UNDERGROUND INJECTION CONTROL (UIC)
PERMIT APPLICATION

UIC-1
SECTION 1-5
CERTIFICATION

UIC #: 2D0872003
FACILITY NAME: Rock Creek D Well
OPERATOR: Mountain V Oil & Gas, Inc.

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	Mountain V Oil & Gas, Inc.		
Existing UIC Permit ID Number	2D0872003	UIC Well API Number	47-087-02003

Office of Oil and Gas Office Use Only	
Permit Reviewer	AL
Date Received	6/18/18
Administratively Complete Date	1/8/19
Approved Date	
Permit Issued	

Please check the fees and payment included.

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

Check No. 55665
7/17/18

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

✓ Appendix D Public Service District Affidavit

✓ Appendix E Water Sources

✓ Appendix F Area Permit Wells

✓ Section 8 – Geological Data on Injection and Confining Zones

✓ Section 9 – Operating Requirements / Data

✓ Appendix G Wells Serviced by Injection Well

✓ Section 10 – Monitoring

✓ Section 11 – Groundwater Protection Plan (GPP)

✓ Appendix H Groundwater Protection Plan (GPP)

✓ Section 12 – Plugging and Abandonment

✓ Section 13 – Additional Bonding

✓ Section 14 – Financial Responsibility

✓ Appendix I Financial Responsibility

✓ Section 15 – Site Security Plan

✓ Appendix J Site Security for Commercial Wells

✓ Section 16 – Additional Information

✓ 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): Jamie Andrews

Reviewed by (Sign): [signature]

Date Reviewed: 7/16/18

RECEIVED
Office of Oil and Gas
JUL 18 2018
WV Department of
Environmental Protection

dep

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 # 2D0872003 **API #** 47-087-02003 **WELL #** GM&MA Summers #5

Section I. Facility Information

Facility Name: ROCK CREEK D WELL

Address: 677 Paxton Ridge Road

City: Walton State: WV Zip: 25286

County: Roane District: Walton

Location description: To Well Site: From Exit 19 off of I-79 proceed north on US Route 119 for approx.. 8 miles; turn left on CR 19 (Ambler Ridge RD) and follow for approx.. 3.6 miles; turn left onto CR 19/7 (Paxton Ridge RD) and follow for approx.. 1.3 miles; turn left at gate and follow for approx.. 200 feet to existing location of the GM&MA Summers #5. To Pump Facility: From Exit 19 off of I-79 proceed north on US Route 119 for approx.. 8 miles; turn left on CR 19 (Ambler Ridge RD) and follow for approx.. 3.1 miles; turn left onto an existing gravel driveway and access road and follow for approx.. 0.2 miles to existing pump facility.

Location of well(s) or approximate center of field/project in UTM NAD 83 (meters):
Northing: 4,271,356.8 N Easting: 461,037.7 E
Latitude: 38.589871
Longitude: -81.447403

Environmental Contact Information:
Name: Jamie Andrews Title: Land & Business Development
Phone: 304-203-7555 Email: jandrews@mountainvoilandgas.com

RECEIVED
Office of Oil and Gas
FEB - 1 2019
WV Department of
Environmental Protection

Section 2. Operator Information

Operator Name: Mountain V Oil & Gas, Inc.

Operator ID: 370020

Address: PO Box 470

City: Bridgeport State: WV Zip: 26330

County: Harrison

Contact Name: Jamie Andrews Contact Title: Land & Business Development Contact

Phone: 304-203-7555 Contact Email: jandrews@mountainvoilandgas.com

Promoting a healthy environment.

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:

Mountain V Oil & Gas, Inc. is a private owned corporation, who utilizes this UIC well to dispose of produced and/or brine water from wells operated Mountain V Oil & Gas, Inc. This facility is a Non-Commercial operation and disposes of Class II compliant fluids.

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: Mike Shaver

Print Title: President

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: M. Christopher Shaver

Date: 7-13-18

[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.

Section 6
Construction

APPENDIX A
Injection Well Form

1) GEOLOGIC TARGET FORMATION Big Injun

Depth 2,047 Feet (top) 2,106 Feet (bottom)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 2,135 Feet

3) Approximate water strata depths: Fresh None Reported Feet Salt 545 Feet

4) Approximate coal seam depths: None Reported

5) Is coal being mined in the area? Yes _____ No X

6) Virgin reservoir pressure in target formation 909 psig Source Field Estimates

7) Estimated reservoir fracture pressure 2,169 psig (BHFP)

8) MAXIMUM PROPOSED INJECTION OPERATIONS:

Injection rate (bbl/hour) 30

Injection volume (bbl/day) 720

Injection pressure (psig) 671

Bottom hole pressure (psig) 2100

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

Production water and/or brine. Fluids are Class II compliant and no additives are being used.

Temperature of injected fluid: (°F) Ambient temperature

10) FILTERS (IF ANY)

Cartridge

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

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							
Fresh Water	8-5/8"	New	H-40	20	359.6'	359.6'	200 SKS CTS
Coal							
Intermediate 1							
Intermediate 2							
Production	4-1/2"	New	K-55	9.5	2132'	2132	50 SKS
Tubing	2-3/8"	New	J-55	4.6		2069'	N/A
Liners							

TYPE	Wellbore Diameter	Casing Size	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./sk)	Cement to Surface ? (Y or N)
Conductor							
Fresh Water	11"	8-5/8"	0.312	2270			Y
Coal							
Intermediate 1							
Intermediate 2							
Production	6-3/4"	4 ½"	0.224	4790			N
Tubing	N/A	2 3/8"	0.190	7700	N/A	N/A	N/A
Liners							

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	Tension			
Sizes:	2-3/8" x 4-1/2"			
Depths Set:	2025'			

Well Name: GM&MA Summers #5

API: 47-087-02003

Location: Kettle 7.5' Quad

Downhole Information (By Depth)

ELEV.
GL 1,043'

Casing:

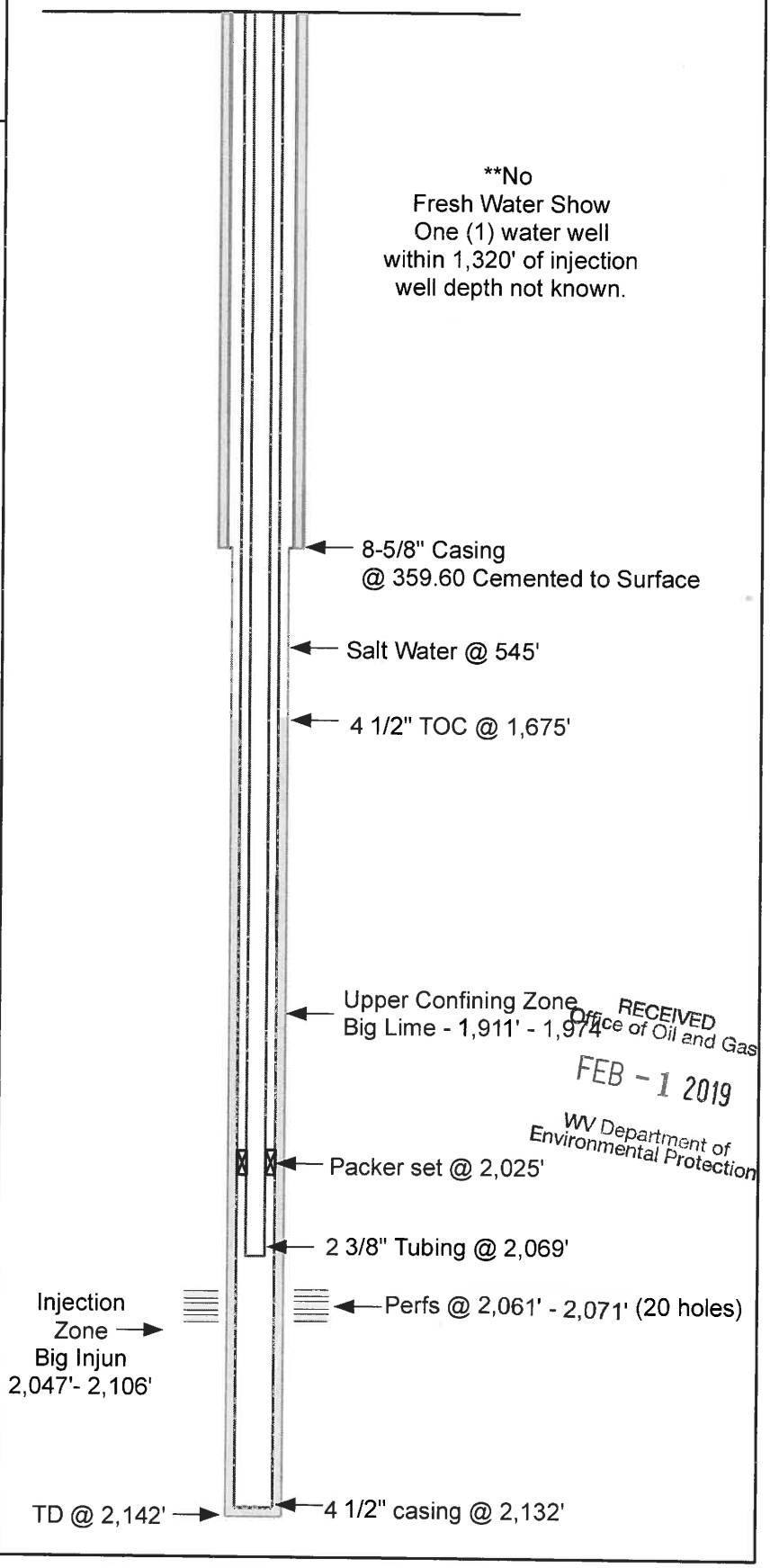
8-5/8" @ 359.60' (W/200 SKS - CTS)

4-1/2" @ 2,132' (W/50 SKS - Cemenrt to 1,675')

Perforations: (DIL Depths)
Big Injun: 2,061' - 2,071' (20 Holes)

Tubing:
2-3/8" @ 2,069'
Tension Packer @ 2,025'

Logs:
GR/DEN



N

Rock Creek UIC2D0872003 Well Schematic
Walton District, Roane County, WV
Kettle 7.5' Quad

MOUNTAIN V OIL & GAS, INC.

OG-10
Rev. - 9-71

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
Oil and Gas Division
WELL RECORD

RECEIVED
OCT 3 1973
OIL & GAS DIVISION
DEPT. OF MINES

Rotary X Oil X / Sec.
Cable ____ Gas ____
Recycling ____ Comb. ____
Water Flood ____ Storage ____
Disposal ____ ____ (Kind)

Quadrangle Walton
Permit No. Roa-2003

Company PENNZOIL COMPANY
Address P. O. Box 1588, Parkersburg, W. Va.
Farm G. M. & M. A. Summers Acres 262
Locatio (waters) Lynn Camp Run/Green Crk.
Well No. 5 Elev. 1041.70'
District Walton County Roane
The surface of tract is owned in fee by
E. G. Summers
Address Glendenin, W. Va. 25045
Mineral rights are owned by Ruth A. Summers McCrary Address 1229 Edgewood Dr., Charleston
Drilling Commenced August 30, 1973
Drilling Completed September 3, 1973
Initial open flow 60 cu. ft. 15 bbls.
Final production 60 cu. ft. per day 10 bbls.
Well open ____ hrs. before test ____ RP.

Casing and Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft. (Sks.)
Size 20-16 Cond.			
13-10"			
9 5/8			
8 5/8	359.60		
7			
5 1/2			
4 1/2	2132.22		
3			
2			
Liners Used			

Well treatment details:
Attach copy of cementing record.
Fractured 9/5/73 w/787 BW, 30,000# 20/40 sd., 250 Gals. 15% HCL

Coal was encountered at ____ Feet ____ Inches
Fresh water ____ Feet ____ Salt Water ____ Feet ____
Producing Sand Big Injun Depth ____

Formation	Color	Hard or Soft	Top Feet	Bottom Feet	Oil, Gas or Water	* Remarks
Salt Sand			1822	1876		
Little Lime			1876	1900		
Pencil Cave			1900	1909		
Big Lime			1909	2047		
Big Injun			2047	2106		
Total Depth			2142			
			310			

(over)

* Indicates Electric Log tops in the remarks section.

OCT 17 1973

NEW WELL REPORT — CONTINUED

INITIAL TORPEDO RECORD

Date of Shot	
Name of Torpedo Co.	
No. of Quarts	
Length of Shell	
Diameter of Shell	
Length of Anchor	
Top of Shot	
Bottom of Shot	
Feet of Fluid in Hole When Shot	
Results:	

CASING AND TUBING RECORD

SIZE	PUT IN WELL			PULLED OUT		
	TRANSFER NO.	FEET	INCH	TRANSFER NO.	FEET	INCH
8-5/8"	S. L. M.	359.60		✓		
4½"	S. L. M.	2132.22		✓		
2-3/8"	Talley	2069.27		✓		
2 3/8	10 R 4.60#	2076	2			

INITIAL PRODUCTION FIRST 24 HOURS

Open Flow /10ths Water in	Inch
/10ths Merc. in	Inch
Volume	Cu. Ft.
Rock Pressure lbs.	hrs.
Oil	bbls., First 24 hrs.

PACKER RECORD

KIND	SIZE	DEPTH SET	DATE SET
Steel Shoe	8-5/8"	359.60	8/31/73
Float Collar	4½"	2121	9/3/73
Guide Shoe	4½"	2132.22	9/3/73
Baker AD-1	2 3/8 x 4	2046.64	

ACIDIZATION OR FRACTURING RECORD

DATE WELL ACIDIZED

DATE WELL FRACTURED September 5, 1973

NAME OF COMPANY Dowell

(List below materials used in Acidizing or Fracturing, i.e., Sand, Crude Oil, Gasoline, Water, Kerosene, Mothballs, Acid, etc., giving gallons, barrels and pounds.)

Used: 787 Bbls. Water
Used: 30,000 Lbs. Sand 20/40
Used: 250 Gals. Acid 15% HCl
Used: 350 Lbs J-209
Used: 20 Gals. Freflo-C

BREAKDOWN PRESSURE 2300#

PUMPING PRESSURE 1650 - 1150#

AVERAGE PUMPING RATE/MINUTE 35.5

PUMPING TIME

RESULT AFTER TREATMENT — GAS CU. FT.

OIL 8 bbls. BBLS.

ROCK PRESSURE AFTER TREATMENT No test LBS.

CASING CEMENTED

8-5/8" SIZE 359.60 FT. 8/31/73 DATE

BAGS USED 200

4½" SIZE 2132.22 FT. 9/3/73 DATE

BAGS USED 50

SIZE FT. DATE

BAGS USED

SIZE FT. DATE

BAGS USED

TOP DEPTH OF CEMENT SHOWN BY TEMPERATURE LOG

REMARKS. NOTE: This well was logged by Birdwell on 9/3/73.

NOTE: Used 5 centralizers @ 2121, 2091, 2061, 2031, 2001.

NOTE: This well was perforated by McCullough on 9-5-73 @2061' - 2071' (20 Holes) ←

NOTE: This well was drilled according to Rule 11, under Section 13 of Article 4, Chapter 22 of the Code of the Department of Mines, Oil and Gas Division.

APPROVED

A. A. McKamey Jr

SUPERINTENDENT

FORM 534 2C 9/68 M-G. 7373 D-15

FILE NO. Roa-2003

PENNZOIL UNITED, INC. — COMPLETION

SERIAL NO. _____ FARM G. M. & M. A. Summers WELL NO. 5

ELEVATION 1041.70 N. _____ S. 58 E. _____ W. 47

LEASE NO. 82754 ACRES 262

WATERS OF _____ MAP NO. 70

DISTRICT Walton COUNTY Roane STATE W. Va.

DRILLING COMMENCED 8-30-73 COMPLETED 9-3-73 DEPTH 2142

SANDS	TOP	BOTTOM	ELEV. TOP	CASING	
~~Pun-Coal~~ Big Lime	1909	2047		8-5/8	359.60
Big Injun	2047	2106		4-1/2	2132.22

PACKERS AND DEPT. SET

INITIAL PROD. 60 mcf - 15 bbls. oil SAND Big Injun DEPTH _____

GAS TEST Final - 60 mcf - 10 bbls. oil/per day-A.F.

~~SHOT~~ — FRAC. 9/5/73 w/787 BW, 30,000# 20/40 sd., 250 gals. 15% HCL

REMARKS _____

REPORTED BY _____ AREA ABANDONED RADIO CITY LOG

OG – 1
Rev. – 71

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES

RECEIVED
AUG 17 1973
OIL & GAS DIVISION
DEPT. OF MINES

Oil and Gas Division

OIL AND GAS WELL PERMIT APPLICATION

TO THE DEPARTMENT OF MINES,
Charleston, W. Va.

DATE August 15, 1973

Surface Owner E. G. Summers
Address Clendenin, W. Va. 25045
Mineral Owner Ruth A. Summers McCrary
Address 1229 Edgewood Drive, Charleston, W.Va.
Coal Owner
Address
Coal Operator NO COMMERCIAL COAL
Address

Company Pennzoil Company
Address P. O. Box 1588, Parkersburg, W. Va.
Farm G. M. & M. A. Summers Acres 262
Location (waters) Lynn Camp Run / Green Ck
Well No. 5 Elevation 1041.70
District Walton County Roane
Quadrangle Walton

INSPECTOR TO BE NOTIFIED Mr. Harry Hallisey
Box 221 PH: 354-6731
Grantsville
W.Va. 26147

THIS PERMIT MUST BE POSTED AT THE WELL SITE
All provisions being in accordance with Chapter 22, of the W. Va. Code, the location is hereby approved for drilling. This permit shall expire if operations have not commenced by 12-17-73

Robert L Cox
Deputy Director – Oil & Gas Division

GENTLEMEN:

The undersigned well operator is entitled to drill upon the above named farm or tract of land for oil and gas, having fee title thereto, (or as the case may be) under grant or lease dated October 9, 1906 by G. M. Summers et ux made to Louis F. Payne and recorded on the ____ day of ____ 19__, in ____ County, Book 9 Page 578

X NEW WELL ____ DRILL DEEPER ____ REDRILL ____ FRACTURE OR STIMULATE ____ OIL AND GAS WELL ORIGINALLY DRILLED BEFORE JUNE 5, 1969.

The enclosed plat was prepared by a registered engineer or licensed land surveyor and all coal owners and/or operators have been notified as of the above date.

The above named coal owners and/or operator are hereby notified that any objection they wish to make, or are required to make by Section 3 of the Code, must be received by, or filed with the Department of Mines within ten (10) days. *

Copies of this notice and the enclosed plat were mailed by registered mail, or delivered to the above named coal operators or coal owners at their above shown respective address ____ day ____ before, or on the same day with the mailing or delivery of this copy to the Department of Mines at Charleston, West Virginia.

Very truly yours,
(Sign Name) Curtis A. Lucas
Well Operator Curtis A. Lucas, Surveyor

Address of Well Operator
P. O. Box 1588
Street
Parkersburg,
City or Town
West Virginia 26101
State

*SECTION 3 . . . . If no objections are filed or found by the Department of mines, within said period of ten days from the receipt of notice and plat by the department of mines, to said proposed location, the department shall forthwith issue to the well operator a permit reciting the filing of such plat, that no objections have been made by the coal operators or found thereto by the department and that the same is approved and the well operator authorized to proceed.

BLANKET BOND

Roa-2003 PERMIT NUMBER
47-087-1003

THIS IS AN ESTIMATE ONLY
ACTUAL INFORMATION WILL BE SUBMITTED ON OG-10 UPON COMPLETION

PROPOSED WORK ORDER TO X DRILL _____ DEEPEN _____ FRACTURE-STIMULATE

DRILLING CONTRACTOR: (If Known)
NAME F.W.A.
ADDRESS _____
TELEPHONE _____

RESPONSIBLE AGENT:
NAME Pennzoil Company
ADDRESS Parkersburg, West Virginia 26101
TELEPHONE 422-6565

ESTIMATED DEPTH OF COMPLETED WELL: 2100 ROTARY X CABLE TOOLS _____
PROPOSED GEOLOGICAL FORMATION: Pocono Big Injun
TYPE OF WELL: OIL X GAS _____ COMB. _____ STORAGE _____ DISPOSAL _____
RECYCLING _____ WATER FLOOD _____ OTHER _____

TENTATIVE CASING PROGRAM:

CASING AND TUBING SIZE	USED FOR DRILLING	LEFT IN WELL	CEMENT FILL UP OR SACKS - CUBIC FT.
20 - 16			
13 - 10			
9 - 5/8			
8 - 5/8	300'	300'	Cemented to surface
7			
5 ½			
4 ½	2100'	2100'	50 sks.
3			Perf. Top
2			Perf. Bottom
Liners			Perf. Top
			Perf. Bottom

APPROXIMATE FRESH WATER DEPTHS _____ FEET _____ SALT WATER _____ FEET _____
APPROXIMATE COAL DEPTHS _____, _____
IS COAL BEING MINED IN THE AREA? None BY WHOM? _____

TO DRILL:

SUBMIT FIVE (5) COPIES OF OG - 1, $100.00 PERMIT FEE, PERFORMANCE BOND AND PERMANENT COPY OF PLAT.

TO DRILL DEEPER OR REDRILL:

SUBMIT FIVE (5) COPIES OF OG - 1, SHOWING ORIGINAL PERMIT NUMBER AND PERFORMANCE BOND. ON WELLS DRILLED PRIOR TO 1929, A PERMANENT COPY OF THE PLAT AND THE ORIGINAL WELL RECORD MUST ALSO BE SUBMITTED.

TO FRACTURE - STIMULATE:

OIL AND/OR GAS WELL ORIGINALLY DRILLED BEFORE JUNE 5, 1929, FIVE (5) COPIES OG - 1, PERFORMANCE BOND, PERMANENT PLAT AND ORIGINAL WELL RECORD.

OIL AND/OR GAS WELL ORIGINALLY DRILLED ON AND/OR AFTER JUNE 5, 1929, FIVE COPIES OG - 1, SHOWING ORIGINAL PERMIT NUMBER, AND PERFORMANCE BOND.

Required forms must be filed within ninety (90) days of completion [redacted]. Inspector to be notified twenty-four (24) hours in advance.

The following waiver must be completed by the coal operator if the permit is to be issued within ten days of receipt thereof.

WAIVER: I the undersigned, Agent for _____ Coal Company, Owner or Operator of the coal under this lease have examined and place on our mine maps this proposed well location.

We the _____ Coal Company have no objections to said well being drilled at this location, providing operator has complied with all rules and regulations in Articles 4, 5, and 7, Chapter 22 of the West Virginia Code.

_____
For Coal Company

_____
Official Title

(B) FILE COPY

RECEIVED
FEB 18 1986
DIVISION OF OIL & GAS
DEPARTMENT OF ENERGY

1) Date: February 12
2) Operator's Well No. G.M. & M.A. Summers
3) SIC Code
4 API Well NO. 47 · 087 · (State · County)
5. UIC Permit No.

STATE OF WEST VIRGINIA
NOTICE OF LIQUID INJECTION OR WASTE DISPOSAL WELL WORK PERMIT APPLICATION
for the
DEPARTMENT OF ENERGY, OIL AND GAS DIVISION

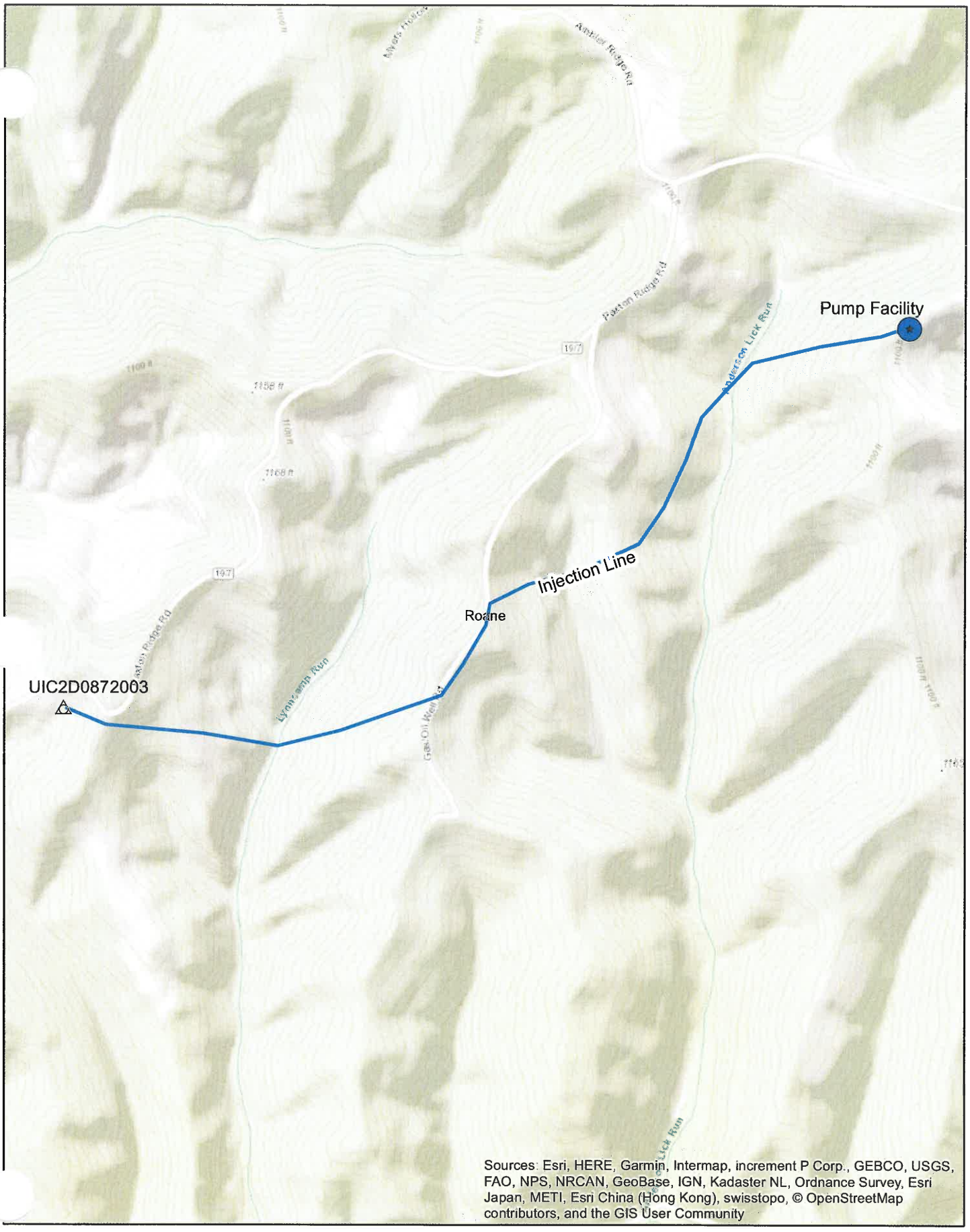
TYPE: Liquid injection X / Gas injection (not storage) / Waste disposal /
TION: Elevation: 1041.70 Watershed: Lynn Camp Run
District: Walton County: Roane Quadrangle: Kettle
OPERATOR Pennzoil Company 673
Address P.O. Box 1588
Parkersburg, WV 26102
9) DESIGNATED AGENT James A. Cr
Address P.O. Box 15
Parkersburg
GAS INSPECTOR TO BE NOTIFIED
Homer Dougherty
ess Linden Rt., Box 3-A
Looneyville, WV 25259
11) DRILLING CONTRACTOR:
Name
Address

)SED WELL WORK: Drill / Drill deeper / Redrill / Stimulate /
Plug off old formation / Perforate new formation / Convert X /
Other physical change in well (specify)
)GICAL TARGET FORMATION, Big Injun 371 Depth 2047 feet(top) to 2106 fe
ted depth of completed well, (or actual depth of existing well) 2135 ft.
timate water strata depths: Fresh N/A feet; salt feet.
timate coal seam depths: N/A
being mined in the area? Yes / No X /
reservoir pressure in target formation 900 psig. Source Estimate
ted reservoir fracture pressure 2092 psig (BHFP)
MUM PROPOSED INJECTION OPERATIONS: Volume per hour: 30 BBl/hr Bottom hole pressure 2050
ILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES:
oduced water treated with corrosion inhibitor, Bacteriacides, and possibly othe
RS (IF ANY): to maintain water quality in oilfield injec
FICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL:

G AND TUBING PROGRAM

E	SPECIFICATIONS Size	Grade	Weight per ft.	New	Used	FOOTAGE INTERVALS For drilling	Left in well	CEMENT FILL-UP OR SACKS (Cubic feet)	PACKERS
									Kinds
	8-5/8	H40	20	X		359.60	359.60	Cemented to	surface
									Sizes
	4-1/2	K55	9.5	X		2132.22	2132.22	50 sks. of	Depths set
								50/50 Posmix	
									Perforations
									Top

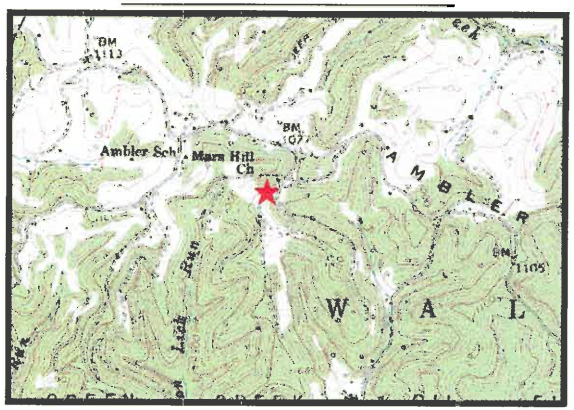
ICANT'S OPERATING RIGHTS were acquired from G. M. Summers, et ux
ed / lease X / other contract / dated 10-9-06, 19 06, of re
Roane County Clerk's office in Lease Book 9 at page 57
reverse side of the APPLICANT'S COPY for instructions to the well operator.



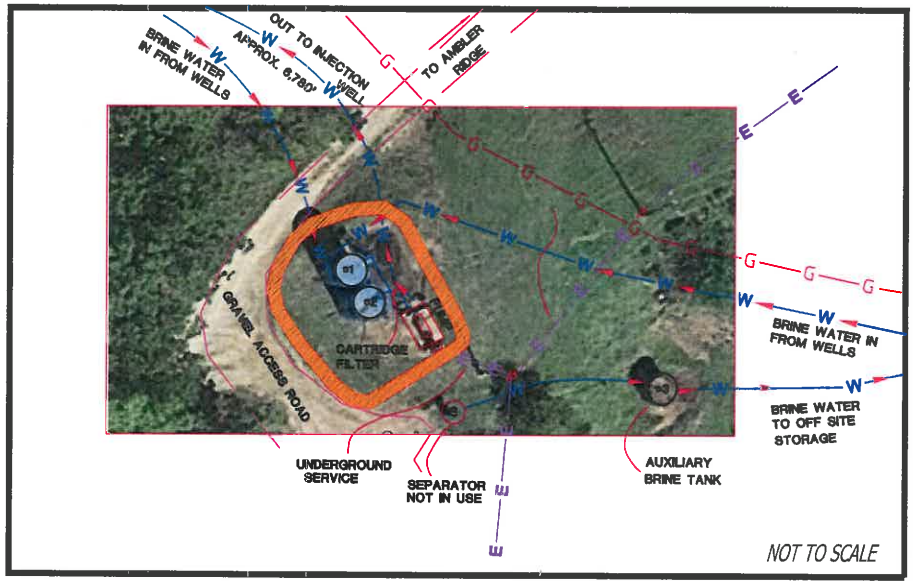
UIC2D0872003 Injection Line

1 inch = 800 feet

VICINITY MAP



Berm Height	2.5 FT.
Berm Diminsions Outside	40 FT. X 40 FT. (1,600 SQ. FT.)
Berm Diminsions Inside	30 FT. X 30 FT. (900 SQ. FT.)
Total Volume of Containment	2.5 X (1600 sqft + 900 sqft + sq rt (1600 sq ft x 900 sq ft))/3 = 3083.3 cu ft
Volume of one 210 bbl Tank	210 bbl x 42 gal per bbl x 0.1337 cf/gal = 1179 cu ft
Volume of 110% of one 210 bbl Tank	1179 cu ft x 1.10 = 1297 cu ft
Base area of two 210 bbl tanks 2 x (3.14 x ((10ft/2) squared) = 157 sq ft	
Volume excluded by two Tanks	(157 sq ft x 2.5 ft) = 392.5 cu ft
Total containment volume minus excluded tanks (lock-out manifold)	3083.3 - 392.5 = 2690.8 cu ft
Ratio of effective containment volume to 110% tank volume (2690.8/1297)	207%
Minimum dike height to achieve 110%	1.3 feet



G.M. & M.A. SUMMERS FACILITY DETAIL

STORAGE TANK INVENTORY

TANK ID	TANK CONTENTS	TANK SIZE	AST. NO.
1	BRINE WATER	8,820 GAL.	044-00000881
2	BRINE WATER	8,820 GAL.	044-00000883
3	BRINE WATER	4,200 GAL.	044-00000882

STORAGE TANK COORDINATES
NAD83 UTM (in meters)

TANK ID	NORTHING	EASTING
1	4272091.1	462684.0
2	4272086.4	462686.0
3	4272085.4	462710.8

LEGEND

- EDGE OF ROAD/GRAVEL
- E — ELECTRIC UTILITIES
- UTILITY POLE
- W — WATERLINE
- TOP OF BERM
- OVERFLOW DRAIN

MOUNTAIN V OIL & GAS, INC.

ANGLE RIGHT LAND SURVEYING, LLC
1584 ROAD FORK ROAD
GRANTSVILLE, WV 26147
(304) 364-0066

G.M. and M.A. SUMMERS
FACILITY DETAIL

180624
tas
Date: 07/06/2018
Scale: na

(4/25)

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							
47-087-02003	1	4,272,091.1	462,6894.0	2014	48	STEEL	8,820	BRINE	VARIES	S
47-087-02003	2	4,272,088.4	462,686.0	2014	48	STEEL	8,820	BRINE	VARIES	S
47-087-02003	3	4,272,085.4	462,710.8	2014	48	STEEL	4,200	BRINE	VARIES	S

APPENDIX C

API No.	Well Type	Well Status	Northing	Easting	Penetrate Injection Zone	Vertical Depth	Surface Elevation	Drill Log	Plug Record	On AOR Maps
4708701965	oil	plugged 2-19-96	4271531.3	461330.2	YES	2146	1049	X	X	X
4708701988	oil&gas	plugged 5-14-99	4271632.4	460927.3	YES	2100	1028	X	X	X
4708703161	oil	plugged 8-25-97	4271208.9	461393	NO	1964	906		X	X

OG-10
Rev. - 9-71

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES

Oil and Gas Division

WELL RECORD

Rotary X Oil X
Cable ____ Gas ____
Reeveling ____ Comb. ____
Water Flood ____ Storage ____
Disposal ____ (Kind)

Quadrangle Walton

Permit No. Roa-1965

Company Pennzoil Company
Address Parkersburg, West Virginia 26101
Farm J. H. Hively Acres 140
Location (waters) ____
Well No. 12 Elev. 1048.68
District Walton County Roane
The surface of tract is owned in fee by
Tom Taylor
Address Walton, West Virginia
Mineral rights are owned by The Davidson Company,
c/o Brooks McCabe Address W. O. Box 1692, Charleston, W. Va., 25326
Drilling Commenced June 5, 1972
Drilling Completed June 9, 1972
Initial open flow 20,000' cu. ft. 15 bbls.
Final production 20,000 cu. ft. per day 10 bbls.
Well open ____ hrs. before test ____ RP.
Well treatment details

Casing and Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft. (Sks.)
Size 20 16			
Cond.			
13-10"			
9 5/8			
8 5/8	378.15	378.15	200 sks.
7			
5 1/2			
4 1/2	2141.67	2141.67	50 sks.
3			
2			
Liners Used			

Attach copy of cementing record.

Fractured 6/12/72 w/769 bbls. water, 30,000# 20/40 sd., 250 Gals. HCL 15%

Perforated: 6/12/72 w/2065-67-2 holes, 2094-96-4 holes, 2071-75-8 holes, 2081-85-8 holes

Coal was encountered at ____ Feet ____ Inches
Fresh water ____ Feet ____ Salt Water ____ Feet ____
Producing Sand Big Injun Depth 2059-2105

Formation	Color	Hard or Soft	Top Feet	Bottom Feet	Oil, Gas or Water	* Remarks
Salt Sand			1770	1885		
Little Lime			1885	1908		
Pencil Cave			1908	1917		
Big Lime			1917	2059		
Big Injun			2059	2105		
Total Depth			2146			

(over)

* Indicates Electric Log tops in the remarks section.

"Pipeline"

Select County: (087) Roane | Enter Permit #: 1965 | Get Data | Reset

Select datatypes: ☐ (Check All)
☑ Location ☑ Production ☑ Plugging
☑ Owner/Completion ☑ Stratigraphy ☑ Sample
☑ Pay/Show/Water ☑ Logs ☑ Btm Hole Loc

Table Descriptions
County Code Translations
Permit-Numbering Series
Usage Notes
Contact Information
Disclaimer
WVGES Main
"Pipeline-Plus" New

WV Geological & Economic Survey:

Well: County = 87 Permit = 1965

Report Time: Wednesday, March 20, 2019 12:45:43 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4708701965	Roane	1965	Walton	Kettle	Walton	38.591422	-81.444033	461330.2	4271531.3

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4708701965	6/9/1972	Original Loc	Completed	J H Hively / T Taylor	12				The Davidson Company	Pennzoil Company			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_
4708701965	6/9/1972	6/5/1972	1049	Ground Level	Walton(Rock Ck)	Big Injun (Price&eq)	Big Injun (Price&eq)	Development Well	Development Well	Oil w/ Gas Show	Rotary	Acid+Frac	2146		2146		

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4708701965	6/9/1972	Show	Gas	Vertical	2065	Big Injun (Price&eq)	2096	Big Injun (Price&eq)	20	20			
4708701965	6/9/1972	Pay	Oil	Vertical	2065	Big Injun (Price&eq)	2096	Big Injun (Price&eq)	15	10			

Production Gas Information: (Volumes in Mcf) * 2018 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708701965	Pennzoil Company	1981	0	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Pennzoil Company	1982	0	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Pennzoil Company	1983	0	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Pennzoil Company	1984	0	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Pennzoil Products Company	1987	0	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Pennzoil Products Company	1989	0	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Pennzoil Products Company	1990	0	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Pennzoil Products Company	1991	0	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Hefner, G. B., & Associates, Inc.	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Hefner, G. B., & Associates, Inc.	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Hefner, G. B., & Associates, Inc.	1996	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil * 2018 data for H6A wells only. Other wells are incomplete at this time.

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4708701965	Pennzoil Company	1981	210	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Pennzoil Company	1982	102	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Pennzoil Company	1983	139	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Pennzoil Company	1984	128	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Pennzoil Products Company	1987	0	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Pennzoil Products Company	1989	312	31	19	19	22	25	20	23	26	27	32	34	34
4708701965	Pennzoil Products Company	1990	360	40	29	39	37	34	33	30	26	28	30	23	11
4708701965	Pennzoil Products Company	1991	30	0	23	7	0	0	0	0	0	0	0	0	0
4708701965	Pennzoil Products Company	1992	0	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Pennzoil Products Company	1993	0	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Hefner, G. B., & Associates, Inc.	1994	0	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Hefner, G. B., & Associates, Inc.	1995	0	0	0	0	0	0	0	0	0	0	0	0	0
4708701965	Hefner, G. B., & Associates, Inc.	1996	0	0	0	0	0	0	0	0	0	0	0	0	0

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Production Water data for this well

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4708701965	Original Loc	Salt Sands (undiff)	Well Record	1770	Reasonable	115	Reasonable	1049	Ground Level
4708701965	Original Loc	Miss/Penn boundary	Electric Log	1884				1056	Kelly Bushing
4708701965	Original Loc	Little Lime	Well Record	1885	Reasonable	23	Reasonable	1049	Ground Level
4708701965	Original Loc	Pencil Cave	Well Record	1908	Reasonable	9	Reasonable	1049	Ground Level
4708701965	Original Loc	Greenbrier Group	Well Record	1917	Reasonable	142	Reasonable	1049	Ground Level
4708701965	Original Loc	Big Lime	Well Record	1917	Reasonable	142	Reasonable	1049	Ground Level
4708701965	Original Loc	Big Injun (Price&eq)	Well Record	2059	Reasonable	46	Reasonable	1049	Ground Level

Wireline (E-Log) Information:

API	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	DIGITIZED	GR_TOP	GR_BOT	D_TOP	D_BOT	N_TOP	N_BOT	I_TOP	I_BOT	T_TOP	T_BOT	S_TOP	S_BOT	O_TOP	O_BOT	INCH2	INCH5
4708701965	1500	2147		D,G,C*	Y	N	1500	2138	1500	2147									1500	2143	Y	Y

Comment: *logs: perforation, CCL, caliper

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if using a 56k or slower dialup connection.

FILENAME
4708701965gcd.tif
4708701965gp.tif

Quick Reference Guide for Log File Names For more info about WVGES scanned logs click here

geologic log types:
- d density (includes bulk density, compensated density, density, density porosity, grain density, matrix density, etc.)
- e photoelectric adsorption (PE or Pe, etc.)
- g gamma ray
- i induction (includes dual induction, medium induction, deep induction, etc.)
- l laterolog
- m dipmeter
- n neutron (includes neutron porosity, sidewall neutron--SWN, etc.)
- o other[1]
- s sonic or velocity
- t temperature (includes borehole temperature, BHT, differential temperature, etc.)
- z spontaneous potential or potential

mechanical log types:
- b cement bond
- c caliper
- o other[1]
- p perforation depth control or perforate

[1]other logs may include, but are not limited to, such curves as audio, bit size, CCL--casing collar locator, continuous meter, directional survey, gas detector, guard, NCTL--Nuclear Cement Top Locator, radioactive tracer, tension

Plugging Information:

API	PLG_DT	DEPTH_PBT
4708701965	2/19/1996	0

There is no Sample data for this well

WR-38

API # 47- 87-01965-P

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
SECTION OF OIL AND GAS

AFFIDAVIT OF PLUGGING AND FILLING WELL

AFFIDAVIT SHOULD BE IN TRIPLICATE, one copy mailed to the Division, one copy to be retained by the Well Operator and the third copy should be mailed to each coal operator at their respective addresses.

Farm name: **TAYLOR, JAMES** Operator Well No.: **J H HIVELY 12**

LOCATION: Elevation: **1048.68** Quadrangle: KETTLE
District: WALTON County: ROANE
Latitude: **12150** Feet South of 38 Deg. 37 Min. 30 Sec.
Longitude: **7800** Feet West of 81 Deg. 25 Min. Sec.

Well Type: OIL XX GAS _____

Company: G B HEFNER & ASSOC., dba
ROCK CREEK OIL CO.
P O BOX 249
BRIDGEPORT, WV 26330
Agent: G B HEFNER

RECEIVED
OFFICE OF OIL AND GAS
MAY 1 9 1996
WV Division of
Environmental Protection

Permit Issued: 06/27/95

AFFIDAVIT

STATE OF WEST VIRGINIA,
County of ROANE ss:

KYLE D PERKINS and **BILL GOODRICH** being first duly sworn according to law depose and say that they are experienced in the work of plugging and filling oil and gas wells are were employed by the above named well operator, and participated in the work of plugging and filling the above well, and HOMER DOUGHERTY, Oil and Gas Inspector representing the Director, say that the work was commenced on the **13th** day of **February**, 19**96** and that the well was plugged and filled in the following manner:

TYPE	FROM	TO	PIPE REMOVED	LEFT
Gel	**2146**	**2100**	**4 1/2" 1500**	**641**
Cement	**2100**	**2000**		
Gel	**2000**	**1500**		
Cement	**1500**	**1400**		
Gel	**1400**	**450**		
Cement	**450**	**350**		
Gel	**350**	**50**		
Cement	**50**	**surface**		

3/14/96

Description of Monument: **1 joint 6 5/8" casing extending 30" above surface**
and that the work of plugging and filling said well was completed on the **19th** day of **February**, 1996.

And further deponents saith not.

Kyle D Perkins
Bill Goodrich

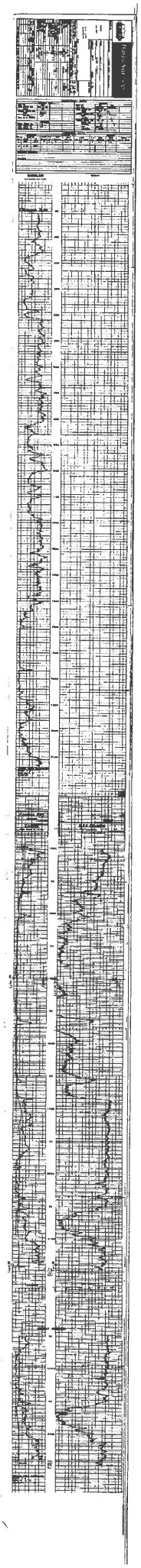
Sworn and subscribe before me this **19th** day of **February** 1996
My commission expires: June 7, 2000

Notary Public

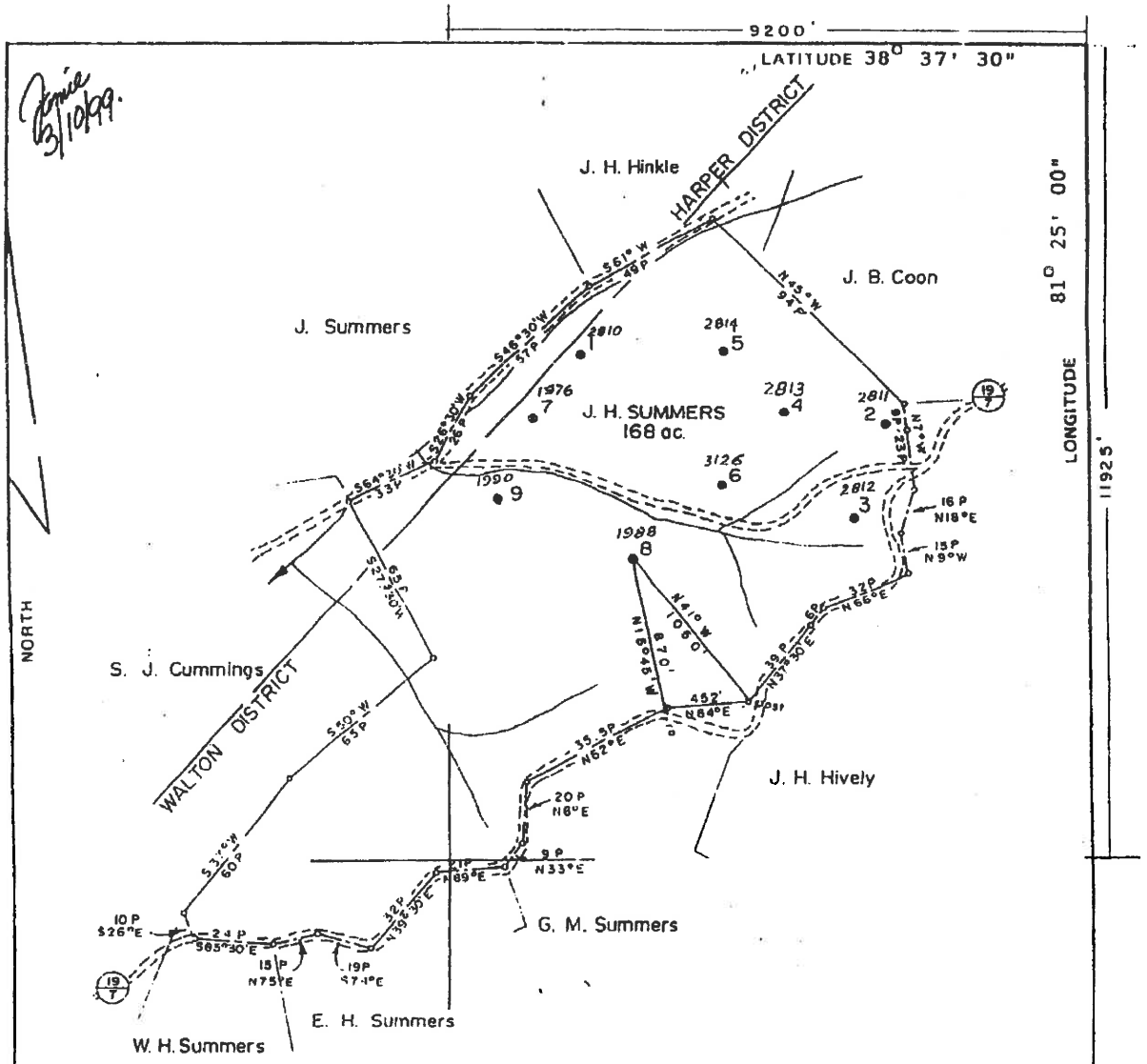
OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
CURTIS A. LIPPS
1604 Race Street
Parkersburg, West Virginia 26101
My Commission Expires June 7, 2000

Oil and Gas Inspector: Homer Dougherty

RECEIVED
Office of Oil and Gas
JUL 18 2018
WV Department of
Environmental Protection



Jamie 3/10/99.



FILE NO. _____
MAP NO. 70 SQS. S58W48
SCALE 1" = 800'
MINIMUM DEGREE OF ACCURACY 1/200
PROVEN SOURCE OF ELEVATION PENNZOIL CO. RECORDS

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF MINES.
(SIGNED) Curtis A. Lucas
CURTIS A LUCAS PS 275

CURTIS A. LUCAS LICENSED NO. 275 STATE OF WEST VIRGINIA LAND SURVEYOR
PLACE SEAL HERE

WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS
#10 McJUNKIN ROAD
NITRO, WEST VIRGINIA 25143-2506

DATE DECEMBER 22, 19 98
FARM J H SUMMERS NO. 8
API WELL NO.
47 . 087 . 01988-P
STATE COUNTY PERMIT

(I) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
WELL TYPE: OIL X GAS ___ LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS,") PRODUCTION ___ STORAGE ___ DEEP ___ SHALLOW ___
LOCATION ELEVATION 1027.92 WATER SHED LEFT FORK OF GREEN CREEK
DISTRICT WALTON COUNTY ROANE
QUADRANGLE KETTLE
SURFACE OWNER PAUL CUMMINGS ACREAGE _____
OIL & GAS ROYALTY OWNER SUMMERS et al LEASE ACREAGE 168
LEASE NO. _____
PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___ PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) Plugging an existing well drilled in 1973
PLUG AND ABANDON X CLEAN OUT AND REPLUG ___
TARGET FORMATION BIG INJUN ESTIMATED DEPTH 2100
WELL OPERATOR G B HEFNER & ASSOC DESIGNATED AGENT G B HEFNER
ADDRESS P O BOX 249 ADDRESS P O BOX 249

FORM WW-6

RECEIVED
Office of Oil and Gas
JUN 18 2018
WV Department of Environmental Protection

WR-38
12-Mar-99

API # 47- 87-01988-P

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
SECTION OF OIL AND GAS

AFFIDAVIT OF PLUGGING AND FILLING WELL

AFFIDAVIT SHOULD BE IN TRIPLICATE, one copy mailed to the Division, one copy to be retained by the Well Operator and the third copy (and extra copies if required) should be mailed to each coal operator at their respective addresses.

Farm name: CUMMINGS, PAUL Operator Well No.:JH SUMMERS 8
LOCATION: Elevation: 1,027.92 Quadrangle: KETTLE
District: WALTON County: ROANE
Latitude: 11925 Feet South of 38 Deg. 37 Min. 30 Sec.
Longitude 9200 Feet West of 81 Deg. 25 Min. 0 Sec.

Well Type: OIL X GAS
G B HEFNER & ASSOC dba
Company: ROCK CREEK OIL CO
P O BOX 249
BRIDGEPORT WV 26330

Coal Operator or Owner

Agent: G B HEFNER

Coal Operator or Owner

Permit Issued: 03/15/99

RECEIVED
JUN 10 1999
Office of Oil & Gas

AFFIDAVIT

STATE OF WEST VIRGINIA,
County of ROANE ss:

CHRIS RAINES and MIKE YOUNG being first duly sworn according to law depose and say that they are experienced in the work of plugging and filling oil and gas wells and were employed by the above named well operator, and participated in the work of plugging and filling the above well, and HOMER DOUGHERTY Oil and Gas Inspector representing the Director, say that said work was commenced on the 3rd day of May, 1999, and that the well was plugged and filled in the following manner:

TYPE	FROM	TO	PIPE REMOVED		LEFT
Cement	2050	1842 (tagged)			
Gel	1842	1523	4 1/2	1523	570
Cement	1523	1423	8 5/8	0	390
Gel	1423	492			
Cement	492	392			
Gel	392	50			
Cement	50	surface			

6/29/99

Description of monument: 7" csg extending 30" above surface
and that the work of plugging and filling said well was completed on the 14th day of May, 1999.

And furthur deponents saith not.

Chris Raines

Mike Young

Sworn and subscribe before me this 14th day of May, 1999

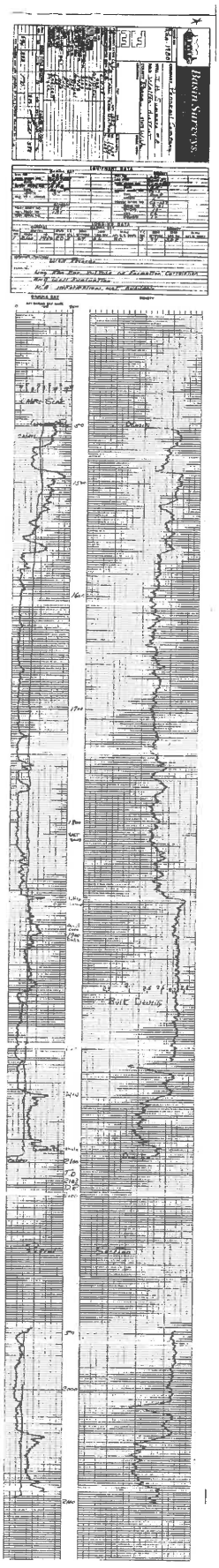
My commission expires: June 7, 2000

Curtis A. Lucas
Notary Public

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
CURTIS A. LUCAS
1604 Race Street
Parkersburg, West Virginia, 26101
My Commission Expires June 7, 2000

Oil and Gas Inspector: H. H. Dougherty

RECEIVED
Office of Oil and Gas
JUL 18 2018
WV Department of
Environmental Protection



WELL RECORD

Roane 3161 F.

PRODUCTION FIRST 24 HOURS FROM ..... Sand ..... Bbls. Approved.

..... Sand ..... Bbls. By ..... Sup

J.H.Hively FARM No. OF LEASE ..... No. AC

Walton DISTRICT Roane COUNTY West Va ST

WELL No. 9 DATE OF LOCATION ..... 19....

RIG COMMENCED ..... 19.....
RIG COMPLETED ..... 19..... } ..... Knight & Sons ..... CONTRAC

DRILLING COMMENCED Feb.26,1917 19.....
DRILLING COMPLETED April 4th,1917 19..... } Louis F.Payn Oil Co. CONTRAC

CASING RECORD

Size	CHARGED TO WELL Feet	In.	PUT IN WELL Feet	In.	BOTTOM OF CASING Feet	In.	PULLED OUT OF WELL Feet	In.	LEFT IN WELL Feet	In.	TRANSFERRED Before Completion Feet	In.	LEFT AT WELL NOT IN USE Feet	In.
13"			13						13					
10"			131											
8¼"			690											
6-5/8			1772						1772					

Formation	Top	Bottom	Remarks
Conductor			
Native Coal First Sand Water	13	90	
Pittsburgh Coal Second Sand	115 185	275	Shot- Apr.4,1917,50 qts-1937-1957'
Little Dunkard Sand	650	670	
Big Dunkard Sand	690	785	
First Salt Sand Coal -	1372	1741	
Second Salt Sand Water	1420		
Water Big Water	1455		Bbl.& Perforation lowered 12/23/26
Maxon Sand			
Little Lime	1741	1768	
Pencil Cave	1768	1783	
Big Lime	1772	1901	
Big Injun Sand Keener	1899	1913	
Gas Injun	1913	1956	43
Break	1956	1964	
First Pay Oil	1932	1956	51
Second Pay Bottom		1964	
Water			
Squaw Sand			
Gantz Sand			
Fifty Foot Sand			
Thirty Foot Sand			
Gordon Stray Sand			
Gordon Sand			
Gas			
First Pay			
Second Pay			
Fourth Sand			
Fifth Sand			
Gas			
Oil			
Bayard Sand			

ABANDONED ..... 19.....

Size	Casing Pulled	Casing Left In

REMARKS

Total Depth 1964

JAN 1 1 1974

OFFICE COPY

RECEIVED

2

PENNZOIL COMPANY

601 GRAND CENTRAL AVENUE • VIENNA, W. VA. 26105 • PHONE (304) 422-6565
Mailing Address: P.O. Drawer 1588, Parkersburg, West Virginia 26101

Mr. Robert L. Dodd, Deputy Director
Oil and Gas Division
Department of Mines
1204 Kanawha Boulevard, East
Charleston, West Virginia 25301

Dear Mr. Dodd:

FRACTURE RECORD

Well Name and No: J. H. Hively, Well No. 9

District: Walton County: Roane

Permit No: Roa-193-Frac.- Well Completion Date: 9-28-73

Formation fractured: Top 1913 Material - Sand: 30,000# 20/40 sd.
Big Injun Bottom 1956 Fluid: 705 BW

Rock Pressure: Test After Fracture:
Before fracture - no test Oil - 5 Bbls.
After fracture - no test Gas

Very truly yours,

PENNZOIL COMPANY

By Curtis A. Lucas
Curtis A. Lucas
Engineering Dept.

47-087-3167

RECEIVED
OFFICE OF OIL AND GAS
SEP 03 1997
WV Division of
Environmental Protection

WR-38
21-May-97

API # 47- 87-03161-P

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
SECTION OF OIL AND GAS

AFFIDAVIT OF PLUGGING AND FILLING WELL

AFFIDAVIT SHOULD BE IN TRIPLICATE, one copy mailed to the Division, one copy to be retained by the Well Operator and the third copy (and extra copies if required) should be mailed to each coal operator at their respective addresses.

Farm name: TAYLOR, JAMES, MRS. Operator Well No.:J.H.HIVELY #9

LOCATION: Elevation: 906.36 Quadrangle: KETTLE
District: WALTON County: ROANE
Latitude: 14000 Feet South of 38 Deg. 37 Min. 30 Sec.
Longitude 8000 Feet West of 81 Deg. 25 Min. 0 Sec.

Well Type: OIL X GAS ____

Company: G B HEFNER & ASSOC dba
ROCK CREEK OIL CO
P O BOX 249
BRIDGEPORT WV 26330

Coal Operator or Owner ____

Agent: G B HEFNER

Coal Operator or Owner ____

Permit Issued: 05/23/97

AFFIDAVIT

STATE OF WEST VIRGINIA,
County of ROANE ss:

MICHAEL D MCKINNEY and RONALD PAXTON being first duly sworn according to law depose and say that they are experienced in the work of plugging and filling oil and gas wells and were employed by the above named well operator, and participated in the work of plugging and filling the above well, and HOMER DOUGHERTY Oil and Gas Inspector representing the Director, say that said work was commenced on the 19th day of August, 1997, and that the well was plugged and filled in the following manner:

TYPE	FROM	TO	PIPE REMOVED	LEFT
Gel	1964	1925	4 1/2 1300	588
Cement	1925	1825	6 5/8 240	1532
Gel	1825	1300		
Cement	1300	1200		
Gel	1200	800		
Cement	800	700		
Gel	700	240		
Cement	240	140		
Gel	140	50		9/8/97
Cement	50	surface		

Description of monument: 1 joint 7" csg extending 30" above surface and that the work of plugging and filling said well was completed on the 25th day of August, 1997

And furthur deponents saith not.

Michael D. McKinney
Ronald Paxton

Sworn and subscribe before me this 25th day of August 1997
My commission expires: June 7, 2000

Curtis A Lucas
Notary Public

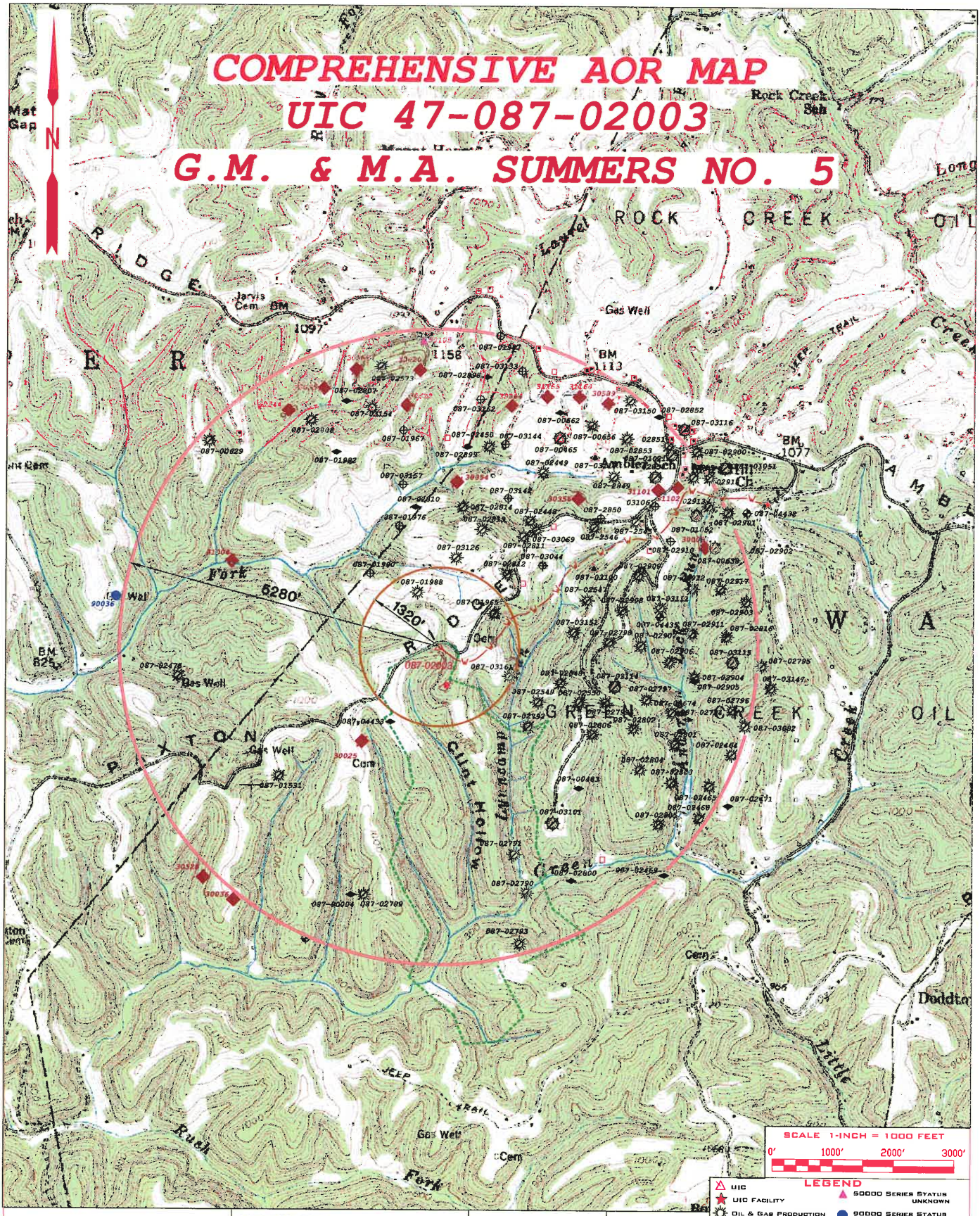
OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
CURTIS A. LUCAS
1604 Race Street
Parkersburg, West Virginia 26101
My Commission Expires June 7, 2000

Oil and Gas Inspector: H. H. Dougherty
I was not on Well Plugging

RECEIVED
Office of Oil and Gas
JUL 18 2018
WV Department of
Environmental Protection

ROA 3161

Section 7
Area of Review



ANGLE RIGHT LAND SURVEYING, LLC
1584 Road Fork Road
Grantsville, WV 26147
(304) 354-0065

180624
TOPO MASTER

OPERATOR	TOPO SECTIONS	COUNTY
MOUNTAIN V OIL & GAS P.O. Box 470 Bridgeport, WV 26330	Kettle 7.5	ROANE
	DATE:	DISTRICTS
	07/06/2018 Rev. 01/29/2019	WALTON

COMPREHENSIVE AOR MAP
UIC 47-087-02003
G.M. & M.A. SUMMERS NO. 5
1/4 MILE RADIUS

ANGLE RIGHT LAND SURVEYING, LLC
1584 Road Fork Road
Grantsville, WV 26147
(304) 354-0065

180624
TOPO MASTER

OPERATOR	TOPO SECTIONS	COUNTY
MOUNTAIN V OIL & GAS P.O. Box 470 Bridgeport, WV 26330	Kettle 7.5	ROANE
	DATE:	DISTRICTS
	07/06/2018 rev 01/29/2019	WALTON

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)

_____

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

_____

that there are no such publically recorded sources.

_____

(Signature of Authorized Representative)

Sworn and subscribed to before me this _____day of _____, 20_____.

_____, my commission expires _____

(Notary Signature)

_____.

Our company contacted the health department of Roane County, and due to NO PSD's servicing, this area, we were informed that they are unable to fill out the affidavit provided by the department.

Section 7 – Area of Review:

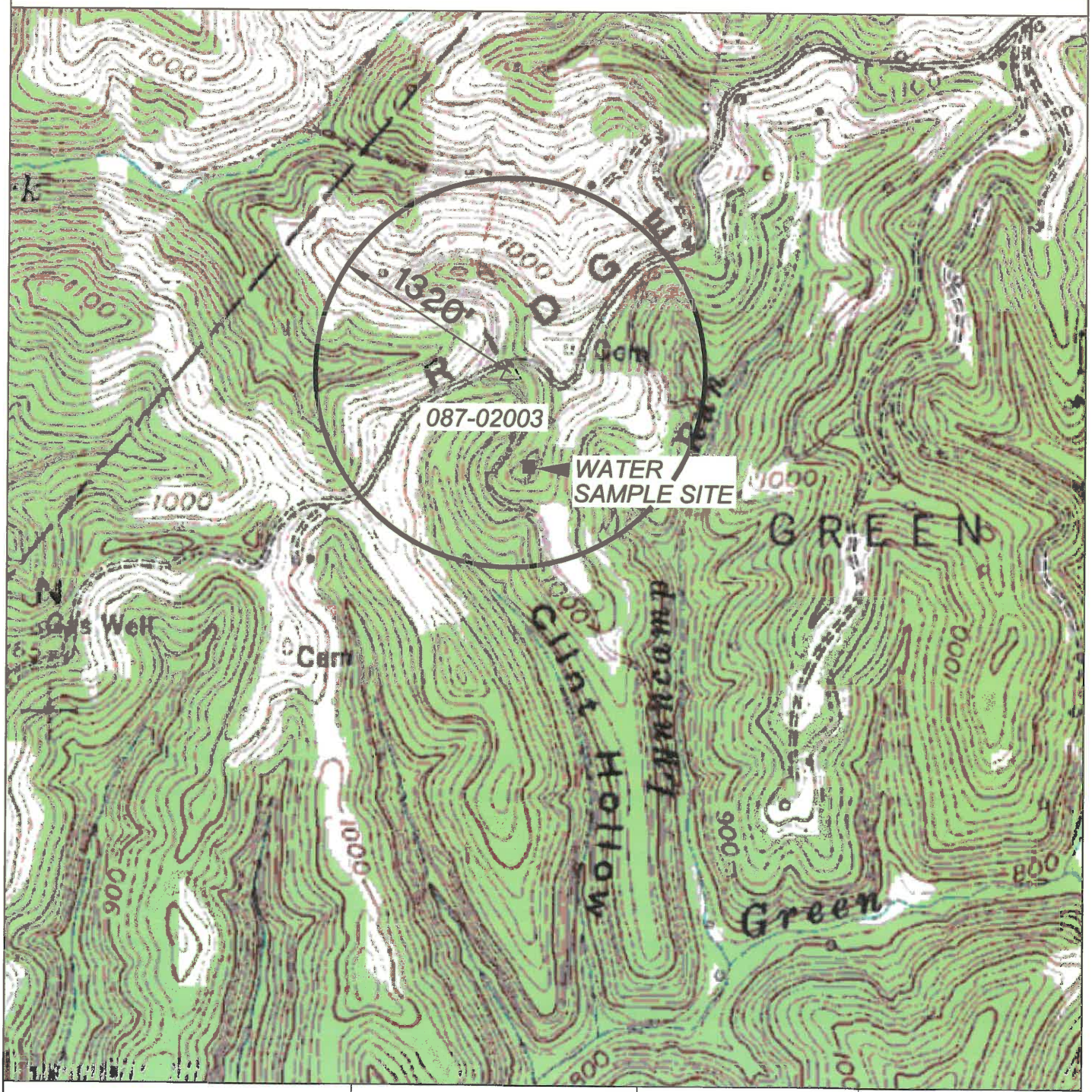
Section 7.3 Depth to the bottom of all USDWs:

- There is one (1) water supply wells within the AOR. There is no information available about the water well tested. The topographic map showing a one mile radius around the proposed injection well is attached. The location of the proposed facility and the sites of all surface bodies of water, including drinking water wells, ponds, springs, and creeks are noted in the Water Supply Exhibit in Section 7 of this permit application.

WELL NO.	WELL STATUS	NORTHING (UTM NAD 83)	EASTING (UTM NAD 83)	VERTICAL DEPTH	SURFACE ELEV.
4708700004	Plugged	4270100.5	460598.5	2040'	850'
4708702476	Plugged	4271203.8	459726.5	1804'	775'
4708702814	Plugged	4272065.8	461154.6	2119'	1061'
4708702900	Plugged	4272347.8	462331.4	2132'	1036'
4708702904	Plugged	4271207.3	462325.5	2090'	1032'
4708703069	Plugged	4271949.1	461525.2	2162'	1100'
4708703154	Active	4272565.1	460691.8	2028'	977'

WATER SAMPLE SITE
UIC 47-087-02003
G.M. & M.A. SUMMERS NO. 5

RECEIVED
Office of Oil and Gas
FEB - 1 2019
WV Department of
Environmental Protection



ANGLE RIGHT LAND SURVEYING, LLC PO BOX 681 GRANTSVILLE, WV 26147 (304) 354-0065 180624	**OPERATOR** MOUNTAIN V OIL & GAS P.O. Box 470 Bridgeport, WV 26330	**TOPO SECTION** KETTLE 7.5'	**WELL NAME** UIC 47-087-02003 G.M. & M.A. SUMMERS NO. 5
		SCALE: 1"=1000'	**DATE:** 07/06/2018 rev. 01/29/2019

WATER SAMPLED___MICHAEL B. HARMON, 5 WINDING WOODS DR., CHARLESTON, WV 25311 (304) 345-8397

(4/25)

APPENDIX E
Water Sources

Operator: Mountain V Oil & Gas, Inc. Year 2018 UIC Permit # 2D0872003

Water Source Name		Michael Harmon
Northing		4,271,163
Easting		461,077
Parameter	Units	
TPH - GRO	mg/L	
TPH - DRO	mg/L	
TPH - ORO	mg/L	
BTEX	mg/L	
Chloride	mg/L	7.82
Sodium	mg/L	
Total Dissolved Solids (TDS)	mg/L	272
Aluminum	mg/L	ND
Arsenic	mg/L	
Barium	mg/L	0.72
Iron	mg/L	0.005
Manganese	mg/L	ND
pH	SU	7.87
Calcium	mg/L	
Sulfate	mg/L	
MBAS	mg/L	ND
Dissolved Methane	mg/L	1.71
Dissolved Ethane	mg/L	1.37
Dissolved Butane	mg/L	0.212
Dissolved Propane	mg/L	0.864
Bacteria (Total Coliform)	c/100mL	PRESE

Due to issues the contractor had with obtaining the water sample from Mr. Harmon, the sample was collected and not all parameters were tested for. The contractor in efforts to get sample and get out of there only tested for pre-drill parameters vs those in UIC permitting. Mr. Harmon gave the contractor a hard time and was hesitant to even allow the sample. The contractor is trying to contact Mr. Harmon to re-sample and conduct a new test within the parameters of the permit. If successful we will provide the department those results as soon as possible. Considering the events aforesaid, please see attached water sample analysis for Mr. Harmon's well originally taken, and Appendix E revised reflecting those results.

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: C05493

ANGLE RIGHT SURVEYING
1584 ROAD FORK ROAD
P.O. BOX 681
GRANTSVILLE WV 26147-

Friday, July 13, 2018

Total Number of Pages: 2
(Not Including C.O.C.)

Lab ID	Sample ID	Sample ID 2	Sample Date
289146-2018-DW	HARMON		6/29/2018

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. All analysis performed by Reliance Laboratories, Bridgeport, WV or Reliance Laboratories, Martinsburg, WV, as noted on laboratory report. 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
Date: 2018.08.08 14:19:26 -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

ANGLE RIGHT SURVEYING
1584 ROAD FORK ROAD
P.O. BOX 681
GRANTSVILLE, WV 26147-

Friday, July 13, 2018

Lab Number: 289146-2018-DW **Sample ID:** HARMON

Parameter		Value	Units	Method	Date/Time Analyzed	Analyst	MDL	MRL
Analyte Group: Inorganics								
E. coli (Chromogenic)		ABSENT		SM9223B-97	6/29/2018 16:50	CP		
Total Coliform (Chromogenic)		PRESENT		SM9223B-97	6/29/2018 16:50	CP		
pH		# 7.87	S.U.	SM4500H+B-11	7/6/2018 10:26	JL		
Total Alkalinity		310	mg CaCO3/l	SM2320B-11	7/6/2018 10:27	JL	1.55	5
Total Chloride		7.82	mg/l	EPA 300.0 R2.1	7/13/2018 14:15	TM	0.15	0.5
Total Dissolved Solids		272	mg/l	SM2540C-11	7/2/2018 10:00	CP	10	20
Total Organic Carbon		1.88	mg/l	SM5310C-11	7/9/2018 9:03	TH	0.1	0.5
Total Surfactant		ND	mg/l	SM5540C-11	6/29/2018 16:53	JL	0.05	0.2
Turbidity	J	0.5	N.T.U.	SM2130B-11	6/29/2018 16:50	TH	0.15	1
Total Aluminum		ND	mg/l	EPA 200.7 R4.4	7/11/2018 11:25	TH	0.009	0.05
Total Barium		0.72	mg/l	EPA 200.7 R4.4	7/11/2018 11:25	TH	0.003	0.05
Total Iron	J	0.005	mg/l	EPA 200.7 R4.4	7/11/2018 11:25	TH	0.004	0.05
Total Manganese		ND	mg/l	EPA 200.7 R4.4	7/11/2018 11:25	TH	0.007	0.05

Remarks: NOTE: #Holding time exceeded for this analysis. This falls outside criteria set by 40CFR136.

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected: 6/29/2018 14:00
Sample Submitted By: K. SHREVE
Date Sample Received: 6/29/2018 16:45
Sample temp. upon receipt: 13.6 Deg C

ND = Not Detected at the MDL or MRL
MDL - Minimum Detectable Limit
MRL - Minimum Reporting Limit
MCL - Maximum Contaminant Level, USEPA Regulated
J = Reported value is an estimate because concentration is less than the MRL

***Method Code: STANDARD METHODS ONLINE 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: This sample does not meet standards set for Total Coliform and E Coli by the State of West Virginia, 64-3-10, Code of State Regulations, adopted July 1, 2002 by the Bureau For Public Health. Sample Analyzed by Certified Laboratory #00354CM and #0044
NOTE: 40CFR136 sets criteria for sample temperature and preservation. This sample fell outside of this criteria.

NOTE: Sample analyzed was improperly preserved or received in an improper container.

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 Angle Bight
*ADDRESS 1584 Road 7 K Rd Grantsville WV 26147
CUSTOMER # CO5493 *TEL. # FAX #
*SAMPLER (S) K. Shreve E-MAIL

SHEET NO. ____ OF ____

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.	Intrusion	Intrusion (mult)						*PROJECT/REMARKS
289146	6/29/18	2:00PM		✓	DW	13.6	4	1		1		1	1	✓	✓						Harmon

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: K Shreve SIGN:	DATE: 6/29/18 TIME: 16:45	PRINT: SIGN: J Dellagatta
*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:
*Preserved @ lab
HCl vials, HNO_3, BAC-T

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, WV00901

Loc: 490
155866

Tuesday, July 17, 2018

TestAmerica - Nashville
2960 Foster Creighton Drive
Nashville, TN 37204

Please analyze the following sample(s) for: **Dissolved Methane/Ethane/Butane/Propane**

Please identify as:

290081-2018-W DATE/TIME SAMPLED: 7/13/2018 11:30

Sampled by: K.Shreve

PLEASE SEND RESULTS & INVOICE TO:

RELIANCE LABORATORIES, INC.
ATTN: TENLEY MILLER
P.O. BOX 4657
BRIDGEPORT, WV 26330
tmiller@wvdsl.net

Thank You

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Nashville
2960 Foster Creighton Drive
Nashville, TN 37204
Tel: (615)726-0177

TestAmerica Job ID: 490-155866-1
Client Project/Site: RSK / 290081

For:
Reliance Laboratories Inc
PO BOX 4657
Bridgeport, West Virginia 26330

Attn: Tenley Miller

Jennifer Gambill

Authorized for release by:
7/31/2018 2:44:35 PM

Jennifer Gambill, Project Manager I
(615)301-5044
jennifer.gambill@testamericainc.com

Table of Contents

Sample Summary

Client: Reliance Laboratories Inc
Project/Site: RSK / 290081

TestAmerica Job ID: 490-155866-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
490-155866-1	290081-2018-W	Water	07/13/18 11:30	07/18/18 09:45

Job ID: 490-155866-1

Laboratory: TestAmerica Nashville

Narrative

Job Narrative
490-155866-1

Comments
No additional comments.

Receipt
The sample was received on 7/18/2018 9:45 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 11.3° C.

GC/MS Semi VOA
Method(s) RSK-175: The following volatile sample was analyzed with significant headspace in the sample container vial: 290081-2018-W (490-155866-1). Significant headspace is defined as a bubble greater than 6 mm in diameter.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA
Method(s) RSK-175: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 490-531391.

Method(s) RSK-175: Surrogate recovery for the following sample was outside control limits: 290081-2018-W (490-155866-1). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Qualifiers

GC VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client Sample Results

Client: Reliance Laboratories Inc
Project/Site: RSK / 290081

TestAmerica Job ID: 490-155866-1

Client Sample ID: 290081-2018-W
Date Collected: 07/13/18 11:30
Date Received: 07/18/18 09:45

Lab Sample ID: 490-155866-1
Matrix: Water

Method: RSK-175 - Dissolved Gases in Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Butane	212		10.0	5.80	ug/L			07/25/18 15:04	1
Ethane	1370		50.0	27.0	ug/L			07/25/18 15:22	10
Methane	1710		50.0	17.0	ug/L			07/25/18 15:22	10
Propane	864		5.00	3.30	ug/L			07/25/18 15:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Acetylene (Surr)	*220*	*X*	*70 - 130*		*07/25/18 15:04*	*1*

1-ARMON WATER WELL

Method: RSK-175 - Dissolved Gases in Water

Lab Sample ID: MB 490-531391/39
Matrix: Water
Analysis Batch: 531391

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Butane	ND		10.0	5.80	ug/L			07/25/18 14:32	1
Ethane	ND		5.00	2.70	ug/L			07/25/18 14:32	1
Methane	ND		5.00	1.70	ug/L			07/25/18 14:32	1
Propane	ND		5.00	3.30	ug/L			07/25/18 14:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Acetylene (Surr)	*90*		*70 - 130*		*07/25/18 14:32*	*1*

Lab Sample ID: LCS 490-531391/40
Matrix: Water
Analysis Batch: 531391

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Butane	1020	1066		ug/L		105	85 - 115
Ethane	527	513.9		ug/L		97	85 - 115
Methane	287	280.7		ug/L		98	85 - 115
Propane	771	755.3		ug/L		98	85 - 115

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Acetylene (Surr)	*91*		*70 - 130*

Lab Sample ID: LCSD 490-531391/41
Matrix: Water
Analysis Batch: 531391

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Butane	1020	1063		ug/L		104	85 - 115	0	30
Ethane	527	509.8		ug/L		97	85 - 115	1	30
Methane	287	278.8		ug/L		97	85 - 115	1	30
Propane	771	748.1		ug/L		97	85 - 115	1	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Acetylene (Surr)	*91*		*70 - 130*

QC Association Summary

Client: Reliance Laboratories Inc
Project/Site: RSK / 290081

TestAmerica Job ID: 490-155866-1

GC VOA

Analysis Batch: 531391

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
490-155866-1	290081-2018-W	Total/NA	Water	RSK-175	
490-155866-1	290081-2018-W	Total/NA	Water	RSK-175	
MB 490-531391/39	Method Blank	Total/NA	Water	RSK-175	
LCS 490-531391/40	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 490-531391/41	Lab Control Sample Dup	Total/NA	Water	RSK-175	

Client Sample ID: 290081-2018-W
Date Collected: 07/13/18 11:30
Date Received: 07/18/18 09:45

Lab Sample ID: 490-155866-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	21 mL	21 mL	531391	07/25/18 15:04	AAB	TAL NSH
Total/NA	Analysis	RSK-175		10	21 mL	21 mL	531391	07/25/18 15:22	AAB	TAL NSH

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

Method Summary

Client: Reliance Laboratories Inc
Project/Site: RSK / 290081

TestAmerica Job ID: 490-155866-1

Method	Method Description	Protocol	Laboratory
RSK-175	Dissolved Gases in Water	RSK	TAL NSH

Protocol References:

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

Laboratory References:

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

Accreditation/Certification Summary

Client: Reliance Laboratories Inc
Project/Site: RSK / 290081

TestAmerica Job ID: 490-155866-1

Laboratory: TestAmerica Nashville

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
West Virginia DEP	State Program	3	219	02-28-19

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
Nashville, TN

COOLER RECEIPT FORM

490-155866 Chain of Custody

Cooler Received/Opened On 7/18/2018 @ 0945

Time Samples Removed From Cooler 16:27 Time Samples Placed In Storage 16:32 (2 Hour Window)

1. Tracking # 6077 (last 4 digits, FedEx) Courier: FedEx

IR Gun ID 17960357 pH Strip Lot N/A Chlorine Strip Lot N/A 20.5 14740456

2. Temperature of rep. sample or temp blank when opened: 11.3 Degrees Celsius

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO NA

4. Were custody seals on outside of cooler? YES NO NA

If yes, how many and where: _____

5. Were the seals intact, signed, and dated correctly? YES...NO...NA

6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (intial) GH

7. Were custody seals on containers: YES NO and intact YES...NO...NA

Were these signed and dated correctly? YES...NO...NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None Water only

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received? YES...NO...NA

b. Was there any observable headspace present in any VOA vial? YES...NO...NA

Larger than this.

14. Was there a Trip Blank in this cooler? YES...NO...NA If multiple coolers, sequence # _____

I certify that I unloaded the cooler and answered questions 7-14 (intial) KD

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO...NA

b. Did the bottle labels indicate that the correct preservatives were used YES...NO...NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (intial) KD

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA

18. Did you sign the custody papers in the appropriate place? YES...NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (intial) KD

I certify that I attached a label with the unique LIMS number to each container (intial) KD

21. Were there Non-Conformance Issues at login? YES...NO Was a NCM generated? YES...NO...# _____

BIS = Broken in shipment
Cooler Receipt Form.doc

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 Laboratories

*ADDRESS

CUSTOMER # *TEL. # FAX #

*SAMPLER (S) K. Shreve E-MAIL

SHEET NO. ____ OF ____

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.	Diss. Methane, Ethane, Ethene	Propane	*PROJECT/REMARKS
	7-13	11:30		X	W		1			IV				X		290081-2018-W

Loc: 490
155866

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: Jessica DeAngelo	DATE: 7-17-18	PRINT:
SIGN:	TIME: 7:00	SIGN: Fedex
*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT:	DATE: 07-18-2018	PRINT: Keith Dawson TA-MAS
SIGN:	TIME: 09:45	SIGN:
*RELINQUISHED BY:	*DATE/TIME	*RECEIVED BY:
PRINT:	DATE:	PRINT:
SIGN:	TIME:	SIGN:
*COURIER:	*DATE/TIME	*RECEIVED BY:
TRACKING #:	DATE:	PRINT:
	TIME:	SIGN:

REMARKS: 11.3

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

APPENDIX F

API No.	Well Type	Well Status	Northing	Easting	Penetrate Injection Zone	Vertical Depth	Surface Elevation	Drill Log	Plug Record	On AOR Maps	
4708700465	water injection	plugged 5-17-74	4272415.6	461640.1	YES	2073	990			X	
4708700483	dry hole	abandoned	4270643.5	461744.2	YES	5450	855			X	
4708700629	gas	plugged 3-13-96	4272394	459877.3	NO	1533	953			X	
4708700638	gas injection	plugged 8-8-96	4271864.2	462425.7	NO	2011	917			X	
4708700656	oil	plugged 8-21-74	4272479.2	461801.2	YES	2080	944			X	
4708700662	oil	abandoned	4272544.4	461640.7	YES	2095	959			X	
4708700674	oil	plugged 9-4-96	4271027.8	462212.6	NO	2032	890			X	
4708701021	water injection	plugged 8-14-74	4272332.3	462202.7	YES	2210	1079			X	
4708701051	water injection	plugged 8-1-74	4272266.6	462475.8	YES	2061	939			X	
4708701052	water injection	plugged 7-19-74	4272025.7	462329.9	YES	2054	934			X	
4708701531	oil	plugged 12-6-67	4270701.2	460234.2	YES	2450	995			X	
4708701965	oil	plugged 2-19-96	4271531.3	461330.2	YES	2146	1049			X	A in 1/4
4708701967	oil	active	4272451.6	460852.1	YES	2118	1012			X	
4708701976	oil	active	4271968.5	460833.6	NO	2026	949			X	
4708701987	oil	active	4272932.4	461336.9	YES	2125	1014			X	
4708701988	oil&gas	plugged 5-14-99	4271632.4	460927.3	YES	2100	1028			X	A in 1/4
4708701990	oil	active	4271727.7	460687.6	YES	2050	951			X	
4708701992	oil	abandoned	4272340.5	460513.7	YES	2220	1120			X	
4708702003	brine disposal	active	4271356.8	461037.7	YES	2142	1043			X	
4708702448	oil	plugged 2-9-1996	4271997.5	461493.3	YES	2209	1070			X	
4708702449	oil	plugged	4272240.9	461557.7	NO	1978	1030			X	
4708702450	oil	plugged 6-23-99	4272371	461284.7	NO	1990	930			X	
4708702464	oil	plugged 10-4-95	4270817	462517.3	YES	2086	1025			X	
4708702465	oil	plugged 10-2-95	4270656.5	462403.9	NO	1977	915			X	
4708702466	oil	plugged 10-19-95	4270494.3	462354.9	NO	1984	925			X	
4708702469	oil	abandoned	4270205.3	462176.5	NO	1984	931			X	
4708702471	oil	abandoned	4270558.1	462500	NO	2042	989			X	

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4708702545	oil	plugged 9-12-94	4271995	462024.1	YES	2154	1090			X
4708702546	oil	plugged 9-16-94	4271963.8	461814.8	YES	2160	1107			X
4708702547	oil	plugged 11-2-96	4271593.5	461780.9	YES	2074	1024			X
4708702548	oil&gas	plugged 8-7-97	4271175.4	461650.2	YES	2141	1082			X
4708702549	oil	plugged 8-1-97	4271079.3	461537.1	YES	2077	1015			X
4708702550	oil	plugged 8-13-97	4271078.3	461746.3	YES	2114	1056			X
4708702573	oil	plugged 5-13-98	4272774.2	460741	YES	2124	1073			X
4708702789	gas	plugged 7-21-00	4270100.2	460662.8	N/A	unknown	960			X
4708702790	oil&gas	plugged 12-3-99	4270112.3	461483.7	NO	1823	775			X
4708702791	oil&gas	plugged 11-10-99	4270305.5	461420.8	NO	1855	799			X
4708702792	oil&gas	plugged 12-31-99	4270953.8	461487.5	NO	1988	936			X
4708702793	oil&gas	plugged 10-21-96	4269854.2	461449.1	NO	2021	900			X
4708702794	oil	abandoned	4270995.2	462292.9	NO	1892	833			X
4708702795	oil	plugged 7-19-96	4271267.2	462664.2	YES	2131	1076			X
4708702796	oil	plugged 8-2-96	4271042.4	462518.3	YES	2103	1045			X
4708702797	oil&gas	plugged	4271092.8	462084.2	NO	2023	969			X
4708702798	oil	plugged	4271383.6	461892.5	YES	2099	1033			X
4708702799	oil	plugged	4271077.7	461875	YES	2162	1114			X
4708702800	oil	abandoned	4270175.3	461709.8	NO	1858	805			X
4708702801	oil	plugged	4270866.7	462227.9	NO	2035	973			X
4708702802	oil&gas	plugged 6-10-97	4270948.2	462019.1	YES	2145	1090			X
4708702803	oil	plugged	4270673.5	462210.9	NO	2007	943			X
4708702804	oil	plugged	4270738.7	462050.3	YES	2152	1093			X
4708702805	oil&gas	plugged 7-22-97	4270463.1	462145.6	NO	1984	917			X
4708702806	oil	plugged 7-28-97	4270917	461809.8	YES	2108	1056			X
4708702807	oil	abandoned	4272598	460563.2	NO	1930	869			X
4708702808	dry hole/oil	plugged 8-9-92	4272502.2	460385.8	NO	1972	925			X

APPENDIX F

API No.	Well Type	Well Status	Northing	Easting	Penetrate Injection Zone	Vertical Depth	Surface Elevation	Drill Log	Plug Record	On AOR Maps
4708702810	oil	abandoned	4272064.8	460914.5	NO	2002	938			X
4708702811	oil	plugged 2-9-99	4271917.2	461460.7	YES	2197	1142			X
4708702812	oil	plugged 3-19-99	4271726.8	461378.3	YES	2087	1036			X
4708702813	oil&gas	plugged 4-27-99	4271952.7	461250.6	YES	2111	1050			X
4708702849	oil	plugged 9-2-97	4272221	461912.6	NO	2023	920			X
4708702850	oil	active	4272011.9	461847.2	YES	2202	1100			X
4708702851	oil	plugged 8-28-97	4272380.7	462186.8	YES	2199	1105			X
4708702852	oil	abandoned	4272525.9	462139.2	YES	2092	1020			X
4708702853	oil	plugged 9-6-97	4272413.9	461977.8	NO	2028	940			X
4708702854	water injection	plugged	4272220	462121.7	YES	2114	999			X
4708702898	oil	abandoned	4272723.3	461271.6	NO	1942	940			X
4708702899	oil	abandoned	4272369.5	461173.4	NO	1958	870			X
4708702901	oil	plugged 6-12-96	4272041.1	462490.8	YES	2146	1085			X
4708702902	oil	abandoned	4271847.5	462570.3	YES	2111	1042			X
4708702903	oil	plugged 7-30-96	4271589.7	462585.2	YES	2079	1013			X
4708702905	oil	abandoned	4271188.3	462325.9	NO	1983	925			X
4708702906	oil	plugged 4-4-96	4271285.5	462197.7	NO	2026	955			X
4708702907	oil	plugged 4-24-96	4271366.7	462053.3	NO	2008	950			X
4708702908	oil	plugged 8-9-96	4271544.4	461957.6	YES	2096	1030			X
4708702909	oil	plugged 5-12-97	4271721.1	462038.9	YES	2081	1014			X
4708702910	oil	active	4271897.5	462200.6	YES	2096	1025			X
4708702911	oil	plugged 5-10-96	4271429.9	462311	NO	1955	893			X
4708702912	oil	plugged 5-8-96	4271655.4	462312.1	NO	1953	880			X
4708702913	oil	plugged	4272073.8	462394.5	NO	1998	921			X
4708702916	oil	plugged 7-2-96	4271413	462487.9	YES	2105	1041			X
4708702917	oil	plugged 5-17-96	4271654.7	462456.8	YES	2099	1022			X
4708702918	oil	plugged 1-29-96	4272218.7	462395.1	YES	2073	1006			X

APPENDIX F

API No.	Well Type	Well Status	Northing	Easting	Penetrate Injection Zone	Vertical Depth	Surface Elevation	Drill Log	Plug Record	On AOR Maps	
4708702919	oil	plugged 12-28-95	4272219.1	462314.7	YES	2173	1043			X	
4708703044	oil	active	4271771.7	461556.5	YES	2175	1098			X	
4708703082	oil	plugged 9-21-95	4270961.6	462582.3	YES	2127	1074			X	
4708703100	oil/water inj	abandoned	4271756.9	461813	YES	2090	1039			X	
4708703101	salt water disp	plugged 9-22-88	4270465.6	461614.6	YES	2090	1026			X	
4708703106	oil	active	4272075.1	462121	YES	2153	1087			X	
4708703111	oil/dry	plugged 4-17-96	4271559.5	462150.7	YES	2082	1018			X	
4708703114	oil/water inj	plugged 8-21-96	4271158	461923.6	NO	1979	922			X	
4708703115	oil/water inj	plugged 6-26-96	4271284	462519.4	NO	1981	925			X	
4708703116	water injection	pluggd 8-19-94	4272460.9	462267.6	YES	2217	1123			X	
4708703117	gas injection	abandoned	4272318.1	461816.5	YES	2060	975			X	
4708703126	oil	plugged 4-13-99	4271808.5	461121.2	NO	2008	948			X	
4708703133	oil	active	4272754.7	461448.7	YES	2108	1055			X	
4708703142	oil	active	4272110.8	461381.2	YES	2079	1028			X	
4708703144	oil	active	4272384.7	461366.5	NO	2000	944			X	
4708703147	oil	plugged 9-8-95	4271154.3	462711.9	YES	2102	1047			X	
4708703150	oil	plugged 8-5-94	4272607.1	461994.9	YES	2177	1102			X	
4708703151	oil	plugged 1-15-96	4271432.8	461715.8	YES	2083	1028			X	
4708703157	oil	active	4272177.8	460850.7	NO	1930	875			X	
4708703161	oil	plugged 8-25-97	4271208.9	461393	NO	1964	906			X	A in 1/4
4708703162	oil	active	4272610.8	461238.9	NO	1918	867			X	
4708704398	gas	active	4269876.3	460372.1	YES	2490	992			X	
4708704432	gas	active	4272042.9	462586.8	YES	5578	1116			X	
470870443	gas	abandoned	4270976.2	460793.8	YES	5458	1044			X	
4708704435	gas	active	4271513.9	462149.9	YES	5463	1007			X	
4708730003	oil	plugged 7-9-29	4271864.5	462377.4	NO	1966	901			X	
4708730036	gas	plugged 11-23-31	4270071.3	460010.5	YES	2078	1077			X	

APPENDIX F

API No.	Well Type	Well Status	Northing	Easting	Penetrate Injection Zone	Vertical Depth	Surface Elevation	Drill Log	Plug Record	On AOR Maps
4708730344	oil	plugged 8-22-42	4272551.1	460273.5	NO	1985	924			X
4708730356	oil&gas	plugged 11-5-42	4272109.1	461735.1	YES	2097	1019			X
4708730364	oil	plugged 3-31-43	4272577.8	461399.6	YES	2134	1073			X
4708730528	gas	plugged 8-5-48	4270184.7	459858.5	YES	2699	801			X
4708730620	oil	plugged 7-13-49	4272757.2	460934	YES	2157	1098			X
4708730622	oil	plugged 7-13-49	4272580.3	460868.8	YES	2135	1085			X
4708730635	oil	plugged 8-9-49	4272662.9	460451	NO	1967	910			X
4708731004	gas	plugged 12-19-57	4271786.5	459994.5	NO	1909	792			X
4708731101	oil	plugged 5-11-64	4272155.5	462137.5	YES	2094	1017			X
4708731102	oil	plugged 6-26-64	42721711	462234.1	YES	2161	1087			X
4708731164	oil	plugged 5-28-74	4272624.5	461737.6	YES	2102	1015			X
4708731165	oil	plugged 6-25-74	4272625.2	461576.7	YES	2176	1108			X
4708750105	oil	unknown	4272902.1	460950.8	YES	2203	1047			X
4708790036	unknown	unknown	4271606.5	459408.7	N/A	unknow	910 scaled			X

Section 8
Geological Data

Section 8 – Geological Data on the Injection and Confining Zone:

- See Geological Report included with this permit attached.

Carpenter Energy, LLC

To: Mr. Jamie Andrews, Mountain V Oil & Gas, Inc.

From: William O. Carpenter, CPG, President, Carpenter Energy, LLC

Subject: Geologic Review of the GM&MA Summers #5 (47-087-02003), Roane County, West Virginia.

Date: 3/6/2018

Mr. Jamie Andrews of Mountain V Oil & Gas, Inc. has requested that Carpenter Energy, LLC evaluate the geologic conditions of the proposed GM&MA Summers #5 (47-087-02003) for salt water disposal (SWD), located in Walton District of Roane County, West Virginia. The well is located within the Kettle USGS 7.5-minute quadrangle.

Correlated and Marked Copy of Open Hole Electric Log

Included as an attachment to this report is a correlated and annotated copy of the full GM&MA Summers #5 (47-087-02003) electric type log (*File Name: Annotated GM&MA Summers #5.pdf*). A portion of the log is also contained in the figures section of this report. The proposed injection well was originally drilled by Pennzoil Oil Company to a driller's depth of 2,142' to the Big Injun Sandstone. The well was logged by Birdwell on 9/3/1973 from the interval 1,400' to 2,135'. The log exhibits all of the key stratigraphic formations discussed in this evaluation. The annotated well log includes the top and base of the proposed injection zone (Big Injun Sandstone), other pertinent shallower formation tops, and confining layers (Big Lime Limestone) above the proposed injection zone.

Characterization of the Injection and Confining Intervals via Geophysical Log Data

The following discussion will begin with the upper confining interval and proceed through the lower confining interval moving down stratigraphically. The GM&MA Summers #5 (47-087-02003) geophysical log only includes the Gamma Ray and Compensated Density curves. Other proximal wells were utilized to supplement geophysical properties of the key formations in the following evaluation. Two vintage core evaluations of the proposed injection interval were also utilized. Depths and thicknesses listed below are in reference to the GM&MA Summers #5 proposed injection well but do vary across the field.

For the evaluation of the GM&MA Summers #5, public completion reports and 169 wells with geophysical logs were utilized to map gross thickness of the Big Injun (Pocono Member) Sandstone injection interval and overlying strata. Due to the vintage of much of the public data and inconsistent formation depths, data correlated from well logs were given a higher quality hierarchy when mapping. Cross sections were further utilized to correlate inconsistent formation "picks" from public sources originating on completion reports. All mapping was completed post correlations. Additionally sparse "data bust" points were filtered out of the data set. Well data was very limited to the south of the field where drilling was less dense.

Upper Confining Intervals and Isopach (Thickness) Maps

The upper confining interval is characterized by the stratigraphic column from the top of the Big Injun (Pocono Member) Sandstone to the top of the Big Lime Limestone, which also includes the Big Injun (Keener Member) Sandstone. This interval consists of tightly cemented sandstone and limestone. The gross thickness of this confining interval is approximately 120' locally (Figure 1).

Big Lime Limestone:

The uppermost confining interval, Big Lime, is characterized by approximately 60' (1,911-1,974') of tight limestone formation (Figure 2). The interval, based on log interpretation and general drilling experience, is a limestone with minor shale interbeds and minor clastic composition. The bulk density curve in the GM&MA Summers #5 indicates a relatively consistent 2.68-2.70 grams/cc through this section. Though no Density Porosity curve is present, the density can be calculated to be 0-2%. This is indicative of a "tight" limited porosity and permeability interval. The high density values are ubiquitous across the region surrounding the injection site. The proposed injection well does not have a caliper log but immediate offsets such as Roane County #1965, #1988, and #3044 do not show significant washout or wellbore rugosity in this interval. Caliper anomalies would be indicative of a fractured brittle limestone or potential faulting. Any minor washout in the GM&MA Summers #5 is most likely drilling induced. Across the field, the immediate overlying Pencil Cave Shale (1,888'-1,911') can exhibit increased likelihood of wash out.

In terms of geologic time, the Big Lime has acted as an upper confining layer to natural gas and oil stored in the Big Injun formation regionally. This observance qualitatively indicates that the Big Lime is a consistent and long term upper confining layer and would prevent the upward migration of injected fluid. Because the GM&MA Summers #5 is situated outside of the primary Rock Creek Field away from high density drilling there is also less likelihood of upward migration through vintage wells.

Big Injun (Keener Member) Sandstone:

A slight risk of upward fluid migration from the injection interval exists to the overlying Big Injun (Keener Member) Sandstone. Generally, the immediate area surrounding the proposed injection site has a Keener that is characterized by a tightly cemented sandstone with density values of 2.68 to 2.70 grams/cc. This tight formation offers an immediate barrier to upward fluid migration. Some wells evaluated have exhibited minor reservoir development in the Keener interval scattered throughout the field. The presence of the reservoir is predicated on secondary porosity that was created by leached cement and generated pore space. Porosity, when present, typically peaks at 6-8% which is much lower than the injection interval. This porosity development generally occurs directly atop the Pocono Member (injection interval) with continued tightly cemented sandstone above. The reservoir quality rock in the Keener is neither continuous or represent a significant portion of the gross thickness. The gross thickness of the Keener Member is 68' (1,974'-2,042') in the GM&MA Summers #5 and exhibits the minor reservoir development described above. The local gross thickness has been exhibited to be variable across the field (Figure 3) from 53'-96' based on log correlation. Recall, if fluids were able to migrate upward into a Keener reservoir, the Big Lime will still ultimately contain the fluids from further upward migration.

Big Injun (Pocono Member) (Injection Interval) and Isopach (Thickness) Map

Based on available completion report information, the shallow Big Injun Sandstone has been exploited since 1905 in this field. The reservoir interval of the Big Injun (Pocono Member) Sandstone is located from 2,042' through 2,107' on the provided GM&MA Summers #5 geophysical log. The reservoir interval ranges in thickness from 34'to a maximum of 77' based on well log information (Figure 4). The average thickness across the field is 50'. Thickness trends are oriented predominantly in a NE to SW direction. It is worthy of noting that the overlying Keener Member exhibit stratigraphic thinning along the Jarrett synclinal axis in the field and then thickens out of the syncline. Inversely, the Pocono injection interval thickens in the synclinal axis which may assist fluid migration orientation.

Core Data:

Vintage core data was obtained from two wells in the vicinity of the GM&MA Summers #5. (Figure 5)

The E. Lewis #1 (47-087-04074), 1.7 miles east of proposed injection site, commenced drilling in 1907 and TD'ed in the Salt Sand Formation. Later in 1976, the well was drilled deeper the Pocono section was cored (2,049'-2,084') and sent away for evaluation by Core Laboratories. The purpose was to evaluate the reservoir for a potential Carbon Dioxide flood project. The 34' core was evaluated in ~2' intervals for porosity and permeability (Figure 6, full report attached as *Edward Lewis #1 Core Analysis.pdf*). The average porosity for the interval was 21.5% with a range from 8-25% and had an average permeability of 18mD with a range of 1-30mD.

Additionally, in 1969 the Isaac Donahue #17 (47-087-01775), 1.3 miles east of proposed injection site, was cored for evaluation of the Big Injun (Figure 7 full report attached as *Isaac Donahue #17 Core Analysis.pdf*). The Pocono section was cored 40' (1,973'-2,013') and sent away for evaluation by Halliburton for porosity, permeability, and petrographic analysis. The average porosity for the interval was 20.3% with a range from 7-23% and had an average permeability of 22mD with a range of 1-38mD. Petrographic analysis described the formation as "SANDSTONE, poorly sorted, very fine to medium grained quartz, clay and feldspar grains, angular to subrounded shape, chlorite clay on grain boundaries, also has carbonate deposition in pore space, good visible porosity, some detrital mica, remainder of clay is structural". X-Ray diffraction analysis indicates that the formation is approximately 68% Quartz, 7% Feldspar, 2% Calcite, and the remaining constituents are Dolomite and clays.

Porosity and permeability values obtained from the two reported cores in the field show that the Pocono Member has the petrophysicial qualities to be an injection target and allow lateral migration of fluid. No core data exists to show the qualities of the overlying confining intervals.

Lower Confining Interval

The lower confining interval (below the disposal interval) consists of stacked shale and intermittent siltstone. The proximal deep wells to the GM&MA Summers #5 (all within 1 mile) include the Triad Resources operated Roane County permit numbers #4432, #4433, and #4435. These wells were utilized to characterize the lower confining layer. This lower confining interval exhibits a baseline density of 2.68 grams/cc and is considered to be nonporous. In the vicinity of the proposed injection site there is a lack of Berea Sandstone development. If present, the Berea Sandstone would be approximately 350

below the Big Injun (Pocono Member), but because these sands are undeveloped, they should not pose a conduit for injected fluids. Based on these deep wells, it is also apparent that no deeper sands or siltstone show development. For reference, the Geneseo Shale and conformable Marcellus Shale is located 3,240' below the Big Injun at a depth of ~5,500' MD. It is not anticipated or implied that the injected fluid would ever reach these depths, but rather the purpose was to provide a full scope of the stratigraphy.

Structural Mapping

For the evaluation of the GM&MA Summers #5, public completion reports and 169 wells with geophysical logs were utilized to map the structure of the Big Injun (Pocono Member) Sandstone injection interval and overlying confining strata. Similar to gross thickness isopach mapping efforts, data obtained from well logs were given a higher quality hierarchy over completion report "picks" when mapping. Additionally sparse "data bust" points were filtered out of the set. It is hypothesized that some wells with geophysical logs are also creating structural anomalies due to incorrect datum elevations. Data was very limited to the south of the field, though this is up dip and should not be impactful on fluid migration. Anticlines and syncline axis were based on the structure mapping and public fold axis maps including the 1968 West Virginia Geologic Map (Cardwell, D.H., Erwin, R.B., and Woodward, H.P.). Potential water migration paths will be discussed in later sections. Key bed mapping will be exhibited starting with the Big Injun (Pocono Member) Sandstone injection interval and progress up stratigraphically through the Big Lime Limestone. In general, the supplied structure maps will be very similar with slight differences due to varying number of data points and stratigraphic thickness changes.

Big Injun (Pocono Member) Sandstone Base (Injection Zone):

Referencing the Pocono Member Sandstone base structure map (*Figure 8*), the field appears to sit within a small plunging syncline and flanking anticlinal features. The syncline is believed to be an extension of the Jarrett Syncline of Kanawha County. The structural high to the northwest of the proposed injection site is believed to be the Milliken Anticline also extending out of Kanawha County. The 1968 West Virginia Geologic Map (Cardwell, D.H., Erwin, R.B., and Woodward, H.P.) shows these two structures converging in the vicinity of the site.

Depths to the Pocono Member range from --909' to -1,194' subsea exhibiting a total relief profile of 285'. The supplied map is primarily based on well log information as completion report data was very inconsistent. Though utilizing well log data, it is felt that some of the datum elevations on these vintage wells, especially the northern extents of the mapping area, are incorrect and cause anomalous features in the structure map. Bed dips flanking the syncline both east and west average approximately 1.5 degrees.

Big Lime Limestone Top (Upper Confining Zone):

The structure of the Big Lime Limestone is very similar to the Pocono Member of the Big Injun. In general these stacked formations mimic each other with slight variations due to erosional and stratigraphic thickness changes (Figure 9). Other variations such as data quality create slight differences and anomalies in the maps. Again, a number of "data busts" were filtered out of the data set

Assessment of Fluid Migration

Structurally the subsurface around the Rock Creek Field and proposed salt water disposal site can be described as having gentle flexures of strata, particularly at the shallow Big Injun depth. The GM&MA Summers #5 is regionally located at the northern convergence of the Jarrett Syncline and Milliken Anticline of Roane County based on the 1968 West Virginia Geologic Map (Cardwell, D.H., Erwin, R.B., and Woodward, H.P.) and generated maps. The proposed injection site is located within northeast trending axis of the Jarrett Syncline with bed dips rising at 1.5 degrees both east and west. Both anticline and syncline are also plunging to the north approximately 0.35 degrees.

Based on 2008 World Stress Map data (http://www.world-stress-map.org/) the dominant J1 fracture orientation should be approximately 85/265 degrees (dominant east to west orientation) locally referencing the most proximal data point. This orientation is nearly 55 degrees opposed to the local bed dips and may inhibit migration through the J1 and J2 fracture sets. Local beds strike at 30 degrees. The high porosity of the formation may be a greater migration influence than natural fracture sets in this case.

In general, less buoyant fluids in the reservoir are going to tend to migrate down dip following structure and reservoir characteristics. The migration paths from GM&MA Summers #5 should be directed northeast with the regional 0.35 degree plunge until preferentially flowing down structure into the Jarrett Syncline where the Big Injun is structurally lowest. Because data is sparse to the south of the injection site, the southern extent and magnitude of the syncline cannot be determined. This may not be of vital of importance as fluid should tend to migrate to the north away from the lack of data. Fluid is anticipated to flow predominantly in a 30 degree NNE direction from the site (Figure 10).

A 3D model was generated to exhibit the probable fluid migration direction. A vertical exaggeration of 10x was required to adequately portray the minor bed dips in the field. The gross thickness isopach of the Big Injun (Pocono Member) Sandstone was overlain on the Big Lime structural surface to indicate the presence of reservoir continuity and preferential fluid flow orientation. The Big Lime structure map was utilized because the formation top pick is much more consistent, also the top of the Pocono Member can be influenced by stratigraphic thickening. The 3D scene (*Figure 11*) exhibits the observation mentioned above where the NE thickness trend of the Pocono Member is located within the Jarrett synclinal axis. These factors combined should strongly influence the north east 30 degree migration of fluid away from the injection site.

Assessment for the Potential for Seismically Active Features

Structurally the area around the GM&MA Summers #5 proposed salt water disposal (water flood project) can be described as being structurally and seismically calm. The field is structurally located at the northern convergence of the Jarrett Syncline and Milliken Anticline of Roane County. These features are broad and have low bed dips. The proposed injection site itself sits in the northern plunging synclinal flexure of the Jarrett Syncline with flanking bed dips of 1.5 degrees. As mentioned before, the regional structure plunges to the north with a bed dip of 0.35 degrees.

Through the mapping of shallow strata (Big Injun depth wells) no faulting has been observed. No anomalous bed thickness repeated beds were noted in shallower or deeper sections. Additionally no significant caliper washouts related to rubble zones were noted. To evaluate the full scope of deeper

existing faults or geohazards, a regional cross section was generated to observe the strata between the Big Lime Limestone and Onondaga Limestone. Eleven well logs in Roane and Kanawha counties were identified to locate potential geohazards (Figure 12). The wells were utilized to generate a projected cross section to locate any anomalous stratigraphic thickness changes and caliper anomalies that would be indicative of faulting. The only observation noted was a steady stratigraphic thickening across the Rhinestreet Shale through Onondaga Limestone section to the east. Approximately 400' of section was gained along the 31 mile cross section to the east. The same stratigraphic thickening was observed between the Lower Huron Shale and Rhinestreet Shale formations gaining approximately 900' along the same distance. In summary, the GM&MA Summers #5 being located at the convergence of two structural features yields no indication of deeper geohazards.

Based on the West Virginia Geologic and Economic Survey (WVGES) Marcellus Shale Interactive Mapping site (http://ims.wvgs.wvnet.edu/Mar/viewer.htm) there are no reported faults that penetrates the Onondaga Limestone in the vicinity of the GM&MA Summers #5. Deeper Ordovician-Basement faults were also investigated on the West Virginia Geologic and Economic Survey (WVGES) Trenton-Black River Interactive Mapping site (http://ims.wvgs.wvnet.edu/TBR_ver3/viewer.htm) and no faults are noted deeper than the Onondaga down to the Basement in the vicinity of the GM&MA Summers #5.

To evaluate historic seismicity of the region, both the WVGES Appalachian Regional Earthquakes (http://ims.wvgs.wvnet.edu/TBR_ver3/viewer.htm) and the USGS All Earthquakes 1900-Present (https://earthquake.usgs.gov/earthquakes/byregion/westvirginia.php) mapping systems were utilized. According to the WVGES mapping no earthquakes have been reported in Roane, Calhoun, or northern Kanawha counties. The most proximal being reported in southwestern Braxton County in 2000 with a 2.5 magnitude. USGS mapping conflicts the WVGES noting a 2016-12-01 01:27:04 (UTC) magnitude 2.5 earthquake 14 km SW of Spencer (38.729°N 81.484°W) with a depth of 11.4 km. The site of the observance was Cox Fork Road which is 9.8 miles north (348 degrees) of the GM&MA Summers #5. Another seismic occurrence was noted by the USGS, a 2014-06-06 22:15:40 (UTC) magnitude 2.6 earthquake 13 km NNE of Sissonville (38.644°N 81.585°W) with a very deep epicenter of 29.6 km. The site of the observance was Goshen Road southern Jackson County which is 8.3 miles west (295 degrees) of the GM&MA Summers #5. Historic seismicity would indicate preexisting planes of strata weakness and areas prone to future seismicity induced by an injection well. Based on public earthquake data there are no know seismicity in the vicinity of the proposed GM&MA Summers #5 injection site.

Water Show Mapping

Completion reports were reviewed to catalog the water shows, both fresh and salt water, reported in wells within a mile of the GM&MA Summers #5 proposed injection site. This mile radius adequately covers the quarter mile radius area of review. The findings are posted on a map (*Figure 13*) included with this report and listed below in chart form. The deepest reported fresh water is at a depth of 300', but the average depth is approximately 150'. Reported salt water shows were also included to show the depth of naturally occurring formation water. Reviewing the salt water depths, salt water is predominantly reported in the Salt Sands and Maxton formation depths. There are two instances of salt water being reported in the Big Injun, likely in the proposed injection interval. The chart below lists the water shows observed in measured depth.

Permit Number	Fresh Water (ft)	Salt Water (ft)
4708700483		1570
4708700638	50, 141, 290	1500, 1533, 2002
4708700662	240	1605
4708700674	20, 250, 300	1470
4708701021	212	1585, 2146
4708701052	101	1514
4708701976	150	
4708702919	80	1546, 1751
4708704433	34	1610, 1645
4708704435	34	1545
4708731102		1570

Conclusion

In conclusion, Carpenter Energy has reviewed data provided by Mountain V Oil & Gas, Inc., publically available data, generated cross sections, and generated structure and isopach maps on aforementioned data to provide sound geologic interpretations. Based on the data, Carpenter Energy has interpreted the preferential fluid migration to flow predominantly towards the structurally lower Jarrett Syncline at 30 degrees NNE until acted upon by other features that may alter its direction. Fluid migration may not preferentially flow through J1 and J2 natural fracture sets in this case, rather following structure and a high permeability reservoir. The area should not witness seismicity due to water injection based on available data. Carpenter Energy reserves the right to reinterpret based on the inclusion of new or uncovered data not previously obtained.

Respectfully submitted by:

William O. Carpenter, CPG

President, Carpenter Energy, LLC

Disclaimer

DISCLAIMER

This document includes forward-looking statements as well as historical information. Forward-looking statements include, but are not limited to statements relating to geological and seismic data interpretations, prospect reserve estimates and prospect risk. Although Carpenter Energy (CE) believes that its expectations reflected in these forward-looking statements are reasonable, such statements involve risks and uncertainties, and no assurance can be given that actual results will be consistent with these forward-looking statements. Investment in oil and gas exploration is high risk by its very nature. Important factors that could cause actual results to differ from these forward-looking statements include, but are not limited to: erroneous interpretations of the seismic and geological data; the inability to acquire leases on identified prospects; mechanical problems while drilling and producing wells which prevent completion of a well or result in plugging of a well; dry holes; less reserves than originally estimated due to poor sand development or drainage by offsetting wells; non-commercial wells; and the variations in future gas pricing. CE cannot and has not beyond normal due diligence care standards confirmed the accuracy and completeness of all the information we have reviewed in the course of this consulting engagement. Data for this review has been provided by Mountain V Oil & Gas, Inc., LLC, its clients or is publicly available and CE, Inc. cannot be held responsible for errors in this provided data. Further, we express no opinion regarding any legal or securities issues. CE shall assume no liability whatsoever for the use or reliance there upon by Mountain V Oil & Gas, Inc., their clients and/or their investors, of information, opinions and interpretations provided by CE. CE reserves the right to adjust these findings and interpretations with the discovery of relevant data or future production data.

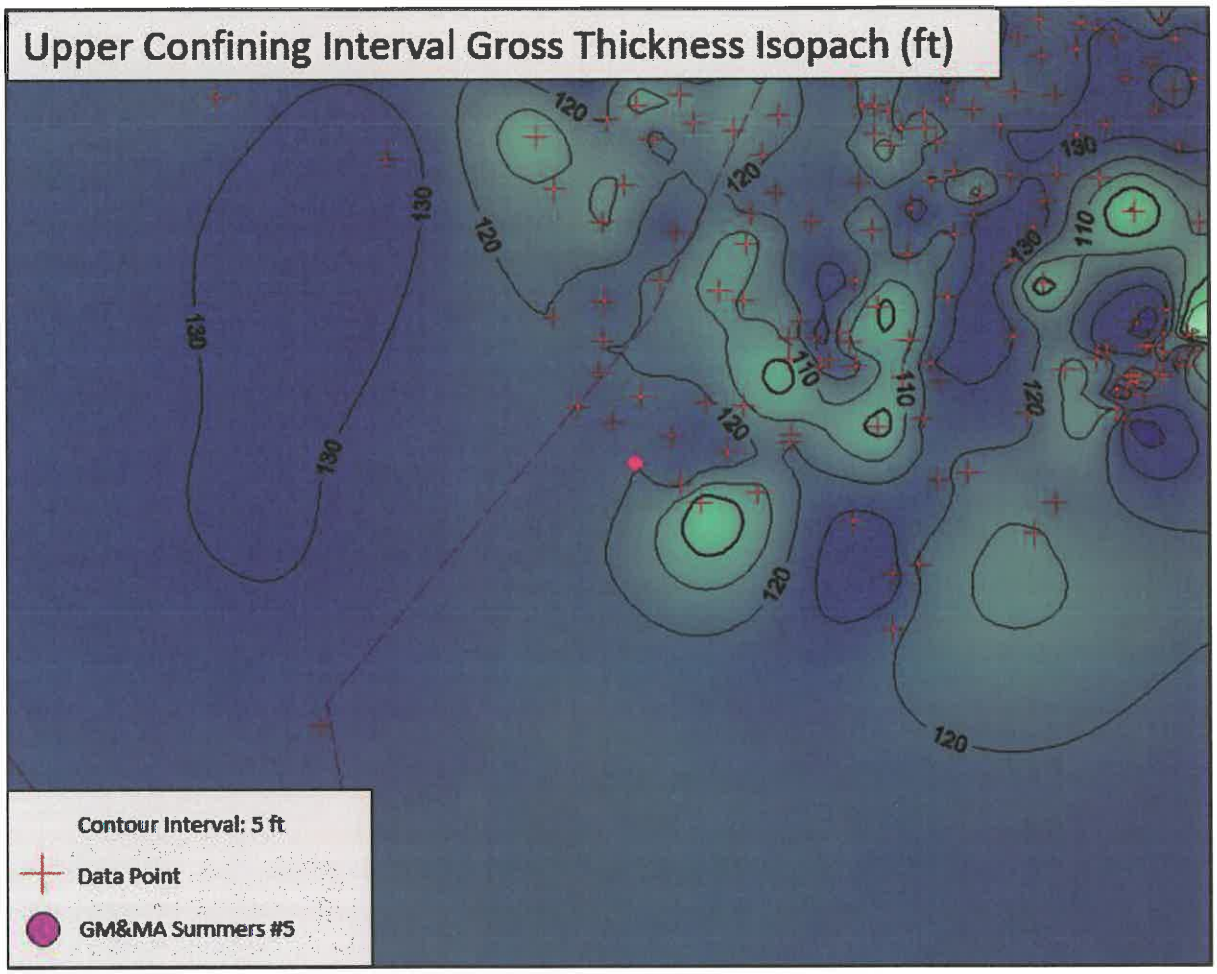


Figure 1) Upper confining stratigraphy gross thickness isopach (ft) map. The upper confining interval is characterized by the stratigraphic column from the top of the Big Injun (Pocono Member) Sandstone to the top of the Big Lime Limestone, which also includes the Big Injun (Keener Member) Sandstone. This interval consists of tightly cemented sandstone and limestone. The gross thickness of this confining interval is approximately 120' regionally.

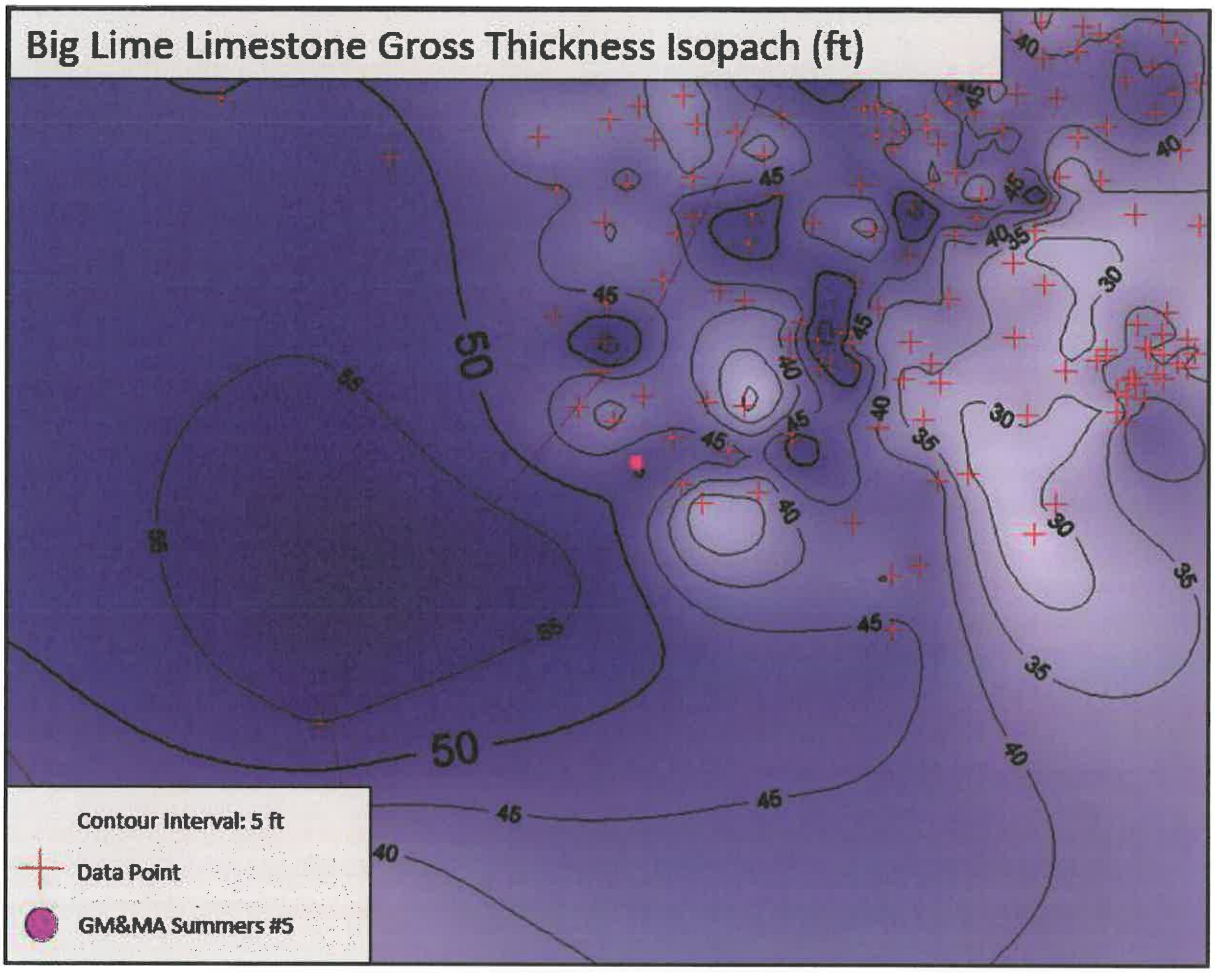


Figure 2) Big Lime Limestone gross thickness isopach (ft) map. The Big Lime gross thickness is relatively consistent across the field. The formation represents to uppermost confining layer for upward fluid migration.

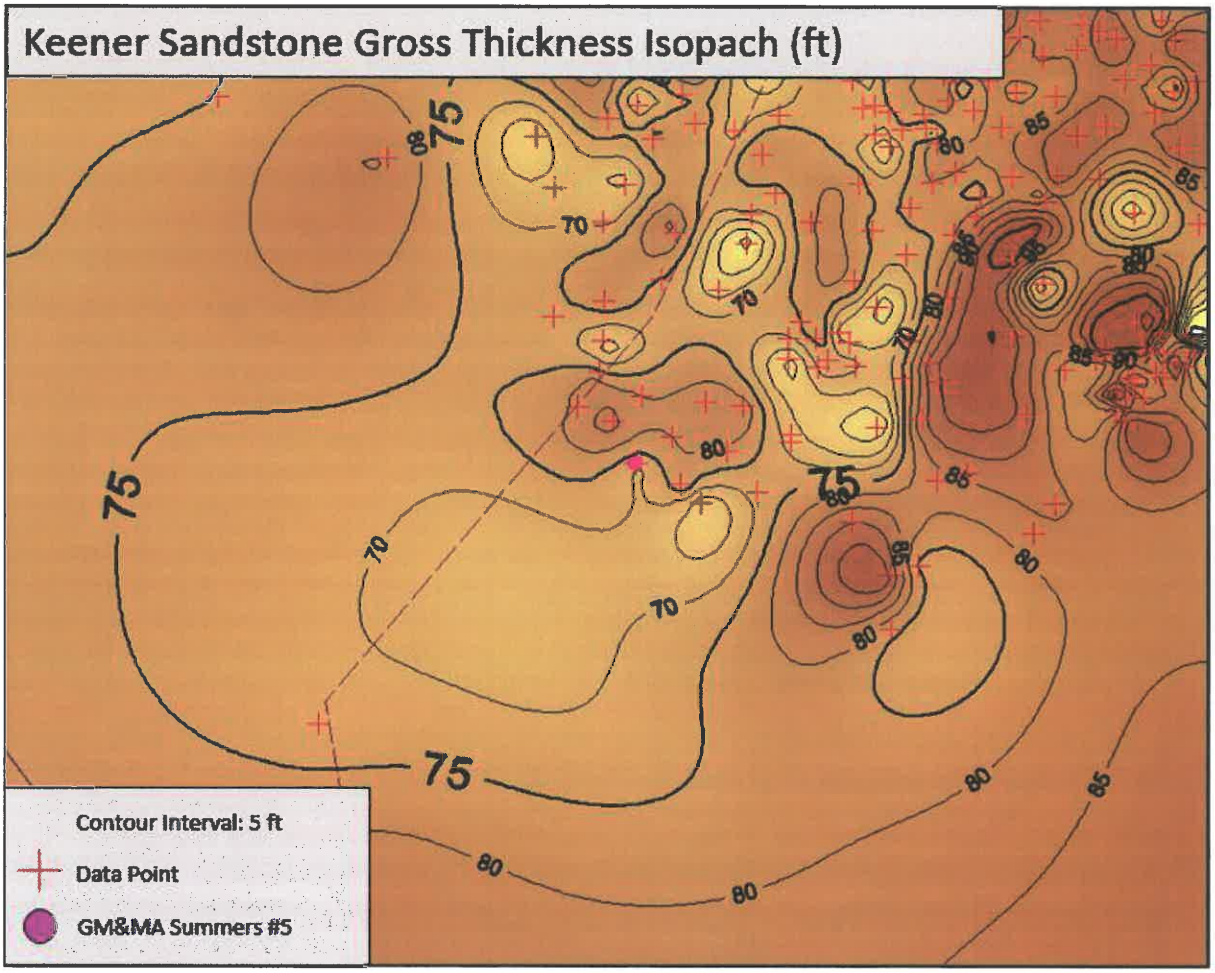


Figure 3) Big Injun (Keener Member) Sandstone gross thickness isopach (ft) map. The Keener thickness has been mapped to exhibit variable thicknesses across the field from 53'-96' based on log correlation.

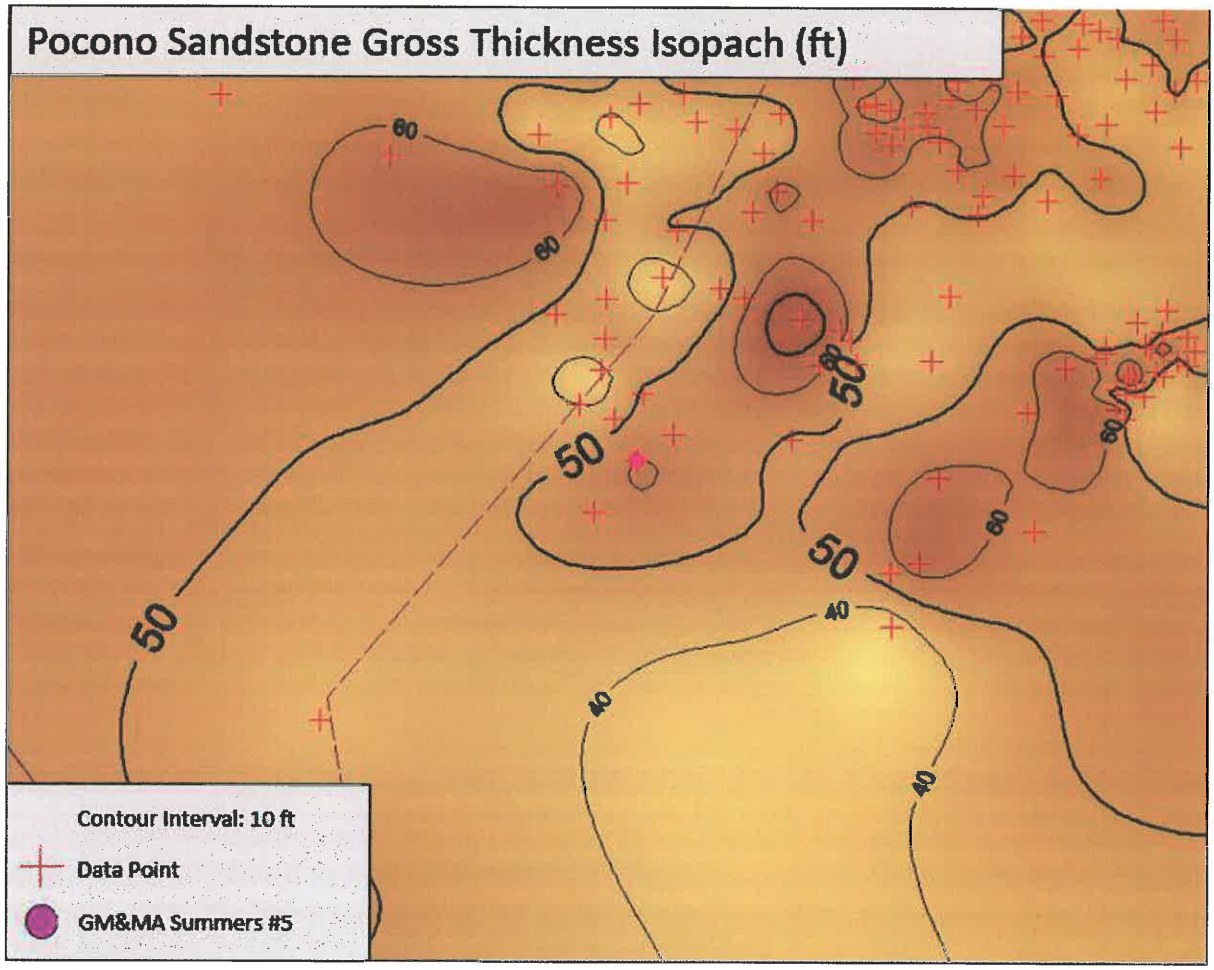


Figure 4) Big Injun (Pocono Member) Sandstone gross thickness isopach (ft) map. The average thickness across the field is 50'. Thickness trends are oriented predominantly in a NE to SW direction. It is worthy of noting that the Pocono injection interval thickens in the Jarrett synclinal axis.

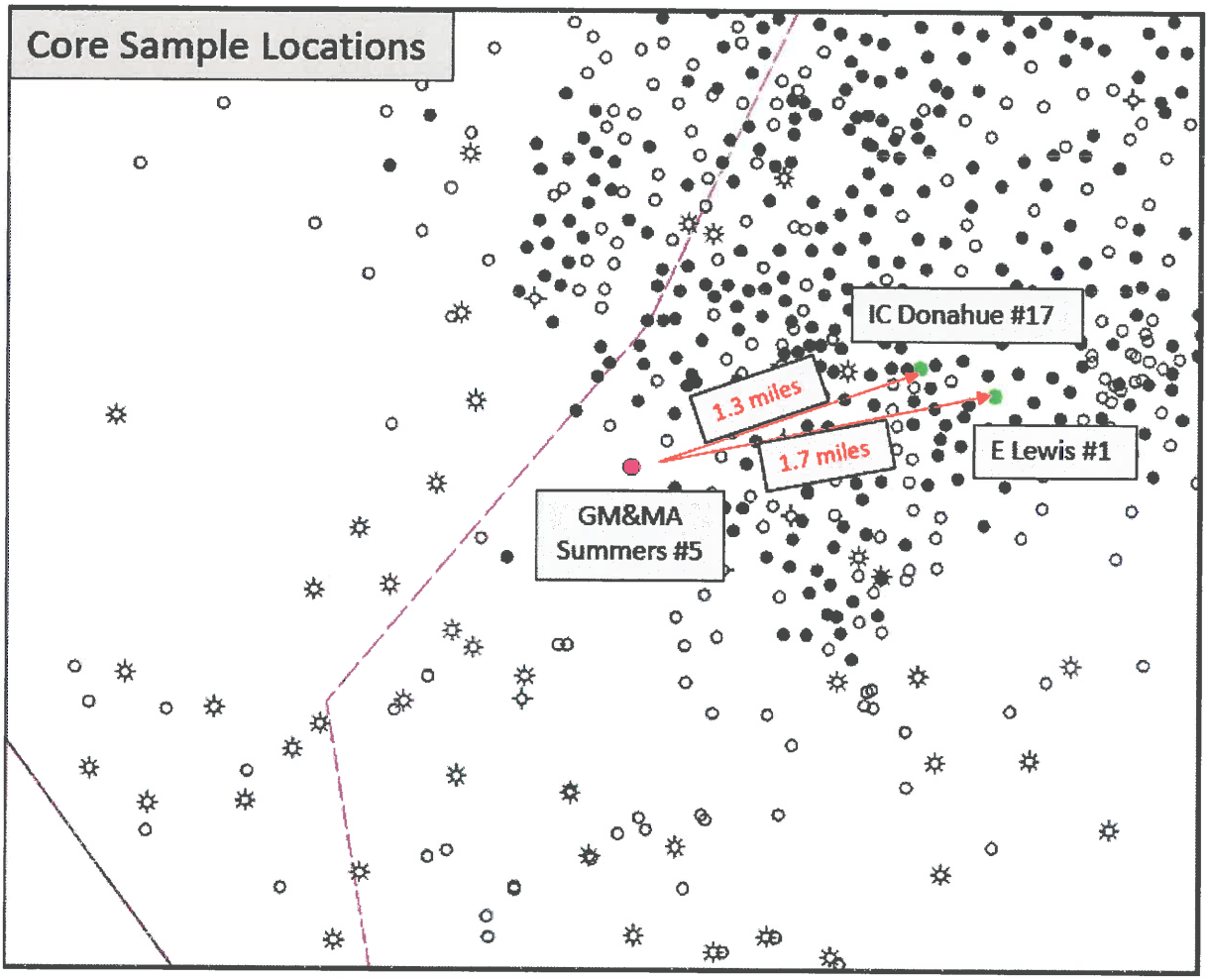
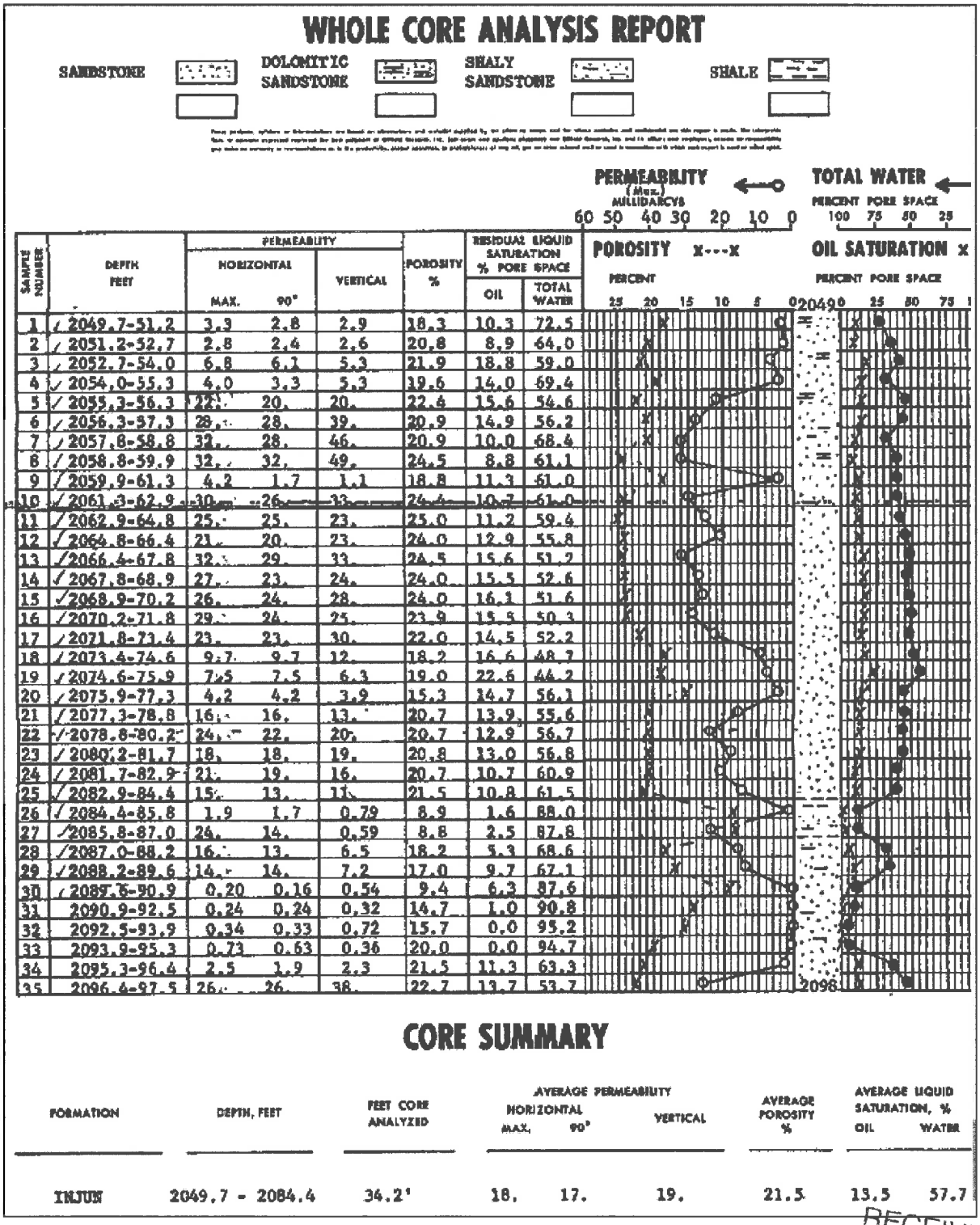


Figure 5) Map of Isaac Donahue #17 and Eric Lewis #1 core evaluation locations in reference to proposed GM&MA Summers #5 proposed injection site.



WHOLE CORE ANALYSIS REPORT

SANDSTONE | DOLOMITIC SANDSTONE | SHALY SANDSTONE | SHALE

PERMEABILITY (Maz.) MILLIDARCYS ← 60 50 40 30 20 10 0

TOTAL WATER → PERCENT PORE SPACE 100 75 50 25

POROSITY x---x PERCENT 25 20 15 10 5 0

OIL SATURATION x PERCENT PORE SPACE 20 49 0 25 50 75 1

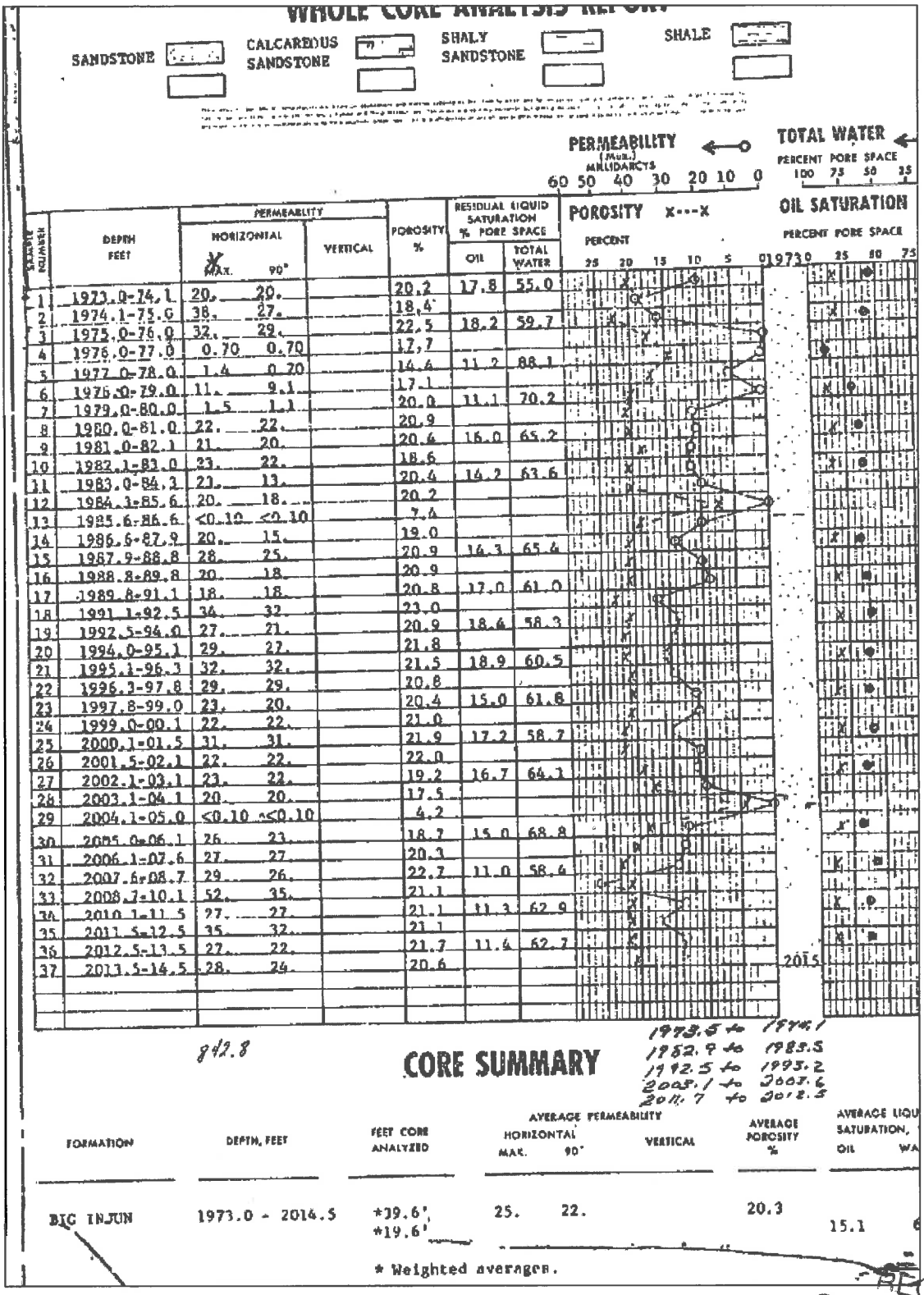
SAMPLE NUMBER	DEPTH FEET	PERMEABILITY HORIZONTAL MAX.	PERMEABILITY HORIZONTAL 90°	PERMEABILITY VERTICAL	POROSITY %	RESIDUAL LIQUID SATURATION % PORE SPACE OIL	RESIDUAL LIQUID SATURATION % PORE SPACE TOTAL WATER
1	2049.7-51.2	3.9	2.8	2.9	18.3	10.3	72.5
2	2051.2-52.7	2.8	2.4	2.6	20.8	8.9	64.0
3	2052.7-54.0	6.8	6.1	5.3	21.9	18.8	59.0
4	2054.0-55.3	4.0	3.3	5.3	19.6	14.0	69.4
5	2055.3-56.3	22.	20.	20.	22.4	15.6	54.6
6	2056.3-57.3	28.	28.	39.	20.9	14.9	56.2
7	2057.8-58.8	32.	28.	46.	20.9	10.0	68.4
8	2058.8-59.9	32.	32.	49.	24.5	8.8	61.1
9	2059.9-61.3	4.2	1.7	1.1	18.8	11.3	61.0
10	2061.3-62.9	30.	26.	33.	24.4	10.7	61.0
11	2062.9-64.8	25.	25.	23.	25.0	11.2	59.4
12	2064.8-66.4	21.	20.	23.	24.0	12.9	55.8
13	2066.4-67.8	32.	29.	33.	24.5	15.6	51.2
14	2067.8-68.9	27.	23.	24.	24.0	15.5	52.6
15	2068.9-70.2	26.	24.	28.	24.0	16.1	51.6
16	2070.2-71.8	29.	24.	25.	23.9	15.5	50.3
17	2071.8-73.4	23.	23.	30.	22.0	14.5	52.2
18	2073.4-74.6	9.7	9.7	12.	18.2	16.6	48.7
19	2074.6-75.9	7.5	7.5	6.3	19.0	22.6	44.2
20	2075.9-77.3	4.2	4.2	3.9	15.3	14.7	56.1
21	2077.3-78.8	16.	16.	13.	20.7	13.9	55.6
22	2078.8-80.2	24.	22.	20.	20.7	12.9	56.7
23	2080.2-81.7	18.	18.	19.	20.8	13.0	56.8
24	2081.7-82.9	21.	19.	16.	20.7	10.7	60.9
25	2082.9-84.4	15.	13.	11.	21.5	10.8	61.5
26	2084.4-85.8	1.9	1.7	0.79	8.9	1.6	88.0
27	2085.8-87.0	24.	14.	0.59	8.8	2.5	87.8
28	2087.0-88.2	16.	13.	6.5	18.2	5.3	68.6
29	2088.2-89.6	14.	14.	7.2	17.0	9.7	67.1
30	2089.6-90.9	0.20	0.16	0.54	9.4	6.3	87.6
31	2090.9-92.5	0.24	0.24	0.32	14.7	1.0	90.8
32	2092.5-93.9	0.34	0.33	0.72	15.7	0.0	95.2
33	2093.9-95.3	0.73	0.63	0.36	20.0	0.0	94.7
34	2095.3-96.4	2.5	1.9	2.3	21.5	11.3	63.3
35	2096.4-97.5	26.	26.	38.	22.7	13.7	53.7

2098

CORE SUMMARY

FORMATION	DEPTH, FEET	FEET CORE ANALYZED	AVERAGE PERMEABILITY HORIZONTAL MAX.	AVERAGE PERMEABILITY HORIZONTAL 90°	AVERAGE PERMEABILITY VERTICAL	AVERAGE POROSITY %	AVERAGE LIQUID SATURATION, % OIL	AVERAGE LIQUID SATURATION, % WATER
INJUN	2049.7 - 2084.4	34.2'	18.	17.	19.	21.5	13.5	57.7

Figure 6) Eric Lewis #1 porosity and permeability core evaluation. Full core report is supplied as an attachment *Eric Lewis #1 Core Analysis.pdf.*



WHOLE CORE ANALYSIS REPORT

SANDSTONE | CALCAREOUS SANDSTONE | SHALY SANDSTONE | SHALE

PERMEABILITY (Maximum) MILLIDARCYS 60 50 40 30 20 10 0 — TOTAL WATER PERCENT PORE SPACE 100 75 50 25 — POROSITY x---x PERCENT 25 20 15 10 5 0 — OIL SATURATION PERCENT PORE SPACE 0 25 50 75

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY HORIZONTAL Max.	PERMEABILITY HORIZONTAL 90°	PERMEABILITY VERTICAL	POROSITY %	RESIDUAL LIQUID SATURATION % PORE SPACE OIL	RESIDUAL LIQUID SATURATION % PORE SPACE TOTAL WATER
1	1973.0-74.1	20.	20.		20.2	17.8	55.0
2	1974.1-75.6	38.	27.		18.4		
3	1975.0-76.0	32.	29.		22.5	18.2	59.7
4	1976.0-77.0	0.70	0.70		17.7		
5	1977.0-78.0	1.4	0.70		14.4	11.2	88.1
6	1978.0-79.0	11.	9.1		17.1		
7	1979.0-80.0	1.5	1.1		20.0	11.1	70.2
8	1980.0-81.0	22.	22.		20.9		
9	1981.0-82.1	21.	20.		20.4	16.0	65.2
10	1982.1-83.0	23.	22.		18.6		
11	1983.0-84.1	21.	13.		20.4	14.2	63.6
12	1984.1-85.6	20.	18.		20.2		
13	1985.6-86.6	<0.10	<0.10		7.4		
14	1986.6-87.9	20.	15.		19.0		
15	1987.9-88.8	28.	25.		20.9	14.3	65.4
16	1988.8-89.8	20.	18.		20.9		
17	1989.8-91.1	18.	18.		20.8	17.0	61.0
18	1991.1-92.5	34.	32.		23.0		
19	1992.5-94.0	27.	21.		20.9	18.4	58.3
20	1994.0-95.1	29.	27.		21.8		
21	1995.1-96.3	32.	32.		21.5	18.9	60.5
22	1996.3-97.8	29.	29.		20.8		
23	1997.8-99.0	23.	20.		20.4	15.0	61.8
24	1999.0-00.1	22.	22.		21.0		
25	2000.1-01.5	31.	31.		21.9	17.2	58.7
26	2001.5-02.1	22.	22.		22.0		
27	2002.1-03.1	23.	22.		19.2	16.7	64.1
28	2003.1-04.1	20.	20.		17.5		
29	2004.1-05.0	<0.10	<0.10		4.2		
30	2005.0-06.1	26.	23.		18.7	15.0	68.8
31	2006.1-07.6	27.	27.		20.3		
32	2007.6-08.7	29.	26.		22.2	11.0	58.4
33	2008.7-10.1	52.	35.		21.1		
34	2010.1-11.5	77.	27.		21.1	11.3	62.9
35	2011.5-12.5	35.	32.		21.1		
36	2012.5-13.5	27.	22.		21.7	11.4	62.7
37	2013.5-14.5	28.	24.		20.6		

842.8

1973.5 to 1974.1
1982.9 to 1983.5
1992.5 to 1993.2
2008.1 to 2007.6
2011.7 to 2012.5

CORE SUMMARY

FORMATION	DEPTH, FEET	FEET CORE ANALYZED	AVERAGE PERMEABILITY HORIZONTAL MAX.	AVERAGE PERMEABILITY HORIZONTAL 90°	AVERAGE PERMEABILITY VERTICAL	AVERAGE POROSITY %	AVERAGE LIQU SATURATION, OIL	WA
BIG INJUN	1973.0 - 2014.5	*39.6' *19.6'	25.	22.		20.3	15.1	

* Weighted averages.

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Figure 7) Isaac Donahue #17 porosity and permeability core evaluation. Full core report is supplied as an attachment *Isaac Donahue #17 Core Analysis.pdf.*

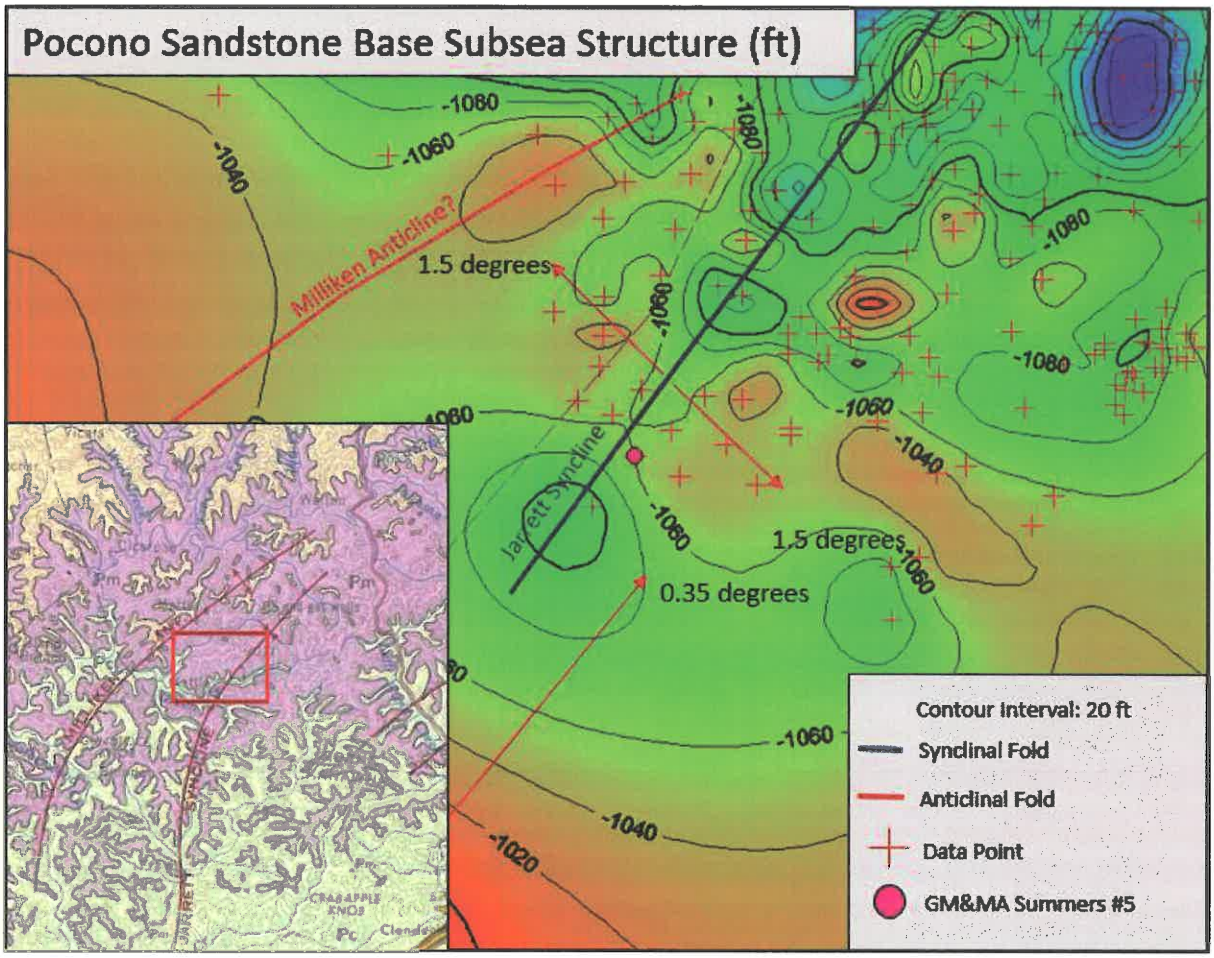


Figure 8) Big Injun (Pocono Member) Sandstone base subsea structure (ft). The Pocono Member is the proposed injection interval.

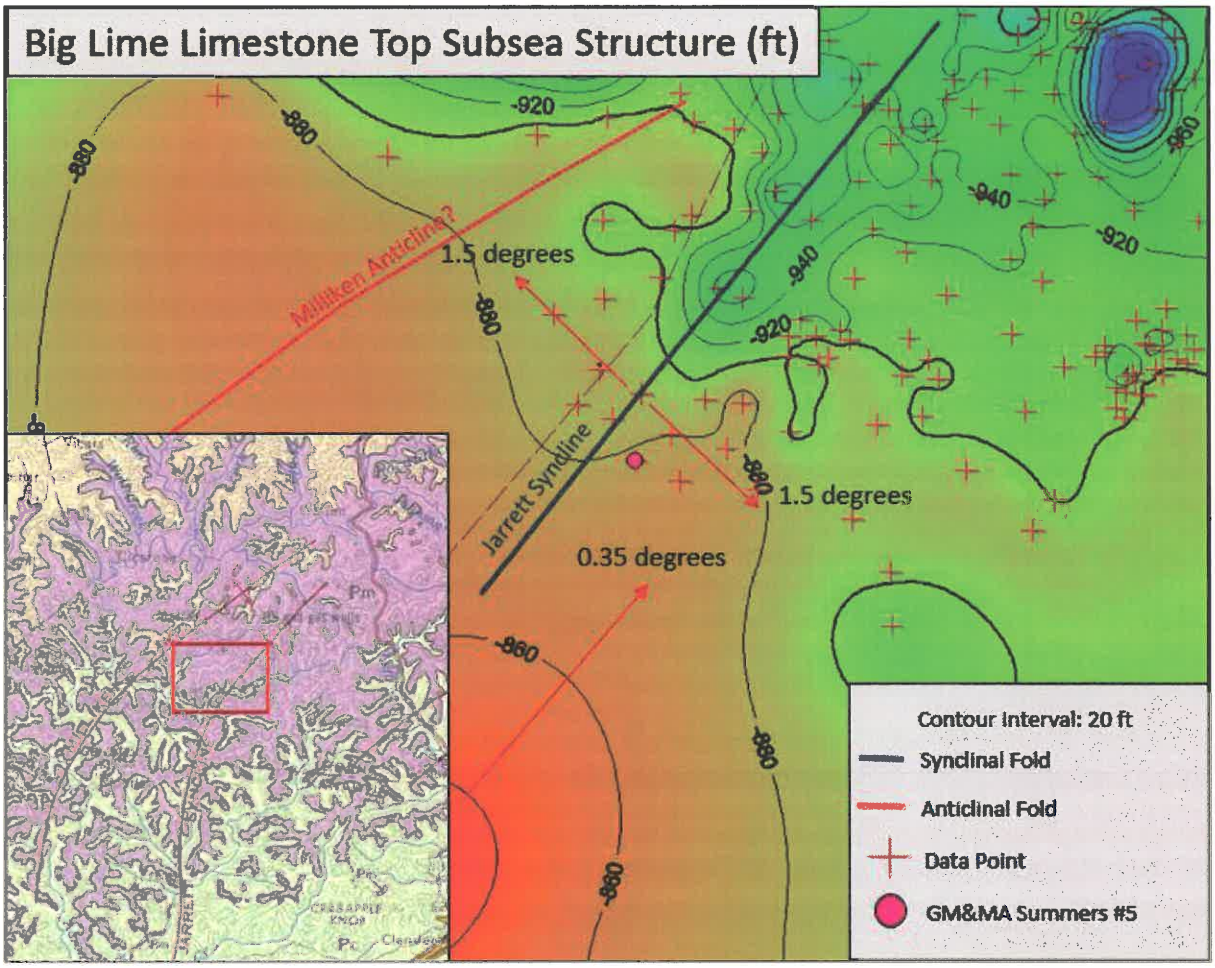


Figure 9) Big Lime Limestone base subsea structure (ft). The Big Lime is the uppermost confining layer.

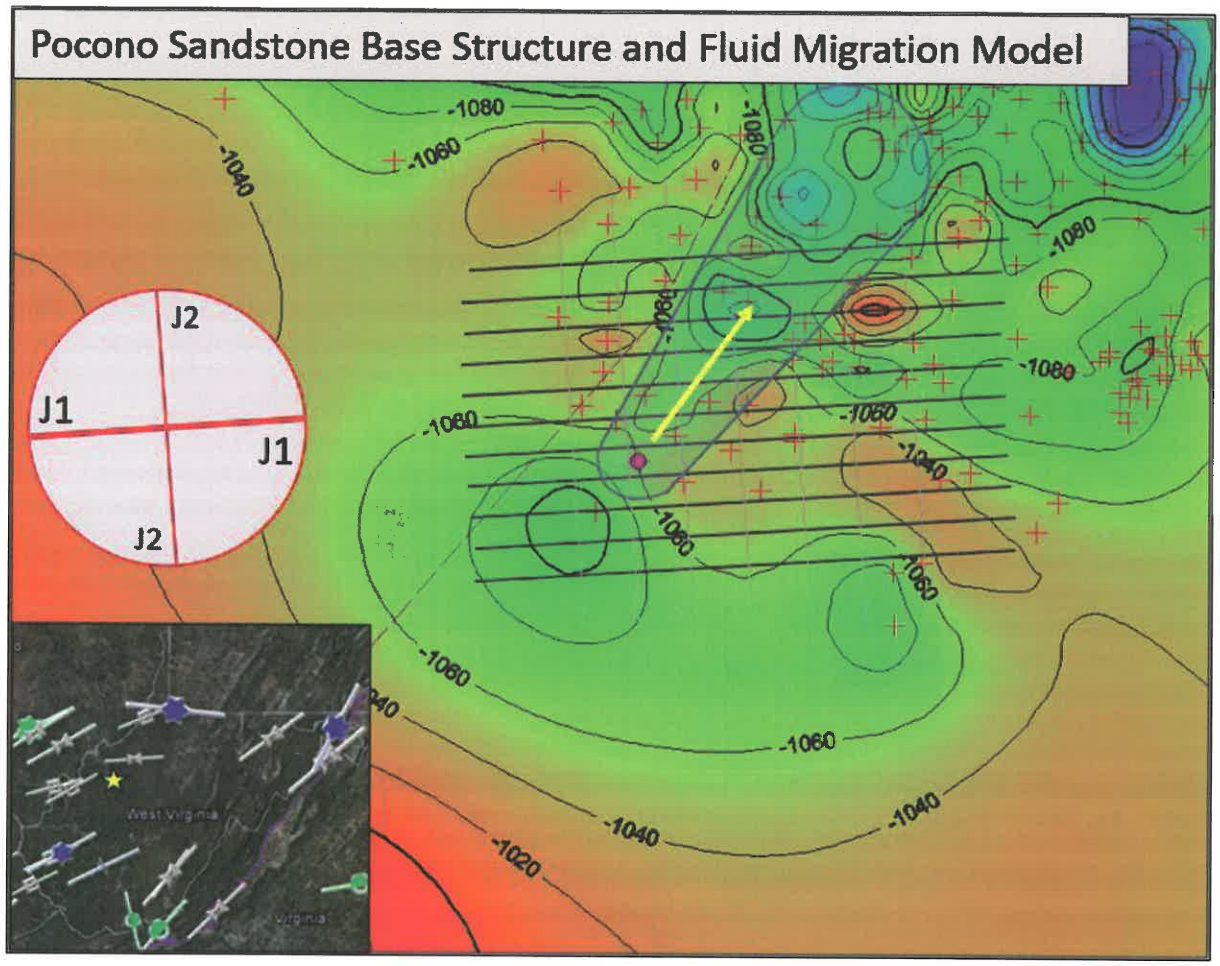
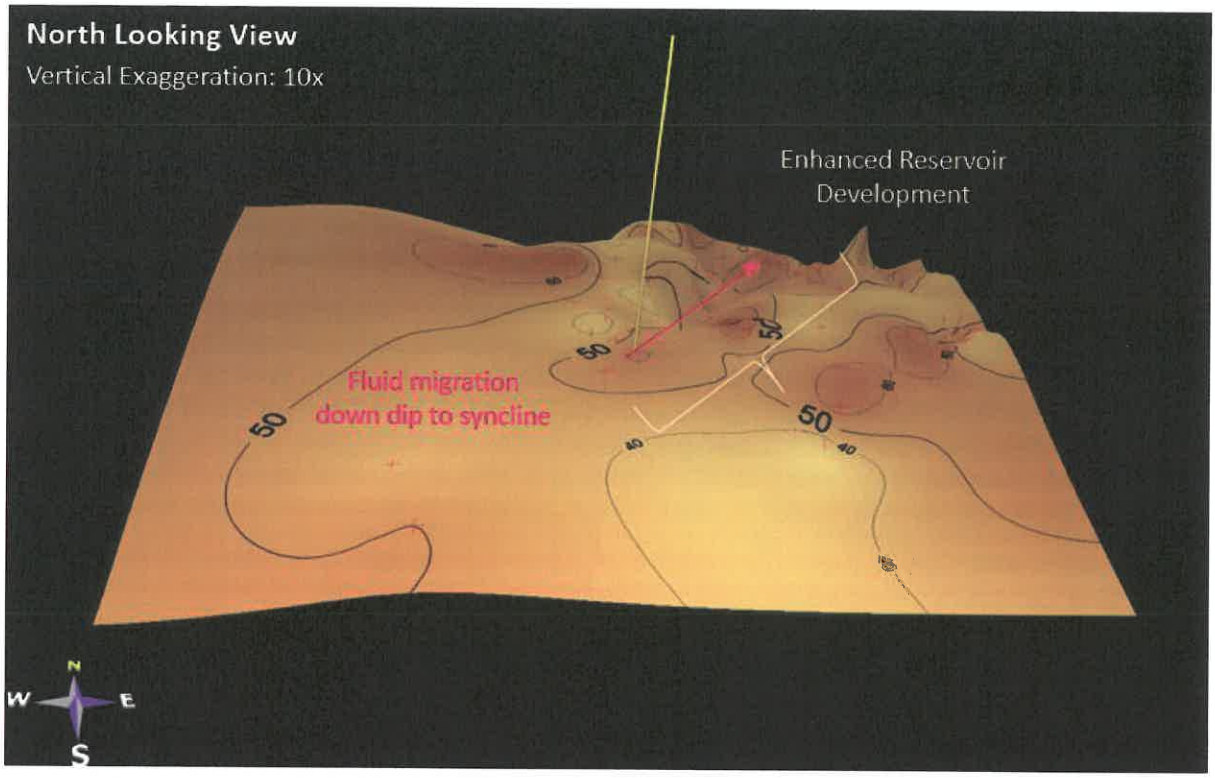


Figure 10) Big Injun (Pocono Member) Sandstone fluid migration model. Fluid injected into the GM&MA Summers #5 well should migrate northeast down dip into the Jarrett Syncline. World Map 2008 data on natural fracturing sets are also inset.



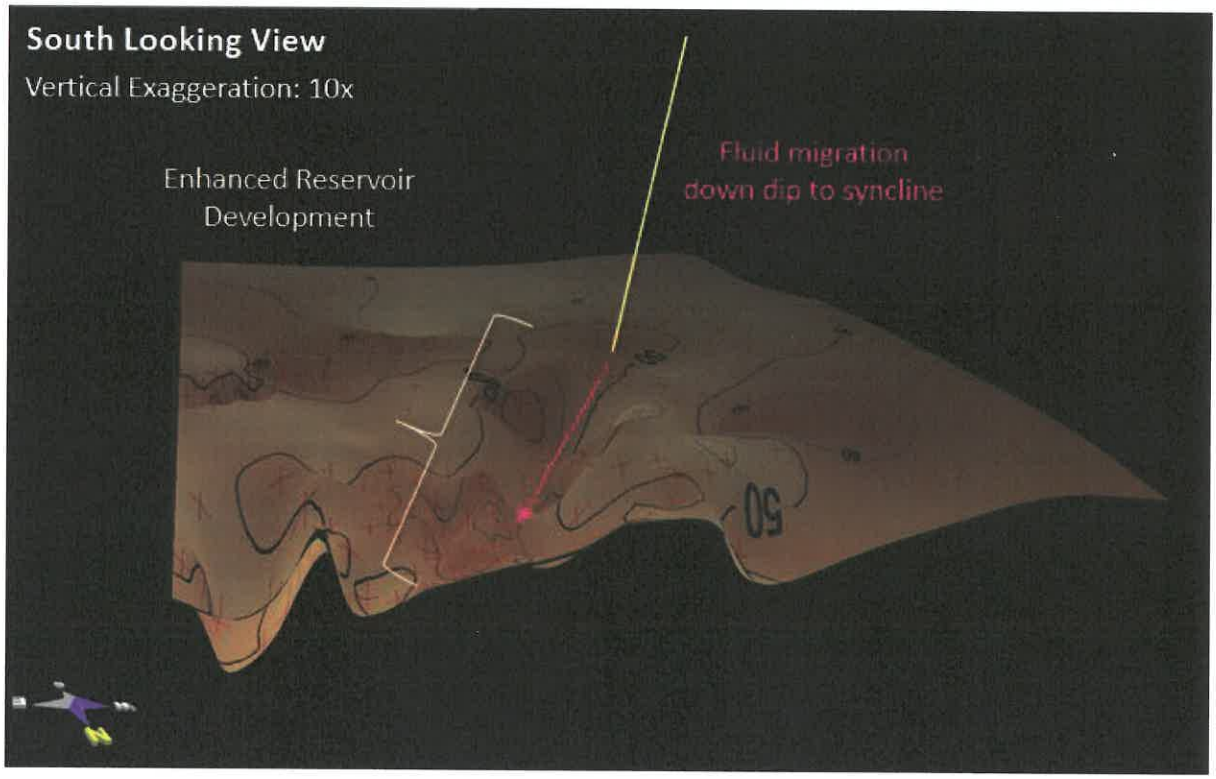
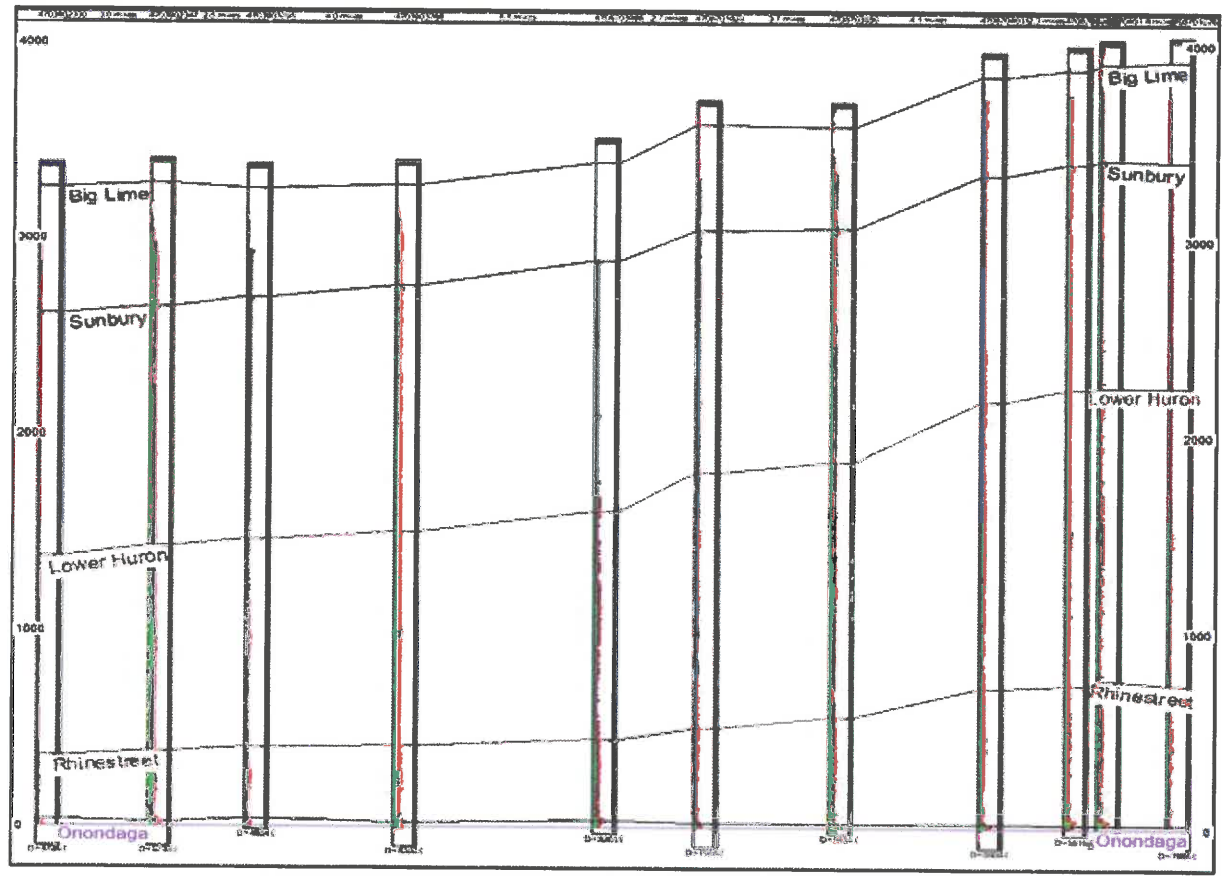


Figure 11) 3D Fluid Migration Model



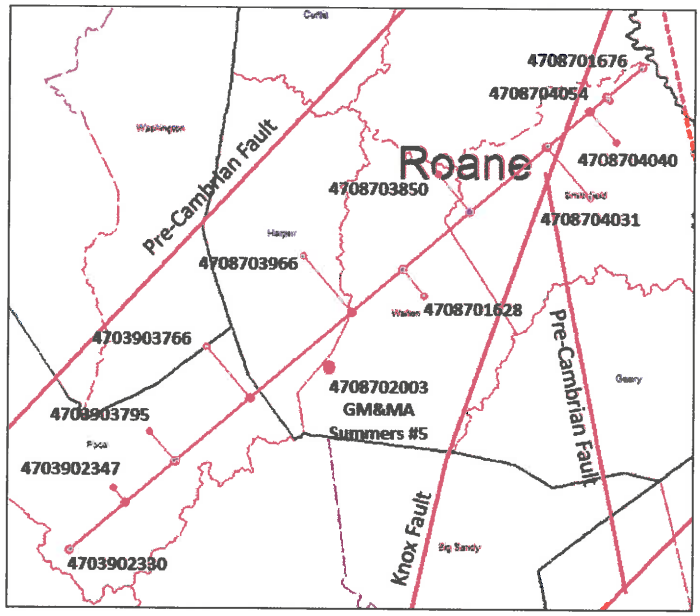


Figure 12) Deep well west to east cross section. Note the clastic wedge and gradual thickening of sediment to the east towards the sediment source. Primary thickening was between the Lower Huron Shale and Onondaga Limestone. Publically identified faults and depths also portrayed on them.

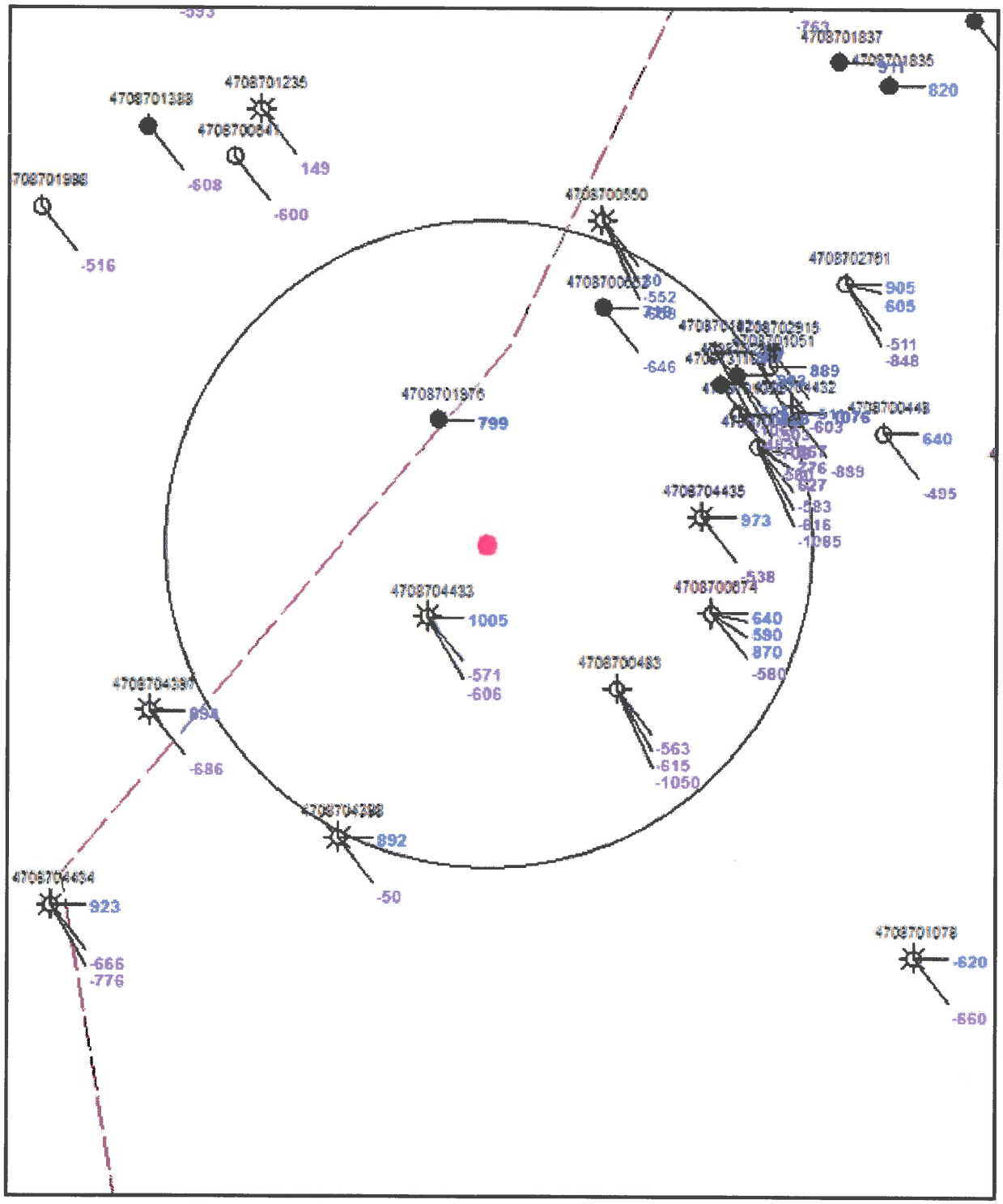
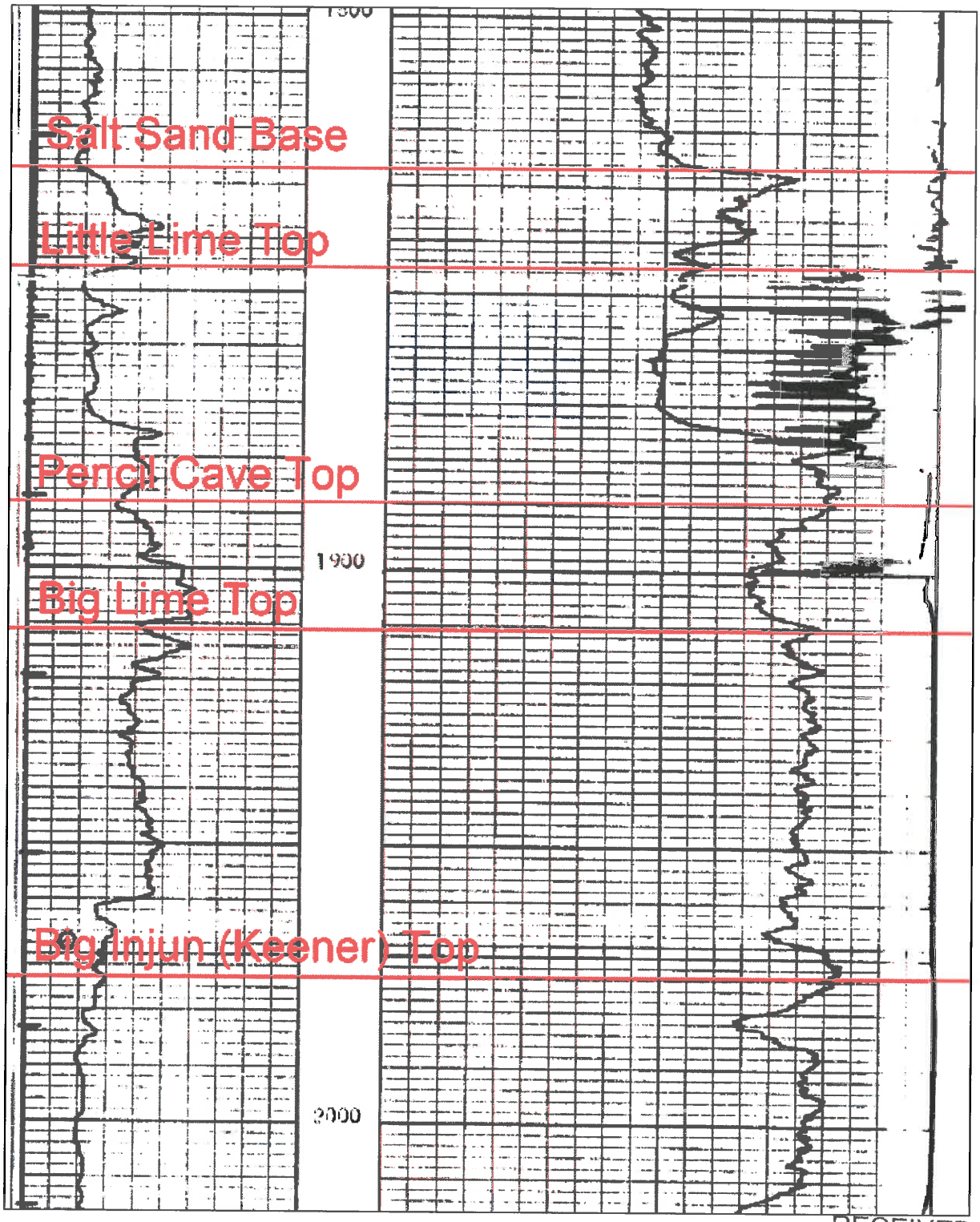
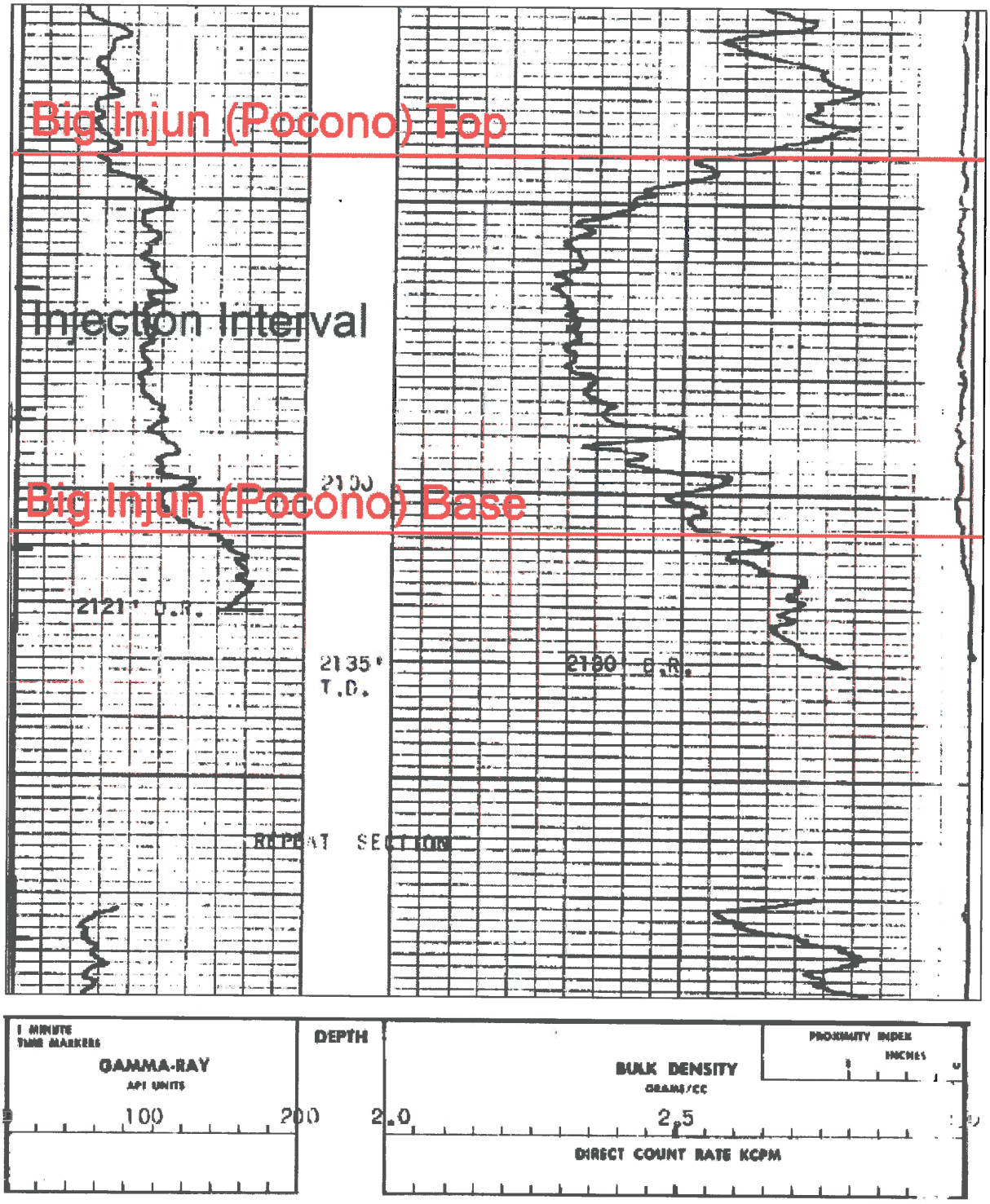


Figure 13) Water show mapping (1 mile radius) from completion reports. Depths in subsea (ft). Only wells with reported shows presented on map.





Annotated GM&MA Summers #5 (47-087-02003) proposed injection well. Full annotated log attached as *4708702003gd Annotated.pdf*

Roa. 2003 (#5
G M & M A Summers
Pennzoil Company

BIRWELL

Gamma-Ray Density

PERMIT NO:
ROA - 2003

COMPANY PENNZOIL COMPANY

WELL G. M. & M. A. SUMMERS #5

FIELD SALTON DISTRICT

COUNTY ROANE STATE W. VA.

LOCATION:
LYNN CAMP RUN
T 5 S R 14 W 47

SEC. TWP. RGE.

OTHER SERVICES

PERMANENT DATUM GROUND LEVEL, ELEV. 1041.70'
LOG MEASURED FROM K.B. 7' ft. above perm. datum
DRILLING MEASURED FROM K.B.

ELEVATIONS:
KB. 1048.70'
DF.
GL. 1041.70'

DATE	9-3-73	
RUN NO.	ONE	
TYPE LOG	GAMMA RAY	DENSITY
DEPTH – DRILLER	2142'	
DEPTH – LOGGER	2135'	2135'
BOTTOM LOGGED INTERVAL	2121'	2130'
TOP LOGGED INTERVAL	0'	1400'
TYPE FLUID IN HOLE	MUD	
SALINITY PPM CL.		
DENSITY LB./GAL.		
LEVEL	FULL	
MAX. REC. TEMP. – DEG. F	91°	
OPERATING RIG TIME	1 HOUR	
RECORDED BY	ROTH	
WITNESSED BY	MR. PRICE	
LOCATION	CHARLESTON, W. Va.	

RUN NO.	BORE HOLE RECORD BIT	FROM	TO	CASING RECORD SIZE	WGT.	FROM	TO
1	6 3/4"	366'	T.D.	9 5/8"		SURF.	366'

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GAMMA-GAMMA EQUIPMENT DATA

RUN NO.	ONE	TOOL SPACING	19"
TOOL MODEL NO.	LAHD	SOURCE NO.	284
TOOL SERIAL NO.	3	DIRECT ZERO LOC.	
DIAMETER	3 5/8"	DISTANCE D OR D'	12"
SUB	PB	NOMINAL HOLE DIAM.	6 3/4"
DETECT. MODEL NO.	TN	TRUCK NO.	2449

GAMMA-GAMMA LOGGING DATA

RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN.	TC SEC.	CPM FULL SCALE	DIRECT CPM /DIV.	LINEAR GMS./DIV.
1	T.D.	1400'	30	2	20×10^4		.05

PRIMARY REFERENCE CR	12.5 AL
EQUIVALENT DEN. G/CC	2.26
SECONDARY REF.	POS. #4
EQUIVALENT DEN. G/CC	2.48
KCPM BEFORE LOG	15K
KCPM AFTER LOG	15K
RECORDER CAL. REF.	10K
EQUIVALENT DEN. G/CC	2.65

GAMMA RAY LOG DATA

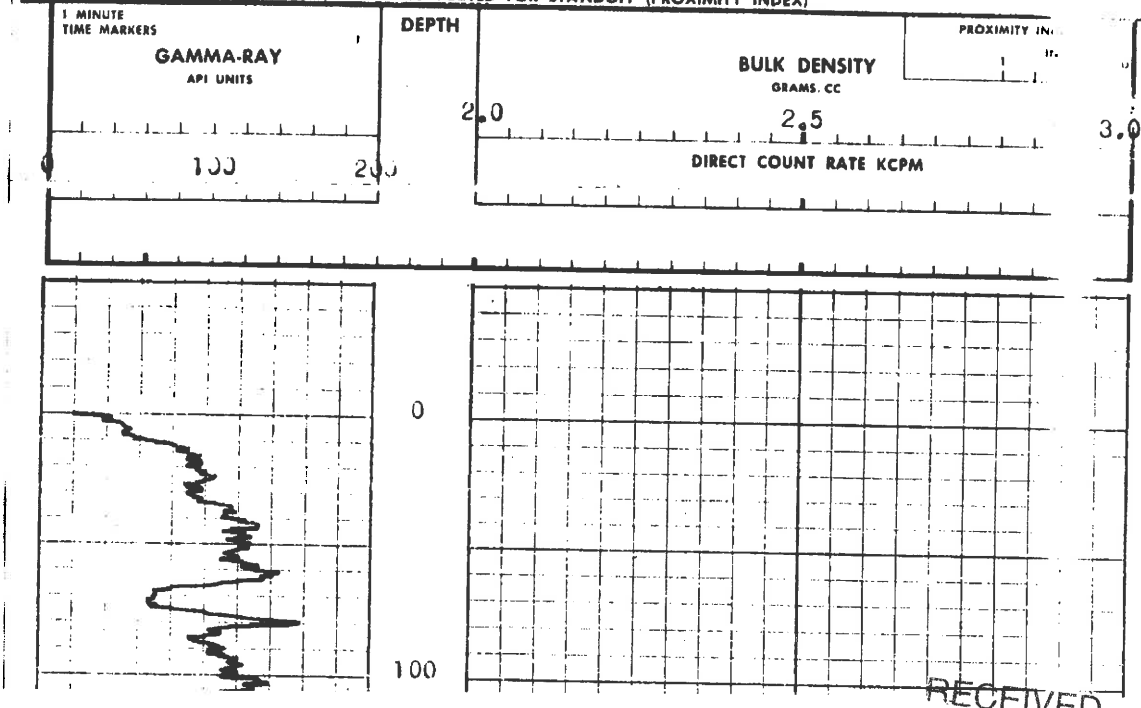
RUN NO.	ONE	DETECT. MODEL NO.	MG-70
TOOL MODEL NO.	LAHD	DIAMETER	3"
DIAMETER	3 5/8"	LENGTH	12"

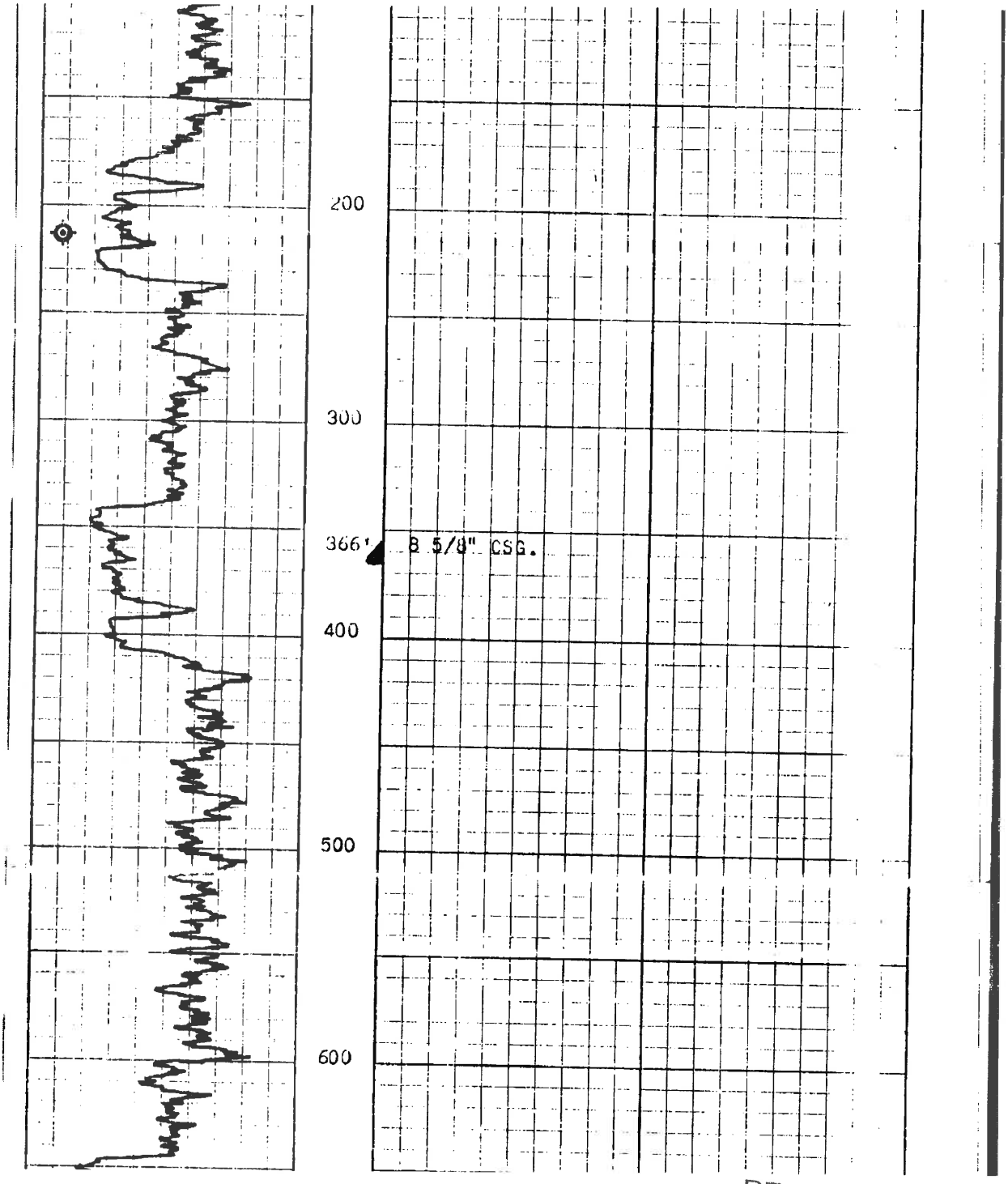
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED FT/MIN.	TC SEC.	CPM FULL SCALE	ZERO DIV. L OR R	API G.R. UNITS PER LOG DIV.
1	T.D.	0'	30	2	20×10^3	0	20

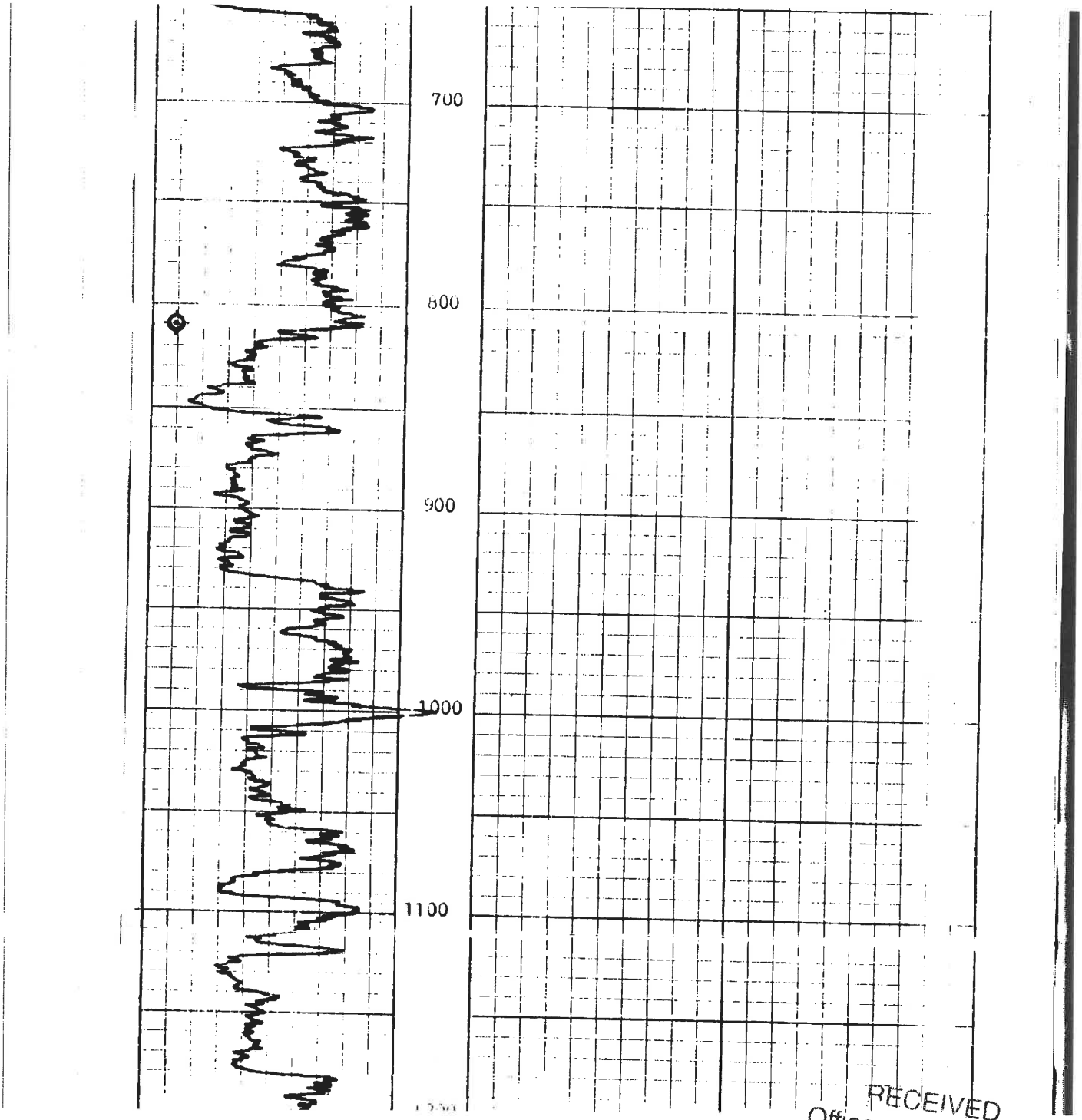
REMARKS:
GRAIN DENSITY GMS/CC:
FLUID DENSITY GMS/CC:
NA: INFORMATION NOT AVAI

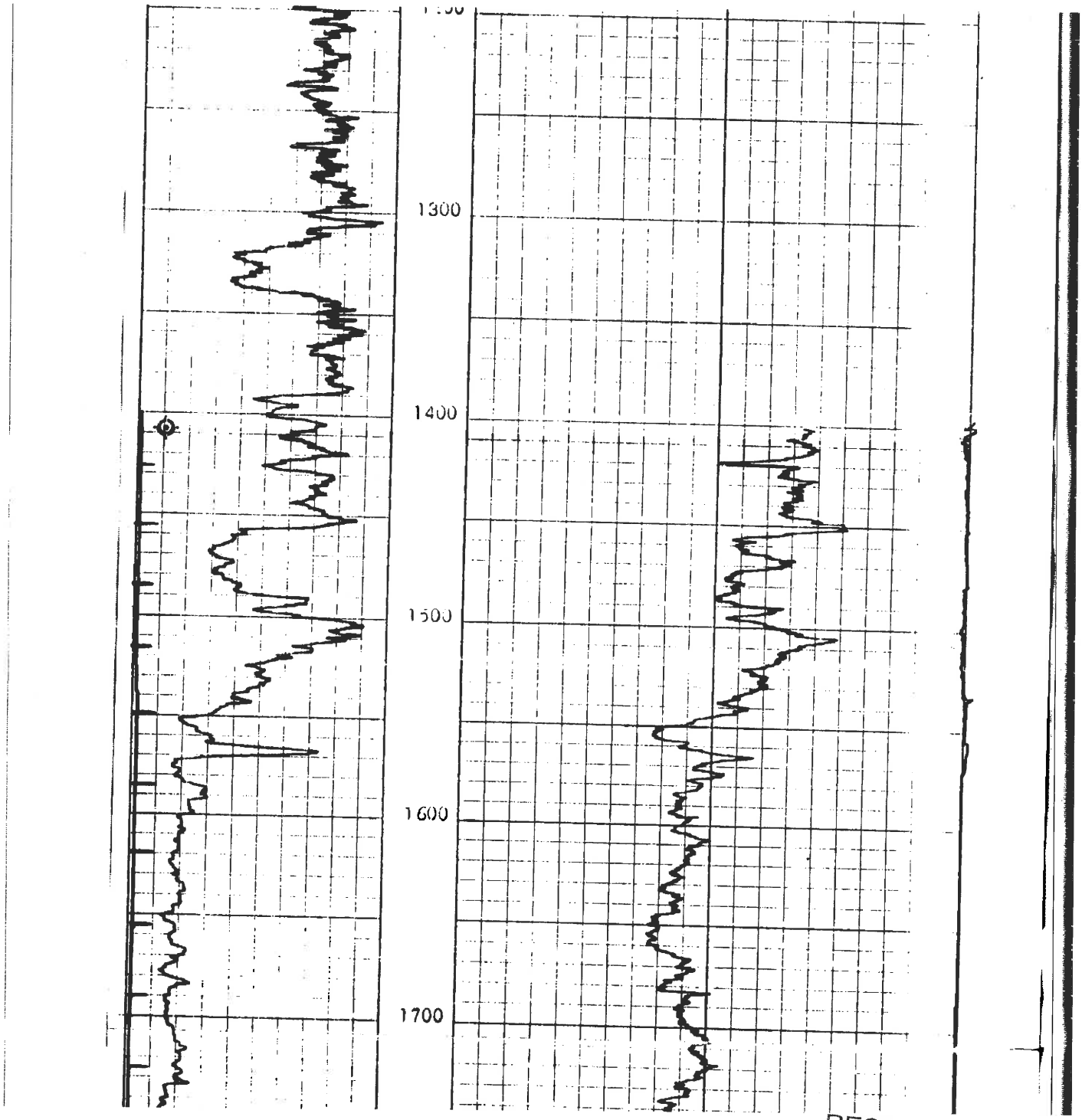
THIS WORK WAS PERFORMED UNDER UNITED STATES ATOMIC ENERGY COMMISSION BY-PRODUCT MATERIAL LICENSE NO. 35-5651-1.

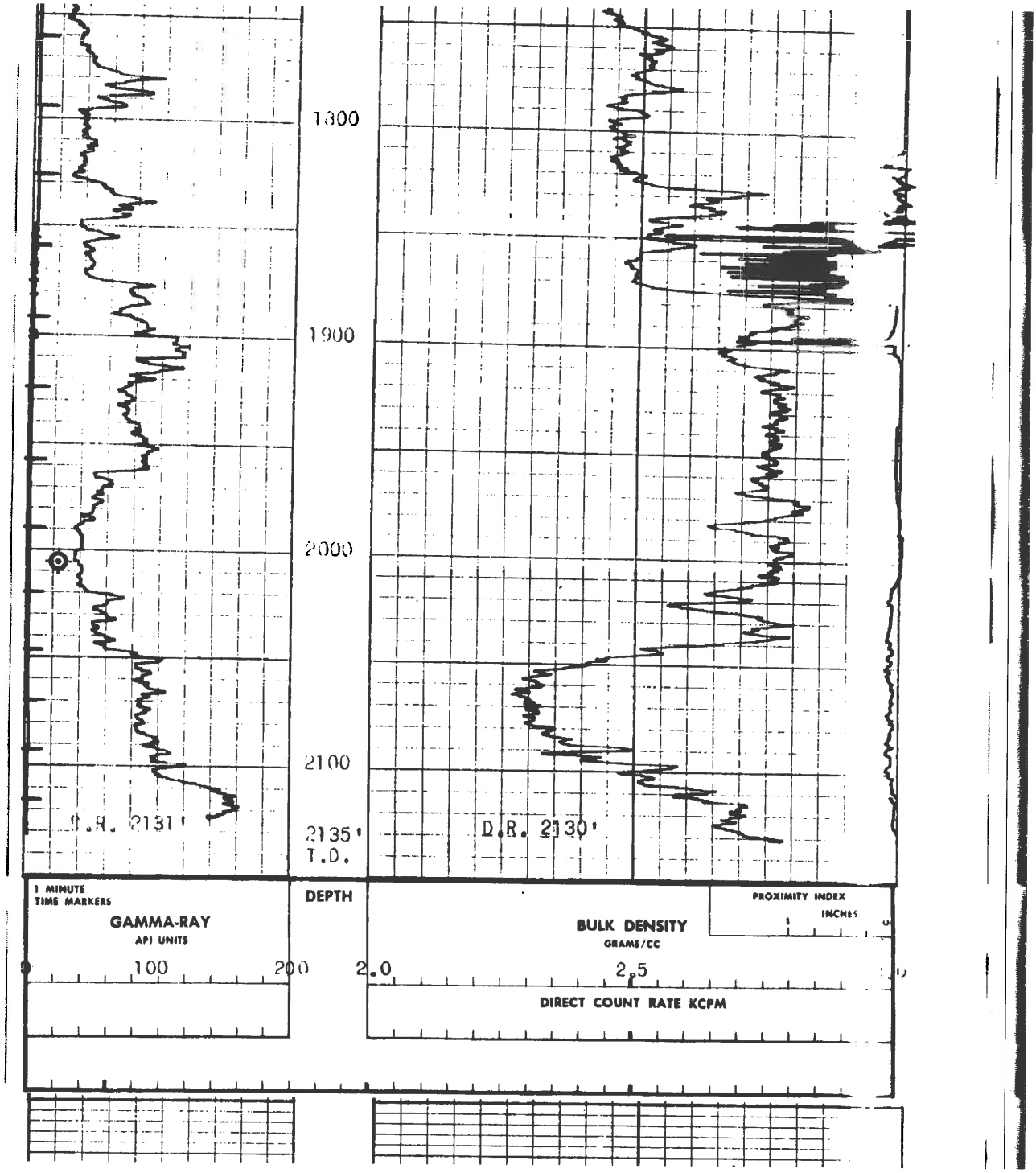
NOTE: RECORDED BULK DENSITY MUST BE CORRECTED FOR STANDOFF (PROXIMITY INDEX)

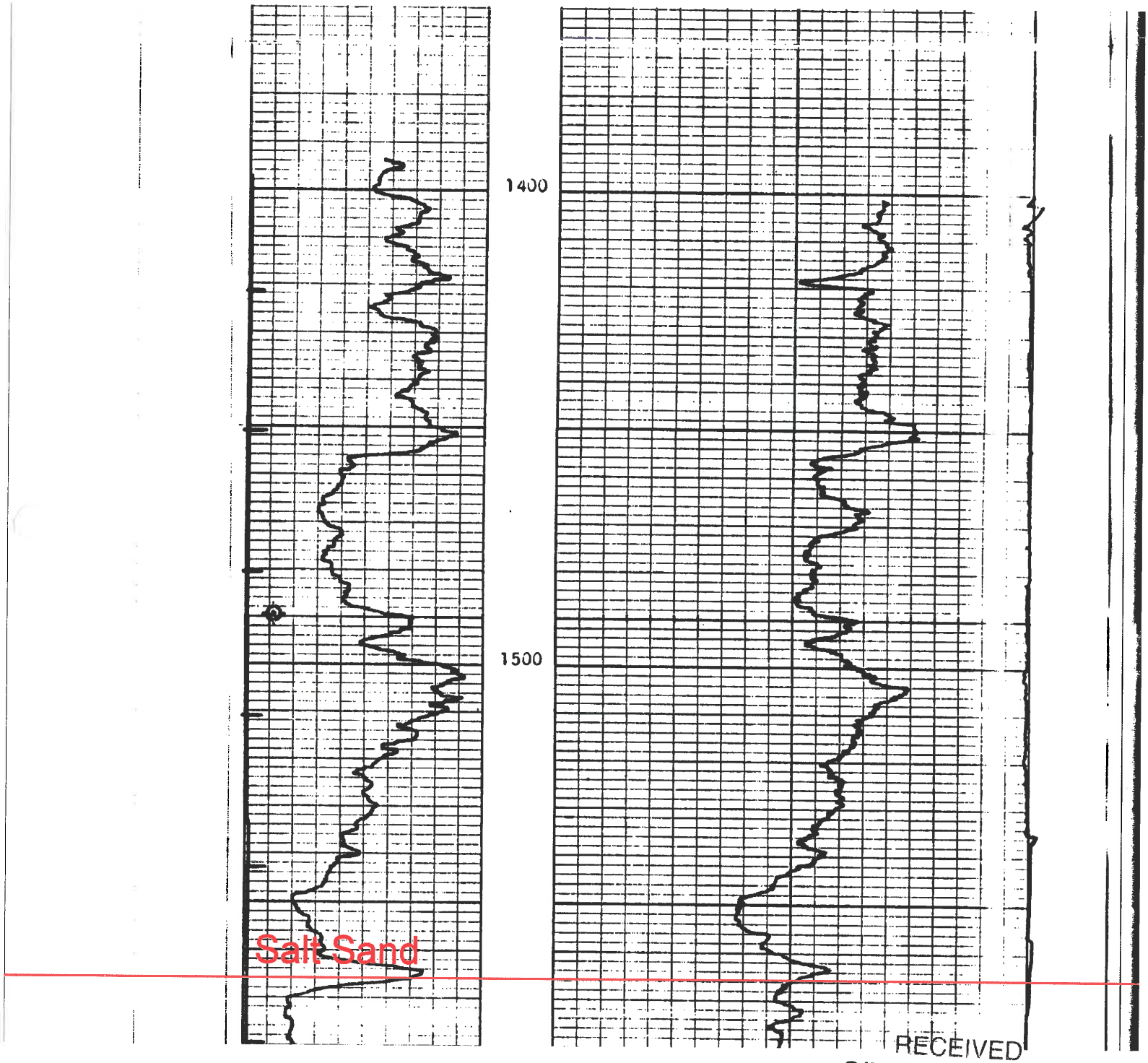


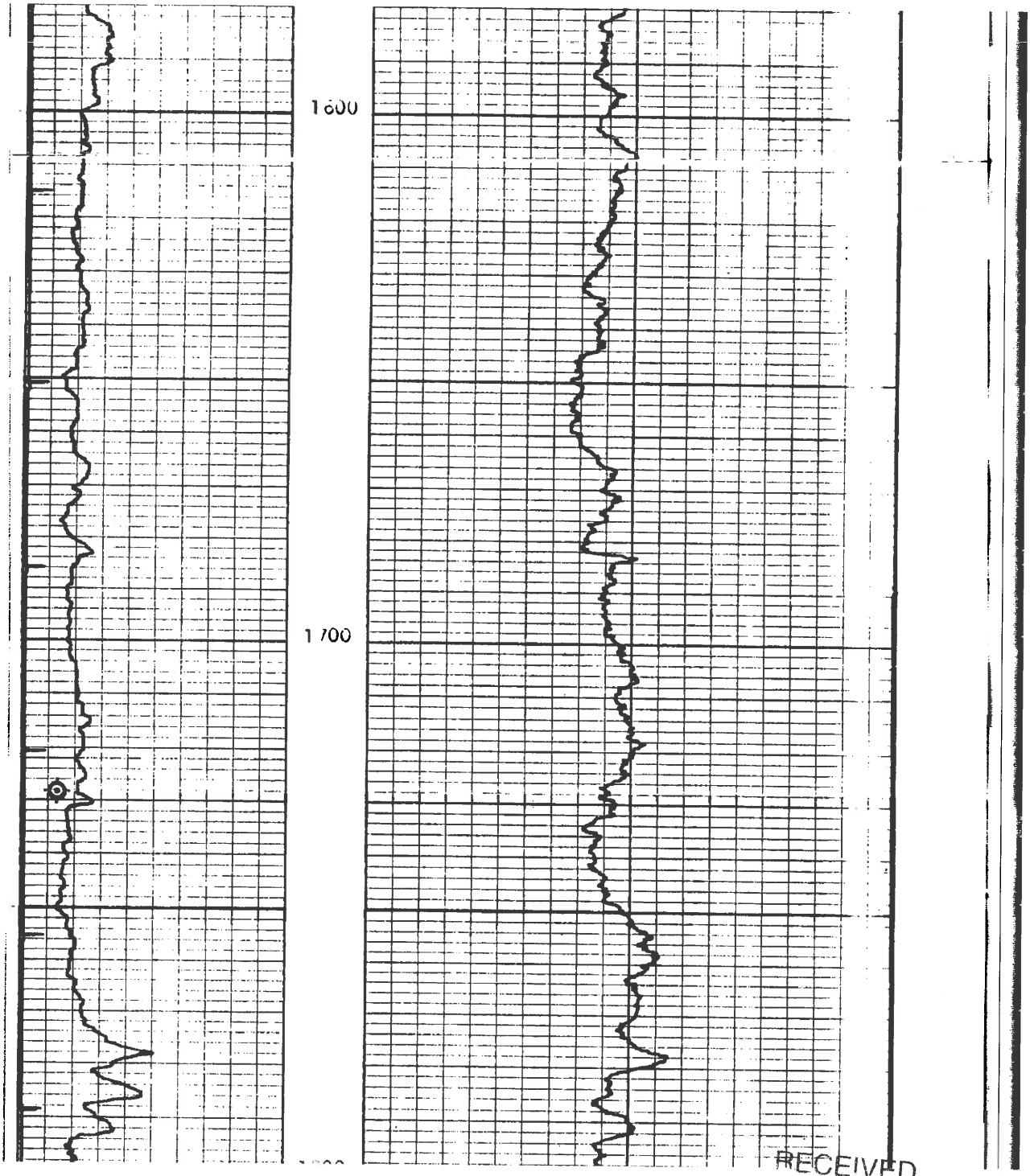


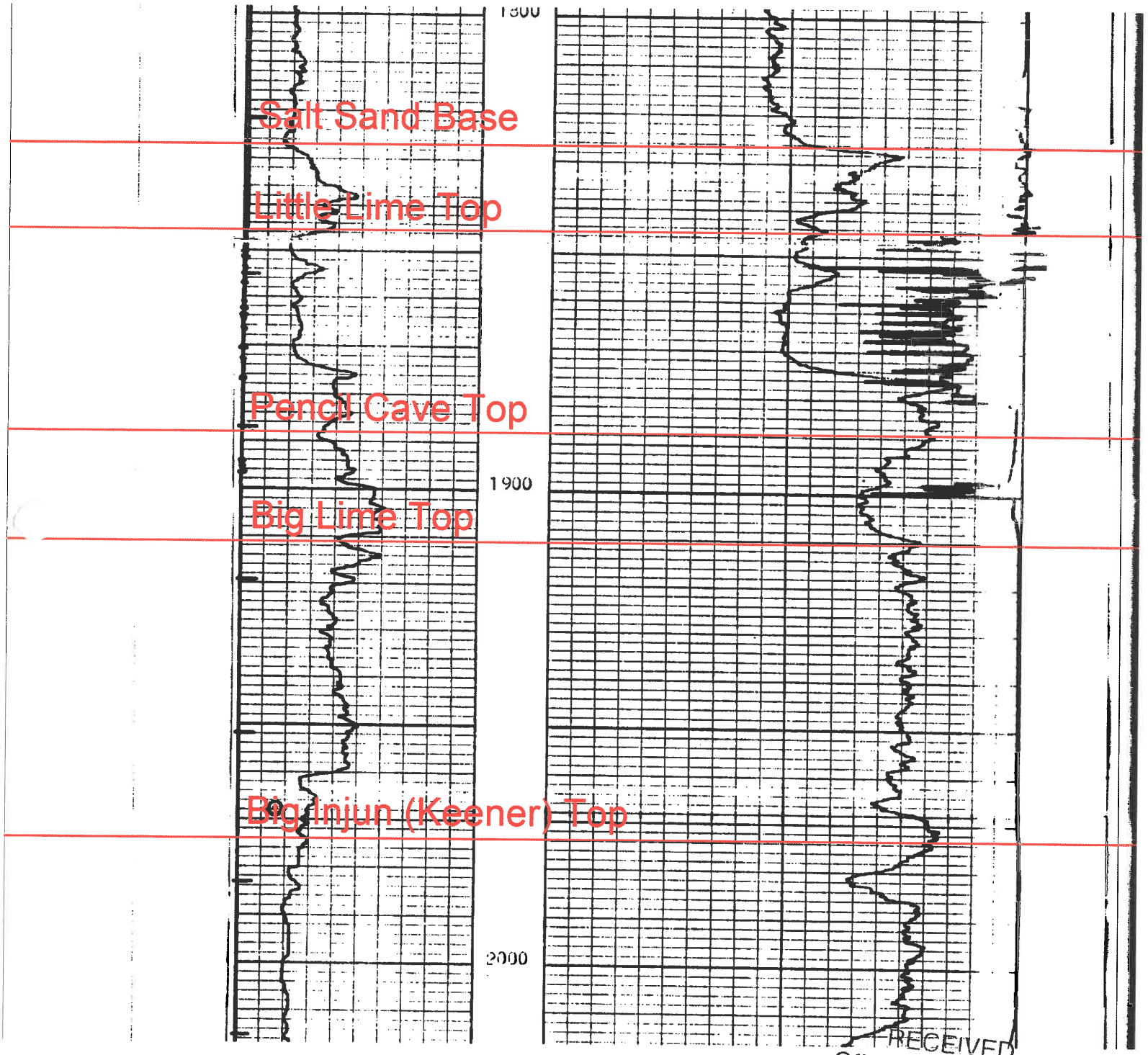


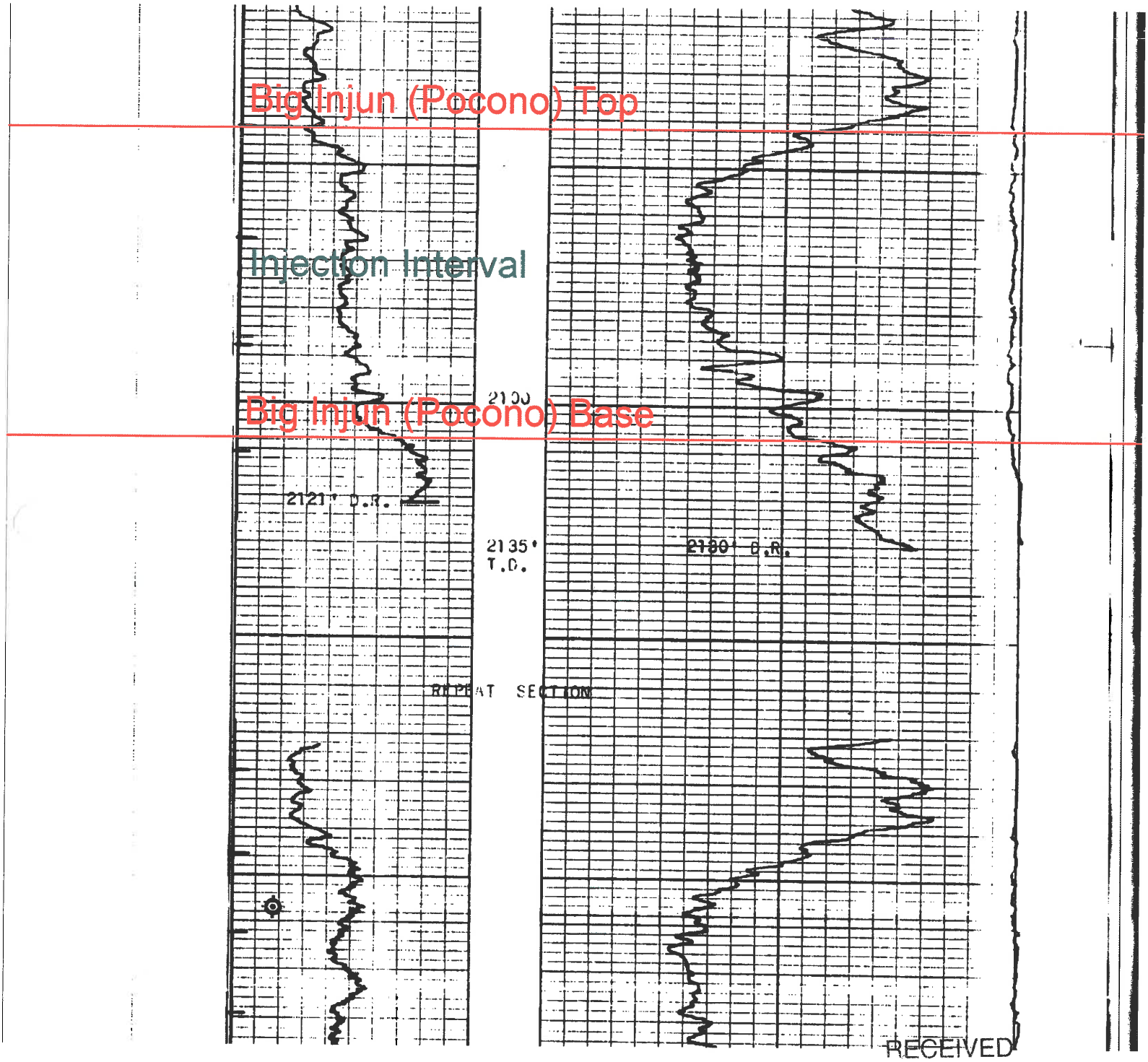


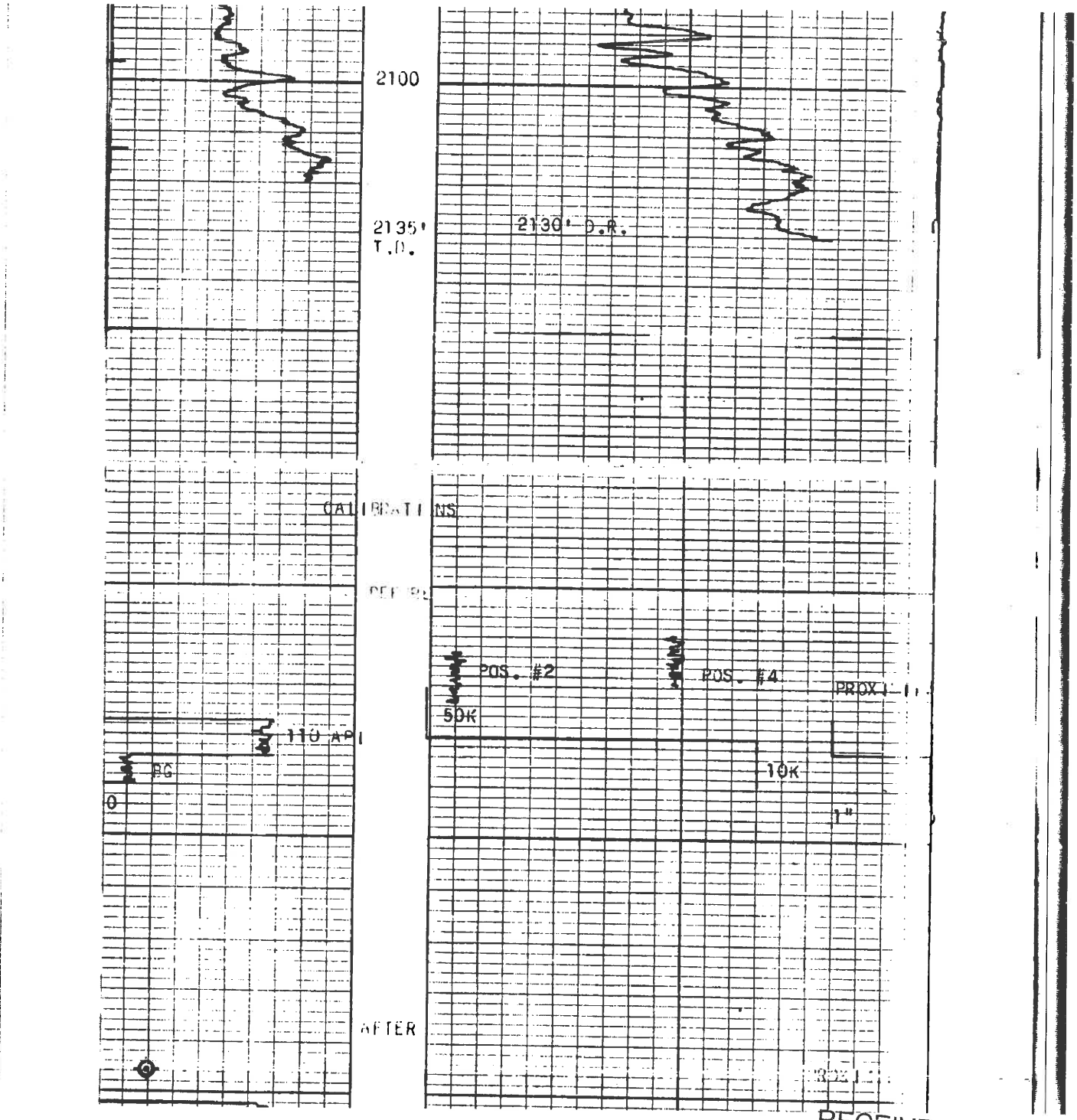


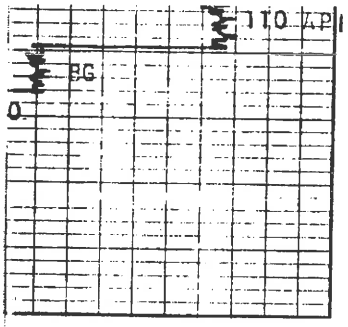


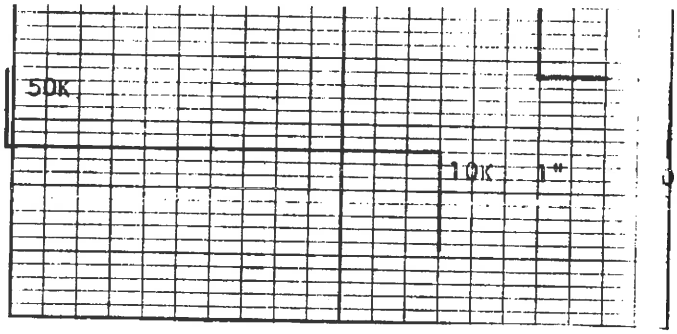












COMPANY	PENNZOIL COMPANY
WELL	G.M. & M.A. SUMMERS #5
FIELD	WALTON DISTRICT
LOCATION	LYNN CAMP RUN SEC. TWP. RGE
	RANE STAT W. VA.

Section 9

Operating Requirements

Section 9 – Operating Requirements / Data:

- Average daily rate or volume of fluid to be injected: 130 BBL
- Maximum daily rate or volume of fluid to be injected: 720 BBL
- Average injection pressure: 375 psi
- Maximum Injection pressure: 671 psi (permitted)

2. See attached Appendix G.

3. Results analysis of injection fluid:
   - Total TPH =
   - pH =
   - Total Chloride =
   - Total Dissolved Solids =
   - Total Suspended Solids =
   - See attached sample results.

4. No injection additives at this time.

5. Annulus fluid consists fresh water. There are no chemicals being used in the annulus between the tubing and the casing, and the annulus has a pressure on average of 0 psi.

6. Two scenarios could potentially allow fluids to migrate to a USDW: 1) A failure within the wellbore itself and 2) a failure of surface equipment. In order for fluids to migrate to any USDW from a wellbore failure, three different casing/tubing systems would all have to fail at the same time: 1) A hole could develop in the tubing which would allow fluids to migrate into the space between the tubing and the production casing or 2) the packer on the tubing could lose its sealing ability which could allow fluids to migrate into the space between the tubing and the production casing, and 3) only if 1 or 2 happens then the production casing would be breached only if a hole develops in the producing casing above the top of the cement behind the production casing, and 4) Only if 1 or 2 and 3 occur then the fresh water casing would have to be breached as a result of a hole in that casing in order for fluids to migrate from the injection well to USDW.
   Contingency plan in case of a wellbore failure:
   The pressure between the tubing and the production casing is continuously monitored, so any failure of the tubing or the packer should be promptly identified. If a tubing or packer failure occurs: 1) injection would immediately cease, 2) the tubing and packer would be pulled utilizing a stripper head that confines wellbore fluids to the wellbore, 3) the faulty packer or damaged tubing would be identified and replaced, and 4) the repaired tubing/packer assembly would be run back into the well and set utilizing the stripping head..

Contingency plan in case of a production casing failure:

The pressure between the tubing and the production casing is continuously monitored, so any failure of the production casing should be promptly identified. If a hole is detected in the production casing: 1) injection would immediately cease, 2) the tubing and packer would be pulled utilizing a stripper head that confines wellbore fluids to the wellbore, 3) a pipe integrity log would be secured to identify the location of the leak, 4) a retrievable bridge plug would be set in the casing which would block any fluids from migrating up the wellbore from the injection zone, 5) the production casing hole would be repaired using whichever method is suitable for the size and type of the hole, 6) the production casing would be pressure tested to ensure that the production casing is not leaking, 7) the bridge plug would be removed, and 8) the tubing/packer assembly would be run back into the well and set utilizing the stripping head.

Contingency plan in case of a surface equipment leak:

The facility is visited daily by operations personnel, so any failure of surface equipment would be promptly identified. If a leak is detected in any surface equipment: 1) injection would immediately cease, 2) the tubing valve would be immediately shut to prevent injected fluids from returning to surface through the tubing, 3) if the leak occurred outside of the secondary containment, berms, ditches, or other means of diversion would be immediately employed to prevent the spilled fluids from migrating beyond the location, 4) the location of the leak would be determined and isolated from the remainder of the surface facilities, 5) any spilled fluids would be returned to tankage on location, 6) the leaking equipment will be repaired or replaced, 7) the surface equipment will be checked for leaks, and 8) the tubing valve will be opened and injection operations resumed.

Fluid Disposal Alternative:

The fluid disposal alternative would be to have the fluids transported by third party haulers to commercial disposal facilities servicing oil and gas operators in West Virginia.

APPENDIX G		
API	**OPERATOR**	**PRODUCING FORMATION**
47-013-1831	Mountain V Oil & Gas, Inc.	Berea
47-013-2192	Mountain V Oil & Gas, Inc.	Berea
47-013-2776	Mountain V Oil & Gas, Inc.	Berea
47-013-2778	Mountain V Oil & Gas, Inc.	Berea
47-013-2845	Mountain V Oil & Gas, Inc.	Berea
47-013-2846	Mountain V Oil & Gas, Inc.	Berea
47-013-2847	Mountain V Oil & Gas, Inc.	Berea
47-013-3293	Mountain V Oil & Gas, Inc.	Berea
47-013-3298	Mountain V Oil & Gas, Inc.	Berea
47-013-3301	Mountain V Oil & Gas, Inc.	Berea
47-013-3302	Mountain V Oil & Gas, Inc.	Berea
47-013-3396	Mountain V Oil & Gas, Inc.	Berea
47-013-3417	Mountain V Oil & Gas, Inc.	Berea
47-013-3687	Mountain V Oil & Gas, Inc.	Berea
47-013-3734	Mountain V Oil & Gas, Inc.	Berea
47-013-3735	Mountain V Oil & Gas. Inc.	Berea
47-013-3736	Mountain V Oil & Gas, Inc.	Berea
47-013-3737	Mountain V Oil & Gas, Inc.	Berea
47-013-3738	Mountain V Oil & Gas, Inc.	Berea
47-013-3739	Mountain V Oil & Gas, Inc.	Berea
47-013-3764	Mountain V Oil & Gas, Inc.	Berea
47-013-3766	Mountain V Oil & Gas, Inc.	Berea
47-013-3785	Mountain V Oil & Gas, Inc.	Berea
47-013-3870	Mountain V Oil & Gas, Inc.	Berea
47-013-3893	Mountain V Oil & Gas, Inc.	Berea
47-013-3894	Mountain V Oil & Gas, Inc.	Berea
47-013-3895	Mountain V Oil & Gas, Inc.	Berea
47-013-3896	Mountain V Oil & Gas, Inc.	Berea
47-013-3897	Mountain V Oil & Gas, Inc.	Berea
47-013-3898	Mountain V Oil & Gas, Inc.	Berea
47-013-3899	Mountain V Oil & Gas, Inc.	Berea
47-013-3900	Mountain V Oil & Gas, Inc.	Berea
47-013-3901	Mountain V Oil & Gas, Inc.	Berea
47-013-3902	Mountain V Oil & Gas, Inc.	Berea
47-013-4142	Mountain V Oil & Gas, Inc.	Berea
47-013-4677	Mountain V Oil & Gas, Inc.	Berea
47-013-4682	Mountain V Oil & Gas, Inc.	Berea
47-039-3270	Mountain V Oil & Gas, Inc.	Big Injun
47-039-3271	Mountain V Oil & Gas, Inc.	Big Injun
47-039-3274	Mountain V Oil & Gas, Inc.	Big Injun
47-039-3300	Mountain V Oil & Gas, Inc.	Big Injun
47-087-0427	Mountain V Oil & Gas, Inc.	Keener
47-087-0428	Mountain V Oil & Gas, Inc.	Big Injun

47-087-0434	Mountain V Oil & Gas, Inc.	Big Injun
47-087-0438	Mountain V Oil & Gas, Inc.	Big Injun
47-087-0439	Mountain V Oil & Gas, Inc.	Big Injun
47-087-0449	Mountain V Oil & Gas, Inc.	Big Injun
47-087-0453	Mountain V Oil & Gas, Inc.	Big Injun
47-087-0454	Mountain V Oil & Gas, Inc.	Big Injun
47-087-0550	Mountain V Oil & Gas, Inc.	Big Injun
47-087-0599	Mountain V Oil & Gas, Inc.	Big Injun
47-087-0662	Mountain V Oil & Gas, Inc.	Squaw
47-087-0673	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1087	Mountain V Oil & Gas, Inc.	Berea
47-087-1156	Mountain V Oil & Gas, Inc.	Berea
47-087-1319	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1320	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1321	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1406	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1409	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1410	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1411	Mountain V Oil & Gas, Inc.	Big Injun
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47-087-1574	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1579	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1737	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1738	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1739	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1839	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1840	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1902	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1903	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1949	Mountain V Oil & Gas, Inc.	Big Injun
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47-087-1951	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1952	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1957	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1958	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1959	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1960	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1961	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1964	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1967	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1968	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1969	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1970	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1976	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1987	Mountain V Oil & Gas, Inc.	Big Injun

47-087-1989	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1990	Mountain V Oil & Gas, Inc.	Big Injun
47-087-1992	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2003	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2168	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2458	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2459	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2460	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2462	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2463	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2468	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2469	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2470	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2471	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2473	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2474	Mountain V Oil & Gas, Inc.	Berea
47-087-2475	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2490	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2494	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2495	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2511	Mountain V Oil & Gas, Inc.	Big Injun
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47-087-2531	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2532	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2544	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2551	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2558	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2559	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2565	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2566	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2567	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2574	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2589	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2590	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2591	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2592	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2593	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2594	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2595	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2596	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2597	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2598	Mountain V Oil & Gas, Inc.	Salt Sands
47-087-2601	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2606	Mountain V Oil & Gas, Inc.	Big Injun

47-087-2608	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2611	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2612	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2613	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2617	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2618	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2621	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2622	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2623	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2624	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2625	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2626	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2646	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2647	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2648	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2649	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2650	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2651	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2653	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2654	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2655	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2656	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2657	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2658	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2659	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2660	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2661	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2662	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2663	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2664	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2665	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2666	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2667	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2668	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2669	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2670	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2694	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2695	Mountain V Oil & Gas, Inc.	Squaw
47-087-2696	Mountain V Oil & Gas, Inc.	Berea
47-087-2700	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2701	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2702	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2703	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2704	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2707	Mountain V Oil & Gas, Inc.	Big Injun

47-087-2708	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2709	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2711	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2740	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2741	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2755	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2761	Mountain V Oil & Gas, Inc.	Squaw
47-087-2764	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2794	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2807	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2810	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2815	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2850	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2852	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2877	Mountain V Oil & Gas, Inc.	Berea
47-087-2879	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2880	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2881	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2882	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2883	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2891	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2892	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2893	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2894	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2898	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2899	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2902	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2905	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2910	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2939	Mountain V Oil & Gas, Inc.	Weir
47-087-2982	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2984	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2985	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2990	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2991	Mountain V Oil & Gas, Inc.	Big Injun
47-087-2992	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3005	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3011	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3018	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3019	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3043	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3044	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3056	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3057	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3058	Mountain V Oil & Gas, Inc.	Big Injun

47-087-3059	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3078	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3086	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3087	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3090	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3093	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3094	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3098	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3100	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3103	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3106	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3108	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3117	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3118	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3119	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3120	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3121	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3123	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3124	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3133	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3139	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3141	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3142	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3143	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3144	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3145	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3154	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3157	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3158	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3159	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3162	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3168	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3189	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3191	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3192	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3194	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3195	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3196	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3334	Mountain V Oil & Gas, Inc.	Berea
47-087-3348	Mountain V Oil & Gas, Inc.	Berea
47-087-3349	Mountain V Oil & Gas, Inc.	Berea
47-087-3364	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3365	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3409	Mountain V Oil & Gas, Inc.	Berea
47-087-3423	Mountain V Oil & Gas, Inc.	Berea

47-087-3436	Mountain V Oil & Gas, Inc.	Berea
47-087-3437	Mountain V Oil & Gas, Inc.	Berea
47-087-3438	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3446	Mountain V Oil & Gas, Inc.	Berea
47-087-3447	Mountain V Oil & Gas, Inc.	Berea
47-087-3457	Mountain V Oil & Gas, Inc.	Berea
47-087-3589	Mountain V Oil & Gas, Inc.	Berea
47-087-3590	Mountain V Oil & Gas, Inc.	Berea
47-087-3591	Mountain V Oil & Gas, Inc.	Berea
47-087-3592	Mountain V Oil & Gas, Inc.	Berea
47-087-3593	Mountain V Oil & Gas, Inc.	Berea
47-087-3594	Mountain V Oil & Gas, Inc.	Berea
47-087-3595	Mountain V Oil & Gas, Inc.	Berea
47-087-3629	Mountain V Oil & Gas, Inc.	Berea
47-087-3630	Mountain V Oil & Gas, Inc.	Berea
47-087-3631	Mountain V Oil & Gas, Inc.	Berea
47-087-3632	Mountain V Oil & Gas, Inc.	Berea
47-087-3633	Mountain V Oil & Gas, Inc.	Berea
47-087-3634	Mountain V Oil & Gas, Inc.	Big Injun
47-087-3635	Mountain V Oil & Gas, Inc.	Berea
47-087-3636	Mountain V Oil & Gas, Inc.	Berea
47-087-3637	Mountain V Oil & Gas, Inc.	Berea
47-087-3638	Mountain V Oil & Gas, Inc.	Berea
47-087-3639	Mountain V Oil & Gas, Inc.	Berea
47-087-3651	Mountain V Oil & Gas, Inc.	Berea
47-087-3762	Mountain V Oil & Gas, Inc.	Berea
47-087-3763	Mountain V Oil & Gas, Inc.	Berea
47-087-3764	Mountain V Oil & Gas, Inc.	Berea
47-087-3765	Mountain V Oil & Gas, Inc.	Berea
47-087-3887	Mountain V Oil & Gas, Inc.	Berea
47-087-3888	Mountain V Oil & Gas, Inc.	Berea
47-087-3889	Mountain V Oil & Gas, Inc.	Berea
47-087-3890	Mountain V Oil & Gas, Inc.	Berea
47-087-3892	Mountain V Oil & Gas, Inc.	Berea
47-087-3910	Mountain V Oil & Gas, Inc.	Berea
47-087-3971	Mountain V Oil & Gas, Inc.	Berea
47-087-3972	Mountain V Oil & Gas, Inc.	Berea
47-087-3973	Mountain V Oil & Gas, Inc.	Berea
47-087-3978	Mountain V Oil & Gas, Inc.	Berea
47-087-3979	Mountain V Oil & Gas, Inc.	Berea
47-087-4016	Mountain V Oil & Gas, Inc.	Berea
47-087-4022	Mountain V Oil & Gas, Inc.	Berea
47-087-4024	Mountain V Oil & Gas, Inc.	Big Injun
47-087-4071	Mountain V Oil & Gas, Inc.	Big Injun
47-087-4073	Mountain V Oil & Gas, Inc.	Big Injun

47-087-4432	Mountain V Oil & Gas, Inc.	Upper Devonian
47-087-4433	Mountain V Oil & Gas, Inc.	Big Injun
47-087-4434	Mountain V Oil & Gas, Inc.	Big Injun
47-087-4435	Mountain V Oil & Gas, Inc.	Upper Devonian
47-087-4632	Mountain V Oil & Gas, Inc.	Berea

INJECTATE

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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: C05493

ANGLE RIGHT SURVEYING
1584 ROAD FORK ROAD
P.O. BOX 681
GRANTSVILLE WV 26147-

Friday, August 10, 2018

Total Number of Pages: 7
(Not Including C.O.C.)

Lab ID	Sample ID	Sample ID 2	Sample Date
290081-2018-W	SUMMERS INJECTION		7/13/2018
290082-2018-W	UP LAW		7/13/2018
290083-2018-W	DOWN LAW		7/13/2018

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. All analysis performed by Reliance Laboratories, Bridgeport, WV or Reliance Laboratories, Martinsburg, WV, as noted on laboratory report. 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 Date: 2018.08.10 16:11:29 -04'00'

Reliance Laboratories, Inc.
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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

ANGLE RIGHT SURVEYING
1584 ROAD FORK ROAD
P.O. BOX 681
GRANTSVILLE, WV 26147-

Friday, August 10, 2018

Lab Number: 290081-2018-W **Sample ID:** SUMMERS INJECTION

Parameter	Value	Units	Method	Date/Time Analyzed		Analyst	MDL	MRL
Analyte Group: Inorganics								
Total Organic Carbon	ND	mg/l	SM5310C-11	7/23/2018	9:10	TH	0.1	0.5
Total Suspended Solids	7170	mg/l	SM2540D-11	7/17/2018	9:40	CP	4	5
Specific Gravity	1.156	g/cc	ASTM D1429-08	7/19/2018	15:05	TH		
E.coli(MPN)**	< 1	Index/100ml	SM9223B-97	7/13/2018	16:08	CP		
pH	# 5.65	S.U.	SM4500H+B-11	7/18/2018	15:25	TH		
Total Aluminum	ND	mg/l	EPA 200.7 R4.4	7/23/2018	11:40	TH	0.009	0.05
Total Arsenic	2.63	mg/l	EPA 200.7 R4.4	7/23/2018	11:40	TH	0.007	0.05
Total Barium	245	mg/l	EPA 200.7 R4.4	7/23/2018	11:40	TH	0.003	0.05
Total Calcium	15210	mg/l	EPA 200.7 R4.4	7/23/2018	11:40	TH	0.078	0.5
Total Chloride	34755	mg/l	EPA 300.0 R2.1	8/9/2018	13:35	TM	0.15	0.5
Total Coliform(MPN)**	< 1	Index/100ml	SM9223B-97	7/13/2018	16:08	CP		
Total Dissolved Solids	220540	mg/l	SM2540C-11	7/17/2018	9:40	CP	10	20
Total Iron	82.0	mg/l	EPA 200.7 R4.4	7/23/2018	11:40	TH	0.004	0.05
Total Manganese	2.73	mg/l	EPA 200.7 R4.4	7/23/2018	11:40	TH	0.007	0.05
Total Sodium	46450	mg/l	EPA 200.7 R4.4	7/23/2018	11:40	TH	0.011	0.5
Total Sulfate	227	mg/l	EPA 300.0 R2.1	8/9/2018	13:35	TM	0.12	0.5
Total Surfactant	ND	mg/l	SM5540C-11	7/14/2018	8:45	TM	0.05	0.2

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected: 7/13/2018 11:30
Sample Submitted By: K.SHREVE
Date Sample Received: 7/13/2018 14:15
Sample temp. upon receipt: 16.0 Deg C

MDL - Minimum Detectable Limit
MCL - Maximum Contaminant Level, USEPA Regulated
ND = Not Detected at the MDL or MRL
MRL - Minimum Reporting Limit
J = Reported value is an estimate because concentration is less than the MRL

***Method Code: STANDARD METHODS ONLINE 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: #Holding time exceeded for this analysis. This falls outside criteria set by 40CFR136.

NOTE: 40CFR136 sets criteria for sample temperature and preservation. This sample fell outside of this criteria.

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ANGLE RIGHT SURVEYING
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GRANTSVILLE, WV 26147-

Friday, August 10, 2018

Lab Number: 290081-2018-W **Sample ID:** SUMMERS INJECTION

Parameter	Value	Units	Method	Date/Time Analyzed	Analyst	MDL	MRL
Analyte Group: Total Petroleum Hydrocarbons							
TPH - DRO	41.9	mg/l	SW8015B/3535A	7/26/2018 20:49	TM	0.68	1
TPH - ORO	12.9	mg/l	SW8015B/3535A	7/26/2018 20:49	TM	0.54	1
o-Terphenyl (Surrogate)	112	%	SW8015B	7/26/2018 20:49	TM		
Benzene	ND	mg/l	SW8021B/5030B	7/26/2018 16:44	TM	0.0007	0.01
Ethylbenzene	ND	mg/l	SW8021B/5030B	7/26/2018 16:44	TM	0.0014	0.01
Toluene	ND	mg/l	SW8021B/5030B	7/26/2018 16:44	TM	0.002	0.01
TPH - GRO	22.6	mg/l	SW8015B/5030B	7/26/2018 16:44	TM	0.04	0.5
Xylene	ND	mg/l	SW8021B/5030B	7/26/2018 16:44	TM	0.003	0.01
4-Bromochlorobenzene (Surrogate	105	%	SW8021B/8015B	7/26/2018 16:44	TM		

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected: 7/13/2018 11:30
Sample Submitted By: K.SHREVE
Date Sample Received: 7/13/2018 14:15
Sample temp. upon receipt: 16.0 Deg C

MDL - Minimum Detectable Limit
MCL - Maximum Contaminant Level, USEPA Regulated

ND = Not Detected at the MDL or MRL
MRL - Minimum Reporting Limit
J = Reported value is an estimate because concentration is less than the MRL

***Method Code: STANDARD METHODS ONLINE 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: #Holding time exceeded for this analysis. This falls outside criteria set by 40CFR136.

NOTE: 40CFR136 sets criteria for sample temperature and preservation. This sample fell outside of this criteria.

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ANGLE RIGHT SURVEYING
1584 ROAD FORK ROAD
P.O. BOX 681
GRANTSVILLE, WV 26147-

Friday, August 10, 2018

Lab Number: 290082-2018-W **Sample ID:** UP LAW

Parameter	Value	Units	Method	Date/Time Analyzed	Analyst	MDL	MRL
Analyte Group: Inorganics							
Total Chloride	17.5	mg/l	SM4500CLB-11	7/27/2018 13:00	AJB	0.84	5

Remarks:

Analysis performed by Reliance Laboratories Martinsburg, WV

Date Sample Collected: 7/13/2018 13:15
Sample Submitted By: K.SHREVE
Date Sample Received: 7/13/2018 14:15
Sample temp. upon receipt: 16.0 Deg C
MDL - Minimum Detectable Limit
MCL - Maximum Contaminant Level, USEPA Regulated

ND = Not Detected at the MDL or MRL
MRL - Minimum Reporting Limit
J = Reported value is an estimate because concentration is less than the MRL

***Method Code: STANDARD METHODS ONLINE 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. This falls outside criteria set by 40CFR136.

NOTE: 40CFR136 sets criteria for sample temperature and preservation. This sample fell outside of this criteria.

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P.O. BOX 681
GRANTSVILLE, WV 26147-

Friday, August 10, 2018

Lab Number: 290082-2018-W **Sample ID:** UP LAW

Parameter	Value	Units	Method	Date/Time Analyzed	Analyst	MDL	MRL
Analyte Group: Inorganics							
Total Alkalinity	79.4	mg CaCO3/l	SM2320B-11	7/17/2018 11:16	CP	1.55	5
Total Organic Carbon	1.22	mg/l	SM5310C-11	7/23/2018 9:10	TH	0.1	0.5
pH	# 7.13	S.U.	SM4500H+B-11	7/17/2018 11:15	CP		
Total Hardness	132	mg CaCO3/l	SM2340C-11	7/30/2018 8:40	CP	0.31	1
Total Dissolved Solids	1834	mg/l	SM2540C-11	7/17/2018 9:40	CP	10	20
Total Sulfide	ND	mg/l	SM4500SF-11	7/16/2018 9:45	TM	1	1
Total Iron	0.97	mg/l	EPA 200.7 R4.4	7/23/2018 11:43	TH	0.004	0.05
Total Manganese	0.28	mg/l	EPA 200.7 R4.4	7/23/2018 11:43	TH	0.007	0.05
Dissolved Oxygen	# 10.6	mg/l	SM4500OG-11	7/26/2018 13:18	CP	0.12	1
Specific Conductivity	259	umhos/cm	EPA 120.1 (1982)	7/17/2018 11:14	CP		
Total Barium	0.06	mg/l	EPA 200.7 R4.4	7/23/2018 11:43	TH	0.003	0.05
Specific Gravity	1.172	g/cc	ASTM D1429-08	7/25/2018 15:50	TH		
Total Sodium	11.7	mg/l	EPA 200.7 R4.4	7/23/2018 11:43	TH	0.011	0.5
Total Magnesium	6.53	mg/l	EPA 200.7 R4.4	7/23/2018 11:43	TH	0.03	0.5

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected: 7/13/2018 13:15
Sample Submitted By: K.SHREVE
Date Sample Received: 7/13/2018 14:15
Sample temp. upon receipt: 16.0 Deg C

MDL - Minimum Detectable Limit
MCL - Maximum Contaminant Level, USEPA Regulated

ND = Not Detected at the MDL or MRL
MRL - Minimum Reporting Limit
J = Reported value is an estimate because concentration is less than the MRL

***Method Code: STANDARD METHODS ONLINE 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. This falls outside criteria set by 40CFR136.

NOTE: 40CFR136 sets criteria for sample temperature and preservation. This sample fell outside of this criteria.

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

ANGLE RIGHT SURVEYING
1584 ROAD FORK ROAD
P.O. BOX 681
GRANTSVILLE, WV 26147-

Lab Number: 290083-2018-W **Sample ID:** DOWN LAW

Parameter	Value	Units	Method	Date/Time Analyzed	Analyst	MDL	MRL
Analyte Group: Inorganics							
Total Chloride	12.5	mg/l	SM4500CLB-11	7/27/2018 13:00	AJB	0.84	5

Remarks:

Analysis performed by Reliance Laboratories Martinsburg, WV

Date Sample Collected: 7/13/2018 13:20
Sample Submitted By: K.SHREVE
Date Sample Received: 7/13/2018 14:15
Sample temp. upon receipt: 16.0 Deg C
MDL - Minimum Detectable Limit
MCL - Maximum Contaminant Level, USEPA Regulated

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MRL - Minimum Reporting Limit
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ANGLE RIGHT SURVEYING
1584 ROAD FORK ROAD
P.O. BOX 681
GRANTSVILLE, WV 26147-

Friday, August 10, 2018

Lab Number: 290083-2018-W **Sample ID:** DOWN LAW

Parameter		Value	Units	Method	Date/Time Analyzed		Analyst	MDL	MRL
Analyte Group: Inorganics									
Total Alkalinity		102	mg CaCO3/l	SM2320B-11	7/17/2018	11:20	CP	1.55	5
Total Organic Carbon		1.14	mg/l	SM5310C-11	7/23/2018	9:10	TH	0.1	0.5
pH		# 7.56	S.U.	SM4500H+B-11	7/17/2018	11:19	CP		
Total Hardness		220	mg CaCO3/l	SM2340C-11	7/30/2018	8:40	CP	0.31	1
Total Dissolved Solids		300	mg/l	SM2540C-11	7/17/2018	9:40	CP	10	20
Total Sulfide		ND	mg/l	SM4500SF-11	7/16/2018	9:45	TM	1	1
Total Iron		0.15	mg/l	EPA 200.7 R4.4	7/23/2018	11:45	TH	0.004	0.05
Total Manganese	J	0.04	mg/l	EPA 200.7 R4.4	7/23/2018	11:45	TH	0.007	0.05
Dissolved Oxygen		# 10.3	mg/l	SM4500OG-11	7/26/2018	13:19	CP	0.12	1
Specific Conductivity		417	umhos/cm	EPA 120.1 (1982)	7/17/2018	11:19	CP		
Total Barium		0.07	mg/l	EPA 200.7 R4.4	7/23/2018	11:45	TH	0.003	0.05
Specific Gravity		1.162	g/cc	ASTM D1429-08	7/25/2018	15:50	TH		
Total Sodium		13.5	mg/l	EPA 200.7 R4.4	7/23/2018	11:45	TH	0.011	0.5
Total Magnesium		15.3	mg/l	EPA 200.7 R4.4	7/23/2018	11:45	TH	0.03	0.5

Remarks:

Analysis performed by Reliance Laboratories Bridgeport, WV

Date Sample Collected: 7/13/2018 13:20
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NOTE: Sample analyzed was improperly preserved or received in an improper container.

NOTE: #Holding time exceeded for this analysis. This falls outside criteria set by 40CFR136.

NOTE: 40CFR136 sets criteria for sample temperature and preservation. This sample fell outside of this criteria.

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 Angelicht
*ADDRESS 1684 Rbod) TK Rd Grantsville
CUSTOMER # C05493 *TEL. # 354-6665 FAX#
*SAMPLER (S) K. Shreve E-MAIL

SHEET NO.____ OF ____

LABORATORY #	*DATE	*TIME	*COMP	*GRAB	MATRIX W, DW, S, O, M	TEMP. ≤ 4°C Yes	TEMP. ≤ 4°C No	*# OF CONTAIN.	HN03	H2S04	HCL	NaOH	BAC-T	NO PRES.	*PROJECT/REMARKS
290081	7/13	11:30			W	16.0		6	1		3			1G 1P	Summers Inj
290082		11:15			↓			6	1		3			1G 1P	Up Lew
290083		11:20			↓			6	1		3			1G 1P	Down Lew

were tested 12/4/17

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:	DATE: 7/13/18 TIME:	PRINT: K Shreve SIGN: KSL
PRINT: SIGN:	DATE: 7-13-18 TIME: 14:15	PRINT: SIGN: J Dellagatta
PRINT: SIGN:	DATE: TIME:	PRINT: SIGN:
*COURIER: TRACKING #:	DATE: TIME:	PRINT: SIGN:

REMARKS:
PWS#
*Samples on ice *limited sample

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

Section 10
Monitoring

Section 10 – Monitoring:

1. On a daily basis Mountain V's personnel visits the facility, and accounts for all the information required to fill-in the WR-40 "Report for Waste Disposal Wells", and on a monthly basis sends the department records of those reports.

2. For every barrel of fluid that is received at this facility, when water is pumped to well to be injected it goes through a barrel counter. This allows us to track how many barrels of fluid are disposed of at the facility.

Section 11

Groundwater Protection Plan

APPENDIX H

GROUNDWATER PROTECTION PLAN

Facility Name: Rock Creek D Well

County: Roane

Facility Location:

Postal Service Address:		
Latitude and Longitude:	Latitude: 38.589871 Longitude: -81.447403	

Contact Information:

Person:	Jamie Andrews
Phone Number:	304-203-7555
E-mail Address:	jandrews@mountainvoilandgas.com

Date:

1. A list of all operations that may contaminate the groundwater.

1. Storage of produced formation brine.
2. Injection of produced formation brine.
3. Improper Transfers of fluids

2. A description of procedures and facilities used to protect groundwater quality from the list of potential contaminant sources above.

1. All storage facilities have secondary containment.
2. Injected fluids are confined to the tubing in the injection well by utilizing, an isolation packer. The annulus pressure is continuously monitored to check for leaks.
3. MIT's

3. List procedures to be used when designing and adding new equipment or operations.

No new equipment or operations will be added to this facility.

4. Summarize all activities at your facility that are already regulated for groundwater protection.

1. Injection of waste
2. Secondary containment
3. Above ground storage tanks

5. Discuss any existing groundwater quality data for your facility or an adjacent property.

See attached map and water analysis results. Section 7.4.

6. Provide a statement that no waste material will be used for deicing or fill material on the property unless allowed by another rule.

No waste material will be used for deicing or fill material at the facility, unless allowed by some other regulation or permit.

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.

1. Employees are trained in secondary containment construction, maintenance, and monitoring.
2. Employees are trained in leak detection.
3. Employees are trained in spill prevention and counter measure procedures.

8. Include provisions for inspections of all GPP elements and equipment. Inspections must be made quarterly at a minimum.

1. Secondary containment is inspected monthly. 2. Tubing / casing annulus pressure is monitored continuously. 3. Piping and fitting are inspected monthly for leaks.

Signature: S. Richard Stamm

Date: 7-13-18

Section 12

Plugging & Abandonment

Section 12 – Plugging and Abandonment:

1. The packer will be released.
2. The tubing/production casing annulus will be filled with gelled fresh water.
3. The tubing/packer assembly will be removed from the well and the packer will be removed from the tubing.
4. The open-ended tubing will be placed back into the well and will be lowered to a point 50 feet below the bottom injection perforation or to a point that is 5 feet above the total depth of the well if the total depth is less than 50 feet deeper than the bottom injection perforation.
5. A 200 feet cement plug will be spotted through the tubing that will cover the perforated injection zone followed by gelled water.
6. The tubing will be pulled from the well.
7. The production casing will be cut above the cement top and will be pulled up a few feet to make sure the casing is free.
8. A 100 feet cement plug will be pumped down and spotted at the bottom of the production casing above the casing cut point followed by gelled water.
9. The production casing will be pulled to 50 feet below the bottom of the fresh water casing.
10. A 100 feet cement plug will be spotted through the production casing such that the top of the cement plug will be 50 feet up into the fresh water casing followed by gelled water.
11. The production casing will be pulled to a point 50 feet below any fresh water zones in the wellbore and a 100 feet cement plug will be spotted across each fresh water zone.
12. The production casing will be pulled to 200 feet.
13. A 200 feet cement plug will be spotted from 200 feet to the surface and all of the production casing will be removed from the well.
14. A plugging monument will be erected that is 6" in diameter and 30" tall with the API number noted on the monument.
15. The location will be reclaimed.

Section 13

Additional Bonding

Section 13 – Additional Bonding:

No additional bonding is required the department has in it's possession under the original permit, a bond in the amount of Five Thousand Dollars ($5,000.00) to cover the additional bond amount for UIC2D0872003

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Section 14

Financial Responsibility

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: Mountain V Oil & Gas, Inc.
PO Box 470
Bridgeport, WV 26330

Date: _____

Subject: Underground Injection Control (UIC) Permit Application
2D0872003
Requirement for Financial Responsibility

I, Mike Shaver, 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: Mike Shaver

Signature: _____

Date: 7-13-18

Section 15

Site Security Plan

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.

Security at the site is maintained by a locked gate at the entrance of the facility off a private road not visible from County Road.

Section 16
Additional Information

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	
NPDES Program	
Prevention of Significant Deterioration (PSD)	
Nonattainment Program	
Dredge or Fill	
NPDES/NPDES – Stormwater	
WVDEP – Office of Waste Management (OWM) – Solid Waste Facility	
WVDEP – OWM – RCRA (Hazardous Waste TSD or Transporter)	
WVDEP – OWM – UST	
CERCLA – Superfund	
WV Voluntary Remediation – Brownfields	
FIFRA – Federal Insecticide, Fungicide and Rodenticide Act	
Well Head Protection Program (WHPP)	
Underground Injection Control (UIC)	2D0872003
Toxic Substances Control Act (TSCA)	
Best Management Plans	
Management of Used Oil	
Other Relevant Permits (Specify):	
	Tank 1 AST#044-00000881
	Tank 2 AST#044-00000883
	Tank 3 AST#044-00000882