi*	Total Ionic Strength:	1.911
BOPD:		Resistivity:	0.066 *ohm meter @ 75F*

BRINE COMPOSITION

CATIONS	Concentration mg/L	meq/L	ANIONS	Concentration mg/L	meq/L
Barium	942	14	Chloride	76,400	2152
Calcium	12,080	602	Carbonate	0	0
Iron	88	3	Bicarbonate *(Field)*	384	6
Magnesium	2,684	221	Sulfate	1	0
Manganese	0.75	0			
Potassium	0	0			
Sodium	30,137	1310			
Strontium	93	1			
Total Cations	***46,024***	2152	***Total Anions***	***76,785***	2158

Ionic Balance *99.69%*

Oil & Grease Content *nr mg/L*

SCALE INDEX

Temperature (°F)	$BaSO_4$	$CaSO_4$	$SrSO_4$	$CaCO_3$
74	12.62	0.00	1.39	0.00

A scaling index greater than 1.000 indicates scaling. Calculations are based on a constant pressure of note or 1 atm if no pressure reported

Chris Swindle
Analyst

July 5, 2011
Date

DBI
5685 East Loop 820 South
Fort Worth, Texas 76119

DownHole SAT(tm)

FORMATION WATER CHEMISTRY INPUT

Currey #1H Separator

Report Date: 07-05-2011 Sampled: 06-25-2011
Sample #: 0 at 1354

CATIONS		ANIONS	
Calcium (as Ca)	12080	Chloride (as Cl)	76400
Magnesium (as Mg)	2684	Sulfate (as SO_4)	1.00
Barium (as Ba)	942.00	Bromine (as Br)	0.00
Strontium (as Sr)	93.00	Dissolved CO_2 (as CO_2)	39.50
Sodium (as Na)	30137	Bicarbonate (as HCO_3)	384.00
Potassium (as K)	0.00	Carbonate (as CO_3)	0.00
Lithium (as Li)	0.00	Silica (as SiO_2)	0.00
Ammonia (as NH_3)	0.00	Phosphate (as PO_4)	0.00
Aluminum (as Al)	0.00	H_2S (as H_2S)	0.500
Iron (as Fe)	88.00	Fluoride (as F)	0.00
Manganese (as Mn)	0.750	Nitrate (as NO_3)	0.00
Zinc (as Zn)	0.00	Boron (as B)	0.00
Lead (as Pb)	0.00		

PARAMETERS

pH	7.04
Temperature (^oF)	74.00
Density(g/mL)	1.09
Pressure(psia)	14.70
Calculated T.D.S.	122838
Molar Conductivity	49135

CORROSION RATE PREDICTION

CO_2 - H_2S Rate(mpy)	0.0378

DownHole SAT(tm)

FORMATION WATER
DEPOSITION POTENTIAL INDICATORS

Currey #1H Separator

Report Date: 07-05-2011 Sampled: 06-25-2011
Sample #: 0 at 1354

SATURATION LEVEL		FREE ION MOMENTARY EXCESS (ppm)	
Calcite ($CaCO_3$)	12.62	Calcite ($CaCO_3$)	0.334
Aragonite ($CaCO_3$)	10.89	Aragonite ($CaCO_3$)	0.329
Witherite ($BaCO_3$)	0.172	Witherite ($BaCO_3$)	-3.42
Strontianite ($SrCO_3$)	0.132	Strontianite ($SrCO_3$)	-3.42
Magnesite ($MgCO_3$)	2.92	Magnesite ($MgCO_3$)	0.201
Anhydrite ($CaSO_4$)	< 0.001	Anhydrite ($CaSO_4$)	-552.98
Gypsum ($CaSO_4*2H_2O$)	< 0.001	Gypsum ($CaSO_4*2H_2O$)	-429.74
Barite ($BaSO_4$)	1.39	Barite ($BaSO_4$)	0.159
Celestite ($SrSO_4$)	< 0.001	Celestite ($SrSO_4$)	-980.03
Fluorite (CaF_2)	0.00	Fluorite (CaF_2)	-6.71
Calcium phosphate	0.00	Calcium phosphate	>-0.001
Hydroxyapatite	0.00	Hydroxyapatite	-946.54
Silica (SiO_2)	0.00	Silica (SiO_2)	-96.81
Brucite ($Mg(OH)_2$)	< 0.001	Brucite ($Mg(OH)_2$)	-0.575
Magnesium silicate	0.00	Magnesium silicate	-284.58
Iron hydroxide ($Fe(OH)_3$)	< 0.001	Iron hydroxide ($Fe(OH)_3$)	< 0.001
Strengite ($FePO_4*2H_2O$)	0.00	Strengite ($FePO_4*2H_2O$)	>-0.001
Siderite ($FeCO_3$)	72.96	Siderite ($FeCO_3$)	0.414
Halite (NaCl)	0.0372	Halite (NaCl)	-400021
Thenardite ($Na2SO_4$)	< 0.001	Thenardite ($Na2SO_4$)	-239157
Iron sulfide (FeS)	11.01	Iron sulfide (FeS)	0.421

SIMPLE INDICES		BOUND IONS	TOTAL	FREE
Langelier	1.69	Calcium	12080	11961
Ryznar	3.66	Barium	942.00	942.00
Puckorius	2.55	Carbonate	10.51	0.217
Larson-Skold Index	338.86	Phosphate	0.00	0.00
Stiff Davis Index	1.15	Sulfate	1.00	0.234
Oddo-Tomson	0.553			

OPERATING CONDITIONS

Temperature (^oF)	74.00
Time(mins)	3.00

FRENCH CREEK SOFTWARE, INC.
KIMBERTON & HARES HILL ROADS, KIMBERTON, PA 19442

Comprehensive Oilfield Water Analysis

Chemical Customer:	X-Chem Weston WV	Analysis Number:	13122652
Production Customer:	Triana	Date Sampled:	December 11, 2013
Lease(Field):	Musgrove 3H	Date Received:	December 20, 2013
Sample Point:	Separator	Date Completed:	December 30, 2013

PHYSICAL PROPERTIES

pH:	6.21 *(Lab)*	Total Hardness:	13,609 *mg/l*
Density:	8.68 *lbs/gal*	Total Dissolved Solids:	57,231 *mg/l*
Specific Gravity:	1.040 *g/ccm*	Dissolved H_2S:	0 *ppm*
System Temperature:	71 *°F*	Dissolved CO_2:	112.83 *mg/L*
System Pressure:	14.7 *psi*	Total Ionic Strength:	0.800
Dissolved O_2:	NR *ppm*	Resistivity:	0.079 *ohm meter @ 75F*

BOPD: NR BWPD: NR Gas Flow: NR *MMSCFD*

BRINE COMPOSITION

CATIONS	Concentration mg/L	Concentration meq/L	ANIONS	Concentration mg/L	Concentration meq/L
Barium	3,140	46	Chloride	34,200	963
Calcium	4,560	227	Carbonate	0	0
Iron	38.2	1	Bicarbonate *(Lab)*	244	4
Magnesium	537	44	Sulfate	0.01	0
Manganese	0.25	0			
Potassium	0	0			
Sodium	14,208	618			
Strontium	304	3			
Total Cations	***22,787***	*940*	***Total Anions***	***34,444***	*967*

Ionic Balance *97.16%*

SCALE INDEX

Temperature (°F)	CaCO3	CaSO4	BaSO4	SrSO4
71	0.94	0.000	0.18	0.000

A scaling index greater than 1.000 indicates scaling. Calculations are based on a constant pressure of note or 1 atm if no pressure reported

Chris Swindle
Analyst

December 30, 2013
Date

X-Chem, Inc.
5685 East Loop 820 South
Fort Worth, Texas 76119

DownHole SAT Rx

FORMATION WATER CHEMISTRY INPUT

Triana — Musgrove 3H

Separator

Report Date: 12-30-2013 Sampled: 12-11-2013
Sample #: 0 at 0811

CATIONS		ANIONS	
Calcium (as Ca)	4560	Chloride (as Cl)	34200
Magnesium (as Mg)	536.80	Sulfate (as SO_4)	0.01000
Barium (as Ba)	3140	Bromine (as Br)	0.00
Strontium (as Sr)	304.00	Dissolved CO_2 (as CO_2)	112.83
Sodium (as Na)	14208	Bicarbonate (as HCO_3)	244.00
Potassium (as K)	0.00	Carbonate (as CO_3)	0.00
Lithium (as Li)	0.00	Silica (as SiO_2)	0.00
Ammonia (as NH_3)	0.00	Phosphate (as PO_4)	0.00
Aluminum (as Al)	0.00	H_2S (as H_2S)	0.00
Iron (as Fe)	38.20	Fluoride (as F)	0.00
Manganese (as Mn)	0.250	Nitrate (as NO_3)	0.00
Zinc (as Zn)	0.00	Boron (as B)	0.00
Lead (as Pb)	0.00		

PARAMETERS

pH	6.21
Temperature (^oF)	71.00
Density(g/mL)	1.04
Pressure(atm)	14.70
Calculated T.D.S.	57423
Molar Conductivity	47900

CORROSION RATE PREDICTION

CO_2 - H_2S Rate(mpy)	0.0402

FRENCH CREEK SOFTWARE, INC.
KIMBERTON & HARES HILL ROAD, KIMBERTON, PA 19442

DownHole SAT Rx

FORMATION WATER
DEPOSITION POTENTIAL INDICATORS

Triana — Musgrove 3H

Separator

Report Date: 12-30-2013 Sampled: 12-11-2013
Sample #: 0 at 0811

SATURATION LEVEL		MOMENTARY EXCESS (Lbs/1000 Barrels)	
Calcite ($CaCO_3$)	0.936	Calcite ($CaCO_3$)	-0.00200
Aragonite ($CaCO_3$)	0.810	Aragonite ($CaCO_3$)	-0.00691
Witherite ($BaCO_3$)	0.210	Witherite ($BaCO_3$)	-0.218
Strontianite ($SrCO_3$)	0.161	Strontianite ($SrCO_3$)	-0.226
Magnesite ($MgCO_3$)	0.0977	Magnesite ($MgCO_3$)	-0.229
Anhydrite ($CaSO_4$)	< 0.001	Anhydrite ($CaSO_4$)	-468.36
Gypsum ($CaSO_4*2H_2O$)	< 0.001	Gypsum ($CaSO_4*2H_2O$)	-338.95
Barite ($BaSO_4$)	0.176	Barite ($BaSO_4$)	-0.0182
Celestite ($SrSO_4$)	< 0.001	Celestite ($SrSO_4$)	-188.49
Fluorite (CaF_2)	0.00	Fluorite (CaF_2)	-4.08
Calcium phosphate	0.00	Calcium phosphate	>-0.001
Hydroxyapatite	0.00	Hydroxyapatite	-343.72
Silica (SiO_2)	0.00	Silica (SiO_2)	-35.67
Brucite ($Mg(OH)_2$)	< 0.001	Brucite ($Mg(OH)_2$)	-0.524
Magnesium silicate	0.00	Magnesium silicate	-102.76
Iron hydroxide ($Fe(OH)_3$)	19.27	Iron hydroxide ($Fe(OH)_3$)	< 0.001
Strengite ($FePO_4*2H_2O$)	0.00	Strengite ($FePO_4*2H_2O$)	>-0.001
Siderite ($FeCO_3$)	10.37	Siderite ($FeCO_3$)	0.0308
Halite (NaCl)	0.00684	Halite (NaCl)	-172479
Thenardite ($Na2SO_4$)	< 0.001	Thenardite ($Na2SO_4$)	-72498
Iron sulfide (FeS)	0.00	Iron sulfide (FeS)	-0.137

SIMPLE INDICES		BOUND IONS	TOTAL	FREE
Langelier	0.208	Calcium	4560	4502
Ryznar	5.79	Barium	3140	3140
Puckorius	3.92	Carbonate	0.713	0.0506
Larson-Skold Index	175.78	Phosphate	0.00	0.00
Stiff Davis Index	-0.483	Sulfate	0.01000	0.00458
Oddo-Tomson	-0.654			

OPERATING CONDITIONS

Temperature (^oF)	71.00
Time(mins)	3.00

FRENCH CREEK SOFTWARE, INC.
KIMBERTON & HARES HILL ROAD, KIMBERTON, PA 19442

Comprehensive Oilfield Water Analysis

Chemical Customer:	X-Chem Weston WV	Analysis Number:	13122651
Production Customer:	Triana	Date Sampled:	December 11, 2013
Lease(Field):	Musgrove 5H	Date Received:	December 20, 2013
Sample Point:	Separator	Date Completed:	December 30, 2013

PHYSICAL PROPERTIES

pH:	6.27 *(Lab)*	Total Hardness:	13,406 *mg/l*
Density:	8.67 *lbs/gal*	Total Dissolved Solids:	57,344 *mg/l*
Specific Gravity:	1.038 *g/ccm*	Dissolved H_2S:	0 *ppm*
System Temperature:	71 *°F*	Dissolved CO_2:	144.88 *mg/L*
System Pressure:	14.7 *psi*	Total Ionic Strength:	0.794
Dissolved O_2:	NR *ppm*	Resistivity:	0.078 *ohm meter @ 75F*
BOPD: NR	BWPD: NR	Gas Flow:	NR *MMSCFD*

BRINE COMPOSITION

CATIONS	Concentration mg/L	*meq/L*	ANIONS	Concentration mg/L	*meq/L*
Barium	2,944	*43*	Chloride	34,200	*963*
Calcium	4,720	*235*	Carbonate	0	*0*
Iron	32.39	*1*	Bicarbonate *(Lab)*	336	*6*
Magnesium	390	*32*	Sulfate	0.01	*0*
Manganese	0.25	*0*			
Potassium	0	*0*			
Sodium	14,433	*628*			
Strontium	288	*3*			
Total Cations	***22,808***	*942*	***Total Anions***	***34,536***	*969*

Ionic Balance *97.27%*

SCALE INDEX

Temperature (°F)	[illegible]	[illegible]	[illegible]	SrSO4
71	1.50	0.000	0.17	0.000

A scaling index greater than 1.000 indicates scaling. Calculations are based on a constant pressure of note or 1 atm if no pressure reported

Chris Swindle
Analyst

December 30, 2013
Date

X-Chem, Inc.
5685 East Loop 820 South
Fort Worth, Texas 76119

DownHole SAT Rx

FORMATION WATER CHEMISTRY INPUT

Triana Musgrove 5H

Separator

Report Date: 12-30-2013 Sampled: 12-11-2013
Sample #: 0 at 0811

CATIONS		ANIONS	
Calcium (as Ca)	4720	Chloride (as Cl)	34200
Magnesium (as Mg)	390.40	Sulfate (as SO_4)	0.01000
Barium (as Ba)	2944	Bromine (as Br)	0.00
Strontium (as Sr)	288.00	Dissolved CO_2 (as CO_2)	144.88
Sodium (as Na)	14433	Bicarbonate (as HCO_3)	335.50
Potassium (as K)	0.00	Carbonate (as CO_3)	0.00
Lithium (as Li)	0.00	Silica (as SiO_2)	0.00
Ammonia (as NH_3)	0.00	Phosphate (as PO_4)	0.00
Aluminum (as Al)	0.00	H_2S (as H_2S)	0.00
Iron (as Fe)	32.39	Fluoride (as F)	0.00
Manganese (as Mn)	0.250	Nitrate (as NO_3)	0.00
Zinc (as Zn)	0.00	Boron (as B)	0.00
Lead (as Pb)	0.00		

PARAMETERS

pH	6.27
Temperature (^oF)	71.00
Density(g/mL)	1.04
Pressure(atm)	14.70
Calculated T.D.S.	57591
Molar Conductivity	48262

CORROSION RATE PREDICTION

CO_2 - H_2S Rate(mpy)	0.0432

FRENCH CREEK SOFTWARE, INC.
KIMBERTON & HARES HILL ROAD, KIMBERTON, PA 19442

DownHole SAT Rx

FORMATION WATER
DEPOSITION POTENTIAL INDICATORS

Triana — Musgrove 5H

Separator

Report Date: 12-30-2013 Sampled: 12-11-2013
Sample #: 0 at 0811

SATURATION LEVEL		MOMENTARY EXCESS (Lbs/1000 Barrels)	
Calcite ($CaCO_3$)	1.50	Calcite ($CaCO_3$)	0.0152
Aragonite ($CaCO_3$)	1.30	Aragonite ($CaCO_3$)	0.0105
Witherite ($BaCO_3$)	0.307	Witherite ($BaCO_3$)	-0.203
Strontianite ($SrCO_3$)	0.237	Strontianite ($SrCO_3$)	-0.216
Magnesite ($MgCO_3$)	0.110	Magnesite ($MgCO_3$)	-0.310
Anhydrite ($CaSO_4$)	< 0.001	Anhydrite ($CaSO_4$)	-454.56
Gypsum ($CaSO_4*2H_2O$)	< 0.001	Gypsum ($CaSO_4*2H_2O$)	-328.59
Barite ($BaSO_4$)	0.167	Barite ($BaSO_4$)	-0.0195
Celestite ($SrSO_4$)	< 0.001	Celestite ($SrSO_4$)	-191.59
Fluorite (CaF_2)	0.00	Fluorite (CaF_2)	-4.01
Calcium phosphate	0.00	Calcium phosphate	>-0.001
Hydroxyapatite	0.00	Hydroxyapatite	-342.92
Silica (SiO_2)	0.00	Silica (SiO_2)	-35.58
Brucite ($Mg(OH)_2$)	< 0.001	Brucite ($Mg(OH)_2$)	-0.613
Magnesium silicate	0.00	Magnesium silicate	-102.54
Iron hydroxide ($Fe(OH)_3$)	21.57	Iron hydroxide ($Fe(OH)_3$)	< 0.001
Strengite ($FePO_4*2H_2O$)	0.00	Strengite ($FePO_4*2H_2O$)	>-0.001
Siderite ($FeCO_3$)	13.68	Siderite ($FeCO_3$)	0.0489
Halite (NaCl)	0.00698	Halite (NaCl)	-171966
Thenardite ($Na2SO_4$)	< 0.001	Thenardite ($Na2SO_4$)	-72309
Iron sulfide (FeS)	0.00	Iron sulfide (FeS)	-0.139

SIMPLE INDICES		BOUND IONS	TOTAL	FREE
Langelier	0.416	Calcium	4720	4639
Ryznar	5.44	Barium	2944	2944
Puckorius	3.43	Carbonate	1.06	0.0784
Larson-Skold Index	130.10	Phosphate	0.00	0.00
Stiff Davis Index	-0.276	Sulfate	0.01000	0.00461
Oddo-Tomson	-0.446			

OPERATING CONDITIONS

Temperature (^oF)	71.00
Time(mins)	3.00

FRENCH CREEK SOFTWARE, INC.
KIMBERTON & HARES HILL ROAD, KIMBERTON, PA 19442

RELIANCE LABORATORIES, INC. - CHAIN OF CUSTODY RECORD

☐ 2044 MEADOWBROOK ROAD
POST OFFICE BOX 4657
BRIDGEPORT, WV 26330
TEL. (304) 842-5285 • FAX (304) 842-5351
E-MAIL reliancelabs@wvdsl.net
INTERNET www.RelianceLabs.net

☐ RIDGEFIELD BUSINESS CENTER
25 CRIMSON CIRCLE
MARTINSBURG, WV 25403
TEL. (304) 596-2084 • FAX (304) 596-2086

*CLIENT NAME PDC Mountaineer

*ADDRESS 633 West Main Street Bridgeport, WV 26330

CUSTOMER # C016247 *TEL.# 304-669-2595 FAX #

*SAMPLER (S) Lenny Pearce E-MAIL Leonard.Pearce@pdce.com

SHEET NO. 1 OF 1

LABORATORY #	*DATE	*TIME	COMP	GRAB	MATRIX W, DW, S, O, M	TEMP. ≤ 4°C Yes No	*# OF CONTAIN.	HN03	H2S04	HCL	NaOH	BAC-T	NO PRES.	Cubes	8260B	TDC	NP DESPICHOLD 3	7 Inactive Metals	BOD CWD	Rad Gross Alpha	*PROJECT/REMARKS
210474	4/9/14	9:30am		X	W	4.4	2							2	/	/	/	/	/	/	Armstrong-Reynolds 4 HM

SAMPLES DO / DO NOT ____ MEET USEPA GUIDELINES FOR HOLDING TIMES
SAMPLES DO / DO NOT ____ MEET USEPA GUIDELINES FOR CHEMICAL PRESERVATIVES
SAMPLES DO / DO NOT ____ MEET USEPA GUIDELINES FOR SAMPLE CONTAINERS
SAMPLES ARE / ARE NOT ____ FOR REGULATORY COMPLIANCE PURPOSES

*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT: Joshua Morgan SIGN: [signature]	DATE: 4/9/14 TIME: 10:05 Am	PRINT: SIGN: [signature]
*RELINQUISHED BY: PRINT: SIGN:	*DATE/TIME DATE: TIME:	*RECEIVED BY: PRINT: SIGN:
*RELINQUISHED BY: PRINT: SIGN:	*DATE/TIME DATE: TIME:	*RECEIVED BY: PRINT: SIGN:
*COURIER: TRACKING #:	*DATE/TIME DATE: TIME:	*RECEIVED BY: PRINT: SIGN:

REMARKS:

Sample bottles made at lab 4/9/14 AF

PWS# ____

WEATHER/TEMPERATURE:

☐ **RUSH STATUS** (INITIAL ACCEPTANCE _____)

*** ADDITIONAL LABORATORY FEES MAY APPLY***

EXTENT OF LIABILITY

SHOULD RELIANCE LABORATORIES, INC. BE AT FAULT AND ANY DISPUTE ARISE REGARDING ANALYTICAL DATA GENERATED BY THE LABORATORY, THE EXTENT OF THE LIABILITY TO RELIANCE WILL BE A DUPLICATE ANALYSIS OF THAT SAMPLE (PROVIDING ADEQUATE SAMPLE REMAINS) OR A REFUND OF THE ANALYTICAL FEE. IN NO EVENT WILL RELIANCE LABORATORIES BE LIABLE FOR DAMAGES INCLUDING BUT NOT LIMITED TO DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES ARISING FROM SUCH DISPUTE.

NOTE: TYPICAL SAMPLE TURN AROUND FOR ROUTINE SAMPLES IS 5 TO 10 WORKING DAYS. THIS IN NOT A GUARANTEE THAT SAMPLES WILL BE COMPLETED IN THIS TIME FRAME, HOWEVER. NON-ROUTINE SAMPLES MAY REQUIRE ADDITIONAL TIME.

* TO BE COMPLETED BY CLIENT

ORIGINAL CHAIN OF CUSTODY DOCUMENT MUST BE EXECUTED IN INK

WHITE - LABORATORY YELLOW - CLIENT

Reliance Laboratories, Inc.
2044 Meadowbrook Road | P.O. Box 4657
Bridgeport, WV 26330
Phone: 304.842.5285 | Fax: 304.842.5351

Martinsburg Laboratory
Ridgefield Business Center | 25 Crimson Circle
Martinsburg, WV 25403
Phone: 304.596.2084 | Fax: 304.596.2086

Certifications: WV Department of Health #: 00354, 00443 | WV Department of Environmental Protection #: 158, 181
MD Department of Environment #: 336, 337 | US Environmental Protection Agency #: WV00042, WV00901

LABORATORY REPORT SUMMARY

Client: C06247

PDC MOUNTAINEER LLC
P.O. BOX 26
BRIDGEPORT WV 26330-

Wednesday, April 23, 2014

Total Number of Pages: 6
(Not Including C.O.C.)

Lab ID	Sample ID	Sample ID 2	Sample Date
210474-2014-W	ARMSTRONG-REYNOLDS 4HM		4/9/2014

The enclosed results have been analyzed according to the referenced method and SOP. Any deviations to the method have been noted on the report. Unless otherwise noted, all results have been verified to meet quality control requirements of the method. This report may not be reproduced, except in full, without written approval of Reliance Laboratories, Inc.

Report Reviewed By: Tenley Miller

Digitally signed by Tenley Miller
DN: cn=Tenley Miller, o=Reliance Laboratories, Inc., ou, email=tmiller@wvdsl.net, c=US
Date: 2014.05.02 13:50:05 -04'00'

Reliance Laboratories, Inc.
2044 Meadowbrook Road | P.O. Box 4657
Bridgeport, WV 26330
Phone: 304.842.5285 | Fax: 304.842.5351

Martinsburg Laboratory
Ridgefield Business Center | 25 Crimson Circle
Martinsburg, WV 25403
Phone: 304.596.2084 | Fax: 304.596.2086

Certifications: WV Department of Health #: 00354, 00443 | WV Department of Environmental Protection #: 158, 181
MD Department of Environment #: 336, 337 | US Environmental Protection Agency #: WV00042, WV00901

PDC MOUNTAINEER LLC
P.O. BOX 26

BRIDGEPORT, WV 26330-

Wednesday, April 23, 2014

Lab Number: 210474-2014-W **Sample ID:** ARMSTRONG-REYNOLDS 4HM

Parameter	Value	Units	Method	Date/Time Analyzed		Analyst	MDL	MCL
Analyte Group: Inorganics								
Total Organic Carbon	729	mg/l	SM5310C-00	4/18/2014	10:28	MC	0.1	
pH	# 6.57	S.U.	SM4500H+B-00	4/10/2014	9:25	CP		
Phenol	ND	mg/l	EPA 420.1 (1978)	4/22/2014	8:33	CP	0.002	
Specific Conductivity	68101	umhos/cm	EPA 120.1 (1982)	4/10/2014	11:13	KV	0.14	
Total Alkalinity	306	mg CaCO3/l	SM2320B-97	4/10/2014	11:13	KV	1.55	
Total Chloride	24992	mg/l	SM4500CLB-97	4/17/2014	15:45	KV	2.52	
Total Cyanide	ND	mg/l	SM4500CNE-99	4/9/2014	14:00	KD	0.004	
Total Dissolved Solids	38080	mg/l	SM2540C-97	4/14/2014	10:15	KV	10	
Total Hardness	12000	mg/l	SM2340C-97	4/10/2014	10:00	KV	0.31	
Total Hot Acidity	ND	mg/l	SM2310B-97	4/10/2014	13:40	KV	1.07	
Total Nitrate as N	ND	mg/l	EPA 300.0 R2.1	4/9/2014	11:45	KD	0.028	
Total Sulfate	ND	mg/l	ASTM D516-02	4/16/2014	9:40	KV	0.59	
Total Suspended Solids	520	mg/l	SM2540D-97	4/14/2014	10:15	KV	4	
Total Aluminum	ND	mg/l	EPA 200.8 R5.4	4/17/2014	11:04	TH	0.003	
Total Antimony	0.004	mg/l	EPA 200.8 R5.4	4/17/2014	11:04	TH	0.0008	
Total Arsenic	0.25	mg/l	EPA 200.8 R5.4	4/17/2014	11:04	TH	0.001	
Total Barium	684	mg/l	EPA 200.8 R5.4	4/17/2014	11:04	TH	0.0015	
Total Beryllium	ND	mg/l	EPA 200.8 R5.4	4/17/2014	11:04	TH	0.0005	
Total Cadmium	0.0008	mg/l	EPA 200.8 R5.4	4/17/2014	11:04	TH	0.0002	
Total Chromium	0.178	mg/l	EPA 200.8 R5.4	4/17/2014	11:04	TH	0.001	
Total Copper	0.259	mg/l	EPA 200.8 R5.4	4/17/2014	11:04	TH	0.001	
Total Iron	65.5	mg/l	EPA 200.8 R5.4	4/17/2014	11:04	TH	0.004	
Total Lead	0.006	mg/l	EPA 200.8 R5.4	4/17/2014	11:04	TH	0.0005	
Total Manganese	3.23	mg/l	EPA 200.8 R5.4	4/17/2014	11:04	TH	0.002	
Total Mercury	ND	mg/l	EPA 245.1 R3.0	4/15/2014	15:05	TH	0.0001	

Remarks:

Date Sample Collected: 4/9/2014 9:30
Sample Submitted By: L. PEARCE
Date Sample Received: 4/9/2014 10:05
ND = Not Detected at the MDL or MRL
MDL - Minimum Detectable Limit **MRL - Minimum Reporting Limit**
MCL - Maximum Contaminant Level, USEPA Regulated **[MCL] = Maximum Contaminant Level, Non-Regulated**

***Method Code: STANDARD METHODS 19TH ED; US EPA METHODS FOR THE CHEMICAL ANALYSIS OF WATER AND WASTES, Rev. 83; US EPA METHODS FOR THE DETERMINATION OF METALS IN ENVIRONMENTAL SAMPLES, May 1994; TEST METHODS FOR EVALUATING SOLID WASTE, SW-846, 3rd ED; USEPA Manual for Certification of Laboratories Analyzing Drinking Water, 5th ED. In accordance with EPA Regulations, all reports, including raw data and quality control data, are maintained by the laboratory for a minimum of 5 years.**
NOTE: Sample analyzed was improperly preserved or received in an improper container.

NOTE: #Holding time exceeded for this analysis.

Reliance Laboratories, Inc.
2044 Meadowbrook Road | P.O. Box 4657
Bridgeport, WV 26330
Phone: 304.842.5285 | Fax: 304.842.5351

Martinsburg Laboratory
Ridgefield Business Center | 25 Crimson Circle
Martinsburg, WV 25403
Phone: 304.596.2084 | Fax: 304.596.2086

Certifications: WV Department of Health #: 00354, 00443 | WV Department of Environmental Protection #: 158, 181
MD Department of Environment #: 336, 337 | US Environmental Protection Agency #: WV00042, WV00901

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BRIDGEPORT, WV 26330-

Wednesday, April 23, 2014

Lab Number: 210474-2014-W **Sample ID:** ARMSTRONG-REYNOLDS 4HM

Parameter	Value	Units	Method	Date/Time Analyzed		Analyst	MDL	MCL
Total Nickel	0.141	mg/l	EPA 200.8 R5.4	4/17/2014	11:04	TH	0.001	
Total Selenium	0.717	mg/l	EPA 200.8 R5.4	4/17/2014	11:04	TH	0.001	
Total Silver	0.001	mg/l	EPA 200.8 R5.4	4/17/204	11:04	TH	0.0002	
Total Thallium	ND	mg/l	EPA 200.8 R5.4	4/17/2014	11:04	TH	0.0005	
Total Zinc	0.183	mg/l	EPA 200.8 R5.4	4/17/2014	11:04	TH	0.001	
B.O.D. (5)	1686	mg/l	SM5210B-01	4/10/2014	9:25	CP	2.12	
Chemical Oxygen Demand	9200	mg/l	EPA 410.4 R2.0	4/10/2014	9:00	KV	2.94	

Remarks:

Date Sample Collected: 4/9/2014 9:30
Sample Submitted By: L. PEARCE
Date Sample Received: 4/9/2014 10:05
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MDL - Minimum Detectable Limit **MRL - Minimum Reporting Limit**
MCL - Maximum Contaminant Level, USEPA Regulated **[MCL] = Maximum Contaminant Level, Non-Regulated**

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BRIDGEPORT, WV 26330-

Wednesday, April 23, 2014

Lab Number: 210474-2014-W **Sample ID:** ARMSTRONG-REYNOLDS 4HM

Parameter	Value	Units	Method	Date/Time Analyzed		Analyst	MDL	MCL
Analyte Group: Organics								
1,1,1,2-Tetrachloroethane	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.001	
1,1,1-Trichloroethane	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.002	
1,1,2,2-Tetrachloroethane	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.003	
1,1,2-Trichloroethane	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.003	
1,1-Dichlorethane	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.002	
1,1-Dichloroethylene	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.002	
1,2,3-Trichloropropane	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.003	
1,2-Dichloroethane	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.001	
1,2-Dichloropropane	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.002	
2-Butanone	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.003	
2-Hexanone	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.003	
Acetone	0.078	mg/l	SW8260B	4/11/2014	4:33	AT	0.004	
Acrylonitrile	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.005	
Benzene	0.044	mg/l	SW8260B	4/11/2014	4:33	AT	0.001	
Bromochloromethane	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.003	
Bromodichloromethane	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.001	
Bromoform	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.001	
Bromomethane	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.002	
Carbon Disulfide	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.002	
Carbon Tetrachloride	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.001	
Chlorobenzene	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.001	
Chloroethane	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.002	
Chloroform	0.007	mg/l	SW8260B	4/11/2014	4:33	AT	0.001	
Chloromethane	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.003	
cis-1,2-Dichloroethene	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.001	

Remarks:

Date Sample Collected: 4/9/2014 9:30
Sample Submitted By: L. PEARCE
Date Sample Received: 4/9/2014 10:05
ND = Not Detected at the MDL or MRL
MDL - Minimum Detectable Limit **MRL - Minimum Reporting Limit**
MCL - Maximum Contaminant Level, USEPA Regulated **[MCL] = Maximum Contaminant Level, Non-Regulated**

***Method Code: STANDARD METHODS 19TH ED; US EPA METHODS FOR THE CHEMICAL ANALYSIS OF WATER AND WASTES, Rev. 83; US EPA METHODS FOR THE DETERMINATION OF METALS IN ENVIRONMENTAL SAMPLES, May 1994; TEST METHODS FOR EVALUATING SOLID WASTE, SW-846, 3rd ED; USEPA Manual for Certification of Laboratories Analyzing Drinking Water, 5th ED. In accordance with EPA Regulations, all reports, including raw data and quality control data, are maintained by the laboratory for a minimum of 5 years.**
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Reliance LABORATORIES

Certifications: WV Department of Health #: 00354, 00443 | WV Department of Environmental Protection #: 158, 181
MD Department of Environment #: 336, 337 | US Environmental Protection Agency #: WV00042, WV00901

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BRIDGEPORT, WV 26330-

Wednesday, April 23, 2014

Lab Number: 210474-2014-W **Sample ID:** ARMSTRONG-REYNOLDS 4HM

Parameter	Value	Units	Method	Date/Time Analyzed		Analyst	MDL	MCL
cis-1,3-Dichloropropene	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.002	
DBCP	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.0001	
Dibromochloromethane	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.001	
Dibromomethane	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.001	
Dichloromethane	0.053	mg/l	SW8260B	4/11/2014	4:33	AT	0.002	
EDB	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.0001	
Ethylbenzene	0.014	mg/l	SW8260B	4/11/2014	4:33	AT	0.001	
Iodomethane	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.002	
Isopropylbenzene	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.005	
Methyl Isobutyl Ketone	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.005	
Napthalene	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.001	
o-Dichlorobenzene	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.002	
p-Dichlorobenzene	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.002	
Styrene	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.001	
Tetrachloroethylene	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.001	
Toluene	0.078	mg/l	SW8260B	4/11/2014	4:33	AT	0.002	
trans-1,2-Dichloroethene	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.002	
trans-1,3-Dichloropropene	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.001	
trans-1,4-Dichloro-2-butene	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.005	
Trichloroethylene	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.002	
Trichlorofluoromethane	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.001	
Vinyl Acetate	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.005	
Vinyl Chloride	ND	mg/l	SW8260B	4/11/2014	4:33	AT	0.001	
Xylenes	0.078	mg/l	SW8260B	4/11/2014	4:33	AT	0.002	
1,2-Dichloroethane-d4 (Surrogate)	88.5	%	SW8260B	4/11/2014	4:33	AT		
4-Bromofluorobenzene (Surrogate)	101	%	SW8260B	4/11/2014	4:33	AT		

Remarks:

Date Sample Collected: 4/9/2014 9:30
Sample Submitted By: L. PEARCE
Date Sample Received: 4/9/2014 10:05
ND = Not Detected at the MDL or MRL
MDL - Minimum Detectable Limit **MRL - Minimum Reporting Limit**
MCL - Maximum Contaminant Level, USEPA Regulated **[MCL] = Maximum Contaminant Level, Non-Regulated**

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PDC MOUNTAINEER LLC
P.O. BOX 26

BRIDGEPORT, WV 26330-

Wednesday, April 23, 2014

Lab Number: 210474-2014-W **Sample ID:** ARMSTRONG-REYNOLDS 4HM

Parameter	Value	Units	Method	Date/Time Analyzed	Analyst	MDL	MCL
Toluene-d8 (Surrogate)	96.5	%	SW8260B	4/11/2014 4:33	AT		

Remarks:

Date Sample Collected: 4/9/2014 9:30
Sample Submitted By: L. PEARCE
Date Sample Received: 4/9/2014 10:05
ND = Not Detected at the MDL or MRL
MDL - Minimum Detectable Limit **MRL - Minimum Reporting Limit**
MCL - Maximum Contaminant Level, USEPA Regulated **[MCL] = Maximum Contaminant Level, Non-Regulated**

***Method Code: STANDARD METHODS 19TH ED; US EPA METHODS FOR THE CHEMICAL ANALYSIS OF WATER AND WASTES, Rev. 83; US EPA METHODS FOR THE DETERMINATION OF METALS IN ENVIRONMENTAL SAMPLES, May 1994; TEST METHODS FOR EVALUATING SOLID WASTE, SW-846, 3rd ED; USEPA Manual for Certification of Laboratories Analyzing Drinking Water, 5th ED. In accordance with EPA Regulations, all reports, including raw data and quality control data, are maintained by the laboratory for a minimum of 5 years.**

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NOTE: #Holding time exceeded for this analysis.

Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

April 30, 2014

Ms. Tenley Miller
Reliance Laboratories, Inc.
2044 Meadowbrook Road
P.O. Box 4657
Bridgeport, WV 26330

RE: Project: 210474-2014-W
Pace Project No.: 30117744

Dear Ms. Miller:
Enclosed are the analytical results for sample(s) received by the laboratory on April 10, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jacquelyn Collins
jacquelyn.collins@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project: 210474-2014-W
Pace Project No.: 30117744

Pennsylvania Certification IDs
1638 Roseytown Rd Suites 2,3&4 Greensburg, PA 15601
ACLASS DOD-ELAP Accreditation #: ADE-1544
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California/TNI Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
Florida/TNI Certification #: E87683
Guam/PADEP Certification
Hawaii/PADEP Certification
Idaho Certification
Illinois/PADEP Certification
Indiana/PADEP Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188
Utah/TNI Certification #: ANTE
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin/PADEP Certification
Wyoming Certification #: 8TMS-Q

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Greensburg, PA 15601
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SAMPLE SUMMARY

Project: 210474-2014-W
Pace Project No.: 30117744

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30117744001	Armstrong-Reynolds 4 HM	Water	04/09/14 09:30	04/10/14 09:15

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SAMPLE ANALYTE COUNT

Project: 210474-2014-W
Pace Project No.: 30117744

Lab ID	Sample ID	Method	Analysts	Analytes Reported
30117744001	Armstrong-Reynolds 4 HM	EPA 900.0	JMR	2
		EPA 901.1	MAH	2

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PROJECT NARRATIVE

Project: 210474-2014-W
Pace Project No.: 30117744

Method: **EPA 900.0**
Description: 900.0 Gross Alpha/Beta
Client: Reliance Laboratories, Inc.
Date: April 30, 2014

General Information:
1 sample was analyzed for EPA 900.0. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 210474-2014-W
Pace Project No.: 30117744

Method: **EPA 901.1**
Description: 901.1 Gamma Spec
Client: Reliance Laboratories, Inc.
Date: April 30, 2014

General Information:
1 sample was analyzed for EPA 901.1. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: 210474-2014-W
Pace Project No.: 30117744

Sample: Armstrong-Reynolds 4 HM **Lab ID: 30117744001** Collected: 04/09/14 09:30 Received: 04/10/14 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**3,854 ± 731 (140)** **C:NA T:NA**	pCi/L	04/21/14 17:28	12587-46-1	
Gross Beta	EPA 900.0	**183 ± 85.3 (105)** **C:NA T:NA**	pCi/L	04/21/14 17:28	12587-47-2	
Radium-226	EPA 901.1	**3148.200 ± 546.790 (421.200)** **C:NA T:NA**	pCi/L	04/24/14 13:23	13982-63-3	
Radium-228	EPA 901.1	**179.300 ± 44.472 (46.920)** **C:NA T:NA**	pCi/L	04/24/14 13:23	15262-20-1	

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ANALYTICAL RESULTS

Project: 210474-2014-W
Pace Project No.: 30117744

Sample: Armstrong-Reynolds 4 HM **Lab ID: 30117744001** Collected: 04/09/14 09:30 Received: 04/10/14 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Gross Alpha	EPA 900.0	**3,854 ± 731 (140) C:NA T:NA**	pCi/L	04/21/14 17:28	12587-46-1	
Gross Beta	EPA 900.0	**183 ± 85.3 (105) C:NA T:NA**	pCi/L	04/21/14 17:28	12587-47-2	
Radium-226	EPA 901.1	**3148.200 ± 546.790 (421.200) C:NA T:NA**	pCi/L	04/24/14 13:23	13982-63-3	
Radium-228	EPA 901.1	**179.300 ± 44.472 (46.920) C:NA T:NA**	pCi/L	04/24/14 13:23	15262-20-1	

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QUALITY CONTROL DATA

Project: 210474-2014-W
Pace Project No.: 30117744

QC Batch: RADC/19428
QC Batch Method: EPA 900.0
Analysis Method: EPA 900.0
Analysis Description: 900.0 Gross Alpha/Beta
Associated Lab Samples: 30117744001

METHOD BLANK: 717376
Matrix: Water
Associated Lab Samples: 30117744001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.545 ± 0.862 (1.92) C:NA T:NA	pCi/L	04/22/14 06:26	
Gross Beta	-0.064 ± 0.869 (2.13) C:NA T:NA	pCi/L	04/22/14 06:26	

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QUALITY CONTROL DATA

Project: 210474-2014-W
Pace Project No.: 30117744

QC Batch: RADC/19473
QC Batch Method: EPA 901.1
Analysis Method: EPA 901.1
Analysis Description: 901.1 Gamma Spec .
Associated Lab Samples: 30117744001

METHOD BLANK: 719015
Matrix: Water
Associated Lab Samples: 30117744001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-86.104 ± 434.460 (166.200) C:NA T:NA	pCi/L	04/21/14 11:47	
Radium-228	-0.579 ± 19.489 (33.980) C:NA T:NA	pCi/L	04/21/14 11:47	

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Pace Analytical Services, Inc.
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 210474-2014-W
Pace Project No.: 30117744

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

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RELIANCE LABORATORIES, INC. - CHAIN OF CUSTODY RECORD

☐ 2044 MEADOWBROOK ROAD
POST OFFICE BOX 4657
BRIDGEPORT, WV 26330
TEL. (304) 842-5285 • FAX (304) 842-5351
E-MAIL reliancelabs@wvdsl.net
INTERNET www.RelianceLabs.net

☐ RIDGEFIELD BUSINESS CENTER
25 CRIMSON CIRCLE
MARTINSBURG, WV 25403
TEL. (304) 596-2084 • FAX (304) 596-2086

*CLIENT NAME Reliance Labs

*ADDRESS Bridgeport WV

CUSTOMER # _____ *TEL. # _____ FAX # _____

*SAMPLER (S) L. Pearce E-MAIL _____

SHEET NO. 1 OF 1

LABORATORY #	*DATE	*TIME	BRCA	BRSA	MATRIX W. DW. S. O. M	TEMP. ≤ 4°C Yes No	*# OF CONTAIN.	HN03	H2S04	HCL	NaOH	BAC-T	NO PRES.		Radioactive Gross Alpha							*PROJECT/REMARKS
	4/9/14	930		✓	W		1							cube	1	✓						301-7744 210474-2014-W 001

SAMPLES DO ✓ DO NOT ____ MEET USEPA GUIDELINES FOR HOLDING TIMES
SAMPLES DO ✓ DO NOT ____ MEET USEPA GUIDELINES FOR CHEMICAL PRESERVATIVES
SAMPLES DO ✓ DO NOT ____ MEET USEPA GUIDELINES FOR SAMPLE CONTAINERS
SAMPLES ARE ✓ ARE NOT ____ FOR REGULATORY COMPLIANCE PURPOSES

*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT: SIGN: [signature]	DATE: 4/9/14 TIME: 1500	PRINT: SIGN: Fedex
*RELINQUISHED BY: PRINT: SIGN: Fedex	DATE: 4/10/14 TIME: 0915	PRINT: Alissa B Muchoney SIGN: Alissa B Muchoney
*RELINQUISHED BY: PRINT: SIGN:	DATE: TIME:	PRINT: SIGN:
*COURIER: TRACKING #:	DATE: TIME:	PRINT: SIGN:

REMARKS:

PWS# _____

WEATHER/TEMPERATURE:

☐ ***RUSH STATUS*** (INITIAL ACCEPTANCE _____)

*** ADDITIONAL LABORATORY FEES MAY APPLY***

EXTENT OF LIABILITY

SHOULD RELIANCE LABORATORIES, INC. BE AT FAULT AND ANY DISPUTE ARISE REGARDING ANALYTICAL DATA GENERATED BY THE LABORATORY, THE EXTENT OF THE LIABILITY TO RELIANCE WILL BE A DUPLICATE ANALYSIS OF THAT SAMPLE (PROVIDING ADEQUATE SAMPLE REMAINS) OR A REFUND OF THE ANALYTICAL FEE. IN NO EVENT WILL RELIANCE LABORATORIES BE LIABLE FOR DAMAGES INCLUDING BUT NOT LIMITED TO DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES ARISING FROM SUCH DISPUTE.

NOTE: TYPICAL SAMPLE TURN AROUND FOR ROUTINE SAMPLES IS 5 TO 10 WORKING DAYS. THIS IN NOT A GUARANTEE THAT SAMPLES WILL BE COMPLETED IN THIS TIME FRAME, HOWEVER. NON-ROUTINE SAMPLES MAY REQUIRE ADDITIONAL TIME.

TO BE COMPLETED BY CLIENT

ORIGINAL CHAIN OF CUSTODY DOCUMENT MUST BE EXECUTED IN INK

WHITE - LABORATORY YELLOW - CLIENT

RELIANCE LABORATORIES, INC.

ENVIRONMENTAL ANALYSTS AND CONSULTANTS

BRIDGEPORT, WV www.RelianceLabs.net ***MARTINSBURG, WV***

Certifications: WV Department of Health #: 00354, 00433 | WV Department of Environmental Protection #: 158, 181
MD Department of Environment #: 336, 337 | US Environmental Protection Agency #: WV00042, WV00991

Wednesday, April 9, 2014 30117744

Pace Analytical Services
1638 Roseytown Road
Suites 2,3,4
Greensburg, PA 15601

Please analyze the following samples for: **Radium226-228/GrossAlpha**

Please identify as:

210474-2014-W 4/09/2014 09:30 Sample ID: Armstrong-Reynolds 4 HM 001

Sampled by: L.Pearce

PLEASE SEND RESULTS & INVOICE TO:

RELIANCE LABORATORIES, INC.
ATTN: TENLEY MILLER
P.O. BOX 4657
BRIDGEPORT, WV 26330
tmiller@wvdsl.net

Thank You

Sample Condition Upon Receipt

Pace Analytical

Client Name: Reliance Project # 30117744

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 7984 9175 7399

Optional: Proj. Due Date: Proj. Name:

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☑ Other garbage bag

Thermometer Used 6 (7) 8 Type of Ice: (Wet) Blue None ☑ Samples on ice, cooling process has begun

Cooler Temperature 1.6 Biological Tissue is Frozen: Yes No

Date and initials of person examining contents: ARM 4/10/14

Temp should be above freezing to 6°C

		Comments:
Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4. ARM 4/10/14 Sampler name on additional paperwork that goes with COC
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☐Yes ☑No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11. ARM 4/10/14
Sample Labels match COC:	☐Yes ☑No ☐N/A	12. Ad No date/time on sample bottle. ~~ID on label is project #.~~ Both project # and ID are on container.
-Includes date/time/ID/Analysis Matrix: WT		
All containers needing preservation have been checked.	☑Yes ☐No ☐N/A	13. Added 12 mL HNO3 to sample container. pH<2. ARM. 4/10/14. 1030
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☑No ☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☑No	Initial when completed ARM Lot # of added preservative DL14-0282
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: 4/11/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical

Project Number: 30117744

Client Name: Reliance

Item No.	Matrix Code	Glass Jar (120 / 250 / 500 / 1L)	Soil kit (2 SB, 1M, soil jar)	Chemistry (250 / 500 / 1L)	Organics (1L)	Nutrient (250 / 500)	Phenolics (250 ml)	TOC (40 ml / 250 ml)	TOX (250 ml)	Total Metals	Dissolved Metals preserved Y N	O & G (1L)	TPH (1L)	VOA (40 ml 30 ml)	Cyanide (250 ml)	Sulfide (500 ml)	Bacteria (120 ml)	Wipes / swipe/ smear/ filter	Radchem Nalgene (125 / 250 / 500 / 1L)	Radchem Nalgene (1/2 gal. / 1 gal.L)	Cubitainer (500 ml / 4L)	Ziploc	Other	Other
001	WT																				—			

SECTION 9 – OPERATING REQUIREMENTS / DATA

The North Hills Plant, North Hills #1A, API# 47-019-00508, UIC# 2D0190508 has previously been permitted as a UIC Class 2D injection facility. Production casing of 4 ½" was run to a total depth of 2776' with 2 3/8" EUE tubing and compression packer set at 2690' with brine water and corrosion inhibitor as the annulus fluid makeup. Virgin reservoir pressures obtained from previous reports indicated the Weir's pressure of 750 PSIG with a maximum injection pressure of 758 psig and 2440 psig bottom hole pressure. Over the past year the average daily injection rate has been about 300bpd and 100bph holding approximately 330 psi on the tubing. Planned maximum daily injection volumes are 2880bpd at a rate of 120bph and average pressures of 500 psig off of past history. Upon evaluation and further injection a 1500 gallon 14.5% HCL acid job may be performed on the injection interval to aid in lowered injection pressures due to partial plugging of the pore spaces in the sandstone but in review of past injection history this is not felt to be a project in the near future. The facility utilizes 4 types of filtration, 1 – a hydraulic centrifuge for removing heavy particulate matter, a 50 micron bag type filter unit and then a 20 micron cartridge type filter unit followed finally by a 5 micron cartridge type filter unit. Injection pumps are three phase electric triplex pumps that have a maximum output of 105 bph at 100% efficiency. Injection fluid additives consist of corrosion inhibitor and bactericide chemical additives that shall be administered at a rate of .25 gallon per thousand gallons of injected fluid or the appropriate equivalent.

MIT inspections shall be performed a minimum of every five years or anytime service work is preformed to the well or anytime routine daily/monthly inspections show the possibility of an integrity problem. Routine daily/monthly inspections shall consist of casing and tubing pressures monitoring, equipment and manifold, well head, tanks, containments and equipment inspections for corrosion and potential leaks. Monthly manifold and pipeline integrity step tests to 10% over the maximum permitted injection pressure. All daily/monthly inspections and test shall be recorded, logged and filed in the plant office. In the event of any suspected well, manifold or pipeline integrity problem the well will be immediately shut in and injection activities shall cease with proper notifications being made. In the event of any well integrity problem the well will be made "static", and evaluation of data shall be preformed and remedial work will begin once a plan of action has been put into place. Any injection fluids shall be transported and disposed of in an alternated state approved disposal facility or permitted UIC Class 2D well.

Please find enclosed Appendix "G", a copy of the mechanical integrity test, a copy of a "grab" sample showing the chemical properties of the proposed injection fluids and associated MSDS.

SHC HA-25

ACID FOAM STICK FOR GAS WELLS, DISPOSAL WELLS AND WATER INJECTION WELLS.

PRODUCT DESCRIPTION COLOR - GREEN

HA-25 acid foam stick is a green gel/paste blend of sulfamic acid and surfactants in a water soluble polymer or paper tube

PRODUCT BENEFITS

This product is a highly active acid gel stick with excellent foaming capabilities. Exhibits excellent solids wetting and scale removal. Very effective at restoring gas to normal flow and disposal wells to normal operation. Use in conjunction with soap sticks can be very effective unloading watered up gas wells.

APPLICATION

Remove plastic end caps and inject entire stick. 1-20 sticks in disposal wells often restores normal injection rates. 1-8 sticks in gas wells with shut in time often restores normal flow.

SHIPPING AVAILABILITY

Sizes of 1 1/4" x 15" are available. Shipped in 100 count case sizes.

TYPICAL PHYSICAL PROPERTIES

Ph.....0.1 to 2.0
Odor.....Mild
Solubility.....Water soluble
Appearance.....Green

PRODUCT BULLETIN

SHC HA-25

SOUTHERN HYDROCARBON CORP.
934 Little Coal River Suite B Alum Creek WV.25003
1-866-493-7622

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SOUTHERN HYDROCARBON CORP.
934 LITTLE COAL RIVER, APT B
ALUM CREEK, WV 25003
TEL: 304-756-3171 FAX: 304-756-1364

4 pgs HA-25

MATERIAL SAFETY DATA SHEET

****

SECTION I GENERAL INFORMATION

Product name: HA.25 Acid Gel Stick

HMIS RATINGS
Health.....2
Flammability.....1
Reactivity.....2

NFPA RATINGS
Health..... 2
Fire.....1
Reactivity.....2
Personal Protection...C (contact corrosive =2)
0=Least to 4=Extreme

****

SECTION II HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Component	(CAS Number)	OSHA PEL	ACGIHTLV
Nonyl Phenol Ethoxylate	(9016-45-9)		
Sulfamic Acid	(5329-14-6)		

****

SECTIONIII PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point—212 F
Pour Point - NA
Specific Gravity (H20=1)—1.76
Vapor Pressure – ND
Vapor Density—ND
Evaporation Rate (BuAc=1)—ND
Solubility in water—Soluble
Appearance and odor—Liquid/Solid, Green Neutral

****

SECTION IV FIRE AND EXPLOSION HAZARD DATA

Flash Point—(TCC) >200F
Flammable Limits—LEL:ND UEL:ND
Extinguishing Media–_____Alcohol Foam _X__Carbon Dioxide
__X__ Foam ___X__Dry Chemical __X__ Water Spray
Flammable Limits based on most volatile ingredients
Special Fire Fighting Procedures:
Water spray may be used to cool fire exposed metal containers to prevent reignition from hot surfaces. Do not breath smoke or hot vapors.
Unusual Fire And Explosion Hazards:
Vapor may travel a considerable distance to a source of ignition and flash back. Do not expose to open flame or spark. Intense heat may cause pressure may cause pressure build-up and rupture of product containers. Material will become liquid above pour point. Toxic fumes may be released. Will produce corrosive vapors.

****

SOUTHERN HYDROCARBON CORP
934 LITTLE COAL RIVER RD B
ALUM CREEK, WV 25003
TEL 304-756-3171 FAX: 304-756-3339

HA-25

PAGE TWO

SECTION V REACTIVITY INFORMATION
Stability: Corrosive
Incompatibility: Material to avoid –Reducing agents and metals
Hazardous Decomposition or BY-PRODUCTS—Carbon Dioxide
Carbon Monoxide or Sulfur
and Nitrogen
HAZARDOUS POLYMERIZATION—Will not occur

****

SECTION VI - HEALTH HAZARD DATA

ROUTES OF ENTRY

INHALATION?	Toxic; inhalation of material may cause severe injury or death.
SKIN/EYES?	Corrosive; exposure of skin and/or eyes may cause severe injury.
INGESTION:	Toxic; ingestion of product may cause severe injury or death.

HEALTH HAZARDS

ACUTE:	Inhalation of vapors or mist may cause severe injury and can be fatal. Ingestion of liquid will cause severe injury and can be fatal. Liquid will cause severe corrosion to the eyes.
CHRONIC:	None known.

CARCINOGENICITY

LISTED IN NTP?	IARC MONOGRAPHS?	OSHA REGULATED
NO	NO	NO

SIGNS AND SYMPTOMS OF EXPOSURE: Irritation of eyes and skin develops upon contact.
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None known.
EMERGENCY AND FIRST AID PROCEDURES:

EYE CONTACT:	Flush eyes with water for 20 minutes, get medical Advice.
SKIN CONTACT:	Wash skin with soap and water for at least 20 minutes. Remove any contaminated clothing. Get medical attention if symptoms develop and persist.
INGESTION:	Do not induce vomiting. Notify physician or medical personnel immediately.
INHALATION:	Remove to fresh air. If not breathing give, artificial respiration. Not mouth to mouth. Use artificial respirator only with one-way valve. Give oxygen if breathing is labored. Get emergency medical help. Contact physician immediately.

****

SECTION VII - PRECAUTIONS FOR SAFE HANDLING

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Put on appropriate protective equipment for corrosives.
All spills, contain with dikes, pick up with lined vacuum truck. Handle as hazardous waste [illegible].

KA-25

PAGE THREE

Notify proper local, state and federal agencies.
Do not get water inside containers.
For vapor release, get people out of the area. Shut off ignition sources, ventilate the area. Notify proper authorities if required by SARA Title III.

WASTE DISPOSAL METHOD:

EPA approved hazardous waste disposal site. Follow applicable local, state and federal regulations.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Store in a cool place away from ignition sources.
Store away from reducers or reducing agents and water.

OTHER PRECAUTIONS:

Clean up leaks immediately to prevent soil or water contamination utilizing proper protective equipment for corrosives.

****

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION: NIOSH approved organic and corrosive vapor mask required.

VENTILATION: LOCAL EXHAUST, Recommended SPECIAL, --
MECHANICAL, Recommended OTHER, --

PROTECTIVE GLOVES: Chemical resistant gauntlet type gloves.

EYE PROTECTION: Chemical goggles or full face shield.

OTHER PROTECTIVE EQUIPMENT: Boots, aprons, drench showers, eye wash as as needed for protection against spills and/or splashes. Corrosive material: utilize nonabsorbent for corrosive service personnel protection equipment at all times.

WORK HYGIENIC PRACTICES: Avoid contact with skin, eyes, and clothing. After handling this product, wash hands before eating, drinking, or smoking. If contact occurs, remove contaminated clothing. If needed, take first aid action shown in SECTION VI. Launder contaminated clothing before reuse.

****

SECTION IX - TRANSPORTATION INFORMATION

Corrosive Solid - NOS, 172, UN1759, (Contains Sulfamic Acid)
Reportable Quantity: NONE

****

SECTION X - OTHER DATA

EPA HAZARDS: Acute - Yes Chronic - No Flammability - No
Reactive - Yes Sudden Release of Pressure - No

SARA TITLE III: Threshold Planning Quantity: NONE
Section 313, Toxic Materials:

Chemical Name	CAS Number	Weight %
Nonyl Phenol Ethoxylate	(9016-45-9)	20
Sulfamic Acid	(5329-14-6)	50

SOUTHERN HYDROCARBON CORP.
934 LITTLE COAL RIVER, APT. 3
ALUM CREEK, WV 25003
TEL 304-756-5171 FAX: 304-756-1364

H-A-25

PAGE FOUR

TOXIC SUBSTANCES CONTROL ACT (TSCA) : 40 CFR 710
Sources of the raw materials used in this mixture assure that all chemical ingredients present are in compliance with Sect. 8 (b) Chemical Substance Inventory, or are otherwise in compliance with TSCA.

****

DISCLAIMER OF LIABILITY

The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express, or implied, regarding its correctness.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this reason and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with handling, storage, use, or disposal of the product.

Reviewed & Revised By: Dennis Fagan
4/02/99

SOUTHERN HYDROCARBON CORP.
934 LITTLE COAL RIVER, APT. B
ALUM CREEK, WV 25003
TEL: 304-756-3171 FAX: 304-756-7364

SHC HC-10

CORROSION INHIBITOR GEL STICK FOR GAS WELLS, OIL WELLS, STOCK TANKS AND INJECTION AND DISPOSAL SYSTEMS

PRODUCT BULLETIN

SHC HC-10

PRODUCT DESCRIPTION COLOR - BLACK/BROWN

The HC-10 is a black to brown color blend of surfactants and quaternary amines. Available in water soluble paper tubes or extruded polymer tubes.

PRODUCT BENEFITS

Field proven effective corrosion inhibitor. This product has solids wetting properties HC-10 is also effective in controlling organic deposits. Very beneficial when applied to the rat hole of rod pumped wells.

APPLICATION

Remove plastic end caps. Inject entire stick. Use 2-4 sticks as warranted by well depths and fluid volumes for corrosion control. Apply to surface vessels to control solids and deposits.

SHIPPING AVAILABILITY

Sizes of 1 1/4" X 15" are available. Shipped in 60, 80, and 100 count cases.

TYPICAL PHYSICAL PROPERTIES

Ph..... 6.3 - 9.5
Odor.....Typical
Solubility.....Water Soluble/Oil Dispersible
Appearance.....Black/Brown

SOUTHERN HYDROCARBON CORP.
934 Little Coal River rd. Suite B Alum Creek WV.25003
1-866-493-7622

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Southern Hydrocarbon Corp.
934 Little Coal River, Suite B
Alum Creek, WV 25003

EMERGENCY PHONE 1-888-388-5035

MATERIAL SAFETY DATA SHEET

SECTION I - GENERAL INFORMATION

PRODUCT NAME - HC-10

NFPA	
Fire	1
Health	3
Reactive	0
Special	0

(0-Least to 4-Extreme)

S.A.R.A. INFORMATION
HAZARDS; ACUTE FIRE
PHYSICAL DATA SOLID
TRANSPORTATION EMERENCY NUMBER: 1-888-388-5035

****

SECTION II - HAZARDOUS INGREDIENTS

Hazardous Ingredient	MAX % W/W	SARA APPLIES 312	313	372	AIR CONTAMINENT LEVELS TWA/TLV (ppm)	STEL (ppm)	CEIL (ppm)	AGENT
Nonyl Phenol Ethoxylate (CAS # 9016-45-9)	70	N	N	N				
Isopropyl Alcohol (CAS # 67-63-0)	?	Y	N	N	400	500		OSHA

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT – ND
SPECIFIC GRAVITY (H2o=1)—1.04
VAPOR PRESSURE - ND VAPOR DENSITY – ND
EVAPORATION RATE (BuAc-1)—ND
SOLUBILITY IN WATER—Soluble
PH 6 - 7.5
APPEARANCE AND ODOR—Dark Solid Stick, Alcohol Odor

****

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT—124 Degree F ASTM - 93 AUTOIGNITION TEMP, ND
FLAMMABLE LIMITS—ND
EXTINGUISHING MEDIA
DRY CHEMICAL CARBON DIOXIDE WATER SPRAY FOAM
Prevent human exposure to fire, fumes, smoke and products of combustion.
FIREFIGHTERS SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS AND TURNOUT GEAR.

HC-1C PAGE TWO

UNUSUAL FIRE & EXPLOSION HAZARDS
Vapor may travel a considerable distance to a source of ignition and flash back. Material will become liquid above 135 Degree F.

****

SECTION V - REACTIVITY INFORMATION

STABILITY

PRODUCT IS : Stable

INCOMPATIBILITY

MATERIALS TO AVOID: Oxidizers or oxidizing material

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Carbon dioxide, Carbon Monoxide, Oxides of Nitrogen

HAZARDOUS POLYMERIZATION: Will not occur

****

SECTION VI - HEALTH HAZARD DATA

ROUTES OF ENTRY

INHALATION? Irritant
SKIN/EYES? Irritant
INGESTION? Irritant, can cause central nervous system (CNS) depression. In extreme cases may be fatal.

HEALTH HAZARDS

ACUTE. Inhalation of vapors or mist may be narcotic and can be fatal. Ingestion of liquid will cause gastro intestinal distress. Liquid can cause severe irritation to the eyes.

CHRONIC: None known

CARCINOGENICITY

LSITED IN NTP? No

IARC MONOGRAPHS? NO

OSHA REGULATED? NO

SIGNS AND SYMPTOMS OF EXPOSURE. Irritation of eyes and skin develops upon contact.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE. None Known.

EMERGENCY AND FIRST AID PROCEDURES.

EYE CONTACT: Flush eyes with water for 15 minutes, get medical advice.
SKIN CONTACT: Wash skin with soap and water. Remove any contaminated clothing. Get medical attention if symptoms develop and persist.
INGESTION: If swallowed induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. Call a physician.
INHALATION: Remove to fresh air. If not breathing, give artificial respiration.

HC-10

PAGE THREE

Give oxygen if breathing is labored. Get emergency medical help.
Contact physician immediately.
****

SECTION VII - PRECAUTIONS FOR SAFE HANDLING

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED. Small spills, pick up with absorbent media. Store as hazardous waste.
Large spills, contain with dikes, pick up with vacuum truck. Handle as hazardous waste. Notify proper local, state and federal agencies.
For vapor release, get people out of the area. Shut off ignition sources, ventilate the area. Notify proper authorities if required by SARA Title III.

WASTE DISPOSAL METHOD. EPA approved hazardous waste disposal site.
Follow the applicable local, state and federal regulations.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE. Store in a cool place away from ignition sources. Store away from oxidizers or materials bearing a yellow "DOT" label.

OTHER PRECAUTIONS. Clean up leaks immediately to prevent soil or water contamination.
****

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION. (If concentration reaches or exceeds TLV), NIOSH approved organic vapor mask required.

VENTILIATION: LOCAL EXHAUST, Recommended SPECIAL, —
MECHANICAL, Recommended OTHER,—

PROTECTIVE GLOVES. Chemical goggles or full face shield.

OTHER PROTECTIVE EQUIPMENT. Boots, aprons, drench showers, eye wash as needed for protection against spills and/or splashes.

WORK HYGIENIC PRACTICES. Avoid contact with skin, eyes and clothing After handling this product, wash hands before eating, drinking or smoking. If contact occurs, remove contaminated clothing. If needed, take first aid action in SECTION VI. Launder contaminated clothing before use.

HI-10

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SECTION IX - TRANSPORTATION INFORMATION

PROPER SHIPPING NAME: FLAMMABLE SOLID NOS (CONTAINS ISOPROPYL ALCOHOL)
HAZARD CLASS: UN 3175 Guide # 129
LABEL REQUIREMENTS: FLAMMABLE SOLID
REPORTABLE QUANITY: NONE

****

SECTION X - OTHER DATA

EPA HAZARDS. Acute - Yes Chronic - No Flammability - Yes
Reactive - No Sudden Release of Pressure - No

SARA TITLE III
Threshold Planning Quantity. NONE
Reportable Quantity. NONE
Section 313. Toxic Materials

Chemical Name	CAS Number	Weight %
Isopropyl Alcohol	(67-63-0)	7
Nonyl Phenol Ethoxylate	(9016-45-9)	70

TOXIC SUBSTANCES CONTROL ACT (TSCA). 40 CFA 710
Sources of the raw materials used in this mixture assure that all chemical ingredients present are in compliance with Sect. 8(b) Chemical Substance Inventory, or are otherwise in compliance with TSCA.

****

DISCLAIMER OF LIABILITY

The information provided in this Material Safety data sheet has been obtained from sources believed to be reliable. Hydro Foam Technology provides no warranties, either expressed or implied and assumes no responsibility for the accuracy or completeness of the data contained herein. This information is offered for your information, consideration, and investigation. You should satisfy yourself that you have all current data relevant to your particular use.

Prepared by Dennis Fagan 02/18/99

DWC

EMERGENCY RESPONSE PLAN:

SPILL PREPAREDNESS, PREVENTION & CONTINGENCY PLAN (SPPC)

Revision Date : 05-13-2014

SITE NAME: NORTH HILLS PLANT

LOCAL EMERGENCY CONTACT NUMBERS

Dial "911" In the event of any emergency

Fayette County Emergency Response Dispatch: 304-574-3590

Oak Hill State Police: 304-469-2915

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1 – Facility Chemical Inventory

1.0 Introduction & Purpose

1.1 The purpose of this plan is to ensure adequate preparedness for rapid and appropriate incident response in order to protect Danny Webb Construction, INC employees, the environment, and Danny Webb Construction, INC's assets. For the purposes of this SPPC Plan, an incident is defined as an event that interrupts normal Danny Webb Construction, INC activities and may result in a threat to human health and/or the environment if not properly addressed.

1.2 This SPPC Plan is designed to be applicable to any type of incident that may affect Danny Webb Construction, INC disposal well sites and facilities. The SPPC Plan is based on the concept that elements of incident response are similar, regardless of the hazard. However, the Plan contains certain hazard-specific information in cases where the hazard requires a response that is unique and not covered by other elements of the SPPC Plan. All Danny Webb Construction, INC employees are to abide by the provisions of this Plan and are required to participate in its administration.

1.3 This SPPC Plan was developed to comply with the requirements of applicable Federal, State, and local laws pertaining to emergency situations, also Danny Webb Construction, INC's operations.

1.4 This SPPC Plan will be shared with other external resources as necessary.

1.5 This SPPC Plan may be subject to revision and/or update whenever any of the following occur and will be reviewed annually.

- A new chemical or process is brought onsite
- Existing processes are modified significantly
- Regulations are revised significantly
- The current Plan fails in an emergency situation
- Changes in emergency response services occur
- Changes in internal and external emergency resources occur
- Any updated plan will be reposted and submitted to external resources as required

1.6 Copies of the SPPC Plan are located at the all office buildings, plant sites, with the Operations Manager and Emergency Response Coordinators. The SPPC may be accessed electronically by all employees within the office.

1.7 This plan will also be located at each well site. A cover page will be attached to the standard SPPC Plan and identify the name of the facility and local emergency contact numbers along with chemical inventories and MSDS sheets.

2.0 Background & Responsibility

2.1 Background

2.1.1 Danny Webb Construction Inc is an Oil and Gas waste fluid disposal company located in Lochgelly, West Virginia at the following addresses:

Main Office
P.O. Box 267
Lochgelly, WV 25866
Phone: 304-465-9448
Fax: 304-465-9448

2.1.2 Other Contacts: The Responsible Organizational Structure is as follows:

A. Danny Webb – President / Owner – (304) 890-4546
B. Todd Huey – Operations Manager / ERC - (724) 840-7695
C. Bill Huey – Trucking Manager / ERC- (814) 591-5272

2.1.3 Danny Webb Construction Inc has implemented the following vendors for assistance in Pollution Control.

A. Danny Webb Construction, Inc
Dozer, Vacuum Trucks, Labor
P.O. Box 267
Lochgelly, WV 25866
Phone: 304-465-9448
Fax: 304-465-9448

B. Huey Brothers, INC
Dozer, Vacuum Trucks, Labor
61 Smithport Rd.
Glen Campbell, PA 15742
Phone: 814-845-7886
Fax: 814-845-7606

C. Hefner Environmental LLC
HAZMAT Spill Response Clean Up Crews
142 Hefners MHP, Lots
Weston, WV 26452
Main: 1-800-269-9118
Summersville: 304-619-4111

2.2 Roles and Responsibilities - In the event of an incident at a Danny Webb Construction, INC facility, each employee has specific roles and responsibilities. It is the responsibility of individual employees to know their roles prior to an incident occurring.

2.2.1 All Danny Webb Construction, Inc employees - During an incident, each employee is responsible for the following:

- Reporting emergency situations to the Emergency Response Coordinator immediately and following their instructions.
- Attending required training on the contents of this SPPC Plan.
- Ensuring that s/he understands emergency evacuation procedures.

2.2.2 Supervisors - Supervisors are responsible for the following:

- Ensuring their employees follow the procedures outlined in this Plan
- Notifying the Emergency Response Coordinator of any incidents immediately
- Ensuring fast, safe and organized evacuation at a well site, drilling site, compressor station
- Ensuring orderly and efficient business recovery once the threat has been mediated.

2.2.3 Emergency Response Coordinator (ERC)

The Emergency Response Coordinator is the primary person responsible for ensuring that an emergency situation is mitigated in a timely and safe manner.

The ERC must be thoroughly familiar with all aspects of this PPC Plan, all operations and activities at the well sites, the location and characteristics of hazardous materials and waste streams and the location of all records. In addition, the ERC has the authority to commit all resources needed to carry out this PPC Plan. In the event of an emergency, the ERC must:

- Asses any and all potential environmental/municipal impacts
- Implement the SPPC Plan
- Coordinate the shutdown of all equipment/systems for the site;
- Notify all personnel, including designated contact(s) for Emergency management services
- Notify appropriate outside agencies or contractors with designated response roles if their help is needed;
- Assure the incident is investigated and any necessary corrective actions to prevent future incidents are implemented.

Whenever there is a hazardous materials release, fire, or explosion, the ERC, while working with the GM and EHS Manager, is responsible for identifying the character, exact source, amount, and territorial extent of any released materials. Concurrently, the ERC must assess possible hazards to human health or the environment that may result from the release, fire, or explosion. This assessment shall consider both direct and indirect effects of the chemical release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-off from water or chemical agents used to control fire and heat-induced explosions). However, this assessment should be done in a manner that protects the safety of all personnel, including the ERC and emergency responders.

Emergency Response Coordinators:

1.	Todd Huey, Operations Manager:	724-840-7695 (Cell)
2.	Bill Huey, Trucking Manager:	814-591-5272 (Cell)
3.	Danny Webb, Owner/ President:	304-890-4546 (Cell)

3.0 Incident Preparedness

3.1 Training and drills - All employees will receive training on this SPPC Plan. The training will address the following:

- Posting of Emergency #s, site location, directions, etc.
- Incident Organization
- Roles and Responsibilities
- Site walk through to address all of the "*what ifs*"
- Daily safety meetings
- JSA's on crucial tasks
- Notification Procedures
- Evacuation Procedures
- Incidental Chemical Spill Response

In addition to SPPC Plan training, all associates who handle hazardous chemicals will be provided training on OSHA's Hazard Communication Standard (HAZCOM). The objective of the HAZCOM training is to familiarize employees with the hazards associated with the chemicals they use in the workplace. Employees with up-to-date HAZCOM training may respond to incidental spills of chemicals in their work area. All other chemical spills require offsite assistance from a HAZMAT team trained in the OSHA 1910.120 HAZWOPER standard.

Training records will be kept in employee personnel records. In addition to training in the SPPC Plan and the HAZCOM standard, annual evacuation drills will be conducted to test employee response to a prescribed emergency scenario. The chemical spill scenarios and the results of the simulations will be documented and maintained in the Safety Files.

3.2 Response Equipment

3.2.1 Spill Equipment – spill equipment is located at each pumping facility and in the warehouse at the office building and will be prominently identified.

3.2.3 Fire extinguishers are located at key points on each site.

3.2.5 First aid kits - First aid kits are located at the storage building at each facility and in each office.

3.2.6 MSDS's – Material safety data sheet books are located in the office building and individual sheets stored in close proximity to each product.

Contractors that bring their own hazardous materials on site will provide their own MSDS's and keep them on site while they are working.

4.0 Incident Notification

Any employee who encounters an emergency situation at a well site, compressor station or drilling site should immediately evacuate the area and call the ERC and 911 if necessary. The ERC is responsible to implement this plan. During an emergency, the foremost responsibility of the ERC is to act immediately to minimize any and all threats to human life. If the emergency is classified as a release, the ERC or onsite Operator, shall notify the Regional Office of the Department of Environmental Protection and the appropriate section/s, as soon as practicable, but no later than two (2) hours after detecting or discovering a release. If the release of a substance is determined to cause or threaten pollution of the waters of the commonwealth and subsequently, public or private water system users

Upon occurrence of any release, DWC shall take necessary corrective actions to:

1. Prevent the substance from reaching the waters of this State;
2. Recover or remove the substance which was released;
3. Dispose of the substance in a manner approved by the Department.

5.0 General Response Procedures

Sign in sheets to each job will be utilized so all personnel will be accounted for. At the onset of an emergency, the employee first to respond will initiate the evacuation and isolation of the affected area. Once the ERC arrives, they will make an initial assessment of the situation and determine the extent of the incident. The ERC will ensure that all personnel are accounted for (refer to evacuation procedures), call for additional resources, and notify management.

Upon the arrival of outside emergency services (e.g., Police, Fire Department, etc.), the lead agency's on-scene commander has the authority to take over command of emergency response operations.

In the event of an incident, follow these steps:

- Stay calm. Do not panic.
- Notify the ERC then evacuate if necessary.
- Explain the nature of the incident.
- The ERC will determine if offsite resources are required to respond and contact in the order needed.

Following an incident, follow these steps:

- The EHS Manager & GM will ensure all wastes associated with the incident are properly disposed.

- The GM & ERC will ensure replacement of any onsite response equipment used during the incident.
- The GM, EHS Manager and ERC will coordinate the investigation and development of corrective actions.
- The GM, EHS Manager and ERC will ensure corrective actions are completed on schedule.

6.0 Site evacuation procedures

Employees that encounter an incident while working at or near well sites, pumping facilities, tank batteries or containment areas should immediately leave the area and call the ERC and emergency services if necessary. Assure all employees and contractors are removed from the area (take a head count), remain together and find an area far enough away from the incident that is safe. Remain in this area until emergency services or the ERC arrives. A predetermined meeting place and site evacuation plans will be site specific and shall be established on site at the beginning of each job.

6.1 Key points for site personnel to follow:

- DO stop all work.
- DO leave area.
- DO follow instructions.
- DO know your ERC.
- DO **NOT** lag behind.
- DO **NOT** stop for personal belongings.
- DO **NOT** return to the site until advised to do so.
- DO **NOT** go home unless authorized to do so.
- DO **NOT** attempt to move vehicle(s) unless instructed to do so.
- DO **NOT** block emergency vehicle thoroughfares.
- **REMAIN CALM AT ALL TIMES.**

6.2 Area Relocation:

Chemical spills, fumes, or smoke may necessitate moving people to a safer area. When a hazardous materials release occurs, employees should move to an area which is effectively "uphill and upwind" of the spill or fumes. The ERC will be notified of the problem immediately in case the surrounding community could be affected. The ERC will advise the employees when it is safe to re-enter the area.

7.0 Fire and Explosions

This section outlines the provisions for responding to a fire or explosion at a well site. In general, the responsibilities of DWC personnel in fire emergencies are to: (1) ensure evacuation, (2) notify the Emergency Management Agency, and (3) provide support services to the Fire Department as requested.

If a fire or explosion occurs at a well site, drilling site or compressor station, the employee should notify the ERC and **911**, if necessary. If the ERC's are unavailable, any employee may call **911**. Inform the ERC in both cases of the following information:

- Exact location of the fire;
- Type of fire (e.g., flammable liquid, electrical, etc.);

- If any injuries have occurred or if anyone is trapped;
- Whether or not the fire is near critical systems (e.g., chemical storage areas, tanks, well heads);

8.0 Hazardous Material (Haz Mat) Spills and Releases

The purpose of this section is to minimize the safety, health, and environmental hazards due to spills and releases of hazardous materials. Materials considered hazardous are those which meet the definition set forth in Article 80 of the Uniform Fire Code (latest edition), materials listed in 40 CFR Part 302.4 (CERCLA Hazardous Substances, Appendix 6), 49 CFR Part 172.101 (DOT HAZ MAT Table) and materials which are hazardous wastes as defined in 40 CFR §261.3). Hazardous materials include raw chemical materials, chemical based materials and fluids, hazardous wastes and biological wastes.

8.1 Incidental versus Emergency Haz Mat Spills:

Hazardous material spills may be classified as either "incidental" or "emergency" Incidents. The purpose of distinguishing between the two types of incidents is to allocate properly trained response resources accordingly.

8.1.1 **Incidental events** present minimal health and safety hazards to Employees in the immediate work area or those assigned to respond to the event and may be characterized by the following criteria:

- Limited in Scope
- Limited in Exposure Potential
- Limited in Toxicity

Other circumstances to consider when determining if a hazardous material spill is incidental are:

- Properties of the spilled chemical (volatility, flammability, corrosivity etc.)
- Employee knowledge of the spilled chemical
- Proximity of spill cleanup equipment
- Availability of appropriate personal protective equipment (PPE)
- Adequate ventilation
- Confined space considerations
- Any potential environmental/municipal threat of contamination

NOTE: If a hazardous material spill is "incidental," annual HAZCOM training adequately prepares an associate to respond to the incident.

8.1.2 In contrast, OSHA 1910.120 (a) (3) defines an "**emergency response**" as the following:

A response effort by employees from outside the immediate release area or by other designated responders (i.e. mutual aid groups, local fire

departments, etc.) to an occurrence which results, or is likely to result, in an uncontrolled release of a hazardous substance. Responses to incidental releases of hazardous substances where the substance can be absorbed, neutralized, or otherwise controlled at the time of release by the employees in the immediate release area, or by maintenance personnel are not considered to be emergency responses within the scope of this standard.

An emergency response may include, but is not limited to, the following situations:

- The response comes from outside the immediate release area.
- The release requires evacuation of employees in the area.
- The release poses, or has the potential to pose, conditions that are immediately dangerous to life and health (IDLH).
- The release poses a serious threat of fire or explosion (exceeds or has the potential to exceed the lower explosive limit).
- The release may cause high levels of exposure to toxic substances.
- There is uncertainty that the employee in the work area can handle the severity of the hazard with the PPE and equipment that has been provided and the exposure limit could easily be exceeded.
- The spilled chemical is unknown or of unknown origin.
- The release is threatening waterways

NOTE: If an employee is uncomfortable or in doubt of the severity of a Haz Mat spill, they are to assume it is a potential emergency and call the ERC. Only employees with OSHA 24-Hour Haz Mat training may respond to an emergency Haz Mat spill.

8.2 Hazardous Material Spills versus Releases

8.2.1 For the purposes of this Plan, a **spill** is defined as the accidental discharge of a solid, liquid, or gas from its proper container whether from container failure, upset, or unintentional drainage or venting. Spills are confined to inside a building and are not in contact with the external environment.

8.2.2 In contrast, for the purposes of this Plan, a **release** is defined as a spill that enters the environment via soil, water or air. Often, unless the spill becomes a release (i.e. the hazardous material enters the environment), it is not necessary to notify any environmental regulatory agencies. All environmental releases must be communicated to the ERC for appropriate notifications to all agencies and parties involved.

8.2.3 Hazardous material spills of less than five gallons will be defined as "incidental" spills and may be cleaned up by employees with up-to-date HAZCOM training if appropriate cleaning materials are readily available. Hazardous material spills ***greater than five gallons*** will be

determined by the ERC as to who cleans up the spill – Flatirons personnel or HAZWOPER trained individuals.

The ERC will be responsible for determining if an evacuation of the immediate area is necessary and will contact offsite resources.

8.3 Spill/Release Potential

While it is Flatirons Development's policy to take whatever reasonable measures are available to prevent or minimize the impact of hazardous materials incidents, the possibility still exists that a hazardous materials release may occur. Of the possible hazardous materials releases, the **most probable** scenario at this facility or site is a release due to a spill during chemical delivery or transfer.

The **worst probable** spill scenario would involve a release of contained fluids at a well site, drilling site or compressor station that can cause harm to individuals and the environment.

A primary function of the ERC is to rapidly identify and evaluate hazardous material releases, and coordinate the resulting safe evacuation of personnel to isolate them from the release.

8.4 Spill/Release Prevention and Preparedness Measures

Specific measures have been implemented at the DWC facilities to prevent hazardous material spills whenever possible. These prevention measures include:

- Annual spill potential assessments.
- Annual HAZCOM and hazardous waste training.
- Annual training on this Plan.
- Annual fire drills/chemical spill exercises.
- All hazardous material containers are kept closed when not in use.
- Secondary containment utilized around any and all storage and equipment.
- Daily logged inspections of tanks, equipment, lines, well heads and containments.

In addition to the activities listed above, specific preparedness measures are implemented at the DWC facilities to minimize the impacts of hazardous material spills on the environment and employees. These preparedness measures include:

- MSDS's accessible to all employees and outside agencies as needed.
- Copies of the SPPC Plan are maintained at the office buildings. An electronic copy is also available to all employees in the office.
- Spill kits are located in hazardous material storage areas and are inventoried often.

8.5 Small Spill Procedures

Releases of small quantities (less than 5 gallons) which pose minimal safety and health dangers, do not adversely affect the environment, and are unlikely to grow in severity, may be handled by DWC personnel trained to do so or an outside contractor. These personnel should:

- Consult the MSDS located in the work area for chemical-specific hazards
- Ensure they are wearing proper personal protective equipment;
- Eliminate the source of the spill;
- Prevent the chemical from spreading; and
- Absorb the material using spill wipes.

Several methods and techniques are provided for the purpose of cleaning up spills. Depending on the category of the substance and its location, the following may be used either singularly or in combination.

8.5.1 Sorbent Materials - After donning appropriate personal protective equipment sorbent material may be used to absorb residual substances or to aid in controlling a spill from spreading into surrounding areas.

8.5.2 Spill Pillows/Booms - Chemical spill pillows and spill booms contain a highly absorbent and inert material in a porous bag allowing the flow of fluids into absorbent material. The fluids are retained by the absorbent, making it possible to contain the liquid. Place the pillows around the spill area, and working from the outside inward, absorb/collect the liquid. Once the chemical is absorbed by the pillows, they may be disposed of by placing them in the appropriate labeled hazardous waste container.

NOTE: Materials used to contain and absorb hazardous materials will acquire the hazardous characteristics of those materials and should be handled and disposed of accordingly.

8.6 Large Release Procedures

In the event of any release greater than 5 gallons of a hazardous material (Disposal Fluids, Diesel Fuel, Crude Oils), the observer should immediately notify the ERC, and provide the following information:

- Location of spill;
- Number of personnel affected/injures;
- Material spilled;
- Amount spilled; and
- Amount that has entered into storm drains, outside waterways, etc., if applicable

The ERC will determine whether or not to dispatch the appropriate response resources.

8.7 Disposal of Clean-Up Wastes

Two types of wastes may be generated via the containment of spilled hazardous substances, including: liquid or solid hazardous waste.

8.7.1 Liquid Wastes

Liquids should be collected and transferred into a properly marked and labeled safety container and disposed of as correctly (hazardous or non-hazardous waste). NEVER mix chemicals, as this may cause a fire or explosion! Certain solvents will dissolve plastic drums. **Under no circumstances should liquid wastes be dispensed into sinks or drains.**

8.7.2 Solid Waste

If a solid waste is generated by using neutralization, sorbent, or chemical spill pillows/booms, the waste material must be collected and placed into the appropriate open-top, labeled hazardous or non-hazardous waste drum. Drums should be transferred to an appropriate location for temporary storage (for as short a period of time as possible) until an outside waste hauler can pick-up the drum(s).

8.8 Water Pollution Control

- Prior to the start of any new upgrade, equipment change out or new task, a contingency plan will be developed. Practical intercepting facilities will be assessed and shall be installed or constructed should an incident occur. These facilities are to be site specific and shall be reviewed with the equipment operator that may be stationed on site.
- All personnel shall be made aware of sensitive areas – streams, drainage ditches, storm drains, etc.

Should any chemical or oil spill get into storm drains or waterways, contact the ERC immediately with the name of the material spilled and the amount that entered the storm drains or waterways. If safe to do so, a responsible individual should stand by the incident to monitor the situation. The employee should attempt to contain the release and divert any additional spill from entering the storm drains if safe to do so, and call 911. The ERC will then coordinate operations with an outside clean-up contractor.

Once the release to the storm drain or waterway is under control, the ERC will notify the appropriate authorities in Section 11.0.

The ERC will report, if required, the following information:

- Name and telephone number of reporter.
- Name and address of facility.
- Time and type of incident.

- Name and quantity of material.
- Extent of injuries.
- Possible hazards to human health or the environment.

9.0 Material and Waste Inventory/Waste Management Plan

A key element of the DWC's Waste Management Plan is the reduction of waste volumes and containment. All waste generated from any operations and activities of DWC will be controlled and disposed of in manners consistent with regulations of the Department of Environmental Protection. Waste and materials generated during standard operations could include but not limited to, waste oils, O&G waste solids, waste oils and miscellaneous wastes.

Oil and Gas Waste Solids..... sediments that have settled out of disposal fluids and built up in storage tanks shall be tested, solidified and disposed of at a state approved landfill following the mandated guidelines.

Waste oils and lubes..... Shall be disposed of in a state approved manner to a credited disposal facility.

Miscellaneous Waste .....Trash, paper, rags, packaging, etc. will not be allowed to accumulate. The generator of any trash will be required to take such trash with them so it may be disposed of at a proper waste management facility through regular garbage collection.

10.0 Containment, Monitoring and Inspection

- All storage tanks/containers are monitored at all times by personnel on site with volumes being accounted for daily. In some cases in the future computerized monitoring systems are to be put in place.
- At all times, any movement of materials/chemicals will be adequately supervised.
- All storage containers are inspected for integrity at a minimum every month and recorded.

11.0. Agency Phone Numbers

The following agencies or governmental authorities will be notified, depending upon incident location, type and/or severity:

GOVERNMENT AGENCIES:

* Call 911 first if public safety is threatened

Fayette County Emergency Dispatch	304-574-3590
Emergency Services	304-574-1610
Oak Hill State Police	304-469-2915
Fayette County Sherriff	304-574-4304
Fayette County Health Department	304-465-9613
Pleteau Medical Center	304-469-8600
DEP Inspector – Terry Urban	304-549-5915
DEP Spill Reporting Number	1-800-642-3074
National Response Center	1-800-424-8802
Elk View Emergency Response Unit	304-558-5938

12.0. Plan-holder's Responsibility

The foremost intent of this plan is to account for and preserve human safety and life in the event of an emergency. After all threats to human life have been addressed, emergency response actions mandate immediate response to mitigate any detrimental effects from those actions or conditions, and planning the actions to be taken to prevent pollution substances from reaching the waters of the State of West Virginia.

BMPs and effective treatment methods utilized for Erosion and Sedimentation Control and Storm water Management of runoff related to construction/disturbance associated with development are not an objective of this plan; and therefore will not be incorporated into this plan and diminish the intent herein. Conversely, DWC acknowledges that these areas of concern are relegated to compliance of DEP regulations and approval of permits including but not limited to permits obtained from DEP prior to Earth Disturbance Activities.

Prevention of an environmental problem is easier and less expensive than cleaning up the problem after it has occurred. The DEP's rules and recognize the value of careful planning to prevent pollution and require that all persons engaged in activities which have the potential for causing pollution to the waters of the State take all necessary measures to prevent polluting substances from reaching waters of the State of West Virginia.

This plan shall be reviewed and updated annually improve upon management and safety techniques as well as to account for changes in operational conditions.

ATTACHMENT 1

FACILITY CHEMICAL INVENTORY

HAZARDOUS MATERIAL	LOCATION	MAXIMUM QUANTITY	REPORTABLE QUANTITY (RQ)	HAZARDS
SHC HC-25	All injection facilities	100 sticks	NA	Corrosive
SHC HC-10	All injection facilities	100 sticks	N/A	Irritant
Acetylene	Some Injection Facilities	2- 100 lb. cylinder	NA	Flammable
Diesel Fuel	Some Injection Facilities	1500 gallon tank	NA	Combustible

APPENDIX G

Wells Serviced by Injection Wells

API #	Operator	Producing Formation
47-091-01188	Triana Energy LLC	Marcellus
47-091-01189	Triana Energy LLC	Marcellus
47-041-05614	Triana Energy LLC	Marcellus
47-081-01454	Geomet	(CBM)
47-081-01455	Geomet	(CBM)
47-081-01444	Geomet	(CBM)
47-081-01433	Geomet	(CMB)
47-081-01456	Geomet	(CBM)
47-109-03057	Geomet	(CBM)
47-109-03059	Geomet	(CBM)
47-081-01462	Geomet	(CBM)
47-081-01464	Geomet	(CBM)
47-081-01469	Geomet	(CBM)
47-081-01466	Geomet	(CBM)
47-081-01468	Geomet	(CBM)
47-081-01423	Geomet	(CBM)
47-081-01430	Geomet	(CBM)
47-091-01239	Triana Energy LLC	Marcellus
47-091-01238	Triana Energy LLC	Marcellus
47-091-01240	Triana Energy LLC	Marcellus
47-091-01293	Triana Energy LLC	Marcellus
47-091-01290	Triana Energy LLC	Marcellus
47-091-01285	Triana Energy LLC	Marcellus
47-091-01292	Triana Energy LLC	Marcellus
47-091-01291	Triana Energy LLC	Marcellus
47-081-01453	Geomet	(CBM)

Make as many copies as necessary and include page numbers as appropriate.

Section 10 – MONITORING

Monitoring of all injection parameters shall be reported and logged daily consisting of startup/shutdown pressures, total injection volumes, injection rates, average injection pressures and annulus pressures along with the integrity of all tanks, containments, equipment and manifolds/lines. WR-40's shall be completed and filed in accordance with state regulations and kept on file at the facility office and be made available upon request. Fluid manifests shall be completed documenting every load of fluid delivered to the facility for disposal. These manifests shall report the following; Operator, Well Name, Number and API Number, Amount of Fluid, Type of Fluid, Contractor Hauling Fluid, Name of Driver / Truck Number and Fluid Sampling / Testing if required. Records of this information shall be kept at the facilities office and shall be made available upon request.

SECTION 11 – GROUNDWATER PROTECTION PLAN (GPP)

The following is the completed Groundwater Protection Plan (GPP) for the North Hills Plant, North Hills #1A, API# 47-019-00508, UIC# 2D0190508. This plan along with the company's facility Spill, Prevention, Preparedness and Contingency Plan (SPPC) has been put together in accordance with 47CSR58. Please find enclosed Appendix "H" and DWC SPPC plans.

APPENDIX H

GROUNDWATER PROTECTION PLAN

Facility Name: North Hills Plant

County: Fayette

Facility Location:

Postal Service Address:	P.O Box 267 Lochgelly WV, 25866	
Latitude and Longitude:	38.014943 / -81.152326	

Contact Information:

Person:	Todd A. Huey
Phone Number:	(724) 840-7695
E-mail Address:	toddhuey76@gmail.com

Date: 05-28-2014

1. A list of all operations that may contaminate the groundwater.

Heavy truck traffic, off loading of trucks into tank battery, fluid containment and transport lines, pumps and filtering equipment and chemical storage areas. (spills, leaks, erosion)

2. A description of procedures and facilities used to protect groundwater quality from the list of potential contaminant sources above.

Access roads must be kept in good condition in order to minimize potential erosion, trucks shall off load in a contained area utilizing the "buddy system" to ensure that proper techniques and safety measure are employed. All lines, primary, secondary containments, sumps, equipment and storage capacities shall be checked/reported daily and monitored throughout the work shift. Spill kits shall be kept on the site, inventoried and readily available to all employees in the event of a spill or release.

3. List procedures to be used when designing and adding new equipment or operations.

All equipment or facility upgrades or changes shall be done so to provide adequate protection and prevention of any incidental discharges or releases. Before any changes, replacements and or repairs are preformed a "JSA" shall be completed along with a potential incident evaluation in order to address any any safety issues or potential environmental impacts.

4. Summarize all activities at your facility that are already regulated for groundwater protection.

Trucks off load in a contained area to minimize the chance of a potential spills / releases, primary and secondary containments are in place around areas of fluid storage and equipment.

5. Discuss any existing groundwater quality data for your facility or an adjacent property.

The current ground water data from the AOR is for surface water in the area, below average ph, no traces of BTEX, MBAS or oil & grease Dissolved solids appear to be on the higher side along with the iron.

6. Provide a statement that no waste material will be used for deicing or fill material on the property unless allowed by another rule.

Under no circumstance shall any fluids or waste materials be used in or around the facility for anything operation. Waste materials shall be disposed of in accordance with all regulatory guidelines.

7. Describe the groundwater protection instruction and training to be provided to the employees. Job procedures shall provide direction on how to prevent groundwater contamination.

Safety and job training shall be given to all employees on a quarterly basis or to new hires at the start of the job covering the following. Areas of awareness, inspection procedures, startup shutdown procedures, repair replacement procedures, material and waste handling, PPE, MSDS location and understanding, Spill Prevention, Preparedness and Contingency Plans, Emergency Response Plans, JSA's to be completed before the start of a task that could result in an incident.

8. Include provisions for inspections of all GPP elements and equipment. Inspections must be made quarterly at a minimum.

Inspections of all GPP elements shall be completed on a daily basis and monitored throughout the work shift.

Signature: Alan E Wells

Date: June 5-14

SECTION 12 – PLUGGING AND ABANDONMENT

Upon the completion of injection activities or the event that well inspection data concludes that a well integrity failure may result the proposed injection well shall be plugged and abandoned in accordance with all state regulations. This plan as designed is to have the well in a static condition, remove the 2 3/8", 4.7#, EUE tubing and packer, a CBL then will be run to determine the top of cement and a production casing "backoff" point. Tubing will then be ran back into the hole with cement plugs balanced over all perf'd intervals in the well spacing from 50' below the perfs to 50' above the perfs, the cement plugs shall be displaced with freshwater and the tubing removed from the well. The 4 ½", 11.6# production casing shall then be backed off at free point (in the event cement is not to surface) and 100' balanced cement plug shall be set at backoff point and a 50' balance cement plug set 50' down from surface. Upon completion of the P&A job the well head shall be removed, the remainder of the well packed off with "pea" gravel and a vent stack and well ID monument installed. All plugging and abandonment documentation and reporting shall be filed with the state along with a completed WR-38.

SECTION 13 – ADDITIONAL BONDING

Proper performance bonding is in place for the proposed UIC Class 2D injection well.

APPENDIX I

Requirement for Financial Responsibility to Plug/Abandon an Injection Well

To: WV Department of Environmental Protection
Office of Oil and Gas
601 57th Street, SE
Charleston, West Virginia 25304-2345
ATTN: Underground Injection Control Program

From: Danny Webb Construction Co. INC
617 Towne Hollow Rd
P.O. Box 267
Lochgelly, WV 25866

Date: _____

Subject: Underground Injection Control (UIC) Permit Application
UIC2D0190508
Requirement for Financial Responsibility

I, Danny E. Webb, verify in accordance with 47CSR13-13.7.g., that I will maintain financial responsibility and resources to close, plug, and abandon underground injection wells(s) in a manner prescribed by the Chief of the Office of Oil and Gas.

Name: Danny E. Webb

Signature: Danny E Webb

Date: June 5-14

APPENDIX J

Site Security for Commercial Facilities

Provide a detailed description of the method(s) utilized at the facility to restrict or prohibit illegal dumping of unauthorized waste or vandalism at the facility.

1. Complete enclosure of all wells, holding tank/pits and manifold assemblies within a chain link or other suitable fencing; and

2. Require that all gates and other entry points be locked when the facility is unattended; or

3. Providing tamper-proof seals for the master valve on each well (a "lock-out" or chain & padlock system would be more secure; however, these devices could create a potential safety hazard if the well needed to be quickly shut in due to an emergency); and

4. Installing locking caps on all valves and connections on holding tanks, unloading racks, and headers.

The gate on the access road to the site shall be closed and locked at all times there is not a company representative at the facility. Security cameras shall be installed in key areas and inspected to be in working condition on a regular basis. All structure doors, valves, storage areas shall be secured and locked any time a company representative is not at the facility. The facility and well shall be fenced off with all gates and access points secured and locked while no representative is at the facility. All visitors and trucks must check in at the main office upon arriving to the facility, trucks shall not be allowed to off load without the proper paperwork and documentation.

APPENDIX K

Identify permit or construction approvals received or applied for under the following programs:

Permit/approvals	ID Number
Hazardous Waste Management Program under RCRA	NA
NPDES Program	NA
Prevention of Significant Deterioration (PSD)	NA
Nonattainment Program	NA
Dredge or Fill	NA
NPDES/NPDES – Stormwater	NA
WVDEP – Office of Waste Management (OWM) – Solid Waste Facility	NA
WVDEP – OWM – RCRA (Hazardous Waste TSD or Transporter)	NA
WVDEP – OWM – UST	NA
CERCLA – Superfund	NA
WV Voluntary Remediation – Brownfields	NA
FIFRA – Federal Insecticide, Fungicide and Rodenticide Act	NA
Well Head Protection Program (WHPP)	NA
Underground Injection Control (UIC)	UIC2D0190460
Toxic Substances Control Act (TSCA)	NA
Best Management Plans	NA
Management of Used Oil	NA
Other Relevant Permits (Specify):	

IR-6

REV 2-14

COMPLETE (EXISTING) WELL / FACILITY INSPECTION FORM

API NUMBER 47- 19-508 UIC FACILITY / PAD NAME Lochgelly

GPS COORDINATE (DEG.DECIMAL): Longitude _____ Latitude _____

ASSIGNED API NUMBER 47- _____ WELL OPERATOR Danny Webb Construction

FARM NAME _____ WELL NUMBER _____ COUNTY Fayette

A. The ACCESS ROAD meets all requirements? (22-6-30, 22-6A-14, 35CSR4-16, 35CSR8-12) **(CIRCLE ANSWERS)**

1.	CULVERTS PROPERLY SIZED AND SPACED	(YES)	NO	N/A
2.	DISSIPATING DEVICES (ROCK CHECKS, SUMPS, SEDIMENT BASINS, ETC.)	(YES)	NO	N/A
3.	PROPERLY MAINTAINED (ACCESS INTEGRITY INCLUDING VEGETATION ON SLOPES, ETC)	(YES)	NO	N/A
4.	DIVERSION DITCHES IN PLACE	(YES)	NO	N/A

B. The WELL and LOCATION are properly equipped and reclaimed? (22-6-30, 22-6-6, 22-6A-14, 35CSR4-16, 35CSR8-12)

1.	API NUMBER	(YES)	NO	N/A
2.	DIVERSION DITCHES INSTALLED AND MAINTAINED	(YES)	NO	N/A
3.	PROPERLY MAINTAINED (GENERAL SITE, WELL, AND EQUIPMENT INTEGRITY, ETC)	(YES)	NO	N/A
4.	ALL DISTURBED AREAS RECLAIMED (VEGETATION COVERAGE, ETC)	(YES)	NO	N/A
5.	IS SITE, WELL, AND STRUCTURES FREE OF OIL, GAS AND SALT WATER LEAKS	(YES)	NO	N/A
6.	IS WELL PRODUCING	YES	(NO)	N/A
7.	FREE OF CORROSION OR PITTING ON WELL CASINGS, WELLHEAD, OR VALVINGS	YES	(NO)	N/A
8.	PRODUCTION REPORTS BEEN FILED	(YES)	NO	N/A
9.	ANNUAL INSPECTIONS BY OPERATOR AVAILABLE (35CSR4-11.6)	(YES)	NO	N/A

C. Does the SPILL PREVENTION meet all requirements?(22-6-7, 35CSR1-1 TO 9, 35CSR4-11 TO 17, 35CSR8-18)

1.	ARE TANKS PROPERLY EQUIPPED WITH THE FOLLOWING?			
	A. SECONDARY CONTAINMENT	(YES)	NO	N/A
	B. TANK / LINE LEAKAGE PREVENTION	(YES)	NO	N/A
	C. VALVES INSTALLED	(YES)	NO	N/A
	D. EQUALIZING LINES ON MULTIPLE-TANK SYSTEM	(YES)	NO	N/A
	E. MANHOLES AND OPERATING VALVES LOCKED, SEALED, AND SECURE	(YES)	NO	N/A
2.	SECONDARY CONTAINMENT STRUCTURES INSTALLED AND AND MAINTAINED:			
	A. IMPERVIOUS CONTAINMENT AREA	(YES)	NO	N/A
	B. ARE CONTAINMENT WALLS INTACT	(YES)	NO	N/A
	C. SURFACE WATER PROPERLY DRAINED	(YES)	NO	N/A
	D. ANY VISIBLE OIL SHEEN IN CONTAINMENT AREA	YES	(NO)	N/A
	E. VALVES INSTALLED ON DIKE DRAINS	(YES)	NO	N/A
	F. DIKE DRAIN VALVES CLOSED AND SECURED	(YES)	NO	N/A
3.	PRODUCTION FACILITY PROGRAM MAINTENANCE:			
	A. SPCC PLAN (40CFR112) AVAILABLE*	(YES)	NO	
	*ARE DIKE-CONTAINMENT DIMENSIONS (CAPACITY) ACCORDING TO PLAN	(YES)	NO	
	*ARE SPCC OPERATOR INSPECTIONS OR RECORDS AVAILABLE	YES	(NO)	
	B. FREE OF CORROSION ON SURFACES OF TANKS, FLOWLINES OR VALVES	YES	NO	
	C. ESTIMATED CAPACITY LARGEST (AST) TANK / VESSEL 300 BARRELS			
	D. APPROPRIATE WATER POLLUTION CONTROL PREVENTION	(YES)	NO	
	E. SITE SECURITY / SAFETY (FENCE AND GATE INTACT, LADDERS SECURED, ETC)	YES	(NO)	No Fence

D. IS SALT WATER (WELL FLUIDS) BEING PROPERLY COLLECTED AND DISPOSED OF? (22-6-7) (YES) NO N/A

E. WAS THIS INSPECTION ROUTINE? YES NO
AND SPECIFY IF (COMPLAINT, RANDOM, ETC.) Random

F. IS THIS WELL / FACILITY PART OF A UIC ACTIVITY OR SECONDARY RECOVERY FIELD? (YES) NO

G. WERE ENFORCEMENT ACTIONS TAKEN** AS A RESULT OF THIS INSPECTION? YES (NO)
**SPECIFY (VIOLATION, ORDER, OR WARNING) _____

COMMENTS: Both Sites & Plant Cleaned up Best I Have Seen, Need to Work on Building Around well - put Locks on Valves

DATE 10-17-14 INSPECTOR [signature]