UNDERGROUND INJECTION CONTROL (UIC) PERMIT APPLICATION

W. C. BOOKER 1 UIC 2D0392327 API 47-039-02327

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	Diversified Production LLC		
Existing UIC Permit ID Number	2D0392327	UIC Well API Number	47-039-02327 WC BOOKER #1

Office of Oil and Gas Office Use Only	
Permit Reviewer	
Date Received	
Administratively Complete Date	
Approved Date	
Permit Issued	

Please check the fees and payment included.

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

Please check the items completed and enclosed.

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

N/A ☑ 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): Jeff Roberts

Reviewed by (Sign): Jeff Roberts

Date Reviewed: 1/15/2025

Section 1, 2, 3, 4, 5

UIC 2D0392327

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 # UIC 2D0392327 **API #** 47-039-02327 **WELL #** W.C. Booker #1

Section I. Facility Information

Facility Name: W.C.Booker 1

Address: Equine Drive

City: Elkview State: WV Zip: 25071

County: Kanawha County District: Elk 7.5" Quad: Blue Creek

Location description:

Location description:
W. C. Booker 1 is located near Equine Drive, Elkview WV in Elk District, Kanawha County on Pritt acreage at Lat: N 38.460666 Long: W-81.488105

Location of well(s) or approximate center of field/project in UTM NAD 83 (meters):
Latitude: 38.461662
Longitude: -81.486031
Northing: 4257151.2 Easting: 457596.6

Environmental Contact Information:
Name: Lisa Raffle Title: EHS Manager
Phone: 724-579-2320 Email: lraffle@dgoc.com

Section 2. Operator Information

Operator Name: Diversified Production LLC
Operator ID: 494524121

Address: 414 Summer Street
City: Charleston State: WV Zip: 25301
County: Kanawha

Contact Name: Charles Shafer Contact Title: Manager Upstream Operations
Contact Phone: 304-373-3152 Contact Email: cshafer@dgoc.com

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:

The W. C. Booker 1 has been a UIC well for the injection of Class II fluids since 1991. Fluids produced from crude oil and natural gas production are gravity fed to one stock tank* and hauled in by truck to one truck unloading bay. From there, water is gravity fed to a pump that discharges the fluids into the disposal well API 47-039-02327

APPLICATION CERTIFICATION

In accordance with WV Code 47CSR13.13.11, all UIC permit applications must be signed by one of the following:

1. For a corporation: by a principle corporate officer of at least the level of vice-president;
2. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively;
3. For a municipality, State, Federal, or other public agency: by either a principle executive officer or ranking elected official;
4. Or a duly authorized representative in accordance with 47CSR13.13.11.b.
   (A person may be duly authorized by one of the primary entities (1-3) listed above by submitting a written authorization to the Chief of the WVDEP Office of Oil and Gas designating an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

Diversified Production LLC

(Company Name)

2D03902327-003

(UIC Permit Number)

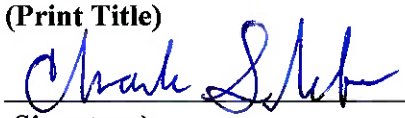
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (47CSR13.13.11.d)

Charles Shafer

(Print Name)

Manager

(Print Title)



(Signature)

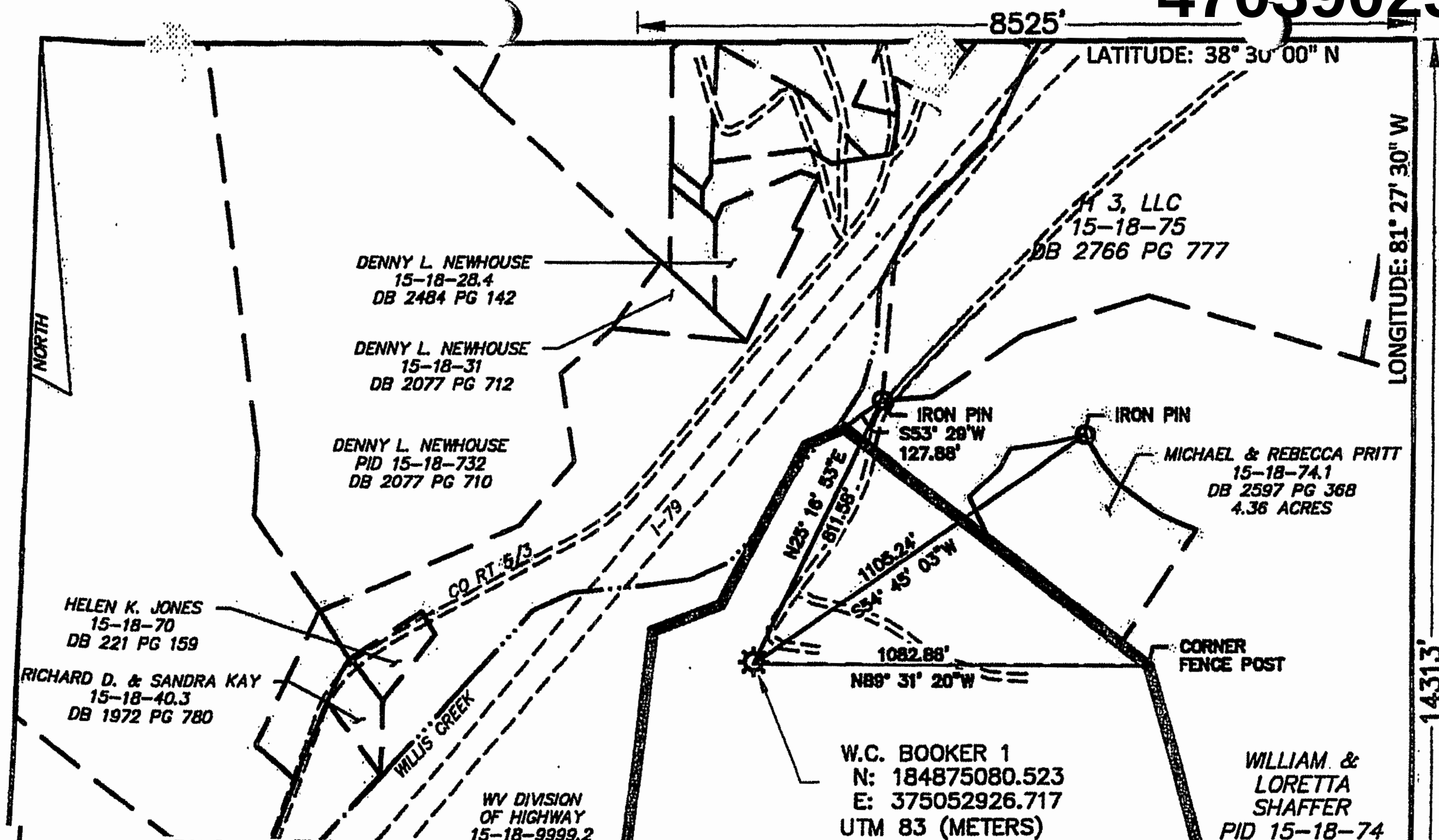
5-19-25

(Date)

Section 6 - Construction

UIC 2D0392327

4703902327



DISTRICT ELK COUNTY KANAWHA

QUADRANGLE BLUE CREEK

SURFACE OWNER CALVIN & PATRICIA PRITT ACREAGE 42 AC

OIL & GAS ROYALTY OWNER N/A LEASE ACREAGE N/A

LEASE NO. N/A

PROPOSED WORK: DRILL__ CONVERT__ DRILL DEEPER__ REDRILL__ FRACTURE OR STIMULATE__ PLUG OFF OLD FORMATION__ PERFORATE NEW FORMATION__ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) ____

PLUG AND ABANDON__ CLEAN OUT AND REPLUG__

TARGET FORMATION BIG INJUN/SALT SANDS ESTIMATED DEPTH 1815'

WELL OPERATOR EXCO Resources (PA), LLC DESIGNATED AGENT MIKE CHURCH-EXCO RESOURCES

ADDRESS 3000 ERICSSON DRIVE, SUITE 200 WARRENDALE, PA 15086 ADDRESS P.O. BOX 8 RAVENSWOOD, WV 26164

FORM WW-6

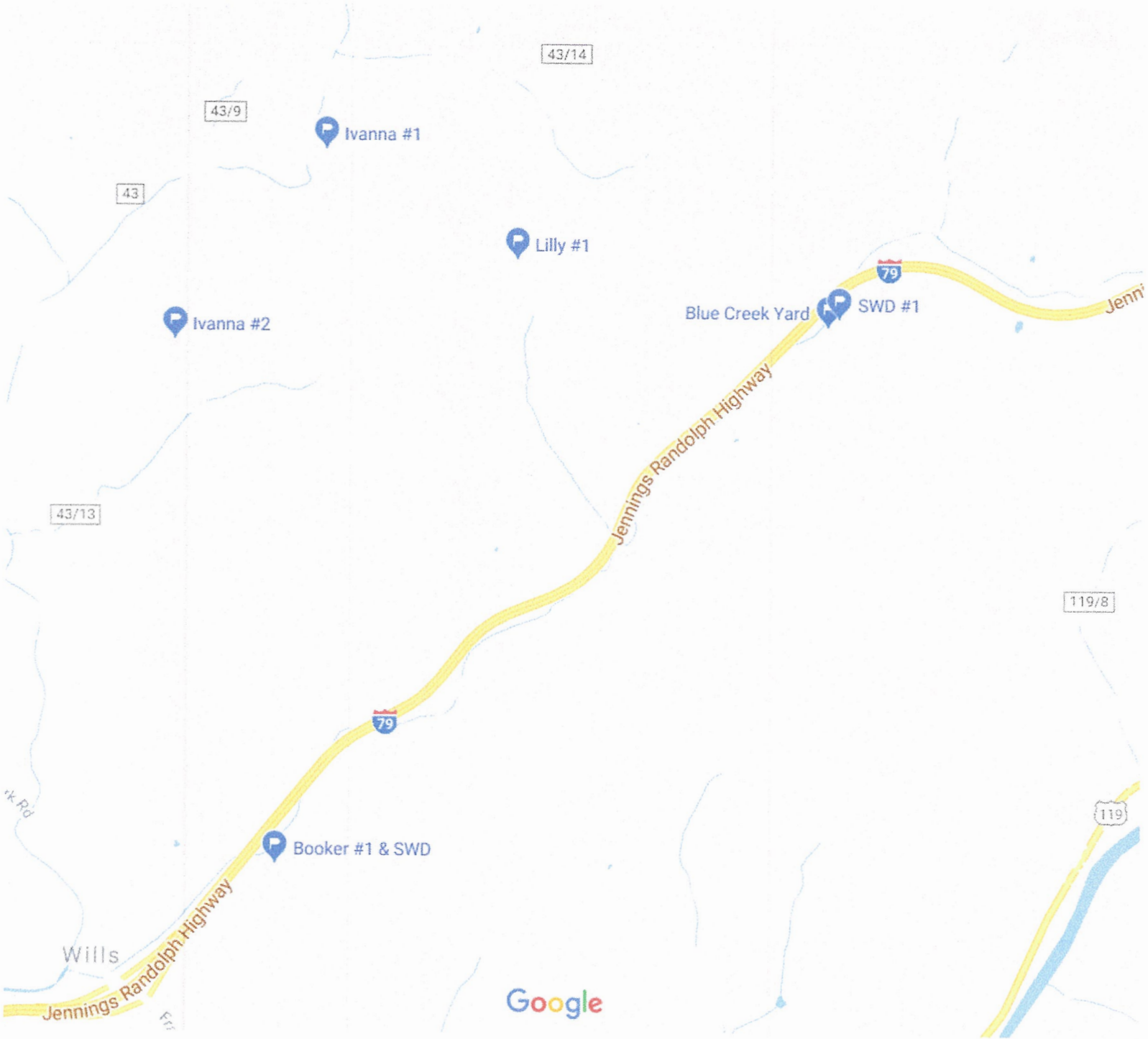
COUNTY NAME

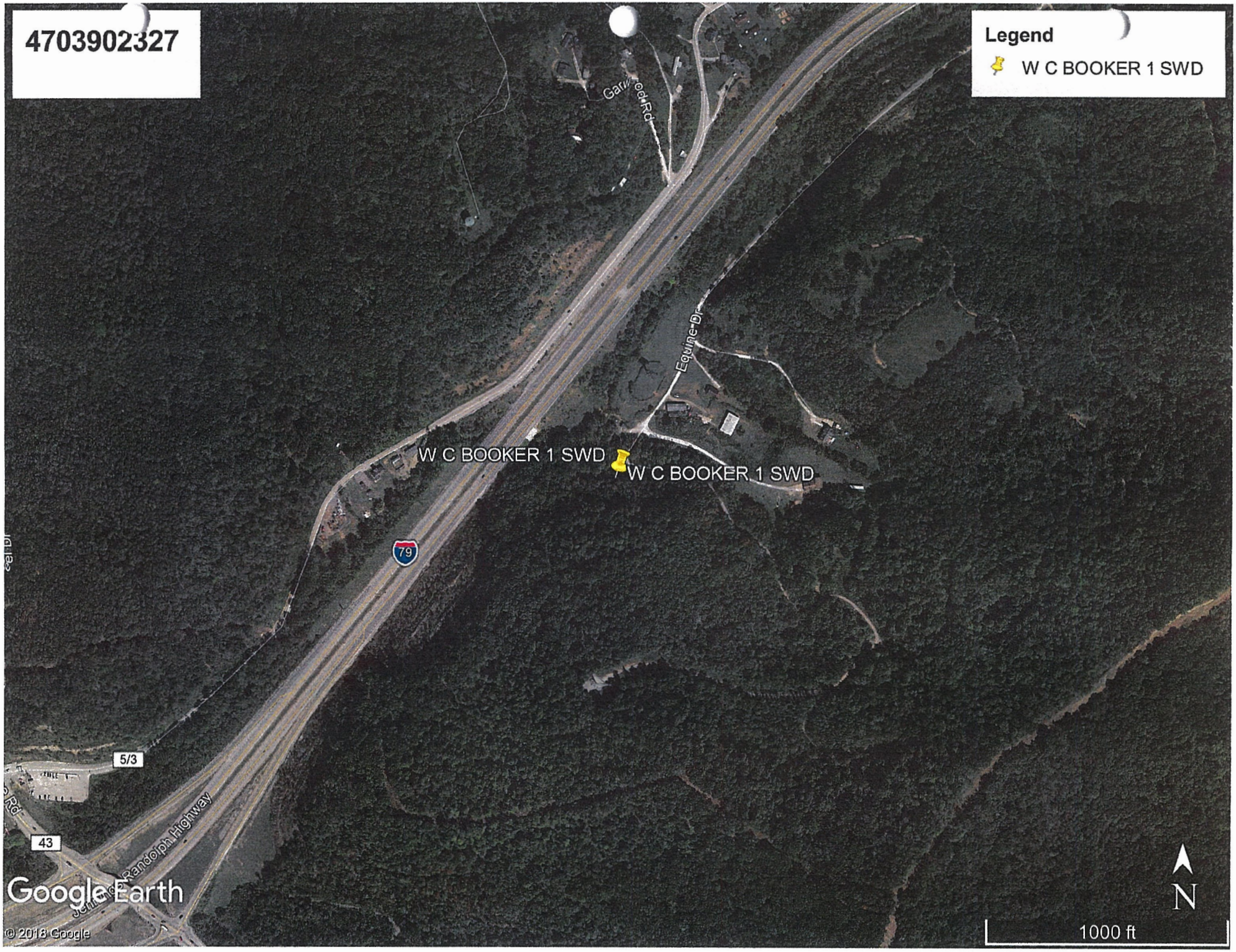
PERMIT

4703902327


43/14
43/9
43/10
Ivanna #1
43
Lilly #1
Ivanna #2
Blue Creek Yard
SWD #1
79
43/12
Jennings Randolph Highway
43/13
119/8
79
Aarons Fork Rd
Booker #1 & SWD
119
Wills
Jennings Randolph Highway
Google

4703902327


43/14
43/9
Ivanna #1
43
Lilly #1
Ivanna #2
79
Blue Creek Yard
SWD #1
Jennings Randolph Highway
43/13
119/8
79
119
Booker #1 & SWD
Wills
Jennings Randolph Highway
Google


4703902327
Legend
W C BOOKER 1 SWD
Garnwood Rd
Equine Dr
W C BOOKER 1 SWD
W C BOOKER 1 SWD
79
5/3
43
John Q Randolph Highway
Google Earth
© 2018 Google
N
1000 ft

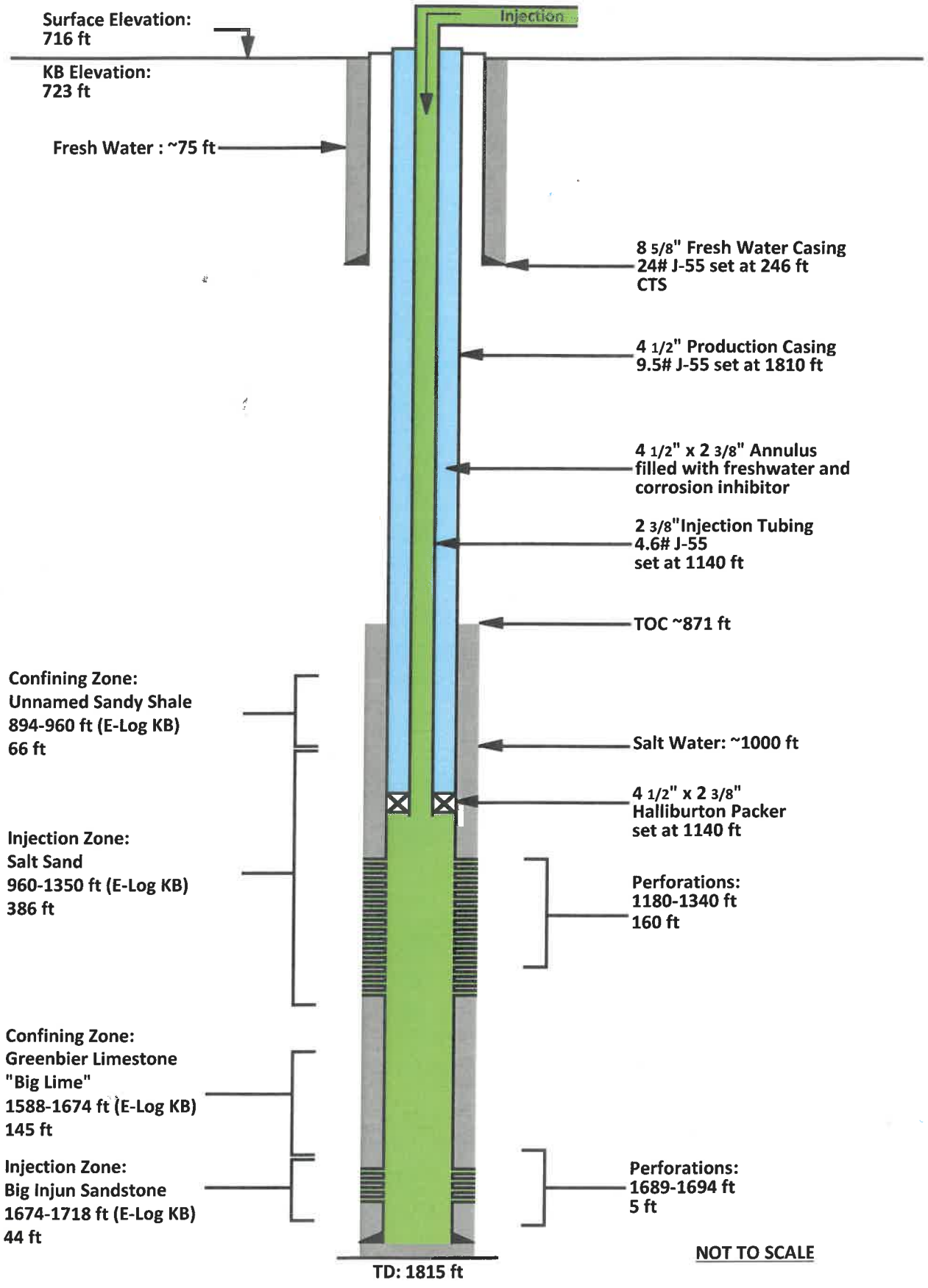
Well Bore Diagram

W. C. Booker No.1

API 47-039-02327

Diversified Production LLC

UIC 2D03902327-003



API No.: 4703902327

APPENDIX A
Injection Well Form

1) GEOLOGIC TARGET FORMATION: Salt Sand and Big Injun Sandstone

Depth: SS: 960 BI: 1674 Feet (top) SS: 1350 BI: 1718 Feet (bottom)

2) Estimated Depth of Completed Well, (or actual depth of existing well): 1815 Feet

3) Approximate water strata depths: Fresh ~75 Feet Salt ~1000 Feet

4) Approximate coal seam depths: N/A

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

6) Virgin reservoir pressure in target formation 1000 est psig Source WW-3 (B) Form

7) Estimated reservoir fracture pressure 2900 est psig (BHFP)

8) MAXIMUM PROPOSED INJECTION OPERATIONS:

Injection rate (bbl/hour): 10

Injection volume (bbl/day): 240

Injection pressure (psig): 382

Bottom hole pressure (psig): ~1240

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

Produced Big Injun brine

Temperature of injected fluid: (°F) 60 Varies with season

10) FILTERS (IF ANY)

10 micron at the well and at the injection plant

11) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL

Corrosion inhibitor in annular fluid

API No.: 4703902327

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	J-55	24#	246	246	CTS
Coal							
Intermediate 1							
Intermediate 2							
Production	4 1/2	New	J-55	9.5#	1810	1810	150 sx
Tubing	2 7/8	New	J-55	4.6#		1140	
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							
Coal							
Intermediate 1							
Intermediate 2							
Production							
Tubing							
Liners							

PACKERS	Packer #1	Packer #2	Packer #3	Packer #4
Kind:	R-4 Halliburton			
Sizes:	4 1/2 x 2 3/8			
Depths Set:	1140			

Form OG-10

RECEIVED
MAY 04 1988

DIVISION OF OIL & GAS
DEPARTMENT OF ENERGY

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION

WELL RECORD

4703902327

Rotary [X]
Spudder [ ]
Cable Tools [ ]
Storage [ ]

Quadrangle Clendenin

Permit No. Kan-2327

Oil or Gas Well OIL (KIND)

Company Kareve Oil Corp.
Address P. O. Box 1228, Parkersburg, W.Va.
Farm W. C. Booker Acres 42
Location (waters)
Well No. Elev.
District County
The surface of tract is owned in fee by W. C. Booker
Address Elkview, W.Va.
Mineral rights are owned by W. C. Booker
Address Elkview, W.Va.
Drilling commenced 11/5/68
Drilling completed 11/8/68
Date Shot From To
With
Open Flow /10ths Water in Inch
/10ths Merc. in Inch
Volume Cu. Ft.
Rock Pressure lbs. hrs.
Oil Show bbls., 1st 24 hrs.
WELL ACIDIZED (DETAILS)
WELL FRACTURED (DETAILS) 41,500 # sand & 41,500 gallons gelled fresh water.

Casing and Tubing	Used in Drilling	Left in Well	Packers
Size			
16			Kind of Packer
13			
10			Size of
8¼ 8-5/8"	247	247	
6⅝	Cement circ.		Depth set
5 3/16			
4½			
3			Perf. top
2			Perf. bottom
Liners Used			Perf. top
			Perf. bottom

Attach copy of cementing record.

CASING CEMENTED 4½ SIZE 1810 No. Ft. 11/8/68 Date
Amount of cement used (bags) 150
Name of Service Co. Howco
COAL WAS ENCOUNTERED AT FEET INCHES
FEET INCHES FEET INCHES
FEET INCHES FEET INCHES

RESULT AFTER TREATMENT (Initial open Flow or bbls.) 22 BOPD
ROCK PRESSURE AFTER TREATMENT HOURS
Fresh Water Feet Salt Water Feet
Producing Sand Big Injun Depth 1676-1720

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth	Remarks
Surface & Rock			0	75			
Sand & Shale			75	110			
Shale & rock	streaks		110	247			
Shale w/sand	streaks		247	420			
Shale			420	700			
Sandy shale			700	954			
Salt Sand			954	1491			
Little Lime			1491	1525			
Pencil Cave			1525	1531			
Big Lime			1531	1676			
Big Injun			1676	1720			
Shale			1720	1815	(T.D.)		

Received
Office of Oil & Gas
OCT 29 2014

Office of Oil & Gas
OCT 29 2014

JR

4703902327

WR-35
Rev. 8/23/13

Page ___ of ___

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47- 039 - 02327W County Kanawha District Elk
Quad Blue Creek Pad Name ____ Field/Pool Name ____
Farm name ____ Well Number W. C. Booker #1
Operator (as registered with the OOG) Exco Resources (PA), LLC
Address 260 Executive Drive City Cranberry Township State PA Zip 16066

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4257148.2 Easting 457597.4
Landing Point of Curve Northing ____ Easting ____
Bottom Hole Northing ____ Easting ____

Elevation (ft) 716 GL Type of Well ☐New ☒Existing Type of Report ☐Interim ☒Final
Permit Type ☐ Deviated ☐ Horizontal ☐ Horizontal 6A ☒ Vertical Depth Type ☐ Deep ☒ Shallow
Type of Operation ☐ Convert ☐ Deepen ☐ Drill ☐ Plug Back ☐ Redrilling ☐ Rework ☒Stimulate
Well Type ☒Brine Disposal ☐ CBM ☐ Gas ☐ Oil ☐ Secondary Recovery ☐ Solution Mining ☐ Storage ☐ Other ____
Type of Completion ☐ Single ☒Multiple Fluids Produced ☐ Brine ☐Gas ☐ NGL ☐ Oil ☒Other N/A - SWD
Drilled with ☐ Cable ☐ Rotary

Drilling Media Surface hole ☐ Air ☐ Mud ☐Fresh Water Intermediate hole ☐ Air ☐ Mud ☐ Fresh Water ☐ Brine
Production hole ☐ Air ☐ Mud ☐ Fresh Water ☐ Brine
Mud Type(s) and Additive(s)
N/A

Date permit issued 6/12/14 Date drilling commenced N/A Date drilling ceased N/A
Date completion activities began 6/25/14 Date completion activities ceased 6/25/14
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 75 Open mine(s) (Y/N) depths N/A
Salt water depth(s) ft 1000 Void(s) encountered (Y/N) depths N/A
Coal depth(s) ft N/A Cavern(s) encountered (Y/N) depths N/A
Is coal being mined in area (Y/N) N/A

Reviewed by:

10/31/2014

4703902327

WR-35
Rev. 8/23/13

Page ___ of ___

API 47-039-02327 Farm name _____ Well number W.C. Booker #1

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor							
Surface		8-5/8"	296'	J-55	24 #		
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production		4-1/2"	1810'	J-55	9.5 #		
Tubing		2-7/8"	1156	J-55	6.5 #		
Packer type and depth set		Halliburton R-4 @ 1156'					

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor							
Surface		247					
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production		150					
Tubing							

Drillers TD (ft) N/A Loggers TD (ft) _____

Deepest formation penetrated _____ Plug back to (ft) _____

Plug back procedure _____

Kick off depth (ft) N/A

Check all wireline logs run ☐ caliper ☐ density ☐ deviated/directional ☐ induction ☐ neutron ☐ resistivity ☐ gamma ray ☐ temperature ☐ sonic

Well cored ☐ Yes ☐ No Conventional Sidewall Were cuttings collected ☐ Yes ☐ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING N/A

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ☐ No DETAILS N/A

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ☐ No DETAILS N/A

WERE TRACERS USED ☐ Yes ☐ No TYPE OF TRACER(S) USED N/A

10/31/2014

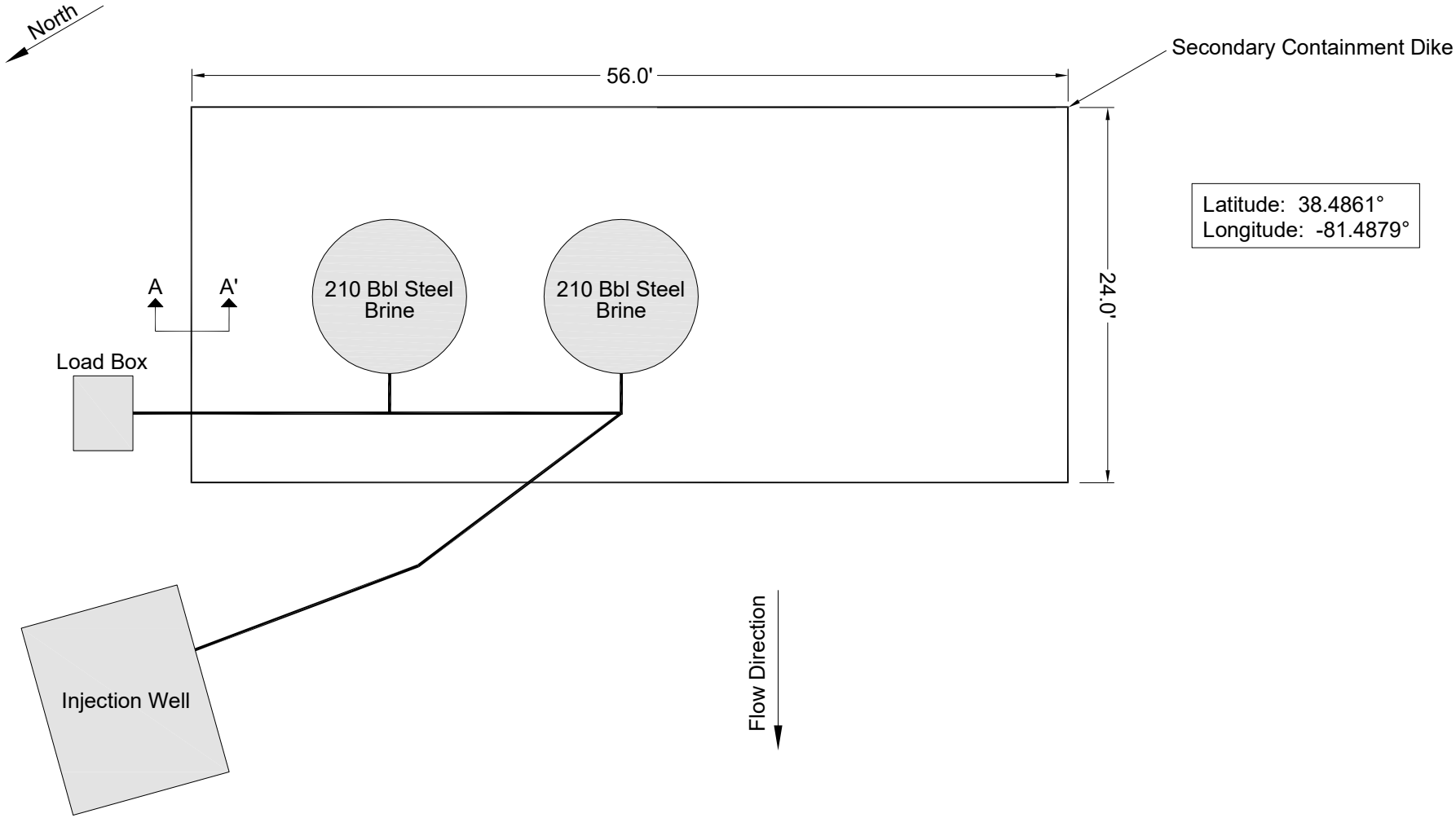
APPENDIX B

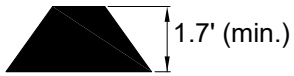
UIC Permit No. **2D03902327**

Storage Tank Inventory

Tank ID No.	AST Registration No.	Tank Location		Capacity (barrels)	Type of Fluid Stored	Construction Material (Steel, Plastic, etc.)	Tank Type (Single / Double Wall)	Installation Date	Tank Age (Months)
		Northing	Easting						
10768	020-00000770	4256844.37	457442.51	210	Brine	Steel	Single	1991	408
20769	020-00000771	4256844.37	457442.51	210	Brine	Steel	Single	1991	408

4703902327





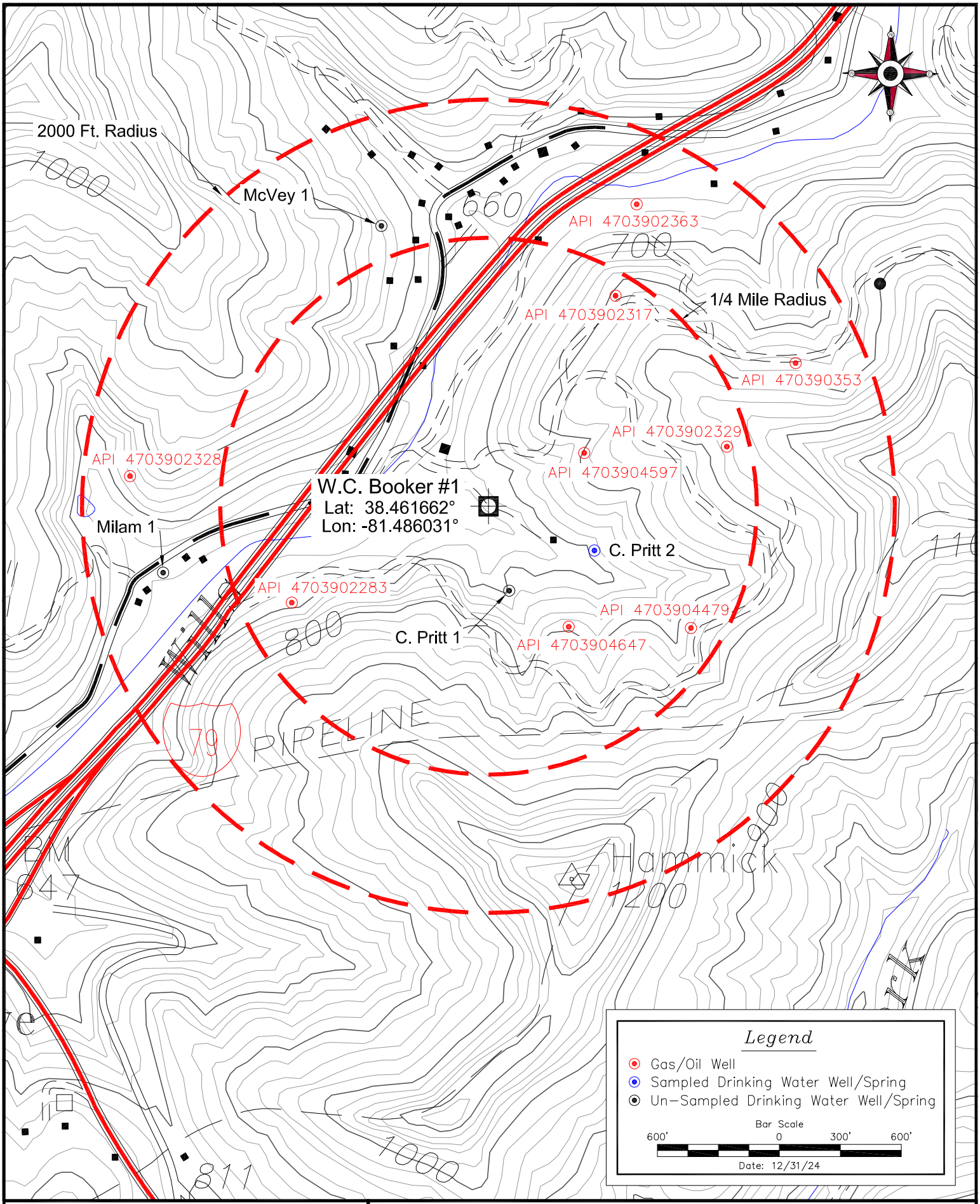
Section A-A'

NOTES:

1. Dimensions of secondary continment dike are inside at the midpoint of dike height.
2. Drawing not to scale.

Section 7 - Area of Review

UIC 2D0392327



DR CONSULTING SERVICES
262 Ashbrooke Hill, Ashland KY Phone: 606 922 0323

W.C. Booker #1 AOR
Kanawha County, West Virginia

UIC Permit No. **2D03902327**

APPENDIX C
Wells within the Area of Review

	API No.	Well Type	Well Status	Northing	Easting	Surface Elevation	Total Vertical Depth	Penetrate Confining Zone (Y or N)	Penetrate Injection Zone (Y or N)
1	4703902283	Oil Prod	Plugged	4256991.88	457290.00	710	1805	Y	Y
2	4703902317	Oil Prod	Plugged	4257448.39	457771.57	780	2025	Y	Y
3	4703902327	Injector	Active	4257151.2	457596.60	716	1815	Y	Y
4	4703902328	Injector	Plugged	4257186.35	457049.53	691	1785	Y	Y
5	4703902329	Oil Prod	Abandonded	4257212.75	457952.94	909.4	2025	Y	Y
6	4703904479	Oil Prod	Abandonded	4256956.56	457885.29	854.1	2004	Y	Y
7	4703904597	Oil Prod	Abandonded	4257198.94	457709.45	821.4	1934	Y	Y
8	4703904647	Oil Prod	Active	4256957.49	457708.26	832	1965	Y	Y
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

4703902283

"Pipeline"

Select County: (039) Kanawha
Enter Permit #: 2283
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 = 39 Permit = 2283 Link to all digital records for well

Report Time: Wednesday, May 14, 2025 12:29:40 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4703902283	Kanawha	2283	Elk	Blue Creek	Clendenin	38.460211	-81.489535	457290	4256991.9

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
4703902283	8/-/1968	Original Loc	Completed	C Hammack	1					Mareve Oil Corp.			

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_BEF	G_A
4703902283	8/-/1968	-/-/-	710	Ground Level	Blue Ck(Flg Rk)	Big Injun (Price&eq)	Big Injun (Price&eq)	Development Well	Development Well	Oil	Rotary	Fractured	1805		1805		0	

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
4703902283	8/-/1968	Pay	Oil	Vertical			1666	Big Injun (Price&eq)	0	0			

There is no Production Gas data for this well

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

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
4703902283	Original Loc	Salt Sands (undiff)	Well Record	970	Reasonable	510	Reasonable	710	Ground Level
4703902283	Original Loc	Big Lime	Well Record	1480	Reasonable	186	Reasonable	710	Ground Level
4703902283	Original Loc	Greenbrier Group	Well Record	1480	Reasonable	186	Reasonable	710	Ground Level
4703902283	Original Loc	Big Injun (Price&eq)	Well Record	1666	Reasonable	42	Reasonable	710	Ground Level

Wireline (E-Log) Information:
* There is no Scanned/Raster Log data for this well

* There is no Digitized/LAS Log data for this well

* There is no Scanned or Digital Logs available for download

Plugging Information:

API	PLG_DT	DEPTH_PBT
4703902283	5/18/1973	0

There is no Sample data for this well

4703902283

Form OG-10

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION

Rotary [X]
Spudder [ ]
Cable Tools [ ]
Storage [ ]

Quadrangle Clendenin

Permit No. KAN-2283

WELL RECORD

Oil or Gas Well OIL (KIND)

Company Mareve Oil Corp.
Address P. O. Box 1228, parkersburg, W.Va.
Farm C. Hammack Acres 30
Location (waters) Wills Creek
Well No. 1 Elev. 710
District Elk County Kanawha
The surface of tract is owned in fee by
Address
Mineral rights are owned by Orlepa Hammack et al P.O.Box 9233
Address Charleston, W.Va.
Drilling commenced 8/5/68
Drilling completed 8/10/68
Date Shot From To
With
Open Flow /10ths Water in Inch
/10ths Merc. in Inch
Volume Cu. Ft.
Rock Pressure lbs. hrs.
Oil Show bbls., 1st 24 hrs.
WELL ACIDIZED (DETAILS)

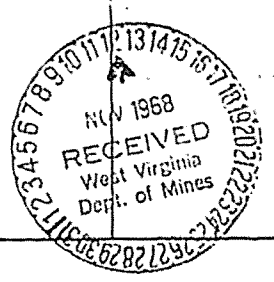
Casing and Tubing	Used in Drilling	Left in Well	Packers
Size			
16			Kind of Packer
13			
10			Size of
8¼ 8-5/8"	228	228	
6¾	Circulated Cement		Depth set
5 3/16			
4½		1795	
3			Perf. top
2			Perf. bottom
Liners Used			Perf. top
			Perf. bottom

Attach copy of cementing record.
CASING CEMENTED 4½" SIZE 1795 No. Ft. 8/10/68 Date
Amount of cement used (bags) 150 sx
Name of Service Co. Halliburton
COAL WAS ENCOUNTERED AT FEET INCHES
FEET INCHES FEET INCHES
FEET INCHES FEET INCHES

WELL FRACTURED (DETAILS) 41,500 # Sand & 41,500 gallons gelled fresh water.

RESULT AFTER TREATMENT (Initial open Flow or bbls.) 35 BOPD
ROCK PRESSURE AFTER TREATMENT HOURS
Fresh Water Feet Salt Water Feet
Producing Sand Big Injun Depth 1666 to 1708

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth	Remarks
Shale & Rock			0	162			
Sand, shale & Rock			162	245			
Rock & Shale			245	445			
Rock & Shale			445	588			
Shale & Rock			588	769			
Shale & Sand			769	970			
Salt Sand			970	1480			
Lime			1480	1666			
Big Injun			1666	1708			
Shale			1708	1805	(T.D.)		



4703902283

RECEIVED
MAY 22 1973
OIL & GAS DIVISION
DEPT. OF MINES

FORM OG-8

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS WELLS DIVISION

AFFIDAVIT OF PLUGGING AND FILLING WELL

AFFIDAVIT SHOULD BE MADE IN TRIPLICATE, ONE COPY MAILED TO THE DEPARTMENT, 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.

COAL OPERATOR OR OWNER

ADDRESS

COAL OPERATOR OR OWNER

ADDRESS

LEASE OR PROPERTY OWNER

ADDRESS

MAREVE OIL CORP.
NAME OF WELL OPERATOR
P.O. Box 1228, Parkersburg, W. Va. 26101
COMPLETE ADDRESS
May 18, 19 73
WELL AND LOCATION
Elk District
Kanawha County
Well No. 1
C. Hammack Farm

STATE INSPECTOR SUPERVISING PLUGGING.....

AFFIDAVIT

STATE OF WEST VIRGINIA,
County of Kanawha } ss:

W.C. Weske and I.N. Hickox 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 Mareve Oil Corp., well operator, and participated in the work of plugging and filling the above well, that said work was commenced on the 18th day of May, 19 73, and that the well was plugged and filled in the following manner:

SAND OR ZONE RECORD	FILLING MATERIAL	PLUGS USED	CASING	
FORMATION		SIZE & KIND	CSG PULLED	CSG LEFT IN
	Placed cement from 1666' to	Cement	-0-	8 5/8"-228'
	0' in side of 4 1/2" casing -			Cement Circ.
	completely filling casing			
	with cement		-0-	4 1/2"-1795'
				Cement @382' from
				Surface

COAL SEAMS	DESCRIPTION OF MONUMENT
(NAME)	No monument since I-79 will
(NAME)	remove same in next few days
(NAME)	
(NAME)	

and that the work of plugging and filling said well was completed on the 18th day of May, 19 73.

And further deponents saith not.

W.C. Weske
I.N. Hickox

Sworn to and subscribed before me this 21st day of May, 1973

Mrs. Imadelle Hartley
Notary Public.

My commission expires:
November 19, 1974

Permit No. KAN-2283-C. NOTE

WV Geological & Economic Survey:

Well: County = 039 Permit = 2317 Link to all digital records for well

Report Time: Wednesday, May 14, 2025 12:28:55 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4703902317	Kanawha	2317	Elk	Blue Creek	Clendenin	38.463857	-81.484393	457740.7	4257394.1

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_F
4703902317	2/-/1969	Original Loc	Completed	Dora Huffman	A-1					Mareve Oil Corp.			
4703902317	11/2/2022	Plugging	Completed	Darris L & Carolyn Barker		1	Dora Huffman A		Allen Huffman	Diversified Production, LLC			

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_BEF	G_
4703902317	2/-/1969	-/-/-	780	Ground Level	Blue Ck(Flg Rk)	Big Injun (Price&eq)	Big Injun (Price&eq)	Development Well	Development Well	Oil	Rotary	Fractured	1950		1950		0	
4703902317	11/2/2022	10/26/2022	818	Ground Level														

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
4703902317	2/-/1969	Pay	Oil	Vertical			1814	Big Injun (Price&eq)	0	0			

Production Gas Information: (Volumes in Mcf) *** 2024 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
4703902317	Quaker State Oil Refining Co.	1981	2,440	316	322	288	342	347	397	267	0	64	59	0	38
4703902317	Quaker State Oil Refining Co.	1982	219	50	71	29	0	0	0	0	0	0	0	11	58
4703902317	Quaker State Oil Refining Co.	1983	58	19	19	19	19	0	0	0	0	0	0	0	0
4703902317	Quaker State Oil Refining Co.	1984	753	129	145	142	27	310	0	0	0	0	0	0	0
4703902317	Quaker State Oil Refining Co.	1985	90	0	0	0	0	10	10	5	0	10	27	23	5
4703902317	Quaker State Oil Refining Co.	1986	279	17	22	11	31	24	33	39	20	29	26	21	6
4703902317	Quaker State Oil Refining Co.	1987	522	25	42	41	49	54	73	43	26	39	57	40	33
4703902317	Quaker State Oil Refining Co.	1988	480	132	37	27	42	74	46	26	17	20	34	4	21
4703902317	Quaker State Oil Refining Co.	1989	296	9	12	3	5	12	15	65	64	3	25	33	50
4703902317	Quaker State Oil Refining Co.	1990	727	26	30	31	44	51	45	0	79	74	74	73	200
4703902317	Quaker State Oil Refining Co.	1991	2,176	184	270	264	244	178	223	271	110	143	154	71	64
4703902317	Quaker State Oil Refining Co.	1992	1,157	52	50	0	71	149	132	131	121	123	116	119	93
4703902317	Quaker State Oil Refining Co.	1993	1,004	89	76	90	66	67	65	62	192	36	94	88	79
4703902317	Quaker State Oil Refining Co.	1994	1,070	114	90	83	66	85	101	105	73	50	134	88	81
4703902317	Peake Energy, Inc.	1995	1,092	113	139	81	126	103	92	71	84	88	84	35	76
4703902317	Peake Energy, Inc.	1996	1,578	141	111	149	139	167	125	122	118	95	118	130	163
4703902317	Peake Energy, Inc.	1997	1,076	147	83	124	164	83	89	68	68	56	51	82	61
4703902317	Peake Energy, Inc.	1998	900	74	71	49	69	92	83	106	96	59	70	71	60
4703902317	Peake Energy, Inc.	1999	482	11	51	11	4	0	1	73	111	70	46	64	40
4703902317	North Coast Energy Eastern	2000	434	34	30	38	31	42	44	37	47	36	37	34	24
4703902317	North Coast Energy Eastern	2001	508	18	28	26	25	28	24	69	62	62	72	41	53
4703902317	North Coast Energy Eastern	2002	510	37	37	43	55	63	73	50	45	55	25	11	16
4703902317	North Coast Energy Eastern	2003	308	14	26	5	26	48	15	56	37	28	25	17	11
4703902317	North Coast Energy Eastern	2004	172	1	1	23	11	9	16	17	7	39	37	2	9
4703902317	North Coast Energy Eastern	2005	46	0	0	0	4	1	4	4	2	3	25	1	2
4703902317	North Coast Energy Eastern	2006	70	1	14	3	1	0	27	2	1	1	1	11	8
4703902317	EXCO - North Coast Energy Eastern, Inc.	2007	65	0	1	0	0	34	14	11	0	0	4	1	0
4703902317	EXCO Resources (WV), Inc.	2008	11	0	0	0	0	0	0	3	7	1	0	0	0
4703902317	EXCO Resources (WV), Inc.	2009	11	0	7	1	0	1	1	0	0	0	1	0	0
4703902317	EXCO Resources (WV), Inc.	2010	40	0	0	2	19	1	0	1	2	11	2	1	1
4703902317	EXCO Resources (PA), LLC	2011	75	6	1	0	0	0	7	29	32	0	0	0	0
4703902317	EXCO Resources (PA), LLC	2012	57	0	0	0	0	0	0	0	0	0	0	37	20
4703902317	EXCO Resources (PA), LLC	2013	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	EXCO Resources (PA), LLC	2014	15	0	0	5	0	6	0	0	1	1	0	0	2
4703902317	EXCO Resources (PA), LLC	2015	5	0	0	5	0	0	0	0	0	0	0	0	0
4703902317	Nytis Exploration Co., LLC	2016	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	Nytis Exploration Co., LLC	2017	142	0	0	0	0	0	0	0	0	0	53	48	41
4703902317	Nytis Exploration Co., LLC	2018	238	25	38	42	41	0	16	15	13	16	32	0	0
4703902317	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	Diversified Production, LLC	2020	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	Diversified Production, LLC	2021	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 *** 2024 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
4703902317	Quaker State Oil Refining Co.	1981	318	30	27	29	27	30	22	26	30	23	24	25	26
4703902317	Quaker State Oil Refining Co.	1982	295	29	23	30	23	27	26	26	14	8	38	27	25
4703902317	Quaker State Oil Refining Co.	1983	264	23	23	23	21	24	23	21	24	19	19	23	21
4703902317	Quaker State Oil Refining Co.	1984	230	19	20	18	21	20	17	19	0	42	22	14	18
4703902317	Quaker State Oil Refining Co.	1985	210	16	21	20	18	16	16	19	19	16	17	16	16
4703902317	Quaker State Oil Refining Co.	1986	92	21	17	0	17	9	0	0	0	0	0	0	28
4703902317	Quaker State Oil Refining Co.	1987	296	9	37	18	29	31	23	23	28	31	18	29	20
4703902317	Quaker State Oil Refining Co.	1988	252	18	19	24	17	1	50	21	21	21	20	19	21
4703902317	Quaker State Oil Refining Co.	1989	206	16	17	20	18	20	17	16	17	16	15	17	17
4703902317	Quaker State Oil Refining Co.	1990	426	18	16	17	15	17	15	16	6	52	51	203	0
4703902317	Quaker State Oil Refining Co.	1991	155	42	36	36	33	0	0	0	8	0	0	0	0
4703902317	Quaker State Oil Refining Co.	1992	397	0	26	38	33	38	22	18	69	102	0	24	27
4703902317	Quaker State Oil Refining Co.	1993	285	26	27	29	28	28	21	28	21	16	10	50	1
4703902317	Quaker State Oil Refining Co.	1994	208	25	19	22	13	18	19	0	22	13	18	22	17
4703902317	Peake Energy, Inc.	1995	132	0	0	0	0	0	0	132	0	0	0	0	0
4703902317	Peake Energy, Inc.	1996	166	14	16	15	10	17	13	14	16	8	15	14	14
4703902317	Peake Energy, Inc.	1997	159	0	66	0	0	0	0	0	0	65	28	0	0
4703902317	Peake Energy, Inc.	1998	80	0	0	0	0	0	0	80	0	0	0	0	0
4703902317	Peake Energy, Inc.	1999	118	0	0	0	0	0	89	0	29	0	0	0	0
4703902317	North Coast Energy Eastern	2000	163	0	0	0	0	0	0	0	0	163	0	0	0
4703902317	North Coast Energy Eastern	2001	158	0	0	0	0	0	0	0	0	0	140	18	0
4703902317	North Coast Energy Eastern	2002	101	0	0	0	0	0	0	0	0	0	101	0	0
4703902317	North Coast Energy Eastern	2003	139	0	0	0	0	0	0	0	0	0	0	0	139
4703902317	North Coast Energy Eastern	2004	165	0	0	0	0	0	0	0	0	0	141	24	0
4703902317	North Coast Energy Eastern	2005	119	0	0	0	0	0	0	0	119	0	0	0	0
4703902317	North Coast Energy Eastern	2006	115	0	0	0	0	0	0	0	0	115	0	0	0
4703902317	EXCO - North Coast Energy Eastern, Inc.	2007	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	EXCO Resources (WV), Inc.	2008	113	0	0	0	0	0	0	65	48	0	0	0	0
4703902317	EXCO Resources (WV), Inc.	2009	35	0	0	0	0	0	0	0	0	0	0	0	35
4703902317	EXCO Resources (WV), Inc.	2010	30	0	0	30	0	0	0	0	0	0	0	0	0
4703902317	EXCO Resources (PA), LLC	2011	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	EXCO Resources (PA), LLC	2012	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	EXCO Resources (PA), LLC	2013	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	EXCO Resources (PA), LLC	2014	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	EXCO Resources (PA), LLC	2015	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	Nytis Exploration Co., LLC	2016	32								9		23		
4703902317	Nytis Exploration Co., LLC	2017	0	0											
4703902317	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0

4703902317

4703902317	Diversified Production, LLC	2020	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	Diversified Production, LLC	2021	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil *** 2024 data for H6A wells only. Other wells are incomplete at this time.**

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4703902317	EXCO Resources (PA), LLC	2013	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	EXCO Resources (PA), LLC	2014	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	EXCO Resources (PA), LLC	2015	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	Nytis Exploration Co., LLC	2016	0												
4703902317	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	Diversified Production, LLC	2020	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	Diversified Production, LLC	2021	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) *** 2024 data for H6A wells only. Other wells are incomplete at this time.**

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4703902317	Nytis Exploration Co., LLC	2016	0												
4703902317	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	Diversified Production, LLC	2020	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902317	Diversified Production, LLC	2021	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4703902317	Original Loc	Salt Sands (undiff)	Well Record	1003	Reasonable	627	Reasonable	780	Ground Level
4703902317	Original Loc	Little Lime	Well Record	1630	Reasonable	30	Reasonable	780	Ground Level
4703902317	Original Loc	Pencil Cave	Well Record	1660	Reasonable	8	Reasonable	780	Ground Level
4703902317	Original Loc	Big Lime	Well Record	1668	Reasonable	146	Reasonable	780	Ground Level
4703902317	Original Loc	Greenbrier Group	Well Record	1668	Reasonable	146	Reasonable	780	Ground Level
4703902317	Original Loc	Big Injun (Price&eq)	Well Record	1814	Reasonable	44	Reasonable	780	Ground Level

Wireline (E-Log) Information:

* Scanned/Raster Log Information:

API	STATUS	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	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	INC
4703902317	Regular Entry	30	1948		G,D,I,C,S,*	Y	30	1934	1576	1948			1530	1945			1528	1943	30	1948	Y	Y

Scanned/Raster Comment: *logs:caliper,CCL,perf.depth,perforation,laterolog; log and sandstone analysis

* There is no Digitized/LAS Log data for this well

Downloadable Log Images/Data: We advise you to save the scanned log or digitized log file(s) to your PC for viewing. To do so, right-click the file of interest and select the save option. Then you can direct the file to a location of your choice. Please note the scanned log images vary in size and some may take several minutes to download.

Scanned/Raster Logs

FILENAME
4703902317gcd.tif
4703902317gil_a.tif
4703902317gpo.tif
4703902317gs.tif
4703902317_a.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
4703902317	11/2/2022	0

There is no Sample data for this well

Form OG-10

4703902317

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION

WELL RECORD

Rotary ☒
Spudder ☐
Cable Tools ☐
Storage ☐

Quadrangle Clendenin
Permit No. KAN-2317
Oil or Gas Well OIL (KIND)

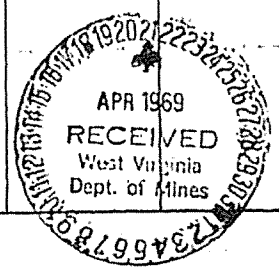
Company Mareve Oil Corp.
Address P.O.Box 1228, Parkersburg, W.Va.
Farm Dora Huffman "A" Acres 23
Location (waters) Wills Creek
Well No. 1 Elev. 780
District Elk County Kanawha
The surface of tract is owned in fee by Dora Huffman Heirs Address Elkview, W.Va.
Mineral rights are owned by Dora Huffman Heirs Address Elkview, W.Va.
Drilling commenced 1/28/69
Drilling completed 2/2/69
Date Shot ____ From ____ To ____
With ____
Open Flow ____ /10ths Water in ____ Inch
____ /10ths Merc. in ____ Inch
Volume ____ Cu. Ft.
Rock Pressure ____ lbs. ____ hrs.
Oil Show bbls., 1st 24 hrs.
WELL ACIDIZED (DETAILS) ____
WELL FRACTURED (DETAILS) 41,500 # Sand & 41,500 gallons gelled fresh water.

Casing and Tubing	Used in Drilling	Left in Well	Packers
Size			
16			Kind of Packer
13			
10			Size of
8¼ 8-5/8"	237	237	
6⅝	Cement Circ.		Depth set
5 3/16			
4½			
3			Perf. top
2			Perf. bottom
Liners Used			Perf. top
			Perf. bottom

Attach copy of cementing record.
CASING CEMENTED 4½ SIZE 1947 No. Ft. 2/2/69 Date
Amount of cement used (bags) 350
Name of Service Co. Howco-Cement circ.
COAL WAS ENCOUNTERED AT ____ FEET ____ INCHES
____ FEET ____ INCHES ____ FEET ____ INCHES
____ FEET ____ INCHES ____ FEET ____ INCHES

RESULT AFTER TREATMENT (Initial open Flow or bbls.) 32 BOPD
ROCK PRESSURE AFTER TREATMENT ____ HOURS ____
Fresh Water ____ Feet ____ Salt Water ____ Feet ____
Producing Sand Big Injun Depth 1814-1858

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth	Remarks
Surface & Rock			0	37			
Shale w/sand streaks			37	106			
Shale			106	237			
Shale & Sand			237	462			
Sandy Shale			462	1003			
Salt Sand			1003	1630			
Little Lime			1630	1660			
Pencil Cave			1660	1668'			
Big Lime			1668	1814			
Big Injun			1814	1858			
Shale			1858	1950	(T.D.)		



WR-38
Rev. 5/08

API # 47-039-02317

4703902317

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

ORIGINAL

AFFIDAVIT OF PLUGGING AND FILLING WELL

AFFIDAVIT SHOULD BE IN TRIPLICATE, one copy mailed to the Department, 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: HUFFMAN, DORA Operator Well No.: A-1

LOCATION: Elevation: 817.71 Quadrangle: Clendenin
District: Elk County: Kanawha
Latitude: 38.4638647 Feet South of ____ Deg. ____ Min. ____ Sec.
Longitude: -81.48439676 Feet West of ____ Deg. ____ Min. ____ Sec.

RECEIVED
Office Of Oil and Gas
FEB 15 2023
WV Department of
Environmental Protection

Well Type: OIL ____ GAS X

Company	Diversified Production, LLC	Coal Operator or Owner	Darris L. & Carolyn Barker
	PO Box 1207		P.O. Box 893
	Charleston, WV 25362		Clendenin, WV 25045
		Coal Operator or Owner	
Agent	Nicholas Cerone		
Permit Issued Date	5/5/22		

AFFIDAVIT

STATE OF WEST VIRGINIA,
County of Kanawha ss:

Dave Bowles and Ed Burrows 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 say that said work was commenced on the 26 day of October, 2022, and the well was plugged and filled in the following manner:

TYPE	FROM	TO	PIPE REMOVED	LEFT
Type 1	1850	1550	none	8-5/8" 237'
type 1	850	surface		4-1/2" 1947'

Description of monument: 6" OD pipe raised 36" above ground with well info posted and that the work of plugging and filling said well was completed on the 2nd day of November, 2022.

And further deponents saith not. Theresa N. Comisso

Theresa N Comisso

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
LINDA J. WILSON
WesBanco Wolfden
333 Ponco Road
Wolfden, West Virginia 26002
My Commission Expires Feb. 13, 2027

Sworn and subscribe before me this 7TH day of JANUARY, 2023

My commission expires: 2-13-2027

Linda J Wilson
Notary Public

1-13-23 Inspector Delegas

03/17/2023

4703902327

WVGES GEOLOGY UNDERLIES IT ALL
"Pipeline"

Select County: (039) Kanawha
Enter Permit #: 2327
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 = 39 Permit = 2327 Link to all digital records for well

Report Time: Wednesday, May 14, 2025 12:30:22 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4703902327	Kanawha	2327	Elk	Blue Creek	Clendenin	38.461662	-81.486031	457596.6	4257151.2

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_
4703902327	11/8/1968	Original Loc	Completed	W C Booker	1				W C Booker	Mareve Oil Corp.			
4703902327	6/25/2014	Worked Over	Completed	C & P Pritt	1		W C Booker			EXCO Resources (PA), LLC	1815	Big Injun (Price&eq)	
4703902327	-/-/-	Worked Over	Completed	Calvin E and Patricia A Pritt	1		W C Booker			Quaker State Oil Refining Co.			
4703902327	-/-/-	Plugging	Cancelled	W C Booker	1					Quaker State Oil Refining Co.			

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
4703902327	11/8/1968	11/5/1968	716	Ground Level	Blue Ck(Flg Rk)	Price Fm & equivs	Big Injun (Price&eq)	Development Well	Development Well	Oil	Rotary	Fractured	1815		1815		
4703902327	6/25/2014	6/25/2014	716	Ground Level	Blue Ck(Flg Rk)	Price Fm & equivs	Big Injun (Price&eq)	Service Well	Unsuccessful	Salt Water Disp	unknown	unknown	1815		0		
4703902327	-/-/-	-/-/-	716	Ground Level	Blue Ck(Flg Rk)	Price Fm & equivs	Big Injun (Price&eq)	Service Well	Unsuccessful	Salt Water Disp	unknown	unknown	1815		0		
4703902327	-/-/-	-/-/-	716	Ground Level	Blue Ck(Flg Rk)	Price Fm & equivs							1815		0		

Comment: -/-/- Injection zones in pays are proposed.

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
4703902327	6/25/2014	Horizon	Injection	Vertical	1180	3rd Salt Sand	1340	3rd Salt Sand					
4703902327	-/-/-	Horizon	Injection	Vertical	1180	3rd Salt Sand	1340	3rd Salt Sand					
4703902327	-/-/-	Horizon	Injection	Vertical	1689	Big Injun (Price&eq)	1694	Big Injun (Price&eq)					
4703902327	6/25/2014	Horizon	Injection	Vertical	1689	Big Injun (Price&eq)	1694	Big Injun (Price&eq)					
4703902327	11/8/1968	Pay	Oil	Vertical	1676	Big Injun (Price&eq)	1720	Big Injun (Price&eq)					

Production Gas Information: (Volumes in Mcf) *** 2024 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
4703902327	Quaker State Oil Refining Co.	1981	540	37	51	43	60	61	82	39	0	19	29	59	60
4703902327	Quaker State Oil Refining Co.	1982	387	33	38	61	48	55	61	0	0	0	0	18	73
4703902327	Quaker State Oil Refining Co.	1983	460	52	52	52	76	185	43	0	0	0	0	0	0
4703902327	Quaker State Oil Refining Co.	1984	548	32	36	50	42	56	37	45	59	62	69	60	0
4703902327	Quaker State Oil Refining Co.	1985	813	11	63	44	66	85	85	66	89	85	76	78	65
4703902327	Quaker State Oil Refining Co.	1986	207	30	32	72	59	14	0	0	0	0	0	0	0
4703902327	Quaker State Oil Refining Co.	1988	399	0	0	0	0	0	0	0	0	0	0	263	136
4703902327	Quaker State Oil Refining Co.	1989	1,753	64	51	46	35	40	31	63	64	109	851	202	197
4703902327	Quaker State Oil Refining Co.	1990	2,022	121	84	88	91	105	94	96	0	367	371	363	242
4703902327	Quaker State Oil Refining Co.	1991	1,901	222	237	232	214	152	132	160	52	79	85	159	177
4703902327	Quaker State Oil Refining Co.	1992	1,661	136	132	125	115	127	145	155	152	155	143	130	146
4703902327	Quaker State Oil Refining Co.	1993	1,360	141	113	93	112	109	96	96	157	103	133	115	92
4703902327	Quaker State Oil Refining Co.	1994	927	95	73	79	66	83	92	97	56	11	70	103	102
4703902327	North Coast Energy Eastern	2003	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902327	North Coast Energy Eastern	2005	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902327	North Coast Energy Eastern	2006	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902327	EXCO Resources (PA), LLC	2013	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902327	Nytis Exploration Co., LLC	2017	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902327	Nytis Exploration Co., LLC	2018	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 *** 2024 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
4703902327	Quaker State Oil Refining Co.	1981	268	32	29	25	25	23	22	22	21	9	14	29	16
4703902327	Quaker State Oil Refining Co.	1982	222	0	0	2	40	17	4	30	37	24	30	19	21
4703902327	Quaker State Oil Refining Co.	1983	191	10	10	10	18	15	16	17	20	17	15	22	22
4703902327	Quaker State Oil Refining Co.	1984	211	42	6	21	17	19	22	15	0	112	161	14	18
4703902327	Quaker State Oil Refining Co.	1985	741	263	296	29	64	14	14	17	16	14	13	0	1
4703902327	Quaker State Oil Refining Co.	1986													
4703902327	Quaker State Oil Refining Co.	1988	244	0	0	0	0	0	0	0	0	92	0	99	53
4703902327	Quaker State Oil Refining Co.	1989	982	9	15	21	22	16	17	175	208	166	137	105	91
4703902327	Quaker State Oil Refining Co.	1990	1,345	62	59	59	47	54	159	140	199	155	179	91	141
4703902327	Quaker State Oil Refining Co.	1991	1,025	129	71	97	74	76	18	94	113	102	135	53	63
4703902327	Quaker State Oil Refining Co.	1992	811	39	121	52	96	78	71	69	66	58	69	43	49
4703902327	Quaker State Oil Refining Co.	1993	465	45	51	56	0	10	53	45	6	86	40	1	72
4703902327	Quaker State Oil Refining Co.	1994	407	32	34	37	32	39	24	4	59	44	41	28	33
4703902327	North Coast Energy Eastern	2003	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902327	North Coast Energy Eastern	2005	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902327	North Coast Energy Eastern	2006	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902327	EXCO Resources (PA), LLC	2013	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902327	Nytis Exploration Co., LLC	2017	0	0											
4703902327	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil *** 2024 data for H6A wells only. Other wells are incomplete at this time.**

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4703902327	EXCO Resources (PA), LLC	2013	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902327	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) *** 2024 data for H6A wells only. Other wells are incomplete at this time.**

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4703902327	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4703902327	Original Loc	Salt Sands (undiff)	Well Record	954	Reasonable	537	Reasonable	716	Ground Level
4703902327	Original Loc	Little Lime	Well Record	1491	Reasonable	34	Reasonable	716	Ground Level
4703902327	Original Loc	Pencil Cave	Well Record	1525	Reasonable	6	Reasonable	716	Ground Level
4703902327	Original Loc	Big Lime	Well Record	1531	Reasonable	145	Reasonable	716	Ground Level
4703902327	Original Loc	Greenbrier Group	Well Record	1531	Reasonable	145	Reasonable	716	Ground Level
4703902327	Original Loc	Big Injun (Price&eq)	Well Record	1676	Reasonable	44	Reasonable	716	Ground Level

Wireline (E-Log) Information:
* There is no Scanned/Raster Log data for this well

* There is no Digitized/LAS Log data for this well

* There is no Scanned or Digital Logs available for download

There is no Plugging data for this well

There is no Sample data for this well

Office of Oil & Gas
OCT 29 2014

TR

4703902327

WR-35
Rev. 8/23/13

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47- 039 - 02327W County Kanawha District Elk
Quad Blue Creek Pad Name _____ Field/Pool Name _____
Farm name _____ Well Number W. C. Booker #1
Operator (as registered with the OOG) Exco Resources (PA), LLC
Address 260 Executive Drive City Cranberry Township State PA Zip 16066

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4257148.2 Easting 457597.9
Landing Point of Curve Northing _____ Easting _____
Bottom Hole Northing _____ Easting _____

Elevation (ft) 716 GL Type of Well ☐New ☒Existing Type of Report ☐Interim ☒Final
Permit Type ☐ Deviated ☐ Horizontal ☐ Horizontal 6A ☒ Vertical Depth Type ☐ Deep ☒ Shallow
Type of Operation ☐ Convert ☐ Deepen ☐ Drill ☐ Plug Back ☐ Redrilling ☐ Rework ☒Stimulate
Well Type ☒Brine Disposal ☐ CBM ☐ Gas ☐ Oil ☐ Secondary Recovery ☐ Solution Mining ☐ Storage ☐ Other _____
Type of Completion ☐ Single ☒Multiple Fluids Produced ☐ Brine ☐Gas ☐ NGL ☐ Oil ☒Other N/A - SWD
Drilled with ☐ Cable ☐ Rotary

Drilling Media Surface hole ☐ Air ☐ Mud ☐Fresh Water Intermediate hole ☐ Air ☐ Mud ☐ Fresh Water ☐ Brine
Production hole ☐ Air ☐ Mud ☐ Fresh Water ☐ Brine
Mud Type(s) and Additive(s)
N/A

Date permit issued 6/12/14 Date drilling commenced N/A Date drilling ceased N/A
Date completion activities began 6/25/14 Date completion activities ceased 6/25/14
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 75 Open mine(s) (Y/N) depths N/A
Salt water depth(s) ft 1000 Void(s) encountered (Y/N) depths N/A
Coal depth(s) ft N/A Cavern(s) encountered (Y/N) depths N/A
Is coal being mined in area (Y/N) N/A

Reviewed by:

10/31/2014

4703902327

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Page ___ of ___

API 47- 039- 02327 Farm name _____ Well number W.C. Booker #1

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor							
Surface		8-5/8"	296'	J-55	24 #		
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production		4-1/2"	1810'	J-55	9.5 #		
Tubing		2-7/8"	1156	J-55	6.5 #		
Packer type and depth set		Halliburton K-4 @ 1156'					

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³/sks)	Volume (ft.²)	Cement Top (MD)	WOC (hrs)
Conductor							
Surface		247					
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production		150					
Tubing							

Drillers TD (ft) N/A Loggers TD (ft) _____

Deepest formation penetrated _____ Plug back to (ft) _____

Plug back procedure _____

Kick off depth (ft) N/A

Check all wireline logs run ☐ caliper ☐ density ☐ deviated/directional ☐ induction ☐ neutron ☐ resistivity ☐ gamma ray ☐ temperature ☐ sonic

Well cored ☐ Yes ☐ No Conventional Sidewall Were cuttings collected ☐ Yes ☐ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING N/A

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ☐ No DETAILS N/A

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ☐ No DETAILS N/A

WERE TRACERS USED ☐ Yes ☐ No TYPE OF TRACER(S) USED N/A

10/31/2014

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Page ___ of ___

API 47- 039- 02327 Farm name _____ Well number W.C. Booker #1

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	1968	1689	1694	6	Big Injun
	1992	1180	1340	118	3rd Salt Sand

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)

Please insert additional pages as applicable.

10/31/2014

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Page ___ of ___

API 47- 039 - 02327 Farm name _____ Well number W.C. Booker #1

PRODUCING FORMATION(S)	DEPTHS	
N/A	_____ TVD	_____ MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ☐ Open Flow OIL TEST ☐ Flow ☐ Pump

SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas _____ mcfpd Oil _____ bpd NGL _____ bpd Water _____ bpd GAS MEASURED BY ☐ Estimated ☐ Orifice ☐ Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		
	N/A				

Please insert additional pages as applicable.

Drilling Contractor _____
Address _____ City _____ State _____ Zip _____

Logging Company _____
Address _____ City _____ State _____ Zip _____

Cementing Company _____
Address _____ City _____ State _____ Zip _____

Stimulating Company Universal Well Services
Address Route 5, Hall Road City Buckhannon State WV Zip 26201
Please insert additional pages as applicable.

Completed by Brian E. Rushe, P.E. w/ EXCO Telephone 724-720-2590
Signature Brian E. Rushe Title Construction & Regulatory Manager Date 10/27/14

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

10/31/2014

FORM WW-3(A)
Obverse

4703902327

1) Date October 12, 2001
Operator's
2) Well No. W. C. Booker #1
3) SIC Code
4) API Well No. 47 - 039 - 2327
State County Permit

STATE OF WEST VIRGINIA

NOTICE OF LIQUID INJECTION OR WASTE DISPOSAL WELL WORK PERMIT APPLICATION
for the

DIVISION OF OIL AND GAS, DEPARTMENT OF ENERGY

RECEIVED
Office of Oil & Gas
OCT 26 2001
WV Department of
Environmental Protection

6) SURFACE OWNER(S) OF RECORD TO BE SERVED

(i) Name Calvin E. & Patricia Pritt
Address 959 Wills Creek Rd
Elkview, WV 25071

(ii) Name
Address

(iii) Name
Address

7 (i) COAL OPERATOR N/A
Address

7 (ii) COAL OWNER(S) WITH DECLARATION ON RECORD:
Name N/A
Address

7 (iii) COAL LESSEE WITH DECLARATION ON RECORD:
Name N/A
Address

TO THE PERSON(S) NAMED ABOVE: You should have received this Form and the following documents:

(1) The Application for a Liquid Injection or Waste Disposal Well Work Permit on Form WW-3(B), which sets out the parties involved in the drilling or other work, and
(2) The plat (surveyor's map) showing the well location on Form WW-6; and
(3) The Construction and Reclamation Plan on Form WW-9 (unless the well work is only to plug a well), which sets out the plan for erosion and sediment control and for reclamation for the site and access road.

The date proposed for the first injection or waste disposal is November, 19 91.

THE REASON YOU RECEIVED THESE DOCUMENTS IS THAT YOU HAVE RIGHTS REGARDING THE APPLICATION WHICH ARE SUMMARIZED IN THE "INSTRUCTIONS" ON THE REVERSE SIDE OF THE COPY OF THE APPLICATION (FORM WW-3(B)) DESIGNATED FOR YOU. HOWEVER, YOU ARE NOT REQUIRED TO TAKE ANY ACTION AT ALL.

Take notice that under Chapter 22B of the West Virginia Code, the undersigned well operator proposes to file or has filed this Notice and Application and accompanying documents for a Well Work Permit with the Director of the Division of Oil and Gas, West Virginia Department of Energy, with respect to a well at the location described on the attached Application and depicted on attached Form WW-6. Copies of this Notice, the Application, the plat, and the Construction and Reclamation Plan have been mailed by registered or certified mail or delivered by hand to the person(s) named above (or by publication in certain circumstances) on or before the day of mailing or delivery to the Director.

The person signing this document shall make the following certification:

"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.

NORTH COAST ENERGY EASTERN, INC.
Well Operator
By
Its Thomas S. Liberatore
Designated Agent
Telephone (304) 273-5371

FORM WW-3(B)
(Obverse)
7/85

4703902327

Found 5/27/2002 well not upon permit -

MIT entered 6/14/2002

1) Date: October 12, 2001
2) Operator's Well No. WC BOOKER #1
3) SIC Code
4) API Well NO. 47 - 039 - 2327 (State / County / Permit)
5. UIC Permit No. 2D0392327

RECEIVED Office of Oil & Gas OCT 26 2001 WV Department of Environmental Protection

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

6) WELL TYPE: Liquid injection ___/ Gas injection (not storage) ___/ Waste disposal X /
7) LOCATION: Elevation: 716 Watershed: Wills Creek
District: Elk County: Kanawha Quadrangle: Blue Creek
8) WELL OPERATOR North Coast Energy Eastern, Inc.
Address PO Box 8
Ravenswood, WV 26164
9) DESIGNATED AGENT Thomas S. Liberatore
Address PO Box 8
Ravenswood, WV 26164
10) OIL & GAS INSPECTOR TO BE NOTIFIED
Name Carlos Hively
Address 223 Pinch Ridge Rd
Elkview, WV 25071
11) DRILLING CONTRACTOR:
Name N/A
Address

12) PROPOSED WELL WORK: Drill ___/ Drill deeper ___/ Redrill ___/ Stimulate ___/
Plug off old formation ___/ Perforate new formation ___/ Convert ___/
Other physical change in well (specify) None
13) GEOLOGICAL TARGET FORMATION, Big Injun/Salt Sand Depth ___ feet(top) to ___ feet(bottom)
14) Estimated depth of completed well, (or actual depth of existing well) 1815 ft.
15) Approximate water strata depths; Fresh, 75 feet; salt, 1000 feet.
16) Approximate coal seam depths: N/A
17) Is coal being mined in the area? Yes ___/ No X /
18) Virgin reservoir pressure in target formation 1000 psig. Source Estimated
19) Estimated reservoir fracture pressure 2900 psig (BHFP)
20) MAXIMUM PROPOSED INJECTION OPERATIONS: Volume per hour: 20 Bottom hole pressure
21) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED, INCLUDING ADDITIVES: Produced Big Injun Brine
22) FILTERS (IF ANY): 10 Micron @ Well / 10 Micron @ Plant
23) SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL: Conrrosion Inhibitor in Annular Fluid
24) CASING AND TUBING PROGRAM

CASING OR TUBING TYPE	Size	Grade	Weight per ft.	New	Used	For drilling	Left in well	CEMENT FILL-UP OR SACKS (Cubic feet)	PACKERS
Conductor									Kinds
Fresh water	8-5/8	J-55	24#	X		246'	246'	110 sx cts	Halliburton
Coal									Sizes 4-1/2 x 2-3/8
Intermediate									
Production	4-1/2	J-55	9.5#	X		1818'	1810'	150 sx	Depths set 1140'
Tubing	2-3/8	J-55	4.6#	X			1140'		
Liners									Perforations:
									Top / Bottom
									1689 / 1694
									1180 / 1340

25) APPLICANT'S OPERATING RIGHTS were acquired from Quaker State/Mareve Oil Company
by deed ___/ lease ___/ other contract X / dated November 30, 1973, of record in the
County Clerk's office in Kanawha Book 82 at page 66-95

See the reverse side of the APPLICANT'S COPY for instructions to the well operator.

4703902328

WVGES GEOLOGY UNDERLIES IT ALL
"Pipeline"

Select County: (039) Kanawha
Enter Permit #: 2328
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 = 39 Permit = 2328 Link to all digital records for well

Report Time: Wednesday, May 14, 2025 12:32:28 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4703902328	Kanawha	2328	Elk	Blue Creek	Clendenin	38.461952	-81.492303	457049.5	4257186.3

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
4703902328	11/25/1968	Original Loc	Completed	Joe Caldwell Heirs	1				Joe Caldwell Heirs	Mareve Oil Corp.			
4703902328	8/30/1988	Plugging	Completed	Russell & Nellie Lucas	1		Caldwell			Quaker State Oil Refining Co.			
4703902328	-/-/-	Worked Over	Completed	Joe Caldwell Heirs	1					Mareve Oil Corp.		Big Injun (Price&eq)	

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
4703902328	11/25/1968	11/21/1968	691	Ground Level	Blue Ck(Flg Rk)	Price Fm & equivs	Big Injun (Price&eq)	Development Well	Development Well	Oil	Rotary	Fractured	1785		1785	
4703902328	8/30/1988	8/30/1988	691	Ground Level	Blue Ck(Flg Rk)											
4703902328	-/-/-	-/-/-	691	Ground Level	Blue Ck(Flg Rk)	Price Fm & equivs	Big Injun (Price&eq)	Service Well	Unsuccessful	Salt Water Disp	unknown	unknown	1785		0	

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
4703902328	-/-/-	Horizon	Injection	Vertical	1646	Big Injun (Price&eq)	1651	Big Injun (Price&eq)					
4703902328	11/25/1968	Pay	Oil	Vertical	1635	Big Injun (Price&eq)	1673	Big Injun (Price&eq)					

There is no Production Gas data for this well

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

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
4703902328	Original Loc	Salt Sands (undiff)	Well Record	890	Reasonable	580	Reasonable	691	Ground Level
4703902328	Original Loc	Little Lime	Well Record	1470	Reasonable	24	Reasonable	691	Ground Level
4703902328	Original Loc	Pencil Cave	Well Record	1494	Reasonable	3	Reasonable	691	Ground Level
4703902328	Original Loc	Big Lime	Well Record	1497	Reasonable	138	Reasonable	691	Ground Level
4703902328	Original Loc	Greenbrier Group	Well Record	1497	Reasonable	138	Reasonable	691	Ground Level
4703902328	Original Loc	Big Injun (Price&eq)	Well Record	1635	Reasonable	38	Reasonable	691	Ground Level

Wireline (E-Log) Information:
* Scanned/Raster Log Information:

API	STATUS	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	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	IN
4703902328	Regular Entry	1266	1786		G,D,C,I,*	Y	1600	1772	1600	1786			1266	1784					1600	1786	N	Y

Scanned/Raster Comment: *logs:caliper,spon.pot.,laterolog; log analysis

* There is no Digitized/LAS Log data for this well

Downloadable Log Images/Data: We advise you to save the scanned log or digitized log file(s) to your PC for viewing. To do so, right-click the file of interest and select the save option. Then you can direct the file to a location of your choice. Please note the scanned log images vary in size and some may take several minutes to download.

Scanned/Raster Logs

FILENAME
4703902328gcd.tif
4703902328ilz.tif
4703902328_a.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
4703902328	8/30/1988	0

There is no Sample data for this well

4703902328

Form OG-10

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION

Rotary [X]
Spudder [ ]
Cable Tools [ ]
Storage [ ]

Quadrangle Clendenin

Permit No. KAN-2328

WELL RECORD

Oil or Gas Well Oil (KIND)

Company Marcve Oil Corp.
Address P. O. Box 1228, Parkersburg, W.Va.
Farm Joe Caldwell Acres 208-1/2
Location (waters) Wills Creek
Well No. 1 Elev. 691
District Elk County Kanawha
The surface of tract is owned in fee by Joe Caldwell Heirs
Address Elkview, W.Va.
Mineral rights are owned by Joe Caldwell Heirs
Address Elkview, W.Va.
Drilling commenced 11-21-68
Drilling completed 11-25-68
Date Shot From To
With
Open Flow /10ths Water in Inch
/10ths Merc. in Inch
Volume Cu. Ft.
Rock Pressure lbs. hrs.
Oil Show bbls., 1st 24 hrs.
WELL ACIDIZED (DETAILS)

Casing and Tubing	Used in Drilling	Left in Well	Packers
Size			
16			Kind of Packer
13			
10			Size of
~~8~~ 8-5/8	245	245	
6¼	Cement Circ.		Depth set
5 3/16			
4½			
3			Perf. top
2			Perf. bottom
Liners Used			Perf. top
			Perf. bottom

Attach copy of cementing record.
CASING CEMENTED 4½ SIZE 1779 No. Ft. 11-25-68 Date
Amount of cement used (bags) 150
Name of Service Co. Howco
COAL WAS ENCOUNTERED AT FEET INCHES
FEET INCHES FEET INCHES
FEET INCHES FEET INCHES

WELL FRACTURED (DETAILS) 41,500 #sand & 41,500 gallons gelled fresh water.

RESULT AFTER TREATMENT (Initial open Flow or bbls.) 25 BOPD
ROCK PRESSURE AFTER TREATMENT HOURS
Fresh Water Feet Salt Water Feet
Producing Sand Big Injun Depth 1635-1673

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth	Remarks
Surface Rock & Sand			0	75			
Shale & Rock			75	245			
Shale & Sand Streaks			245	345			
Sand & Shale			345	570			
Sandy Shale			570	890			
Salt Sand			890	1470			
Little Lime			1470	1494			
Pencil Cave			1494	1497			
Big Lime			1497	1635			
Big Injun			1635	1673			
Shale			1673	1785	(T.D.)		

-May-88

4703902328

STATE OF WEST VIRGINIA
DEPARTMENT OF ENERGY
DIVSION OF OIL AND GAS

AFFIDAVIT OF PLUGGING AND FILLING WELL

AFFIDAVITE 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: LUCAS, RUSSELL & NELLIE Operator Well No.: CALDWELL 1

LOCATION: Elevation: 691.00 Quadrangle: BLUE CREEK
District: ELK County: KANAWHA
Latitude: 13900 Feet South of 38 Deg. 30 Min. 0 Sec.
Longitude 9900 Feet West of 81 Deg. 27 Min. 30 Sec.

Company: Quaker State Corporation
P.O. Box 189
Belpre, Ohio 45714

Coal Operator or Owner: N/A

Agent: Frank Rotunda
Inspector: Carlos Hively
Permit Issued: 05/05/88

Coal Operator or Owner: N/A

RECEIVED
OCT 05 1988
DIVISION OF OIL & GAS
DEPARTMENT OF ENERGY

AFFIDAVIT

STATE OF ~~WEST VIRGINIA~~ OHIO,
County of Washington ss:

George Cumberledge and Timothy R. Clever 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 Quaker State Corporation, well operator, and participated in the work of plugging and filling the above well, that said work was commenced on the 30th day of August, 1988 and that the well was plugged and filled in the following manner:

TYPE	FROM	TO	PIPE REMOVED	LEFT
Class A cement (10sx)	1670	1570		
Gel (6%)	1570	716		245 (8 5/8)
Cement (30 sx)	716	616	716-0	716-1779 (41)
Gel (30 sx)	616	312		
Cement	312	175		
Gel	175	100		
Cement (30 sx)	100	0		

Description of monument: 7" casing with plate reading Caldwell #1 47-039-2328P 8/30/88

and that the work of plugging and filling said well was completed on the 30th day of August, 1988.

And furthur deponents saith not.

Sworn and subscribe before me this 23rd day of September, 1988

My commission expires: Dolores L. Branch – Notary Public, State of Ohio – My Commission Expires March 14, 1990

Notary Public

4703902329

WVGES GEOLOGY UNDERLIES IT ALL
"Pipeline"

Select County: (039) Kanawha
Enter Permit #: 2329
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 = 39 Permit = 2329 Link to all digital records for well

Report Time: Wednesday, May 14, 2025 12:32:50 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4703902329	Kanawha	2329	Elk	Blue Creek	Clendenin	38.462233	-81.481985	457949.9	4257212.7

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
4703902329	11/-/1968	Original Loc	Completed	H H Thaxton		1				Mareve Oil Corp.			

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_BEF	G_A
4703902329	11/-/1968	-/-/-	909	Ground Level	Blue Ck(Flg Rk)	Big Injun (Price&eq)	Big Injun (Price&eq)	Development Well	Development Well	Oil	Rotary	Fractured	2025		2025		0	

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
4703902329	11/-/1968	Pay	Oil	Vertical			1880	Big Injun (Price&eq)	0	0			

Production Gas Information: (Volumes in Mcf) *** 2024 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
4703902329	Quaker State Oil Refining Co.	1981	3,933	321	399	294	337	365	454	265	0	176	363	383	576
4703902329	Quaker State Oil Refining Co.	1982	2,481	408	351	376	376	415	447	0	0	0	0	46	62
4703902329	Quaker State Oil Refining Co.	1983	586	79	79	79	152	136	60	0	0	0	0	0	0
4703902329	Quaker State Oil Refining Co.	1984	3,246	123	137	235	81	331	259	207	272	449	420	429	303
4703902329	Quaker State Oil Refining Co.	1985	1,915	254	200	7	82	235	235	138	75	235	177	169	108
4703902329	Quaker State Oil Refining Co.	1986	4,277	19	429	616	130	314	316	520	15	79	915	916	8
4703902329	Quaker State Oil Refining Co.	1987	1,856	123	131	0	0	5	444	338	83	105	92	221	314
4703902329	Quaker State Oil Refining Co.	1988	2,237	97	145	132	181	120	148	141	155	216	355	403	144
4703902329	Quaker State Oil Refining Co.	1989	4,110	235	345	340	292	376	371	341	363	411	311	356	369
4703902329	Quaker State Oil Refining Co.	1990	3,024	285	162	169	239	275	269	328	330	233	236	231	267
4703902329	Quaker State Oil Refining Co.	1991	2,154	245	241	236	218	232	155	189	43	46	49	256	244
4703902329	Quaker State Oil Refining Co.	1992	2,483	151	146	165	236	154	238	286	208	212	222	218	247
4703902329	Quaker State Oil Refining Co.	1993	2,194	238	210	175	193	160	174	177	366	51	165	149	136
4703902329	Quaker State Oil Refining Co.	1994	1,500	126	92	107	97	102	130	227	123	28	186	149	133
4703902329	Peake Energy, Inc.	1995	1,286	143	123	102	100	77	67	67	123	131	125	114	114
4703902329	Peake Energy, Inc.	1996	881	111	87	89	87	82	63	76	65	44	58	60	59
4703902329	Peake Energy, Inc.	1997	609	80	43	52	52	43	48	54	45	56	55	43	38
4703902329	Peake Energy, Inc.	1998	638	42	28	43	57	53	63	49	54	71	58	60	60
4703902329	Peake Energy, Inc.	1999	566	62	54	47	45	11	1	101	64	64	49	26	42
4703902329	North Coast Energy Eastern	2000	7,196	671	621	653	586	599	574	597	598	567	625	542	563
4703902329	North Coast Energy Eastern	2001	544	49	47	31	44	67	53	51	40	49	43	23	47
4703902329	North Coast Energy Eastern	2002	519	37	38	25	32	54	62	66	53	65	51	14	22
4703902329	North Coast Energy Eastern	2003	285	17	6	16	37	30	15	16	20	20	28	47	33
4703902329	North Coast Energy Eastern	2004	649	55	47	55	48	47	54	66	57	57	59	58	46
4703902329	North Coast Energy Eastern	2005	264	36	35	34	31	15	22	10	6	6	11	25	33
4703902329	North Coast Energy Eastern	2006	296	29	20	18	20	36	11	16	32	23	28	30	33
4703902329	EXCO - North Coast Energy Eastern, Inc.	2007	189	24	18	25	27	7	7	20	7	23	13	11	7
4703902329	EXCO Resources (WV), Inc.	2008	250	6	5	1	9	23	28	22	32	17	31	38	38
4703902329	EXCO Resources (WV), Inc.	2009	114	36	21	40	12	0	1	0	0	0	0	3	1
4703902329	EXCO Resources (WV), Inc.	2010	121	0	9	6	2	13	12	16	14	10	16	6	17
4703902329	EXCO Resources (PA), LLC	2011	125	8	8	9	9	6	12	17	11	10	10	13	12
4703902329	EXCO Resources (PA), LLC	2012	157	14	7	16	11	15	15	9	15	15	12	13	15
4703902329	EXCO Resources (PA), LLC	2013	150	16	9	12	13	5	13	11	14	14	13	13	17
4703902329	EXCO Resources (PA), LLC	2014	108	10	8	8	12	9	10	11	6	7	9	9	9
4703902329	EXCO Resources (PA), LLC	2015	110	8	9	7	2	12	10	6	9	8	12	13	14
4703902329	Nytis Exploration Co., LLC	2016	118	15	16	8	4	3	1	6	6	13	18	13	13
4703902329	Nytis Exploration Co., LLC	2017	30	13	12	5	0	0	0	0	0	0	0	0	0
4703902329	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902329	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902329	Diversified Production, LLC	2020	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902329	Diversified Production, LLC	2021	101	22	17	9	8	16	16	2	2	0	0	3	2
4703902329	Diversified Production, LLC	2022	138	18	17	18	17	10	23	7	10	0	0	9	3
4703902329	Diversified Production, LLC	2023	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 *** 2024 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
4703902329	Quaker State Oil Refining Co.	1981	718	70	60	70	66	68	41	62	63	55	57	54	54
4703902329	Quaker State Oil Refining Co.	1982	624	58	51	59	49	54	50	54	51	52	50	49	47
4703902329	Quaker State Oil Refining Co.	1983	510	43	43	43	48	46	43	39	43	38	40	40	43
4703902329	Quaker State Oil Refining Co.	1984	474	44	33	42	42	41	36	39	0	80	42	34	41
4703902329	Quaker State Oil Refining Co.	1985	477	1	0	75	51	46	46	41	46	46	38	43	44
4703902329	Quaker State Oil Refining Co.	1986	431												
4703902329	Quaker State Oil Refining Co.	1987	696	0	0	0	57	50	30	48	52	122	113	99	125
4703902329	Quaker State Oil Refining Co.	1988	2,185	122	131	101	133	127	117	245	278	272	255	158	246
4703902329	Quaker State Oil Refining Co.	1989	2,170	248	203	206	186	173	126	216	184	171	163	149	145
4703902329	Quaker State Oil Refining Co.	1990	1,380	142	118	134	124	127	126	110	101	104	104	100	90
4703902329	Quaker State Oil Refining Co.	1991	837	85	53	147	108	74	18	43	74	95	59	42	39
4703902329	Quaker State Oil Refining Co.	1992	858	0	106	14	71	114	83	81	137	32	76	73	71
4703902329	Quaker State Oil Refining Co.	1993	620	29	86	61	61	59	49	61	54	53	50	54	3
4703902329	Quaker State Oil Refining Co.	1994	482	10	42	51	48	51	48	2	53	47	50	35	45
4703902329	Peake Energy, Inc.	1995	451	49	52	39	58	0	54	0	51	46	45	0	57
4703902329	Peake Energy, Inc.	1996	463	41	48	45	41	35	40	38	35	26	43	39	32
4703902329	Peake Energy, Inc.	1997	387	40	40	39	47	6	46	40	45	1	56	2	25
4703902329	Peake Energy, Inc.	1998	314	55	42	0	53	37	21	16	0	29	21	38	2
4703902329	Peake Energy, Inc.	1999	305	55	0	26	0	85	0	0	47	0	63	29	0
4703902329	North Coast Energy Eastern	2000	263	38	9	49	14	18	43	0	0	51	35	0	6
4703902329	North Coast Energy Eastern	2001	248	30	33	0	54	0	0	44	43	0	0	44	0
4703902329	North Coast Energy Eastern	2002	226	22	29	0	39	0	0	72	6	46	0	12	0
4703902329	North Coast Energy Eastern	2003	216	23	4	0	23	22	17	42	0	6	0	44	35
4703902329	North Coast Energy Eastern	2004	147	0	0	0	22	0	74	6	0	27	18	0	0
4703902329	North Coast Energy Eastern	2005	210	44	0	6	49	0	6	0	22	26	0	0	57
4703902329	North Coast Energy Eastern	2006	190	38	0	38	0	0	8	34	0	20	0	0	52
4703902329	EXCO - North Coast Energy Eastern, Inc.	2007	165	0	0	25	0	0	25	0	76	0	0	0	39
4703902329	EXCO Resources (WV), Inc.	2008	224	53	13	35	0	13	22	43	0	0	15	6	24
4703902329	EXCO Resources (WV), Inc.	2009	207	0	63	0	0	0	53	0	0	52	0	18	21
4703902329	EXCO Resources (WV), Inc.	2010	143	0	0	30	22	0	0	33	0	9	0	31	18
4703902329	EXCO Resources (PA), LLC	2011	122	0	0	19	0	0	0	59	0	18	0	26	0
4703902329	EXCO Resources (PA), LLC	2012	176	16	33	0	0	32	0	31	38	0	0	0	26
4703902329	EXCO Resources (PA), LLC	2013	129	0	0	31	0	0	0	31	27	0	26	14	0
4703902329	EXCO Resources (PA), LLC	2014	155	19	0	29	6	15	0	54	0	0	0	25	7
4703902329	EXCO Resources (PA), LLC	2015	150	57	0	0	15	0	22	0	0	0	56	0	0
4703902329	Nytis Exploration Co., LLC	2016	154		24			30			53		47		
4703902329	Nytis Exploration Co., LLC	2017	18	0		8		10							
4703902329	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902329	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0

4703902329

4703902329	Diversified Production, LLC	2020	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902329	Diversified Production, LLC	2021	166	23	0	20	31	0	0	29	17	14	0	29	0
4703902329	Diversified Production, LLC	2022	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902329	Diversified Production, LLC	2023	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil *** 2024 data for H6A wells only. Other wells are incomplete at this time.**

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4703902329	EXCO Resources (PA), LLC	2013	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902329	EXCO Resources (PA), LLC	2014	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902329	EXCO Resources (PA), LLC	2015	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902329	Nytis Exploration Co., LLC	2016	0												
4703902329	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902329	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902329	Diversified Production, LLC	2020	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902329	Diversified Production, LLC	2021	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902329	Diversified Production, LLC	2022	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902329	Diversified Production, LLC	2023	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) *** 2024 data for H6A wells only. Other wells are incomplete at this time.**

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4703902329	Nytis Exploration Co., LLC	2016	0												
4703902329	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902329	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902329	Diversified Production, LLC	2020	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902329	Diversified Production, LLC	2021	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902329	Diversified Production, LLC	2022	0	0	0	0	0	0	0	0	0	0	0	0	0
4703902329	Diversified Production, LLC	2023	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4703902329	Original Loc	Salt Sands (undiff)	Well Record	1150	Reasonable	545	Reasonable	909	Ground Level
4703902329	Original Loc	Little Lime	Well Record	1695	Reasonable	40	Reasonable	909	Ground Level
4703902329	Original Loc	Greenbrier Group	Well Record	1735	Reasonable	145	Reasonable	909	Ground Level
4703902329	Original Loc	Big Lime	Well Record	1735	Reasonable	145	Reasonable	909	Ground Level
4703902329	Original Loc	Big Injun (Price&eq)	Well Record	1880	Reasonable	38	Reasonable	909	Ground Level

Wireline (E-Log) Information:

* Scanned/Raster Log Information:

API	STATUS	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	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	INC
4703902329	Regular Entry	937	2022		G,D,I,C,*	Y	1618	2005	1650	2022			937	2020					1646	2022	N	Y

Scanned/Raster Comment: *logs:caliper,spon.pot.,laterolog,CCL,perf.depth,perforation; log analysis

* There is no Digitized/LAS Log data for this well

Downloadable Log Images/Data: We advise you to save the scanned log or digitized log file(s) to your PC for viewing. To do so, right-click the file of interest and select the save option. Then you can direct the file to a location of your choice. Please note the scanned log images vary in size and some may take several minutes to download.

Scanned/Raster Logs

FILENAME
4703902329gcd.tif
4703902329gpo.tif
4703902329ilz_a.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 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

There is no Plugging data for this well

There is no Sample data for this well

Form OG-10

orig

4703902329

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION

WELL RECORD

Rotary [X]
Spudder [ ]
Cable Tools [ ]
Storage [ ]

Quadrangle Clendenin
Permit No. KAN-2329
Oil or Gas Well OIL (KIND)

Company Maruva Oil Corp.
Address P.O.Box 3228, Parkersburg, W.Va.
Farm H. H. Thaxton Acres 47-1/8
Location (waters) Wills Creek
Well No. 1 Elev. 909
District Elk County Kanawha
The surface of tract is owned in fee by H. H. Thaxton Heirs
Address Elkview, W.Va.
Mineral rights are owned by H. H. Thaxton Heirs
Address Elkview, W.Va.
Drilling commenced 11/11/68
Drilling completed 11/15/68
Date Shot From To
With

Casing and Tubing	Used in Drilling	Left in Well	Packers
Size			
16			Kind of Packer
13			
10			Size of
8-5/8	242	242	
6¼	Cement Circ.		Depth set
5 3/16			
4½			
3			Perf. top
2			Perf. bottom
Liners Used			Perf. top
			Perf. bottom

Attach copy of cementing record.

Open Flow /10ths Water in Inch
/10ths Merc. in Inch
Volume Cu. Ft.
Rock Pressure lbs. hrs.
Oil SHOW bbls., 1st 24 hrs.
WELL ACIDIZED (DETAILS)

CASING CEMENTED 4½ SIZE 2020 No. Ft. 11/15/68 Date
Amount of cement used (bags) 150
Name of Service Co. Howco
COAL WAS ENCOUNTERED AT FEET INCHES
FEET INCHES FEET INCHES
FEET INCHES FEET INCHES

WELL FRACTURED (DETAILS) 41,500 #sand & 41,500 gallons gelled fresh water.

RESULT AFTER TREATMENT (Initial open Flow or bbls.) 28 BOPD
ROCK PRESSURE AFTER TREATMENT HOURS
Fresh Water Feet Salt Water Feet
Producing Sand Big INjun Depth 1880-1918

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth	Remarks
Surface & Rock			0	75			
Sandy Rock			75	110			
Shale			110	242			
Red Bed			242	280			
Sand & Shale			280	785			
Shale & Sandy Shale			785	1135			
Shale & Sand			1135	1150			
Salt Sand			1150	1695			
Little Lime			1695	1735			
Big Lime			1735	1880			
Big Injun			1880	1918			
Shale			1918	2025	(T.D.)		

RECEIVED
DEC 1968
West Virginia
Dept. of Mines

WV Geological & Economic Survey:

Well: County = 39 Permit = 4479 Link to all digital records for well

Report Time: Wednesday, May 14, 2025 12:33:19 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4703904479	Kanawha	4479	Elk	Blue Creek	Clendenin	38.459921	-81.48271	457885.3	4256956.6

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
4703904479	6/15/1987	Original Loc	Completed	William H Shaffer	2					Quaker State Oil Refining Co.			

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_BE
4703904479	6/15/1987	6/12/1987	854	Ground Level	Blue Ck(Flg Rk)	Big Injun (Price&eq)	Big Injun (Price&eq)	Development Well	Development Well	Oil and Gas	Rotary	Fractured	2004		2004		

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
4703904479	6/15/1987	Water	Salt Water	Vertical			1142						0
4703904479	6/15/1987	Pay	Gas	Vertical	1849	Big Injun (Price&eq)	1884	Big Injun (Price&eq)	0	30			
4703904479	6/15/1987	Pay	Oil	Vertical	1849	Big Injun (Price&eq)	1884	Big Injun (Price&eq)	0	6			

Production Gas Information: (Volumes in Mcf) *** 2024 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
4703904479	Quaker State Oil Refining Co.	1987	815	0	0	0	0	0	0	0	83	105	92	221	314
4703904479	Quaker State Oil Refining Co.	1988	2,237	97	145	132	181	120	148	141	155	216	355	403	144
4703904479	Quaker State Oil Refining Co.	1989	4,110	235	345	340	292	376	371	341	363	411	311	356	369
4703904479	Quaker State Oil Refining Co.	1990	3,024	285	162	169	239	275	269	328	330	233	236	231	267
4703904479	Quaker State Oil Refining Co.	1991	2,154	245	241	236	218	232	155	189	43	46	49	256	244
4703904479	Quaker State Oil Refining Co.	1992	2,483	151	146	165	236	154	238	286	208	212	222	218	247
4703904479	Quaker State Oil Refining Co.	1993	2,194	238	210	175	193	160	174	177	366	51	165	149	136
4703904479	Quaker State Oil Refining Co.	1994	1,500	126	92	107	97	102	130	227	123	28	186	149	133
4703904479	Peake Energy, Inc.	1995	1,286	143	123	102	100	77	67	67	123	131	125	114	114
4703904479	Peake Energy, Inc.	1996	881	111	87	89	87	82	63	76	65	44	58	60	59
4703904479	Peake Energy, Inc.	1997	578	49	43	52	52	43	48	54	45	56	55	43	38
4703904479	Peake Energy, Inc.	1998	638	42	28	43	57	53	63	49	54	71	58	60	60
4703904479	Peake Energy, Inc.	1999	566	62	54	47	45	11	1	101	64	64	49	26	42
4703904479	North Coast Energy Eastern	2000	3,564	314	312	326	303	291	255	292	302	292	316	291	270
4703904479	North Coast Energy Eastern	2001	544	49	47	31	44	67	53	51	40	49	43	23	47
4703904479	North Coast Energy Eastern	2002	519	37	38	25	32	54	62	66	53	65	51	14	22
4703904479	North Coast Energy Eastern	2003	285	17	6	16	37	30	15	16	20	20	28	47	33
4703904479	North Coast Energy Eastern	2004	649	55	47	55	48	47	54	66	57	57	59	58	46
4703904479	North Coast Energy Eastern	2005	264	36	35	34	31	15	22	10	6	6	11	25	33
4703904479	North Coast Energy Eastern	2006	296	29	20	18	20	36	11	16	32	23	28	30	33
4703904479	EXCO - North Coast Energy Eastern, Inc.	2007	189	24	18	25	27	7	7	20	7	23	13	11	7
4703904479	EXCO Resources (WV), Inc.	2008	250	6	5	1	9	23	28	22	32	17	31	38	38
4703904479	EXCO Resources (WV), Inc.	2009	116	38	21	40	12	0	1	0	0	0	0	3	1
4703904479	EXCO Resources (WV), Inc.	2010	121	0	9	6	2	13	12	16	14	10	16	6	17
4703904479	EXCO Resources (PA), LLC	2011	125	8	8	9	9	6	12	17	11	10	10	13	12
4703904479	EXCO Resources (PA), LLC	2012	157	14	7	16	11	15	15	9	15	15	12	13	15
4703904479	EXCO Resources (PA), LLC	2013	150	16	9	12	13	5	13	11	14	14	13	13	17
4703904479	EXCO Resources (PA), LLC	2014	108	10	8	8	12	9	10	11	6	7	9	9	9
4703904479	EXCO Resources (PA), LLC	2015	110	8	9	7	2	12	10	6	9	8	12	13	14
4703904479	Nytis Exploration Co., LLC	2016	118	15	16	8	4	3	1	6	6	13	19	13	13
4703904479	Nytis Exploration Co., LLC	2017	30	13	12	5	0	0	0	0	0	0	0	0	0
4703904479	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904479	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904479	Diversified Production, LLC	2020	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904479	Diversified Production, LLC	2021	101	22	17	9	8	16	16	2	2	0	0	3	2
4703904479	Diversified Production, LLC	2022	138	18	17	18	17	10	23	7	10	0	0	9	3
4703904479	Diversified Production, LLC	2023	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 *** 2024 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
4703904479	Quaker State Oil Refining Co.	1987	511	0	0	0	0	0	0	0	52	122	113	99	125
4703904479	Quaker State Oil Refining Co.	1988	2,185	122	131	101	133	127	117	245	278	272	255	158	246
4703904479	Quaker State Oil Refining Co.	1989	2,170	248	203	206	186	173	126	216	184	171	163	149	145
4703904479	Quaker State Oil Refining Co.	1990	1,380	142	118	134	124	127	126	110	101	104	104	100	90
4703904479	Quaker State Oil Refining Co.	1991	837	85	53	147	108	74	18	43	74	95	59	42	39
4703904479	Quaker State Oil Refining Co.	1992	858	0	106	14	71	114	83	81	137	32	76	73	71
4703904479	Quaker State Oil Refining Co.	1993	620	29	86	61	61	59	49	61	54	53	50	54	3
4703904479	Quaker State Oil Refining Co.	1994	482	10	42	51	48	51	48	2	53	47	50	35	45
4703904479	Peake Energy, Inc.	1995	451	49	52	39	58	0	54	0	51	46	45	0	57
4703904479	Peake Energy, Inc.	1996	469	42	49	45	40	36	43	37	36	29	43	37	32
4703904479	Peake Energy, Inc.	1997	387	40	40	39	47	6	46	40	45	1	56	2	25
4703904479	Peake Energy, Inc.	1998	314	55	42	0	53	37	21	16	0	29	21	38	2
4703904479	Peake Energy, Inc.	1999	305	55	0	26	0	85	0	0	47	0	63	29	0
4703904479	North Coast Energy Eastern	2000	263	38	9	49	14	18	43	0	0	51	35	0	6
4703904479	North Coast Energy Eastern	2001	248	30	33	0	54	0	0	44	43	0	0	44	0
4703904479	North Coast Energy Eastern	2002	226	22	29	0	39	0	0	72	6	46	0	12	0
4703904479	North Coast Energy Eastern	2003	216	23	4	0	23	22	17	42	0	6	0	44	35
4703904479	North Coast Energy Eastern	2004	147	0	0	0	22	0	74	6	0	27	18	0	0
4703904479	North Coast Energy Eastern	2005	210	44	0	6	49	0	6	0	22	26	0	0	57
4703904479	North Coast Energy Eastern	2006	190	38	0	38	0	0	8	34	0	20	0	0	52
4703904479	EXCO - North Coast Energy Eastern, Inc.	2007	165	0	0	25	0	0	25	0	76	0	0	0	39
4703904479	EXCO Resources (WV), Inc.	2008	224	53	13	35	0	13	22	43	0	0	15	6	24
4703904479	EXCO Resources (WV), Inc.	2009	207	0	63	0	0	0	53	0	0	52	0	18	21
4703904479	EXCO Resources (WV), Inc.	2010	143	0	0	30	22	0	0	33	0	9	0	31	18
4703904479	EXCO Resources (PA), LLC	2011	122	0	0	19	0	0	0	59	0	18	0	26	0
4703904479	EXCO Resources (PA), LLC	2012	176	16	33	0	0	32	0	31	38	0	0	0	26
4703904479	EXCO Resources (PA), LLC	2013	129	0	0	31	0	0	0	31	27	0	26	14	0
4703904479	EXCO Resources (PA), LLC	2014	155	19	0	29	6	15	0	54	0	0	0	25	7
4703904479	EXCO Resources (PA), LLC	2015	150	57	0	0	15	0	22	0	0	0	56	0	0
4703904479	Nytis Exploration Co., LLC	2016	154		24			30			53		47		
4703904479	Nytis Exploration Co., LLC	2017	18	0		8		10							
4703904479	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904479	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904479	Diversified Production, LLC	2020	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904479	Diversified Production, LLC	2021	166	23	0	20	31	0	0	29	17	14	0	29	0
4703904479	Diversified Production, LLC	2022	10	0	10	0	0	0	0	0	0	0	0	0	0
4703904479	Diversified Production, LLC	2023	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil *** 2024 data for H6A wells only. Other wells are incomplete at this time.**

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4703904479	EXCO Resources (PA), LLC	2013	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904479	EXCO Resources (PA), LLC	2014	0	0	0	0	0	0	0	0	0	0	0	0	0

4703904479

4703904479	EXCO Resources (PA), LLC	2015	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904479	Nytis Exploration Co., LLC	2016	0												
4703904479	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904479	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904479	Diversified Production, LLC	2020	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904479	Diversified Production, LLC	2021	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904479	Diversified Production, LLC	2022	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904479	Diversified Production, LLC	2023	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) *** 2024 data for H6A wells only. Other wells are incomplete at this time.**

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4703904479	Nytis Exploration Co., LLC	2016	0												
4703904479	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904479	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904479	Diversified Production, LLC	2020	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904479	Diversified Production, LLC	2021	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904479	Diversified Production, LLC	2022	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904479	Diversified Production, LLC	2023	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4703904479	Original Loc	Salt Sands (undiff)	Well Record	1142	Reasonable	365	Reasonable	854	Ground Level
4703904479	Original Loc	Maxton	Well Record	1607	Reasonable	55	Reasonable	854	Ground Level
4703904479	Original Loc	Little Lime	Well Record	1662	Reasonable	44	Reasonable	854	Ground Level
4703904479	Original Loc	Big Lime	Well Record	1711	Reasonable	140	Reasonable	854	Ground Level
4703904479	Original Loc	Big Injun (Price&eq)	Well Record	1851	Reasonable	39	Reasonable	854	Ground Level

Wireline (E-Log) Information:

* Scanned/Raster Log Information:

API	STATUS	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	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	IN
4703904479	Regular Entry	18	2014		G,D,I,C,*	Y	18	2002	289	2014			1688	2010					1849	1884	Y	Y

Scanned/Raster Comment: *logs: perf depth, tension, caliper, casing collar

* There is no Digitized/LAS Log data for this well

Downloadable Log Images/Data: We advise you to save the scanned log or digitized log file(s) to your PC for viewing. To do so, right-click the file of interest and select the save option. Then you can direct the file to a location of your choice. Please note the scanned log images vary in size and some may take several minutes to download.

Scanned/Raster Logs

FILENAME
4703904479cdgipo.tif
4703904479gpo.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

There is no Plugging data for this well

There is no Sample data for this well

4703904479

WR-35

RECEIVED
OCT 15 1987
DIVISION OF OIL & GAS
DEPT. OF ENERGY

State of West Virginia
DEPARTMENT OF ENERGY
Oil and Gas Division

Date October 9, 1987
Operator's
Well No. #2
Farm H. THAXTON
API No. 47 - 039 - 4479

WELL OPERATOR'S REPORT
OF
DRILLING, FRACTURING AND/OR STIMULATING, OR PHYSICAL CHANGE

WELL TYPE: Oil XX / Gas ___ / Liquid Injection ___ / Waste Disposal ___ /
(If "Gas," Production ___ / Underground Storage ___ / Deep ___ / Shallow XX /)

LOCATION: Elevation: 854.1' Watershed Wills Creek of Little Sandy Creek
District: Elk County Kanawha Quadrangle Blue Creek 7.5'

COMPANY QUAKER STATE OIL REFINING CORPORATION
ADDRESS P.O. Box 1327; Parkersburg, WV 26101
DESIGNATED AGENT Samuel F. Barber
ADDRESS 1226 Putnam Howe Dr; Belpre, OH 45714
SURFACE OWNER William & Loretta Shaffer
ADDRESS Elkview, WV
MINERAL RIGHTS OWNER Ernest Thaxton, et al
ADDRESS Rt. 1; Elkview, WV
OIL AND GAS INSPECTOR FOR THIS WORK
Carlos Hively ADDRESS Elkview, WV
PERMIT ISSUED April 27, 1987
DRILLING COMMENCED June 13, 1967
DRILLING COMPLETED June 15, 1987
IF APPLICABLE: PLUGGING OF DRY HOLE ON CONTINUOUS PROGRESSION FROM DRILLING OR REWORKING. VERBAL PERMISSION OBTAINED ON

Casing & Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft.
Size 20-16 Cond.			
13-10"			
9 5/8			
8 5/8	321'	321'	127 Sx
7			
5 1/2			
4 1/2	1955'	1955'	150 Sx
3			
2			
Liners used			

GEOLOGICAL TARGET FORMATION Big Injun Depth 1851' feet
Depth of completed well 2004' feet Rotary XX / Cable Tools ___
Water strata depth: Fresh N/A feet; Salt 1142 feet
Coal seam depths: N/A Is coal being mined in the area? NO

OPEN FLOW DATA
Producing formation Big Injun Pay zone depth 1851- feet
Gas: Initial open flow -- Mcf/d Oil: Initial open flow show Bbl/d
Final open flow 30 Mcf/d Final open flow 6 Bbl/d
Time of open flow between initial and final tests ___ hours
Static rock pressure ___ psig (surface measurement) after ___ hours shut in
(If applicable due to multiple completion--)
Second producing formation ___ Pay zone depth ___ feet
Gas: Initial open flow ___ Mcf/d Oil: Initial open flow ___ Bbl/d
Final open flow ___ Mcf/d Oil: Final open flow ___ Bbl/d
Time of open flow between initial and final tests ___ hours
Static rock pressure ___ psig (surface measurement) after ___ hours shut in

KAN. 4479

(Continue on reverse side)

4703904479

DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC.

Perf: 1884-1849 with 33 holes

Frac: 391 Bbls. water, 16,000# sand, BD at 2330 psi
treated at 1488 psi with 29 BPM
ISIP 1303 psi

WELL LOG

FORMATION COLOR HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS Including indication of all fresh and salt water, coal, oil and gas
Salt sands	1142	1507	Salt water
Silt & shale	1507	1607	
Maxton Sand	1607	1662	
Little Lime	1662	1706	
Shale	1706	1711	
Big Lime	1711	1851	
Big Injun Sand	1851	1890	Oil
Silt & shale	1890	2004	

(Attach separate sheets as necessary)

CHAVES STATE OIL REFINING CORPORATION
Well Operator

By: Jeffrey M. Hill
Geologist

Date: 7/11/

Note: Regulation 2.02(i) provides as follows:
"The term 'log' or 'well log' shall mean a systematic detailed geological record of all formations, including

WV Geological & Economic Survey:

Well: County = 39 Permit = 4597 Link to all digital records for well

Report Time: Wednesday, May 14, 2025 12:33:42 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4703904597	Kanawha	4597	Elk	Blue Creek	Clendenin	38.462097	-81.48474	457709.5	4257198.9

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
4703904597	6/24/1988	Original Loc	Completed	W Shaffer		3	Thaxton			Quaker State Oil Refining Co.			

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_BE
4703904597	6/24/1988	6/21/1988	821	Ground Level	Blue Ck(Flg Rk)	Big Injun (Price&eq)	Big Injun (Price&eq)	Development Well	Development Well	Oil and Gas	Rotary	Fractured	1934		1934		

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
4703904597	6/24/1988	Water	Fresh Water	Vertical			40						0
4703904597	6/24/1988	Water	Salt Water	Vertical			1118						0
4703904597	6/24/1988	Pay	Gas	Vertical	1822	Big Injun (Price&eq)	1862	Big Injun (Price&eq)	0	30			
4703904597	6/24/1988	Pay	Oil	Vertical	1822	Big Injun (Price&eq)	1862	Big Injun (Price&eq)	0	24			

Production Gas Information: (Volumes in Mcf) *** 2024 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
4703904597	Quaker State Oil Refining Co.	1988	2,237	97	145	132	181	120	148	141	155	216	355	403	144
4703904597	Quaker State Oil Refining Co.	1989	4,110	235	345	340	292	376	371	341	363	411	311	356	369
4703904597	Quaker State Oil Refining Co.	1990	3,024	285	162	169	239	275	269	328	330	233	236	231	267
4703904597	Quaker State Oil Refining Co.	1991	2,154	245	241	236	218	232	155	189	43	46	49	256	244
4703904597	Quaker State Oil Refining Co.	1992	2,483	151	146	165	236	154	238	286	208	212	222	218	247
4703904597	Quaker State Oil Refining Co.	1993	2,194	238	210	175	193	160	174	177	366	51	165	149	136
4703904597	Quaker State Oil Refining Co.	1994	1,500	126	92	107	97	102	130	227	123	28	186	149	133
4703904597	Peake Energy, Inc.	1995	1,284	143	123	102	100	77	67	66	121	131	126	114	114
4703904597	Peake Energy, Inc.	1996	881	111	87	89	87	82	63	76	65	44	58	60	59
4703904597	Peake Energy, Inc.	1997	578	49	43	52	52	43	48	54	45	56	55	43	38
4703904597	Peake Energy, Inc.	1998	638	42	28	43	57	53	63	49	54	71	58	60	60
4703904597	Peake Energy, Inc.	1999	566	62	54	47	45	11	1	101	64	64	49	26	42
4703904597	North Coast Energy Eastern	2000	1,003	86	74	98	66	91	89	78	101	89	92	81	58
4703904597	North Coast Energy Eastern	2001	543	50	47	31	43	66	54	51	41	48	43	23	46
4703904597	North Coast Energy Eastern	2002	512	37	38	25	32	53	61	65	53	64	50	13	21
4703904597	North Coast Energy Eastern	2003	286	18	5	17	37	29	15	17	21	19	29	47	32
4703904597	North Coast Energy Eastern	2004	646	55	47	54	47	48	54	66	56	56	59	58	46
4703904597	North Coast Energy Eastern	2005	267	36	36	33	31	16	23	11	6	6	11	25	33
4703904597	North Coast Energy Eastern	2006	292	29	19	18	19	36	10	15	31	23	28	30	34
4703904597	EXCO - North Coast Energy Eastern, Inc.	2007	188	25	18	24	27	8	6	21	7	23	12	10	7
4703904597	EXCO Resources (WV), Inc.	2008	248	6	5	1	9	22	28	23	31	16	31	38	38
4703904597	EXCO Resources (WV), Inc.	2009	115	37	21	41	11	0	1	0	0	0	1	3	0
4703904597	EXCO Resources (WV), Inc.	2010	116	0	9	6	1	13	11	16	14	9	15	5	17
4703904597	EXCO Resources (PA), LLC	2011	126	8	8	10	9	7	12	16	11	11	10	13	11
4703904597	EXCO Resources (PA), LLC	2012	159	14	8	16	11	15	16	8	15	16	11	14	15
4703904597	EXCO Resources (PA), LLC	2013	151	15	10	13	13	6	14	11	13	13	14	12	17
4703904597	EXCO Resources (PA), LLC	2014	108	10	8	8	11	10	11	10	6	6	10	9	9
4703904597	EXCO Resources (PA), LLC	2015	111	8	9	7	2	12	10	6	10	7	12	14	14
4703904597	Nytis Exploration Co., LLC	2016	114	14	15	8	2	4	0	7	6	12	19	13	13
4703904597	Nytis Exploration Co., LLC	2017	30	13	12	5	0	0	0	0	0	0	0	0	0
4703904597	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904597	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904597	Diversified Production, LLC	2020	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904597	Diversified Production, LLC	2021	101	22	17	9	8	16	16	2	2	0	0	3	2
4703904597	Diversified Production, LLC	2022	138	18	17	18	17	10	23	7	10	0	0	9	3
4703904597	Diversified Production, LLC	2023	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 *** 2024 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
4703904597	Quaker State Oil Refining Co.	1988	2,185	122	131	101	133	127	117	245	278	272	255	158	246
4703904597	Quaker State Oil Refining Co.	1989	2,170	248	203	206	186	173	126	216	184	171	163	149	145
4703904597	Quaker State Oil Refining Co.	1990	1,380	142	118	134	124	127	126	110	101	104	104	100	90
4703904597	Quaker State Oil Refining Co.	1991	837	85	53	147	108	74	18	43	74	95	59	42	39
4703904597	Quaker State Oil Refining Co.	1992	858	0	106	14	71	114	83	81	137	32	76	73	71
4703904597	Quaker State Oil Refining Co.	1993	620	29	86	61	61	59	49	61	54	53	50	54	3
4703904597	Quaker State Oil Refining Co.	1994	482	10	42	51	48	51	48	2	53	47	50	35	45
4703904597	Peake Energy, Inc.	1995	451	49	52	39	58	0	54	0	51	46	45	0	57
4703904597	Peake Energy, Inc.	1996	465	41	48	46	39	37	41	36	37	29	43	37	31
4703904597	Peake Energy, Inc.	1997	387	40	40	39	47	6	46	40	45	1	56	2	25
4703904597	Peake Energy, Inc.	1998	314	55	42	0	53	37	21	16	0	29	21	38	2
4703904597	Peake Energy, Inc.	1999	305	55	0	26	0	85	0	0	47	0	63	29	0
4703904597	North Coast Energy Eastern	2000	263	38	9	49	14	18	43	0	0	51	35	0	6
4703904597	North Coast Energy Eastern	2001	248	30	33	0	54	0	0	44	43	0	0	44	0
4703904597	North Coast Energy Eastern	2002	226	22	29	0	39	0	0	72	6	46	0	12	0
4703904597	North Coast Energy Eastern	2003	216	23	4	0	23	22	17	42	0	6	0	44	35
4703904597	North Coast Energy Eastern	2004	147	0	0	0	22	0	74	6	0	27	18	0	0
4703904597	North Coast Energy Eastern	2005	210	44	0	6	49	0	6	0	22	26	0	0	57
4703904597	North Coast Energy Eastern	2006	190	38	0	38	0	0	8	34	0	20	0	0	52
4703904597	EXCO - North Coast Energy Eastern, Inc.	2007	165	0	0	25	0	0	25	0	76	0	0	0	39
4703904597	EXCO Resources (WV), Inc.	2008	224	53	13	35	0	13	22	43	0	0	15	6	24
4703904597	EXCO Resources (WV), Inc.	2009	207	0	63	0	0	0	53	0	0	52	0	18	21
4703904597	EXCO Resources (WV), Inc.	2010	143	0	0	30	22	0	0	33	0	9	0	31	18
4703904597	EXCO Resources (PA), LLC	2011	122	0	0	19	0	0	0	59	0	18	0	26	0
4703904597	EXCO Resources (PA), LLC	2012	176	16	33	0	0	32	0	31	38	0	0	0	26
4703904597	EXCO Resources (PA), LLC	2013	129	0	0	31	0	0	0	31	27	0	26	14	0
4703904597	EXCO Resources (PA), LLC	2014	155	19	0	29	6	15	0	54	0	0	0	25	7
4703904597	EXCO Resources (PA), LLC	2015	150	57	0	0	15	0	22	0	0	0	56	0	0
4703904597	Nytis Exploration Co., LLC	2016	154		24			30			53		47		
4703904597	Nytis Exploration Co., LLC	2017	18	0		8		10							
4703904597	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904597	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904597	Diversified Production, LLC	2020	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904597	Diversified Production, LLC	2021	166	23	0	20	31	0	0	29	17	14	0	29	0
4703904597	Diversified Production, LLC	2022	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904597	Diversified Production, LLC	2023	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil *** 2024 data for H6A wells only. Other wells are incomplete at this time.**

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4703904597	EXCO Resources (PA), LLC	2013	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904597	EXCO Resources (PA), LLC	2014	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904597	EXCO Resources (PA), LLC	2015	0	0	0	0	0	0	0	0	0	0	0	0	0

4703904597

4703904597	Nytis Exploration Co., LLC	2016	0												
4703904597	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904597	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904597	Diversified Production, LLC	2020	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904597	Diversified Production, LLC	2021	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904597	Diversified Production, LLC	2022	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904597	Diversified Production, LLC	2023	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) *** 2024 data for H6A wells only. Other wells are incomplete at this time.**

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4703904597	Nytis Exploration Co., LLC	2016	0												
4703904597	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904597	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904597	Diversified Production, LLC	2020	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904597	Diversified Production, LLC	2021	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904597	Diversified Production, LLC	2022	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904597	Diversified Production, LLC	2023	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4703904597	Original Loc	unidentified coal	Electric Log	454		1		821	Ground Level
4703904597	Original Loc	unidentified coal	Electric Log	468		1		821	Ground Level
4703904597	Original Loc	Salt Sands (undiff)	Well Record	1118	Reasonable	512	Reasonable	821	Ground Level
4703904597	Original Loc	Miss/Penn boundary	Electric Log	1481				821	Ground Level
4703904597	Original Loc	Little Lime	Well Record	1630	Reasonable	34	Reasonable	821	Ground Level
4703904597	Original Loc	Pencil Cave	Well Record	1664	Reasonable	15	Reasonable	821	Ground Level
4703904597	Original Loc	Big Lime	Well Record	1679	Reasonable	139	Reasonable	821	Ground Level
4703904597	Original Loc	Big Injun (Price&eq)	Well Record	1818	Reasonable	45	Reasonable	821	Ground Level

Wireline (E-Log) Information:

* Scanned/Raster Log Information:

API	STATUS	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	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	INC
4703904597	Regular Entry	10	1935		G,D,C,*	Y	10	1935	300	1934									300	1935	Y	Y

Scanned/Raster Comment: *logs: caliper, perf depth, ccl

* There is no Digitized/LAS Log data for this well

Downloadable Log Images/Data: We advise you to save the scanned log or digitized log file(s) to your PC for viewing. To do so, right-click the file of interest and select the save option. Then you can direct the file to a location of your choice. Please note the scanned log images vary in size and some may take several minutes to download.

Scanned/Raster Logs

FILENAME
4703904597cdg.tif
4703904597gpo.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

There is no Plugging data for this well

There is no Sample data for this well

WR-35

4703904597

07-Jun-88
API # 47- 39-04597

State of West Virginia
DEPARTMENT OF ENERGY
Division of Oil and Gas

Well Operator's Report of Well Work

Farm name: SHAFFER, WILLIAM/ LORETTA Operator Well No.: H. THAXTON 3

LOCATION: Elevation: 821.40 Quadrangle: BLUE CREEK

District: ELK County: KANAWHA
Latitude: 13900 Feet South of 38 Deg. 30Min. 0 Sec.
Longitude 7650 Feet West of 81 Deg. 27 Min. 30 Sec.

Company: QUAKER STATE OIL REFINING
1226 PUTNAM HOWE DR. P.O B189
BELPRE, OH

Agent: FRANK R. ROTUNDA

Inspector: CARLOS W. HIVELY
Permit Issued: 06/09/88
Well work Commenced: 06/21/88
Well work Completed: 06/24/88
Verbal Plugging
Permission granted on:
Rotary ____ Cable ____ Rig
Total Depth (feet) 1934
Fresh water depths (ft) 40

Salt water depths (ft) 1118

Is coal being mined in area (Y/N)? N
Coal Depths (ft):

Casing & Tubing	Used in Drilling	Left in Well	Cement Fill Up Cu. Ft.
Size			
8 5/8"	295'	295'	115 sx.
4 1/2"	1906'	1906'	180 sx.

RECEIVED
SEP 21 1988
DIVISION OF OIL & GAS
DEPARTMENT OF ENERGY

OPEN FLOW DATA

Producing formation Big Injun Pay zone depth (ft) 1822-62
Gas: Initial open flow ____ MCF/d Oil: Initial open flow show Bbl/d
Final open flow 30 MCF/d Final open flow 24 Bbl/d
Time of open flow between initial and final tests ____ Hours
Static rock Pressure ____ psig (surface pressure) after ____ Hours

Second producing formation ____ Pay zone depth (ft) ____
Gas: Initial open flow ____ MCF/d Oil: Initial open flow ____ Bbl/d
Final open flow ____ MCF/d Final open flow ____ Bbl/d
Time of open flow between initial and final tests ____ Hours
Static rock Pressure ____ psig (surface pressure) after ____ Hours

NOTE: ON BACK OF THIS FORM PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

For: QUAKER STATE OIL REFINING CORP.

By: Samuel F. Barber, District Manager
Date: 9-14-88

4703904597

DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC.
Perf.: 1822 - 62
Frac'd: 416 Bbl. water, 160 sx. sand, BD at 1181, treated at 41 BPM, 1707 PSI, ISIP 1161

WELL LOG:

Formation Color Hard or Soft	Top Feet	Bottom Feet	Remarks
sand and shale	0	1118	
salt sands	1118	1630	
Little Lime	1630	1664	
Pencil Cave	1664	1679	
Big Lime	1679	1818	
Big Injun	1818	1863	oil and gas
silt and shale	1863	1934	

7164

4703904647

WVGES GEOLOGY UNDERLIES IT ALL
"Pipeline"

Select County: (039) Kanawha | Select datatypes: (Check All)
Enter Permit #: 4647
Get Data | Reset
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 = 39 Permit = 4647 Link to all digital records for well

Report Time: Wednesday, May 14, 2025 12:34:10 PM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4703904647	Kanawha	4647	Elk	Blue Creek	Clendenin	38.459921	-81.484739	457708.3	4256957.5

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
4703904647	6/11/1989	Original Loc	Completed	Calvin E Pritt	2	BOOKER 2			Wilbur C Booker et al	Quaker State Oil Refining Co.			

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
4703904647	6/11/1989	6/8/1989	832	Ground Level	Blue Ck(Flg Rk)	Big Injun (Price&eq)	Big Injun (Price&eq)	Development Well	Development Well	Oil w/ Gas Show	Rotary	Fractured	1965		1965		

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
4703904647	6/11/1989	Water	Fresh Water	Vertical			110						0
4703904647	6/11/1989	Water	Salt Water	Vertical			1115						0
4703904647	6/11/1989	Show	Gas	Vertical	1819	Big Injun (Price&eq)	1855	Big Injun (Price&eq)	0	20			
4703904647	6/11/1989	Pay	Oil	Vertical	1819	Big Injun (Price&eq)	1855	Big Injun (Price&eq)	0	15			

Production Gas Information: (Volumes in Mcf) *** 2024 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
4703904647	Quaker State Oil Refining Co.	1989	1,753	64	51	46	35	40	31	63	64	109	851	202	197
4703904647	Quaker State Oil Refining Co.	1990	2,022	121	84	88	91	105	94	96	0	367	371	363	242
4703904647	Quaker State Oil Refining Co.	1991	1,901	222	237	232	214	152	132	160	52	79	85	159	177
4703904647	Quaker State Oil Refining Co.	1992	1,661	136	132	125	115	127	145	155	152	155	143	130	146
4703904647	Quaker State Oil Refining Co.	1993	1,360	141	113	93	112	109	96	96	157	103	133	115	92
4703904647	Quaker State Oil Refining Co.	1994	927	95	73	79	66	83	92	97	56	11	70	103	102
4703904647	Peake Energy, Inc.	1995	1,869	212	127	176	202	114	145	107	184	168	154	125	155
4703904647	Peake Energy, Inc.	1996	2,191	128	87	113	154	293	251	225	129	239	223	155	194
4703904647	Peake Energy, Inc.	1997	1,410	160	145	79	94	53	81	135	115	126	101	187	134
4703904647	Peake Energy, Inc.	1998	1,772	150	176	164	111	156	173	167	108	187	117	144	119
4703904647	Peake Energy, Inc.	1999	1,086	131	133	140	142	17	0	83	126	90	84	47	93
4703904647	North Coast Energy Eastern	2000	1,667	116	108	175	211	3	5	17	185	209	159	256	223
4703904647	North Coast Energy Eastern	2001	742	68	61	61	59	62	77	59	50	45	87	53	60
4703904647	North Coast Energy Eastern	2002	987	73	100	22	23	24	59	103	143	133	112	49	146
4703904647	North Coast Energy Eastern	2003	934	81	135	90	104	113	31	19	50	96	94	62	59
4703904647	North Coast Energy Eastern	2004	889	38	71	96	28	70	24	79	116	49	97	97	124
4703904647	North Coast Energy Eastern	2005	1,102	79	102	109	101	141	78	88	79	101	67	55	102
4703904647	North Coast Energy Eastern	2006	840	65	62	69	35	49	65	38	110	109	58	97	83
4703904647	EXCO - North Coast Energy Eastern, Inc.	2007	941	37	66	40	78	52	92	147	31	121	118	80	79
4703904647	EXCO Resources (WV), Inc.	2008	1,454	87	141	206	108	114	101	181	105	155	131	72	53
4703904647	EXCO Resources (WV), Inc.	2009	1,314	78	47	85	106	157	190	130	192	103	91	53	82
4703904647	EXCO Resources (WV), Inc.	2010	1,153	65	65	140	61	151	93	113	144	83	102	87	49
4703904647	EXCO Resources (PA), LLC	2011	1,051	1	2	12	110	88	153	179	84	189	107	45	81
4703904647	EXCO Resources (PA), LLC	2012	1,150	101	56	101	128	123	110	92	99	104	103	94	39
4703904647	EXCO Resources (PA), LLC	2013	1,067	1	1	39	136	187	102	145	159	81	59	72	85
4703904647	EXCO Resources (PA), LLC	2014	1,177	48	90	124	89	108	138	85	94	69	98	110	124
4703904647	EXCO Resources (PA), LLC	2015	1,017	70	96	60	39	138	77	70	98	114	106	100	49
4703904647	Nytis Exploration Co., LLC	2016	647	68	119	147	79	26	0	0	0	0	85	61	60
4703904647	Nytis Exploration Co., LLC	2017	139	60	56	23	0	0	0	0	0	0	0	0	0
4703904647	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904647	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904647	Diversified Production, LLC	2020	38	0	0	0	0	0	0	0	0	0	0	12	26
4703904647	Diversified Production, LLC	2021	645	150	101	57	56	117	104	53	4	0	0	0	0
4703904647	Diversified Production, LLC	2022	742	0	0	0	0	0	0	8	19	172	179	172	189
4703904647	Diversified Production, LLC	2023	900	166	140	120	116	68	64	104	122	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil *** 2024 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
4703904647	Quaker State Oil Refining Co.	1989	982	9	15	21	22	16	17	175	208	166	137	105	91
4703904647	Quaker State Oil Refining Co.	1990	1,345	62	59	59	47	54	159	140	199	155	179	91	141
4703904647	Quaker State Oil Refining Co.	1991	1,025	129	71	97	74	76	18	94	113	102	135	53	63
4703904647	Quaker State Oil Refining Co.	1992	811	39	121	52	96	78	71	69	66	58	69	43	49
4703904647	Quaker State Oil Refining Co.	1993	465	45	51	56	0	10	53	45	6	86	40	1	72
4703904647	Quaker State Oil Refining Co.	1994	407	32	34	37	32	39	24	4	59	44	41	28	33
4703904647	Peake Energy, Inc.	1995	650	100	29	41	73	57	73	0	107	0	53	53	64
4703904647	Peake Energy, Inc.	1996	484	41	33	18	29	70	56	53	46	37	31	29	41
4703904647	Peake Energy, Inc.	1997	395	16	62	31	23	37	14	66	0	55	0	43	48
4703904647	Peake Energy, Inc.	1998	375	0	63	0	65	39	12	60	0	46	3	31	56
4703904647	Peake Energy, Inc.	1999	255	0	43	36	17	34	0	0	0	41	33	51	0
4703904647	North Coast Energy Eastern	2000	326	64	0	37	21	47	52	0	0	72	0	0	33
4703904647	North Coast Energy Eastern	2001	328	58	0	54	44	10	0	69	0	10	29	9	45
4703904647	North Coast Energy Eastern	2002	180	0	33	18	0	0	33	9	0	11	36	40	0
4703904647	North Coast Energy Eastern	2003	188	0	56	0	0	0	59	0	0	0	44	0	29
4703904647	North Coast Energy Eastern	2004	195	0	0	0	73	0	0	0	55	2	0	0	65
4703904647	North Coast Energy Eastern	2005	189	8	0	48	9	0	0	0	61	0	0	0	63
4703904647	North Coast Energy Eastern	2006	109	0	0	0	0	0	70	9	0	0	0	0	30
4703904647	EXCO - North Coast Energy Eastern, Inc.	2007	122	27	0	11	0	0	13	7	64	0	0	0	0
4703904647	EXCO Resources (WV), Inc.	2008	130	0	56	9	0	0	0	0	0	28	37	0	0
4703904647	EXCO Resources (WV), Inc.	2009	194	0	2	53	55	0	9	0	0	67	8	0	0
4703904647	EXCO Resources (WV), Inc.	2010	92	0	0	0	40	0	0	27	0	0	0	0	25
4703904647	EXCO Resources (PA), LLC	2011	79	0	37	0	0	0	0	26	16	0	0	0	0
4703904647	EXCO Resources (PA), LLC	2012	139	75	0	0	0	0	0	0	0	0	55	0	9
4703904647	EXCO Resources (PA), LLC	2013	57	0	0	0	0	0	0	0	48	9	0	0	0
4703904647	EXCO Resources (PA), LLC	2014	63	0	0	0	39	24	0	0	0	0	0	0	0
4703904647	EXCO Resources (PA), LLC	2015	65	0	0	0	0	0	65	0	0	0	0	0	0
4703904647	Nytis Exploration Co., LLC	2016	0												
4703904647	Nytis Exploration Co., LLC	2017	41	33	8										
4703904647	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904647	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904647	Diversified Production, LLC	2020	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904647	Diversified Production, LLC	2021	30	4	0	12	0	0	0	13	0	0	0	0	0
4703904647	Diversified Production, LLC	2022	44	0	0	0	0	0	0	0	0	0	0	0	44
4703904647	Diversified Production, LLC	2023	47	0	0	0	0	0	0	47	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil *** 2024 data for H6A wells only. Other wells are incomplete at this time.**

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4703904647	EXCO Resources (PA), LLC	2013	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904647	EXCO Resources (PA), LLC	2014	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904647	EXCO Resources (PA), LLC	2015	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904647	Nytis Exploration Co., LLC	2016	0												
4703904647	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

4703904647

4703904647	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904647	Diversified Production, LLC	2020	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904647	Diversified Production, LLC	2021	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904647	Diversified Production, LLC	2022	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904647	Diversified Production, LLC	2023	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons) *** 2024 data for H6A wells only. Other wells are incomplete at this time.**

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4703904647	Nytis Exploration Co., LLC	2016	0												
4703904647	Nytis Exploration Co., LLC	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904647	Nytis Exploration Co., LLC	2019	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904647	Diversified Production, LLC	2020	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904647	Diversified Production, LLC	2021	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904647	Diversified Production, LLC	2022	0	0	0	0	0	0	0	0	0	0	0	0	0
4703904647	Diversified Production, LLC	2023	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4703904647	Original Loc	Salt Sands (undiff)	Well Record	1115	Reasonable	375	Reasonable	832	Ground Level
4703904647	Original Loc	Little Lime	Well Record	1635	Reasonable	33	Reasonable	832	Ground Level
4703904647	Original Loc	Pencil Cave	Well Record	1668	Reasonable	14	Reasonable	832	Ground Level
4703904647	Original Loc	Big Lime	Well Record	1682	Reasonable	139	Reasonable	832	Ground Level
4703904647	Original Loc	Big Injun (Price&eq)	Well Record	1821	Reasonable	51	Reasonable	832	Ground Level

Wireline (E-Log) Information:

* Scanned/Raster Log Information:

API	STATUS	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	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	INC
4703904647	Regular Entry	1700	1925		G,*	Y	1700	1925											1700	1925	N	Y

Scanned/Raster Comment: *logs: perf depth, ccl

* There is no Digitized/LAS Log data for this well

Downloadable Log Images/Data: We advise you to save the scanned log or digitized log file(s) to your PC for viewing. To do so, right-click the file of interest and select the save option. Then you can direct the file to a location of your choice. Please note the scanned log images vary in size and some may take several minutes to download.

Scanned/Raster Logs

FILENAME
4703904647gpo.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

There is no Plugging data for this well

There is no Sample data for this well

4703904647

WR-35

20-Apr-89
API # 47- 39-04647

State of West Virginia
DEPARTMENT OF ENERGY
Division of Oil and Gas

Well Operator's Report of Well Work

Farm name: PRITT, CALVIN & PATRICIA Operator Well No.: BOOKER 2

LOCATION: Elevation: 832.00 Quadrangle: BLUE CREEK

District: ELK County: KANAWHA
Latitude: 14620 Feet South of 38 Deg. 30Min. 0 Sec.
Longitude 7670 Feet West of 81 Deg. 27 Min. 30 Sec.

Company: QUAKER STATE CORPORATION
1226 PUTNAM HOWE DR. P.O B189
BELPRE, OH 45714-0000

Agent: FRANK R. ROTUNDA

Inspector: CARLOS W. HIVELY
Permit Issued: 04/20/89
Well work Commenced: 06/08/89
Well work Completed: 06/11/89
Verbal Plugging
Permission granted on: N/A
Rotary XX Cable ____ Rig
Total Depth (feet) 1965
Fresh water depths (ft) 110

Salt water depths (ft) 1115

Is coal being mined in area (Y/N)? N
Coal Depths (ft): N/A

Casing & Tubing	Used in Drilling	Left in Well	Cement Fill Up Cu. Ft.
Size			
8 5/8"	398'	398'	110 sx.
5 1/2"	1938'	1938'	130 sx.

RECEIVED
OCT 10 1989
DIVISION OF OIL & GAS
DEPARTMENT OF ENERGY

OPEN FLOW DATA

Producing formation Big Injun Pay zone depth (ft) 1819-55
Gas: Initial open flow -- MCF/d Oil: Initial open flow show Bbl/
Final open flow 20 MCF/d Final open flow 15 Bbl/
Time of open flow between initial and final tests -- Hour
Static rock Pressure -- psig (surface pressure) after -- Hour

Second producing formation N/A Pay zone depth (ft) ____
Gas: Initial open flow ____ MCF/d Oil: Initial open flow ____ Bbl/
Final open flow ____ MCF/d Final open flow ____ Bbl/
Time of open flow between initial and final tests ____ Hour
Static rock Pressure ____ psig (surface pressure) after ____ Hour

NOTE: ON BACK OF THIS FORM PUT THE FOLLOWING: 1). DETAILS OF PERFORATE INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WEL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

Duane Clark

For: QUAKER STATE CORPORATION

By: Duane Clark
Date: October 3, 1989

4703904647

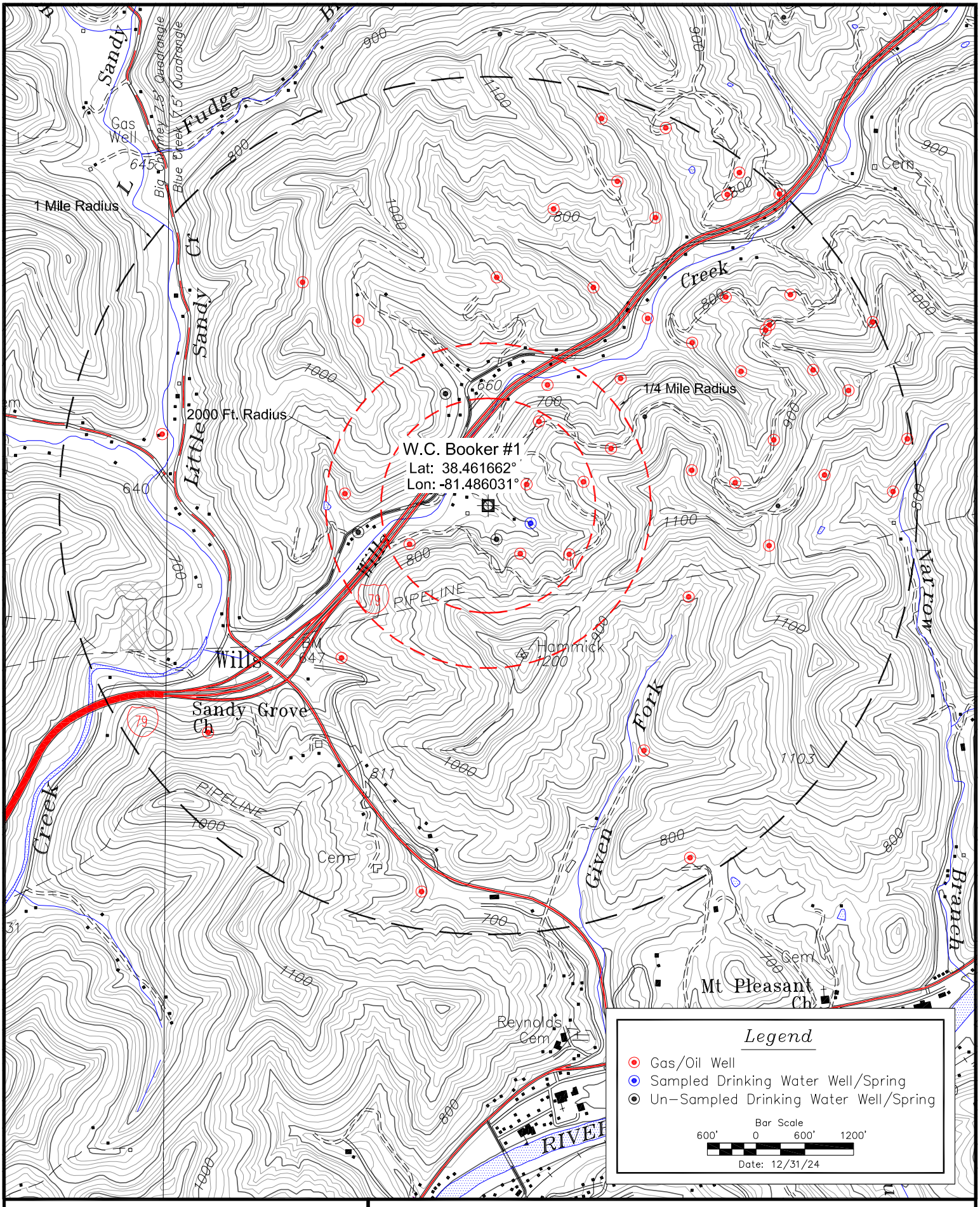
PERF: 1819' - 1855' with 31 holes

FRAC: 431 Bbl. water, 160 sx. sand, BD at 1472 PSI, Treated at 1832 PSI

WELL LOG:

FORMATION	TOP FEET	BOTTOM FEET	
Surface	0	50	
Shale	50	110	
Sand	110	170	
Sand and shale	170	1115	
Salt sands	1115	1490	salt water
Shale	1490	1600	
Sand	1600	1635	
Little Lime	1635	1668	
Pencil Cave	1668	1682	
Big Lime	1682	1821	
Big Injun	1821	1872	oil
Silt and shale	1872	1965	

8-10-b



DR CONSULTING SERVICES
262 Ashbrooke Hill, Ashland KY Phone: 606 922 0323

W.C. Booker #1
Kanawha County, West Virginia

4703902327

UIC Section 7 Water Wells and Springs Sampling Summary W. C. Booker #1 UIC2D0392327

Injection Well	Well Name	Lat	Long	Estimated Distance (miles)	Sampled	Notes
W. C. Booker #1	C. Pritt 1	38.460352	-81.485730	0.13	N	Pump in well had failed and was not replaced. Could not obtain sample. Owner stated that the well was only used to water horses and he had city water.
	C. Pritt 2 (pond)	38.460867	-81.484309	0.21	Y	Pond behind house. Believed to be spring fed.
	McVey 1	38.465331	-81.488006	0.31	N	Unable to obtain sample. Owner not home. Left note with contact information.
	Milam 1	38.460605	-81.491660	0.20	N	Owner did not want well sampled. Well not used.
	Muliple			<0.25	N	Unable to establish contact with various addresses at 969, 1438, 1858, 1894, 1944, 1951, 1980 Willis Creek Rd. 125 Garwood, Old Orchard Branch Rd.- Trailor resident said they did not have a well, property owner had No Tresspass. Owner at 165 Garwood had well but said it coukd not be sampled.

4703902327

APPENDIX E

Water Sources

Operator: Diversified Gas & Oil Year 2024 UIC Permit # UIC2D0392327

		Source #1	Source #2	Source #3	Source #4
Water Source Name		C. Pritt 2 (pond)			
Northing		4257062.26			
Easting		457746.83			
Parameter	**Units**				
Chloride	mg/L	9.23			
Bromide	mg/L	Not detected			
Strontium	mg/L	0.0487			
Barium	mg/L	0.0256			
Iron	mg/L	0.663			
Total Dissolved Solids (TDS)	mg/L	86			
pH	SU	6.66			
Manganese	mg/L	0.0561			
Aluminum	mg/L	0.435			
Arsenic	mg/L	Not detected			
Sodium	mg/L	4.04			
Calcium	mg/L	8.44			
Sulfate	mg/L	7.37			
MBAS	mg/L	Not detected			

Domestic Water Analysis

09-Jan-2025

Jeff Burke
Diversified Gas & Oil Corporation
PO Box 6070
Charleston, WV 25362

Re: **UIC Water Well** Work Order: **24120491**

Dear Jeff,

ALS Environmental received 4 samples on 19-Dec-2024 11:51 AM for the analyses presented in the following report.

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

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

The total number of pages in this report is 12.

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

ADDRESS: 1740 Union Carbide Drive, South Charleston, WV, USA
PHONE: +1 (304) 356-3168 FAX: +1 (304) 205-6262

Sincerely,

Rebecca Kiser

Electronically approved by: Briana Lothes

Rebecca Kiser
Project Manager

Report of Laboratory Analysis

Certificate No: WV: 385

ALS Group, USA

Date: 09-Jan-25

Client: Diversified Gas & Oil Corporation
Project: UIC Water Well
Work Order: **24120491**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
24120491-01	C.Pritt 2 (Pond) Grab	Water		12/19/2024 10:02	12/19/2024 11:51	☐
24120491-01	C.Pritt 2 (Pond) Grab	Water		12/19/2024 10:02	12/20/2024 10:00	☐
24120491-02	Cavender 1 Grab	Water		12/19/2024 09:04	12/19/2024 11:51	☐
24120491-02	Cavender 1 Grab	Water		12/19/2024 09:04	12/20/2024 10:00	☐
24120491-03	Cavender 2 (duglopan well) Grab	Water		12/19/2024 09:11	12/19/2024 11:51	☐
24120491-03	Cavender 2 (duglopan well) Grab	Water		12/19/2024 09:11	12/20/2024 10:00	☐
24120491-04	Cavender 3 (pond)	Water		12/19/2024 09:18	12/19/2024 11:51	☐
24120491-04	Cavender 3 (pond)	Water		12/19/2024 09:18	12/20/2024 10:00	☐

Client: Diversified Gas & Oil Corporation
Project: UIC Water Well
Work Order: 24120491

Case Narrative

Samples for the above noted Work Order were received on 12/19/2024. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Wet Chemistry:
Batch R416402, Method A4500-H B-11, Samples 24120491-01C, -02C, -03C, -04C: Samples were received and analyzed outside of the holding time at the request of the client. Results should be considered estimated. pH

Client:	Diversified Gas & Oil Corporation
Project:	UIC Water Well
WorkOrder:	**24120491**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Analyte accreditation is not offered
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

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

Units Reported	Description
mg MBAS/L	Milligrams Methylene Blue Active Substances per Liter
mg/L	Milligrams per Liter
s.u.	Standard Units

ALS Group, USA

Date: *09-Jan-25*

Client: Diversified Gas & Oil Corporation
Project: UIC Water Well
Sample ID: C.Pritt 2 (Pond) Grab
Collection Date: 12/19/2024 10:02 AM

Work Order: 24120491
Lab ID: 24120491-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
PH (LABORATORY)		Method: **A4500-H B-11**					Analyst: **BJL**
pH (laboratory)	**6.66**	H	**0**	**0.020**	**s.u.**	1	12/19/2024 19:25
Temperature	**21.0**	Hn	**0**		**s.u.**	1	12/19/2024 19:25

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

ALS Group, USA

Date: *09-Jan-25*

Client: Diversified Gas & Oil Corporation
Project: UIC Water Well
Sample ID: Cavender 1 Grab
Collection Date: 12/19/2024 09:04 AM

Work Order: 24120491
Lab ID: 24120491-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
PH (LABORATORY)		Method: **A4500-H B-11**					Analyst: **BJL**
pH (laboratory)	**8.04**	H	**0**	**0.020**	**s.u.**	1	12/19/2024 19:25
Temperature	**21.0**	Hn	**0**		**s.u.**	1	12/19/2024 19:25

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

ALS Group, USA

Date: *09-Jan-25*

Client: Diversified Gas & Oil Corporation
Project: UIC Water Well
Sample ID: Cavender 2 (duglopan well) Grab
Collection Date: 12/19/2024 09:11 AM

Work Order: 24120491
Lab ID: 24120491-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
PH (LABORATORY)		Method: **A4500-H B-11**					Analyst: **BJL**
pH (laboratory)	**5.66**	H	**0**	**0.020**	**s.u.**	1	12/19/2024 19:25
Temperature	**21.2**	Hn	**0**		**s.u.**	1	12/19/2024 19:25

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

ALS Group, USA

Date: *09-Jan-25*

Client: Diversified Gas & Oil Corporation
Project: UIC Water Well
Sample ID: Cavender 3 (pond)
Collection Date: 12/19/2024 09:18 AM

Work Order: 24120491
Lab ID: 24120491-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
PH (LABORATORY)		Method: **A4500-H B-11**					Analyst: **BJL**
pH (laboratory)	**6.64**	H	**0**	**0.020**	**s.u.**	1	12/19/2024 19:25
Temperature	**21.2**	Hn	**0**		**s.u.**	1	12/19/2024 19:25

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

ALS Group, USA

Date: 09-Jan-25

Client: Diversified Gas & Oil Corporation

QC BATCH REPORT

Work Order: 24120491

Project: UIC Water Well

Batch ID: **R416402** Instrument ID **STC-WC** Method: **A4500-H B-11**

LCS Sample ID: **LCS-R416402-R416402** Units: **s.u.** Analysis Date: **12/19/2024 07:25 PM**

Client ID: Run ID: **STC-WC_241219E** SeqNo: **11324450** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH (laboratory)	4.04	0	0.020	4	0	101	90-110	0			

DUP Sample ID: **24120489-05D DUP** Units: **s.u.** Analysis Date: **12/19/2024 07:25 PM**

Client ID: Run ID: **STC-WC_241219E** SeqNo: **11324452** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH (laboratory)	7.97	0	0.020	0	0	0	0-0	7.96	0.126	20	H
Temperature	21.4	0	0	0	0	0		21.1	1.41		H

The following samples were analyzed in this batch: 24120491-01C 24120491-02C 24120491-03C 24120491-04C

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

Chain of Custody Form

☒ ALS
1740 Union Carbide Drive
South Charleston, WV 25303
(Tel) 304.356.3168
(Fax) 304.205.6262

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

Page ____ of ____

16029

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	UIC Water Well	A	
Work Order		Project Number		B	
Company Name	Diversified Gas & Oil	Bill To Company		C	
Send Report To	Lisa Ratcliffe / Jeff Burke	Invoice Attn.		D	
Address	P.O. Box 6070	Address		E	
				F	
City/State/Zip	Charleston WV 25362	City/State/Zip		G	
Phone		Phone		H	
Fax		Fax		I	
e-Mail Address	lratcliffe@dgoc.com / jeffersonburke123@gmail.com.			J	

No.	Sample Description	Comp / Grab	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	Id
1	C. Pritt 2 (pond)	Grab	12/19/24	10:02AM	W		3								pH 6.2
2	Cavender 1	Grab	12/19/24	9:04AM	W		3								pH 7.2
3	Cavender 2 (dug/open well)	Grab	12/19/24	9:11AM	W		3								pH 6.2
4	Cavender 3 (pond)	Grab	12/19/24	9:12AM	W		3								pH 6.8
5															
6															
7															
8															
9															
10															

24120491

DIVERSIFIED: Diversified Gas & Oil Corporation
Project: Water Well

Sampler(s): Please Print & Sign
Jeff Burke Jeff Burke

Shipment Method:

Turnaround Time in Business Days (BD): ☐ Other ____
☐ 10 BD(STD ☐ 5 BD ☐ 3 BD ☐ 2 BD ☐ 1 BD

Re

Relinquished by:	Date:	Time:	Received by:	Temp:	Notes:
Jeff Burke	12/19/2024	11:57AM	Michelle Adkins	ALS#2 L6	
Relinquished by:	Date:	Time:	Received by:		
Relinquished by:	Date:	Time:	Received by:	Temp:	QC Package: (Check Box Below)
Relinquished by:	Date:	Time:	Received by (Laboratory):		Level II: Standard QC Level III: Standard QC + Raw Data Level IV: SW846 Methods/CLP Other:
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):		

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

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

ALS Environmental

1740 Union Carbide Drive
South Charleston, WV 25303

Sample Receiving Checklist

Received by:	MLH
Date/Time:	12.19.24 1151
Carrier Name:	Client
Shipping container/cooler in good condition?	(Yes) / No / Not Present
Custody seals intact on shipping container/cooler?	Yes / No / (Not Present)
Custody seals intact on sample bottles?	Yes / No / (Not Present)
Chain of Custody present?	(Yes) / No
COC signed when relinquished and received?	(Yes) / No
COC agrees with sample labels?	(Yes) / No
Samples in proper container/bottle?	(Yes) / No
Sample containers intact?	(Yes) / No
Sufficient sample volume for indicated test?	(Yes) / No
All samples received within holding time?	(Yes) / No
All sample temperatures verified to be in compliance?	(Yes) / No
Temperature(s) (°C):	<6°c
Thermometer(s):	IR-Gun
Sample(s) received on ice?	(Yes) / No
Matrix/Matrices:	Water
Cooler(s)/Kit(s):	
Date/Time sample(s) sent to storage:	
Trip Blanks included? (for volatile analysis only)	Yes / (No) / N/A
Water – VOA vials have zero headspace?	Yes / No / (No Vials)
Water – pH acceptable upon receipt?	Yes / No / (N/A)
pH strip lot #: _____	
pH adjusted (note adjustments below)?	Yes / No / (N/A)
pH adjusted by:	

Login Notes:

24120491

DIVERSIFIED: Diversified Gas & Oil Corporation
Project: Water Well

09-Jan-2025

Jeff Burke
Diversified Gas & Oil Corporation
PO Box 6070
Charleston, WV 25362

Re: **UIC Water Well** Work Order: **24120491**

Dear Jeff,

ALS Environmental received 4 samples on 20-Dec-2024 for the analyses presented in the following report.

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

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

The total number of pages in this report is 18.

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

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Rebecca Kiser

Electronically approved by: Briana Lothes

Rebecca Kiser
Project Manager

Report of Laboratory Analysis

Certificate No: WV: 355

ALS Group, USA

Date: 09-Jan-25

Client: Diversified Gas & Oil Corporation
Project: UIC Water Well
Work Order: **24120491**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
24120491-01	C.Pritt 2 (Pond) Grab	Water		12/19/2024 10:02	12/19/2024 11:51	☐
24120491-01	C.Pritt 2 (Pond) Grab	Water		12/19/2024 10:02	12/20/2024 10:00	☐
24120491-02	Cavender 1 Grab	Water		12/19/2024 09:04	12/19/2024 11:51	☐
24120491-02	Cavender 1 Grab	Water		12/19/2024 09:04	12/20/2024 10:00	☐
24120491-03	Cavender 2 (duglopan well) Grab	Water		12/19/2024 09:11	12/19/2024 11:51	☐
24120491-03	Cavender 2 (duglopan well) Grab	Water		12/19/2024 09:11	12/20/2024 10:00	☐
24120491-04	Cavender 3 (pond)	Water		12/19/2024 09:18	12/19/2024 11:51	☐
24120491-04	Cavender 3 (pond)	Water		12/19/2024 09:18	12/20/2024 10:00	☐

ALS Group, USA

Date: 09-Jan-25

Client:	Diversified Gas & Oil Corporation
Project:	UIC Water Well
Work Order:	24120491

Case Narrative

Samples for the above noted Work Order were received on 12/20/2024. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
No other deviations or anomalies were noted.

Wet Chemistry:
No other deviations or anomalies were noted.

Client:	Diversified Gas & Oil Corporation
Project:	UIC Water Well
WorkOrder:	**24120491**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Analyte accreditation is not offered
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

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

Units Reported	Description
mg MBAS/L	Milligrams Methylene Blue Active Substances per Liter
mg/L	Milligrams per Liter
s.u.	Standard Units

ALS Group, USA

Date: *09-Jan-25*

Client: Diversified Gas & Oil Corporation
Project: UIC Water Well
Sample ID: C.Pritt 2 (Pond) Grab
Collection Date: 12/19/2024 10:02 AM

Work Order: 24120491
Lab ID: 24120491-01
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-AES		Method: **E200.7**			Prep: CEM-NPDES / 12/27/24		Analyst: **ABL**
Aluminum	**0.435**		**0.010**	**0.010**	**mg/L**	1	1/6/2025 13:05
Arsenic	U		0.0016	0.0050	mg/L	1	1/8/2025 12:42
Barium	**0.0256**		**0.0043**	**0.0050**	**mg/L**	1	1/6/2025 13:05
Calcium	**8.44**		**0.39**	**0.50**	**mg/L**	1	1/6/2025 13:05
Iron	**0.663**		**0.079**	**0.080**	**mg/L**	1	1/6/2025 13:05
Manganese	**0.0561**		**0.0023**	**0.0050**	**mg/L**	1	1/6/2025 13:05
Sodium	**4.04**		**0.26**	**0.50**	**mg/L**	1	1/6/2025 13:05
Strontium	**0.0487**		**0.0012**	**0.0050**	**mg/L**	1	1/6/2025 13:05
ANIONS BY ION CHROMATOGRAPHY		Method: **E300.0**					Analyst: **QTN**
Bromide	U		0.032	0.20	mg/L	1	12/31/2024 01:56
Chloride	**9.23**		**0.31**	**1.0**	**mg/L**	1	12/31/2024 01:56
Sulfate	**7.87**		**0.19**	**1.0**	**mg/L**	1	12/31/2024 01:56
MBAS, AS LAS, MOL WT 348		Method: **A5540C-11**					Analyst: **JNV**
Anionic Surfactants as MBAS	U		0.12	0.40	mg MBAS/L	1	12/20/2024 14:13
TOTAL DISSOLVED SOLIDS		Method: **A2540 C-15**			Prep: FILTER / 12/26/24		Analyst: **SRN**
Total Dissolved Solids	**86**		**22**	**30**	**mg/L**	1	12/30/2024 17:09

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

ALS Group, USA

Date: *09-Jan-25*

Client: Diversified Gas & Oil Corporation
Project: UIC Water Well
Sample ID: Cavender 1 Grab
Collection Date: 12/19/2024 09:04 AM

Work Order: 24120491
Lab ID: 24120491-02
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-AES		Method: **E200.7**			Prep: CEM-NPDES / 12/27/24		Analyst: **ABL**
Aluminum	**0.708**		**0.010**	**0.010**	**mg/L**	1	1/6/2025 13:11
Arsenic	U		0.0016	0.0050	mg/L	1	1/8/2025 12:48
Barium	**0.0195**		**0.0043**	**0.0050**	**mg/L**	1	1/6/2025 13:11
Calcium	**5.30**		**0.39**	**0.50**	**mg/L**	1	1/6/2025 13:11
Iron	**1.05**		**0.079**	**0.080**	**mg/L**	1	1/6/2025 13:11
Manganese	**0.0443**		**0.0023**	**0.0050**	**mg/L**	1	1/6/2025 13:11
Sodium	**2.09**		**0.26**	**0.50**	**mg/L**	1	1/6/2025 13:11
Strontium	**0.0343**		**0.0012**	**0.0050**	**mg/L**	1	1/6/2025 13:11
ANIONS BY ION CHROMATOGRAPHY		Method: **E300.0**					Analyst: **QTN**
Bromide	U		0.032	0.20	mg/L	1	12/31/2024 02:06
Chloride	**18.8**		**5.0**	**16**	**mg/L**	16	12/20/2024 21:09
Sulfate	**0.400**	J	**0.19**	**1.0**	**mg/L**	1	12/31/2024 02:06
MBAS, AS LAS, MOL WT 348		Method: **A5540C-11**					Analyst: **JNV**
Anionic Surfactants as MBAS	U		0.12	0.40	mg MBAS/L	1	12/20/2024 14:13
TOTAL DISSOLVED SOLIDS		Method: **A2540 C-15**			Prep: FILTER / 12/24/24		Analyst: **SRN**
Total Dissolved Solids	**300**		**37**	**50**	**mg/L**	1	12/26/2024 17:33

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

ALS Group, USA

Date: *09-Jan-25*

Client: Diversified Gas & Oil Corporation
Project: UIC Water Well
Sample ID: Cavender 2 (duglopan well) Grab
Collection Date: 12/19/2024 09:11 AM

Work Order: 24120491
Lab ID: 24120491-03
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-AES		Method: **E200.7**			Prep: CEM-NPDES / 12/27/24		Analyst: **ABL**
Aluminum	**0.0636**		**0.010**	**0.010**	**mg/L**	1	1/6/2025 13:17
Arsenic	U		0.0016	0.0050	mg/L	1	1/8/2025 12:54
Barium	**0.0754**		**0.0043**	**0.0050**	**mg/L**	1	1/6/2025 13:17
Calcium	**11.2**		**0.39**	**0.50**	**mg/L**	1	1/6/2025 13:17
Iron	**0.0959**		**0.079**	**0.080**	**mg/L**	1	1/6/2025 13:17
Manganese	**0.0155**		**0.0023**	**0.0050**	**mg/L**	1	1/6/2025 13:17
Sodium	**2.82**		**0.26**	**0.50**	**mg/L**	1	1/6/2025 13:17
Strontium	**0.0719**		**0.0012**	**0.0050**	**mg/L**	1	1/6/2025 13:17
ANIONS BY ION CHROMATOGRAPHY		Method: **E300.0**					Analyst: **QTN**
Bromide	U		0.51	3.2	mg/L	16	12/20/2024 21:18
Chloride	**7.31**	J	**5.0**	**16**	**mg/L**	16	12/20/2024 21:18
Sulfate	**8.62**	J	**3.0**	**16**	**mg/L**	16	12/20/2024 21:18
MBAS, AS LAS, MOL WT 348		Method: **A5540C-11**					Analyst: **JNV**
Anionic Surfactants as MBAS	U		0.12	0.40	mg MBAS/L	1	12/20/2024 14:13
TOTAL DISSOLVED SOLIDS		Method: **A2540 C-15**			Prep: FILTER / 12/24/24		Analyst: **SRN**
Total Dissolved Solids	**120**		**22**	**30**	**mg/L**	1	12/26/2024 17:33

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

ALS Group, USA

Date: *09-Jan-25*

Client: Diversified Gas & Oil Corporation
Project: UIC Water Well
Sample ID: Cavender 3 (pond)
Collection Date: 12/19/2024 09:18 AM

Work Order: 24120491
Lab ID: 24120491-04
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-AES		Method: **E200.7**			Prep: CEM-NPDES / 12/27/24		Analyst: **ABL**
Aluminum	U		0.010	0.010	mg/L	1	1/6/2025 13:23
Arsenic	U		0.0016	0.0050	mg/L	1	1/8/2025 13:00
Barium	**0.126**		**0.0043**	**0.0050**	**mg/L**	1	1/6/2025 13:23
Calcium	**13.8**		**0.39**	**0.50**	**mg/L**	1	1/6/2025 13:23
Iron	**0.353**		**0.079**	**0.080**	**mg/L**	1	1/6/2025 13:23
Manganese	**0.0588**		**0.0023**	**0.0050**	**mg/L**	1	1/6/2025 13:23
Sodium	**93.6**		**0.26**	**0.50**	**mg/L**	1	1/6/2025 13:23
Strontium	**0.305**		**0.0012**	**0.0050**	**mg/L**	1	1/6/2025 13:23
ANIONS BY ION CHROMATOGRAPHY		Method: **E300.0**					Analyst: **QTN**
Bromide	U		0.51	3.2	mg/L	16	12/20/2024 21:26
Chloride	**5.34**	J	**5.0**	**16**	**mg/L**	16	12/20/2024 21:26
Sulfate	**8.51**	J	**3.0**	**16**	**mg/L**	16	12/20/2024 21:26
MBAS, AS LAS, MOL WT 348		Method: **A5540C-11**					Analyst: **JNV**
Anionic Surfactants as MBAS	U		0.12	0.40	mg MBAS/L	1	12/20/2024 14:13
TOTAL DISSOLVED SOLIDS		Method: **A2540 C-15**			Prep: FILTER / 12/24/24		Analyst: **SRN**
Total Dissolved Solids	**84**		**22**	**30**	**mg/L**	1	12/26/2024 17:33

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

Batch ID: **251727** Instrument ID **ICP2** Method: **E200.7**

MBLK Sample ID: **MBLK-251727-251727** Units: **mg/L** Analysis Date: **1/6/2025 12:53 PM**

Client ID: Run ID: **ICP2_250106A** SeqNo: **11350806** Prep Date: **12/27/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.01	0.010								
Barium	U	0.0043	0.0050								
Calcium	U	0.39	0.50								
Iron	U	0.079	0.080								
Manganese	U	0.0023	0.0050								
Sodium	U	0.26	0.50								
Strontium	U	0.0012	0.0050								

MBLK Sample ID: **MBLK-251727-251727** Units: **mg/L** Analysis Date: **1/8/2025 12:30 PM**

Client ID: Run ID: **ICP2_250108A** SeqNo: **11356359** Prep Date: **12/27/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.0016	0.0050								

LCS Sample ID: **LCS-251727-251727** Units: **mg/L** Analysis Date: **1/6/2025 12:59 PM**

Client ID: Run ID: **ICP2_250106A** SeqNo: **11350807** Prep Date: **12/27/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09713	0.01	0.010	0.1	0	97.1	85-115	0			
Barium	0.1041	0.0043	0.0050	0.1	0	104	85-115	0			
Calcium	9.862	0.39	0.50	10	0	98.6	85-115	0			
Iron	10.08	0.079	0.080	10	0	101	85-115	0			
Manganese	0.09713	0.0023	0.0050	0.1	0	97.1	85-115	0			
Sodium	10.03	0.26	0.50	10	0	100	85-115	0			
Strontium	0.09856	0.0012	0.0050	0.1	0	98.6	85-115	0			

LCS Sample ID: **LCS-251727-251727** Units: **mg/L** Analysis Date: **1/8/2025 12:36 PM**

Client ID: Run ID: **ICP2_250108A** SeqNo: **11356360** Prep Date: **12/27/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0979	0.0016	0.0050	0.1	0	97.9	85-115	0			

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

Client: Diversified Gas & Oil Corporation
Work Order: 24120491
Project: UIC Water Well

QC BATCH REPORT

Batch ID: **251727** Instrument ID **ICP2** Method: **E200.7**

MS Sample ID: **24120491-04BMS** Units: **mg/L** Analysis Date: **1/6/2025 01:30 PM**
Client ID: **Cavender 3 (pond)** Run ID: **ICP2_250106A** SeqNo: **11350812** Prep Date: **12/27/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09735	0.01	0.010	0.1	0.003234	94.1	70-130	0			
Barium	0.2208	0.0043	0.0050	0.1	0.126	94.7	70-130	0			
Calcium	22.65	0.39	0.50	10	13.79	88.6	70-130	0			
Iron	9.938	0.079	0.080	10	0.3527	95.9	70-130	0			
Manganese	0.1518	0.0023	0.0050	0.1	0.05885	92.9	70-130	0			
Sodium	101.4	0.26	0.50	10	93.58	78.7	70-130	0			EO
Strontium	0.3894	0.0012	0.0050	0.1	0.3049	84.5	70-130	0			

MS Sample ID: **24120491-04BMS** Units: **mg/L** Analysis Date: **1/8/2025 01:07 PM**
Client ID: **Cavender 3 (pond)** Run ID: **ICP2_250108A** SeqNo: **11356365** Prep Date: **12/27/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09757	0.0016	0.0050	0.1	0.0006743	96.9	70-130	0			

MSD Sample ID: **24120491-04BMSD** Units: **mg/L** Analysis Date: **1/6/2025 01:36 PM**
Client ID: **Cavender 3 (pond)** Run ID: **ICP2_250106A** SeqNo: **11350813** Prep Date: **12/27/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.08564	0.01	0.010	0.1	0.003234	82.4	70-130	0.09735	12.8	20	
Barium	0.2221	0.0043	0.0050	0.1	0.126	96	70-130	0.2208	0.593	20	
Calcium	22.81	0.39	0.50	10	13.79	90.1	70-130	22.65	0.693	20	
Iron	9.825	0.079	0.080	10	0.3527	94.7	70-130	9.938	1.15	20	
Manganese	0.1498	0.0023	0.0050	0.1	0.05885	91	70-130	0.1518	1.31	20	
Sodium	102	0.26	0.50	10	93.58	84.1	70-130	101.4	0.531	20	EO
Strontium	0.3949	0.0012	0.0050	0.1	0.3049	90	70-130	0.3894	1.4	20	

MSD Sample ID: **24120491-04BMSD** Units: **mg/L** Analysis Date: **1/8/2025 01:13 PM**
Client ID: **Cavender 3 (pond)** Run ID: **ICP2_250108A** SeqNo: **11356366** Prep Date: **12/27/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09691	0.0016	0.0050	0.1	0.0006743	96.2	70-130	0.09757	0.679	20	

The following samples were analyzed in this batch:

24120491-01B 24120491-02B 24120491-03B
24120491-04B

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

Client: Diversified Gas & Oil Corporation
Work Order: 24120491
Project: UIC Water Well

QC BATCH REPORT

Batch ID: **251676** Instrument ID **TDS** Method: **A2540 C-15**

MBLK Sample ID: **MBLK-251676-251676** Units: **mg/L** Analysis Date: **12/26/2024 05:33 PM**
Client ID: Run ID: **TDS_241226D** SeqNo: **11334679** Prep Date: **12/24/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	U	22	30								

LCS Sample ID: **LCS-251676-251676** Units: **mg/L** Analysis Date: **12/26/2024 05:33 PM**
Client ID: Run ID: **TDS_241226D** SeqNo: **11334678** Prep Date: **12/24/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	510	22	30	495	0	103	85-109	0			

DUP Sample ID: **24120564-01A DUP** Units: **mg/L** Analysis Date: **12/26/2024 05:33 PM**
Client ID: Run ID: **TDS_241226D** SeqNo: **11334673** Prep Date: **12/24/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	710	37	50	0	0	0	0-0	700	1.42	10	

DUP Sample ID: **24120564-02A DUP** Units: **mg/L** Analysis Date: **12/26/2024 05:33 PM**
Client ID: Run ID: **TDS_241226D** SeqNo: **11334675** Prep Date: **12/24/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	663.3	37	50	0	0	0	0-0	646.7	2.54	10	

The following samples were analyzed in this batch: 24120491-02A 24120491-03A 24120491-04A

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

Client: Diversified Gas & Oil Corporation
Work Order: 24120491
Project: UIC Water Well

QC BATCH REPORT

Batch ID: **251711** Instrument ID **TDS** Method: **A2540 C-15**

MBLK Sample ID: **MBLK-251711-251711** Units: **mg/L** Analysis Date: **12/30/2024 05:09 PM**
Client ID: Run ID: **TDS_241230A** SeqNo: **11341610** Prep Date: **12/26/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	U	22	30								

LCS Sample ID: **LCS-251711-251711** Units: **mg/L** Analysis Date: **12/30/2024 05:09 PM**
Client ID: Run ID: **TDS_241230A** SeqNo: **11341609** Prep Date: **12/26/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	496	22	30	495	0	100	85-109	0			

DUP Sample ID: **24120551-03A DUP** Units: **mg/L** Analysis Date: **12/30/2024 05:09 PM**
Client ID: Run ID: **TDS_241230A** SeqNo: **11341589** Prep Date: **12/26/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	1167	74	100	0	0	0	0-0	1173	0.569	10	

DUP Sample ID: **24120564-04A DUP** Units: **mg/L** Analysis Date: **12/30/2024 05:09 PM**
Client ID: Run ID: **TDS_241230A** SeqNo: **11341601** Prep Date: **12/26/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	1087	74	100	0	0	0	0-0	1087	0	10	

The following samples were analyzed in this batch: 24120491-01A

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

Client: Diversified Gas & Oil Corporation
Work Order: 24120491
Project: UIC Water Well

QC BATCH REPORT

Batch ID: **R416436** Instrument ID **WETCHEM** Method: **A5540C-11**

MBLK Sample ID: **MB-R416436-R416436** Units: **mg MBAS/L** Analysis Date: **12/20/2024 02:13 PM**
Client ID: Run ID: **WETCHEM_241220D** SeqNo: **11325595** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Anionic Surfactants as MBAS	U	0.12	0.40								

LCS Sample ID: **LCS-R416436-R416436** Units: **mg MBAS/L** Analysis Date: **12/20/2024 02:13 PM**
Client ID: Run ID: **WETCHEM_241220D** SeqNo: **11325596** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Anionic Surfactants as MBAS	0.4	0.12	0.40	0.5	0	80	75-125	0			

DUP Sample ID: **24120491-01A DUP** Units: **mg MBAS/L** Analysis Date: **12/20/2024 02:13 PM**
Client ID: **C.Pritt 2 (Pond) Grab** Run ID: **WETCHEM_241220D** SeqNo: **11325598** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Anionic Surfactants as MBAS	U	0.12	0.40	0	0	0	0-0	0	0	25	

The following samples were analyzed in this batch:

24120491-01A	24120491-02A	24120491-03A
24120491-04A		

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

Client: Diversified Gas & Oil Corporation
Work Order: 24120491
Project: UIC Water Well

QC BATCH REPORT

Batch ID: **R416759** Instrument ID **IC5** Method: **E300.0**

MBLK Sample ID: **MBLK-R416759** Units: **mg/L** Analysis Date: **12/20/2024 08:18 PM**
Client ID: Run ID: **IC5_241220A** SeqNo: **11339912** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	U	0.032	0.20								
Chloride	U	0.31	1.0								
Sulfate	U	0.19	1.0								

MBLK Sample ID: **MBLK-R416759** Units: **mg/L** Analysis Date: **12/20/2024 10:27 PM**
Client ID: Run ID: **IC5_241220A** SeqNo: **11340604** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	U	0.032	0.20								
Chloride	U	0.31	1.0								
Sulfate	U	0.19	1.0								

LCS Sample ID: **MLCCV-A-R416759** Units: **mg/L** Analysis Date: **12/20/2024 08:09 PM**
Client ID: Run ID: **IC5_241220A** SeqNo: **11339913** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	2.01	0.032	0.20	2	0	100	90-110	0			
Chloride	9.727	0.31	1.0	10	0	97.3	90-110	0			
Sulfate	10.01	0.19	1.0	10	0	100	90-110	0			

LCS Sample ID: **LCS-R416759** Units: **mg/L** Analysis Date: **12/20/2024 10:18 PM**
Client ID: Run ID: **IC5_241220A** SeqNo: **11340605** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	2.01	0.032	0.20	2	0	100	90-110	0			
Chloride	9.727	0.31	1.0	10	0	97.3	90-110	0			
Sulfate	10.01	0.19	1.0	10	0	100	90-110	0			

MS Sample ID: **24120401-03B MS** Units: **mg/L** Analysis Date: **12/20/2024 08:35 PM**
Client ID: Run ID: **IC5_241220A** SeqNo: **11339920** Prep Date: DF: **40**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	632.3	12	40	400	261.5	92.7	90-110	0			

MSD Sample ID: **24120401-03B MSD** Units: **mg/L** Analysis Date: **12/20/2024 08:43 PM**
Client ID: Run ID: **IC5_241220A** SeqNo: **11339921** Prep Date: DF: **40**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	631.4	12	40	400	261.5	92.5	90-110	632.3	0.146	10	

The following samples were analyzed in this batch: 24120491-01A 24120491-02A 24120491-03A 24120491-04A

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

Client: Diversified Gas & Oil Corporation
Work Order: 24120491
Project: UIC Water Well

QC BATCH REPORT

Batch ID: **R416821C** Instrument ID **IC3** Method: **E300.0**

MBLK Sample ID: **MBLK-C-R416821C** Units: **mg/L** Analysis Date: **12/31/2024 01:07 A**
Client ID: Run ID: **IC3_241230A** SeqNo: **11342517** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	U	0.032	0.20								
Chloride	U	0.31	1.0								
Sulfate	U	0.19	1.0								

LCS Sample ID: **LCS-C-R416821C** Units: **mg/L** Analysis Date: **12/31/2024 12:57 A**
Client ID: Run ID: **IC3_241230A** SeqNo: **11342516** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	2.001	0.032	0.20	2	0	100	90-110	0			
Chloride	9.838	0.31	1.0	10	0	98.4	90-110	0			
Sulfate	10.68	0.19	1.0	10	0	107	90-110	0			

MS Sample ID: **24120463-01C MS** Units: **mg/L** Analysis Date: **12/31/2024 01:36 A**
Client ID: Run ID: **IC3_241230A** SeqNo: **11342520** Prep Date: DF: **40**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	84	1.3	8.0	80	0	105	90-110	0			
Chloride	390.2	12	40	400	9.404	95.2	90-110	0			
Sulfate	494.4	7.6	40	400	74.96	105	90-110	0			

MSD Sample ID: **24120463-01C MSD** Units: **mg/L** Analysis Date: **12/31/2024 01:46 A**
Client ID: Run ID: **IC3_241230A** SeqNo: **11342521** Prep Date: DF: **40**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	85.24	1.3	8.0	80	0	107	90-110	84	1.47	10	
Chloride	391	12	40	400	9.404	95.4	90-110	390.2	0.216	10	
Sulfate	495.4	7.6	40	400	74.96	105	90-110	494.4	0.206	10	

The following samples were analyzed in this batch: 24120491-01A 24120491-02A

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

Subcontractor:
ALS Environmental - Holland
3352 128th Avenue
Holland, MI 49424

TEL: (616) 399-6070
FAX: (616) 399-6185
Acct #:

Salesperson | ALSHN Account

24120491

DIVERSIFIED: Diversified Gas & Oil Corporation
Project: UIC Water Well

Date: 19-Dec-24
COC ID: 27677
Due Date: 27-Dec-24

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	24120491	A	Total Dissolved Solids (A2540 C-15)
Work Order		Project Number		B	MBAS, as LAS, mol wt 348 (A5540C-11)
Company Name	ALS Group USA, Corp	Bill To Company	ALS Group USA, Corp	C	Metals by ICP-AES (E200.7)
Send Report To	Rebecca Kiser	Inv Attn	Accounts Payable	D	Anions by Ion Chromatography (E300.0)
Address	1740 Union Carbide Dr.	Address	1740 Union Carbide Dr.	E	
				F	
City/State/Zip	So. Charleston, WV 25303	City/State/Zip	So. Charleston, WV 25303	G	
Phone	(304) 356-3168	Phone	(304) 356-3168	H	
Fax		Fax		I	
eMail Address	rebecca.kiser@alsglobal.com	eMail CC		J	

ALS Sample ID	Client Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
24120491-01A	C.Pritt 2 (Pond) Grab	Water	19/Dec/2024 10:02	(1) 500PNeat	X	X		X						
24120491-01B	C.Pritt 2 (Pond) Grab	Water	19/Dec/2024 10:02	(1) 125PHNO3			X							
24120491-02A	Cavender 1 Grab	Water	19/Dec/2024 9:04	(1) 500PNeat	X	X		X						
24120491-02B	Cavender 1 Grab	Water	19/Dec/2024 9:04	(1) 125PHNO3			X							
24120491-03A	Cavender 2 (duglopan well) Grab	Water	19/Dec/2024 9:11	(1) 500PNeat	X	X		X						
24120491-03B	Cavender 2 (duglopan well) Grab	Water	19/Dec/2024 9:11	(1) 125PHNO3			X							
24120491-04A	Cavender 3 (pond)	Water	19/Dec/2024 9:18	(1) 500PNeat	X	X		X						
24120491-04B	Cavender 3 (pond)	Water	19/Dec/2024 9:18	(1) 125PHNO3			X							

Comments:
WV Samples Sampler: J.B.

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
Michelle Holmes	12.19.24 1400	[signature]	12-20-24 10:10	4.0c JRE p439	Std
Relinquished by:	Date/Time	Received by:	Date/Time		

ALS Group, USA
Holland, Michigan

Sample Receipt Checklist

Client Name: **DIVERSIFIED** Date/Time Received: **19-Dec-24 11:51**

Work Order: **24120491** Received by: **CMK**

Checklist completed by Caleb Koetje (eSignature) 20-Dec-24 (Date) Reviewed by: Briana Lothes (eSignature) 23-Dec-24 (Date)

Matrices: Water
Carrier name: Courier

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	<6.0c	IR6	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	12/20/2024 12:02:35 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes: pH Check <2

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

APPENDIX F

Area Permit Wells

API #	Well Type (Injection, Production, Observation, Monitoring)	Well Status (Active, Abandoned, Shut-in, Plugged)	Northing (UTM NAD 83 Meters)	Easting (UTM NAD 83 Meters)
N/A				
Not for area permit wells				

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

Section 8 – Geological Data

UIC 2D0392327

SECTION 8-Geological data on the Injection and Confining Zone:

Well Name: Booker #1

API: 47-039-02327

UIC: UIC2D0392327

The subject UIC well is located in Kanawha County, West Virginia in the northeast corner of the Blue Creek quadrangle (Figure 1). The Booker #1 and 3 other active UIC wells have been used to dispose water into the Injun Sandstone and Lower Maxton Sandstone since the mid 1990's.

DESCRIPTION OF INJECTION ZONES

INJUN SANDSTONE

Formation Description

The Injun Sandstone is an injection zone for the subject well. This formation sits beneath the Greenbrier Limestone "Big Lime" at the top of the Lower Mississippian section. This predominately fine-grained, quartz rich sandstone exceeds 50' in thickness in the area of interest and as mapped, would have 40-45' of gross sand (Figure 2). Grains are generally subangular to subrounded, moderate to well sorted, and fine to very fine sand. Primary porosity in the subject well and adjacent Blue Creek oil field can exceed 20% in the Injun Sandstone, and 32'of Injun Sandstone with porosity over 12% would be anticipated in this wellbore (Figure 3). Like gross thickness, primary porosity in the area is greatest in the adjacent Blue Creek oil field that lies to the east of the subject wells but decreases significantly outside of the field.

Stratigraphic Description

In northwestern Kanawha County, the Injun Sandstone is overlain unconformably by the Greenbrier Limestone and sits above the Pocono Shale.

Structural Mapping

Structural mapping on the Injun Sandstone top indicates that the subject well is located updip from a local syncline (Figure 4). The adjacent structural low forms the outline of the Blue Creek oil field, and as mapped, this local syncline also has the thickest Injun Sandstone in the area (Figure 2).

Faulting

Structure maps (Figure 4) on the Injun Sandstone top do not have any indication of faulting in this injection interval throughout the area of interest.

LOWER SALT SAND

Formation Description

As stated above, the Lower Salt Sand is an injection zone along with the Injun Sandstone in the subject well. The Lower Salt Sand is a member of the Pottsville Group of the Pennsylvanian System and the quartz arenite ranges in thickness from 350-500' in northwestern Kanawha Co. (Figure 5). Porosity mapping of the Lower Salt Sand (Figure 6) indicates a thick north-south trend to the west of the Blue Creek oil field. The subject well is mapped within this trend and would be expected to have 25-30' of sand with greater than 12% porosity.

Stratigraphic Description

In northwestern Kanawha County, the Lower Salt Sand lies below an unnamed Shale (named the Lower Salt Sand Shale for this report) and unconformably above the Upper Mississippian Mauch Chunk Group.

Structural Mapping

Structural mapping on the Lower Salt Sand base indicates that the subject well is located updip from a local syncline (Figure 7).

Faulting

Structure maps (Figure 7) on the Lower Salt Sand do not have any indication of faulting in this injection zone.

DESCRIPTION OF CONFINING ZONES

GREENBRIER LIMESTONE (BIG LIME)

Confining Layer for: Injun Sandstone

Formation Description

The Big Lime is 130-170' (Figure 8) thick throughout the area of interest and is predominately composed of dense limestone. Porous zones are uncommon, isolated, and <5' when observed. This limestone has been mapped throughout the area of interest and there is no evidence of faulting. Low porosity, high density, and massive thickness of the Big Lime in northwestern Kanawha County make it an excellent confining layer.

Primary Lithology: Limestone

Log Description:

This limestone has a very low gamma ray signature (20 API), low density ~2.7 g/cc, and porosity in most wells is below 2%. As mapped, the subject well would be anticipated to have a gross thickness of 150'.

LOWER SALT SAND SHALE

Confining Layer for: Lower Salt Sand

Formation Description

In the area of interest, the Lower Salt Sand Shale gross thickness ranges from 40-100' (Figure 9) thick and the average thickness is over 60'. Porous zones are uncommon, but a thin coal seam has been observed in some wells. This shale has been mapped throughout the area of interest and there is no evidence of faulting. The thickness, lack of faults, and dense nature of this shale makes this unit an excellent confining layer.

Primary Rock Type: Shale

Secondary Rock Type: Coal and Siltstone

Log Description:

This shale generally has a gamma ray value over 100 API units but lower than 200. Bulk density values range from 2.60-269 g/cc and porosity values average 3% or less for the entire interval. In the subject well, the Lower Salt Sand Shale has a gross thickness of 67'.

EARTHQUAKES AND INDUCED SEISMICITY

From 1824 to 2016 West Virginia has experienced nearly 100 earthquakes within state boundaries (Figure 10). These earthquakes have magnitudes ranging from .3 to 4.7 using both historical and instrumental measurements. The closest recorded earthquakes to the subject well are in Jackson and Kanawha counties and are 10 and 20 miles from the subject well respectively. As stated above, the subject well has been used as an injection well since the mid 1990's, and the closest recorded seismic event is over 10 miles away. Furthermore, no evidence of faulting in the area at the injection level exists at Blue Creek.

The subject well has two decades of injection history and there have not been any pressure issues, containment problems, or induced seismicity in the area, and the subject well remains an excellent candidate for fluid injection.

WATER MIGRATION MODEL

A schematic depicting the likely migration path for injected fluids is included in this report (Figure 11). Although the likely migration path for each injection formation has been drawn on the one model, the discussion is broken down into two separate paragraphs.

INJUN SAND

As alluded to earlier, structure maps on the Injun Sand (Figure 4) indicate that the subject well is directly adjacent to and west of a local syncline. Furthermore, gross thickness (Figure 2) and porosity mapping (Figure 3) are greatest within this syncline. Pumped fluids would preferentially migrate downdip into the Blue Creek oil field where the Injun Sand has much better porosity than the surrounding areas.

LOWER SALT SAND

Fluids will only be injected into the basal 150' of the formation since porosity is more consistent and better developed than the upper portions of the sand. Porosity maps (Figure 6) show that the subject well lies in a local thick and has over 25' of sand with more than 12% porosity. Unlike the Injun Sand, fluids injected into the Lower Salt Sand are not expected to preferentially migrate in one direction.

4703902327

FIGURE 1

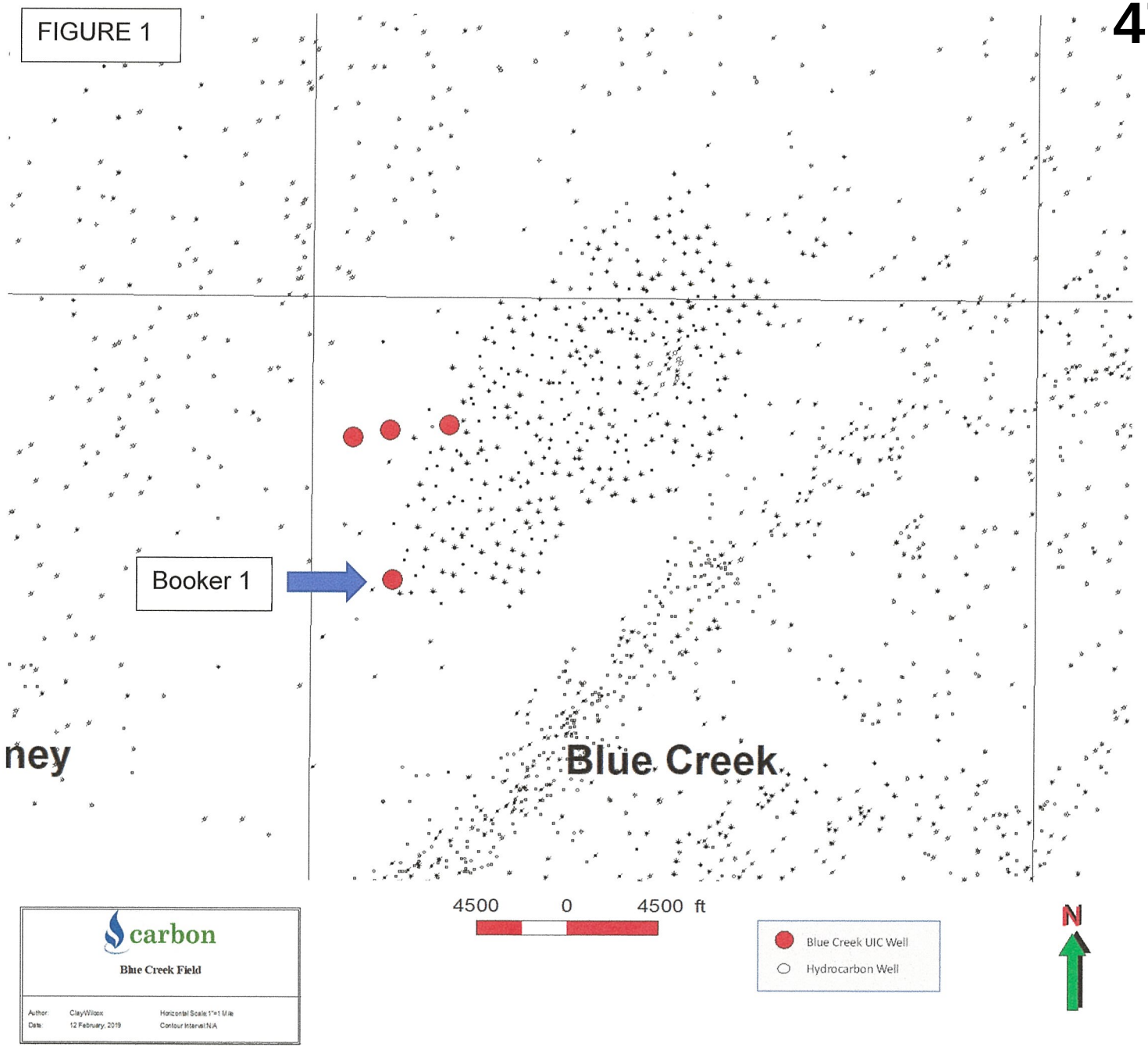


FIGURE 2

4703902327

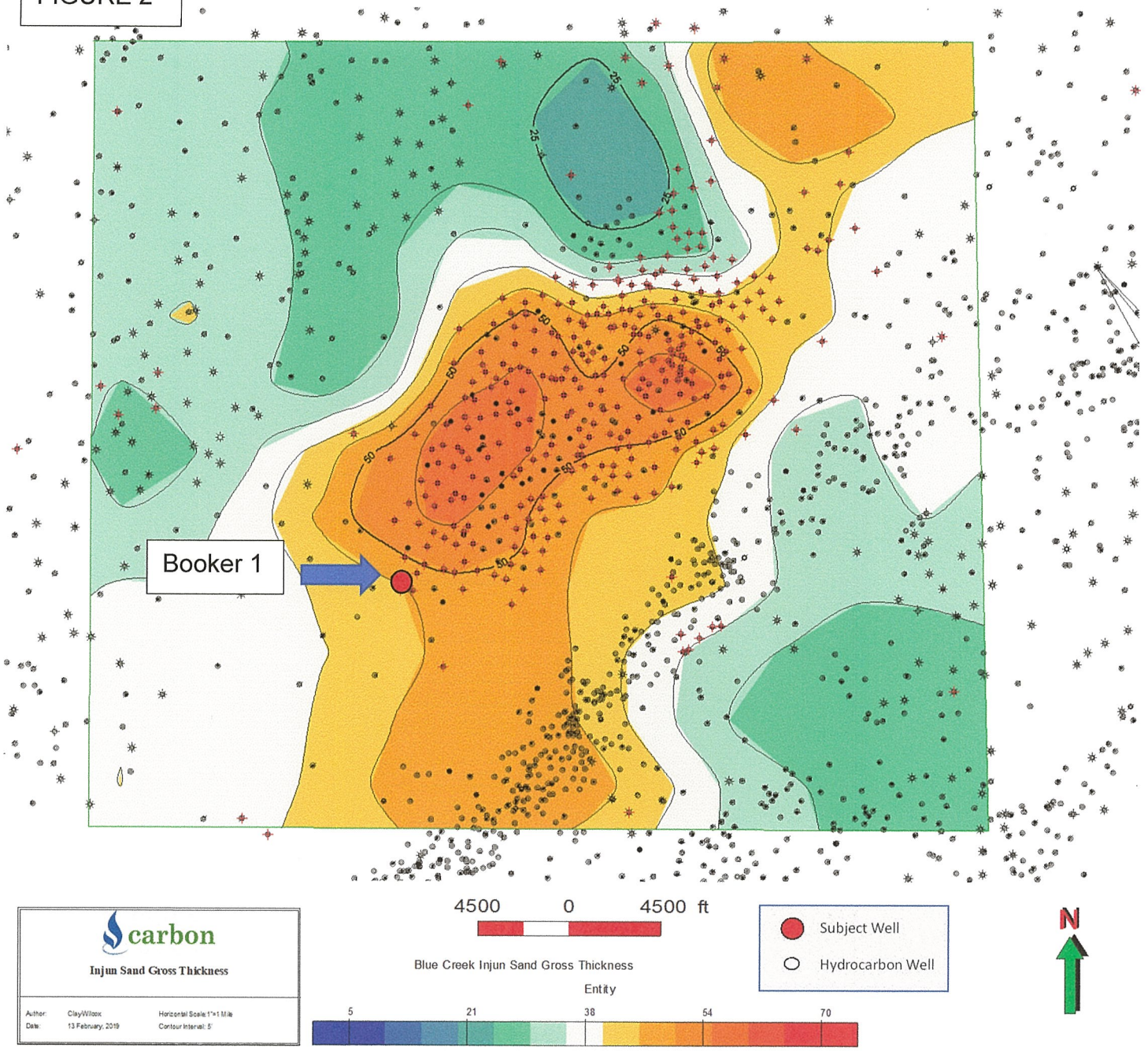


FIGURE 3

4703902327

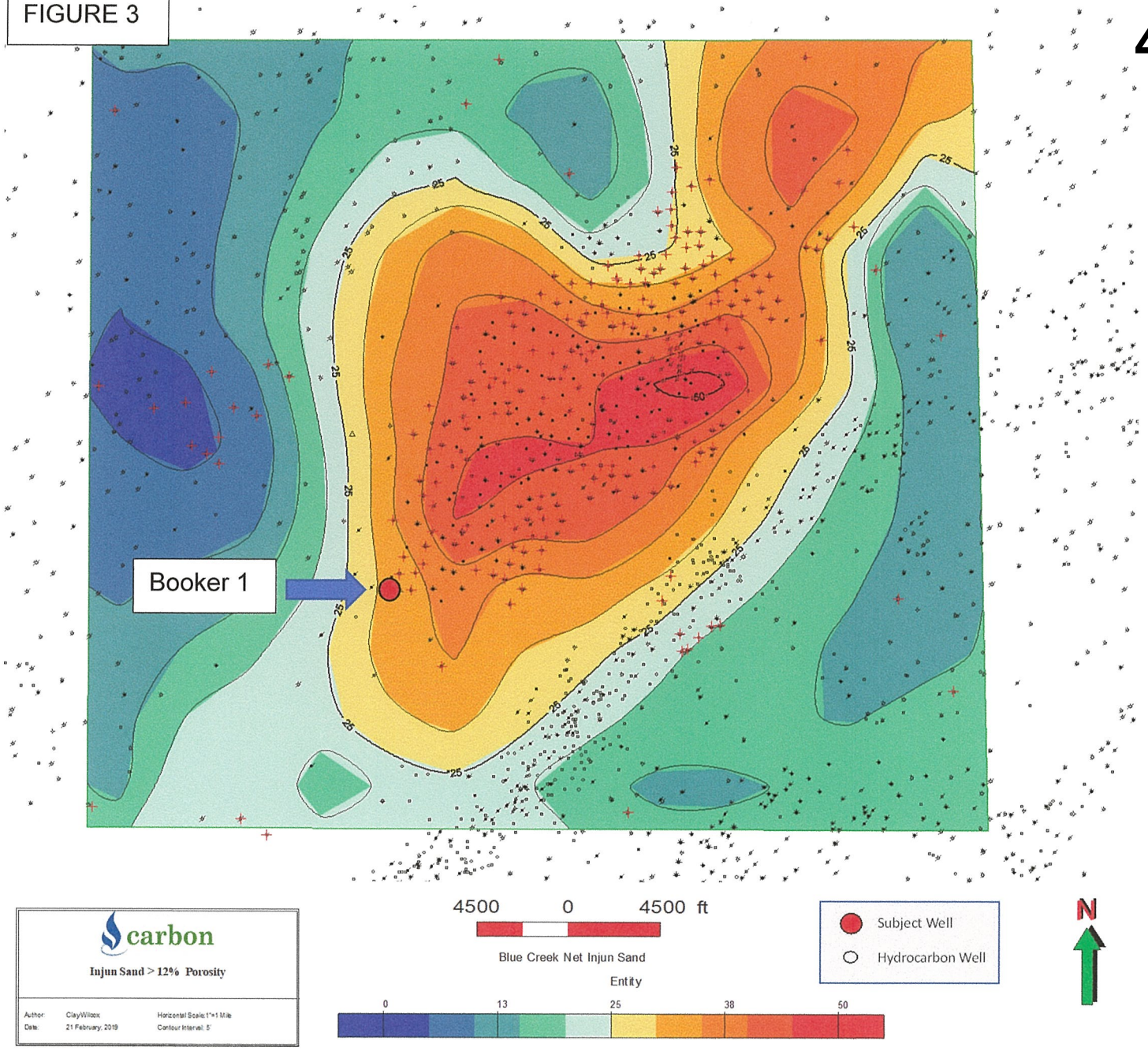


FIGURE 4

4703902327

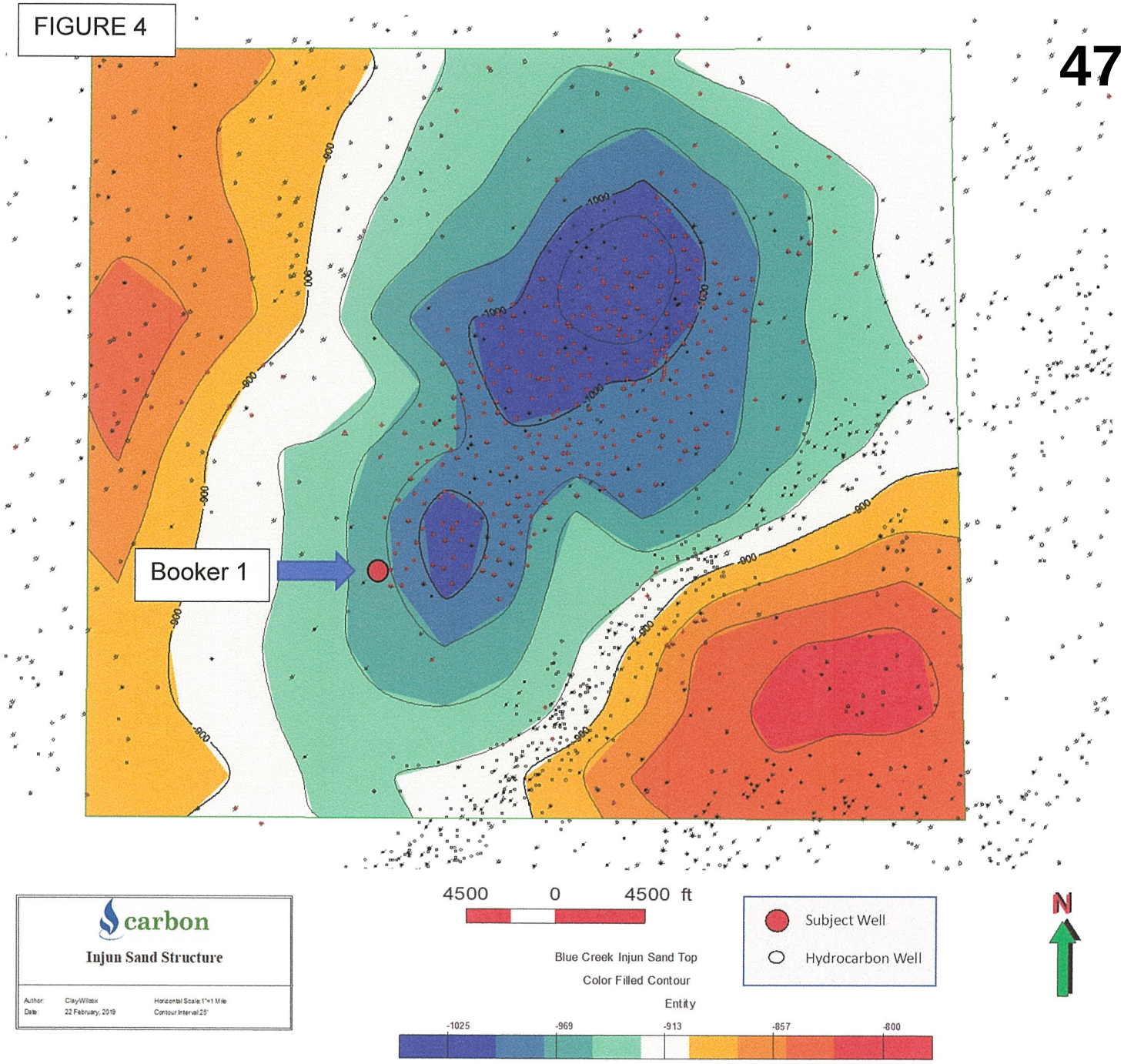


FIGURE 5

4703902327

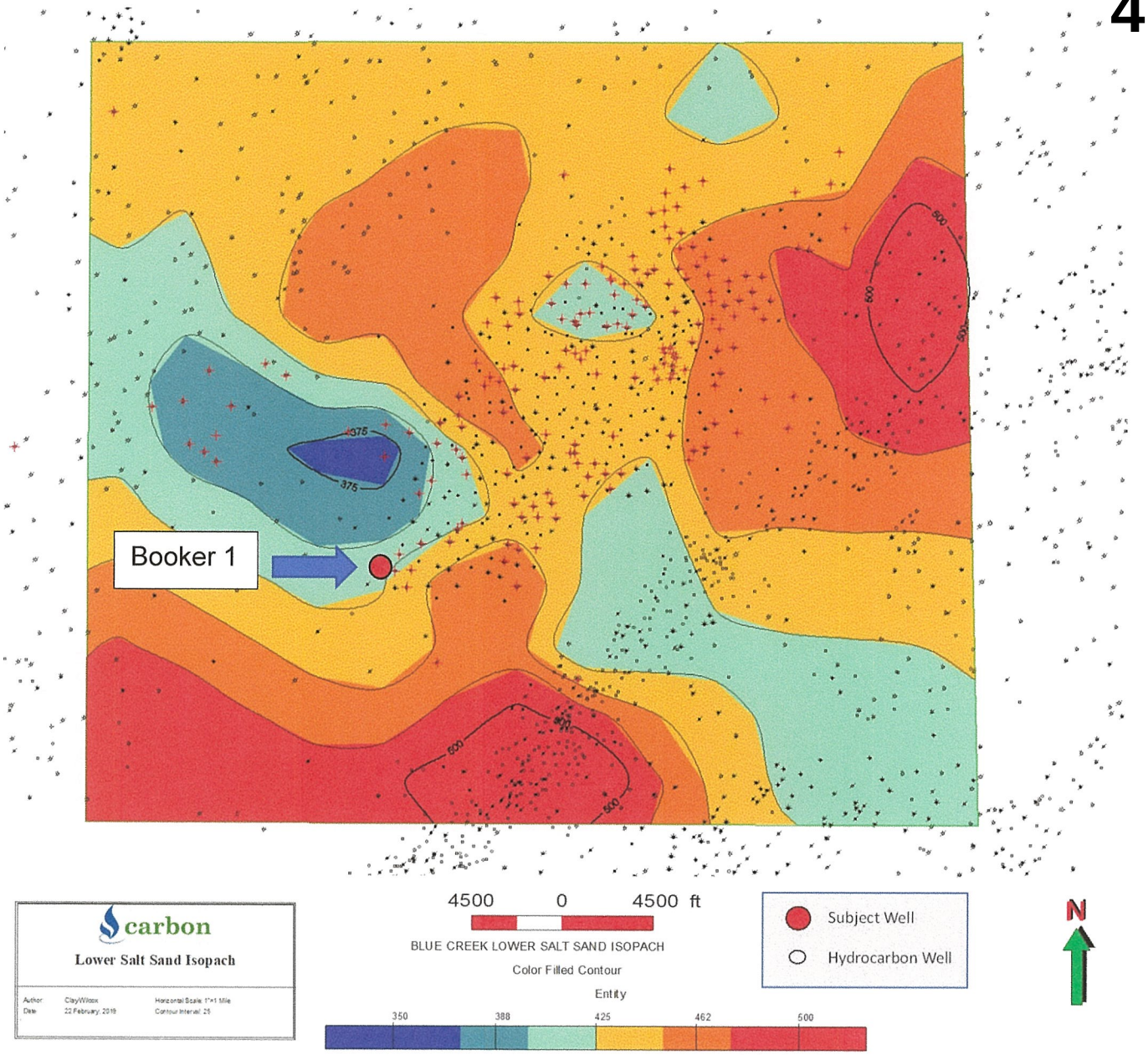


FIGURE 6

4703902327

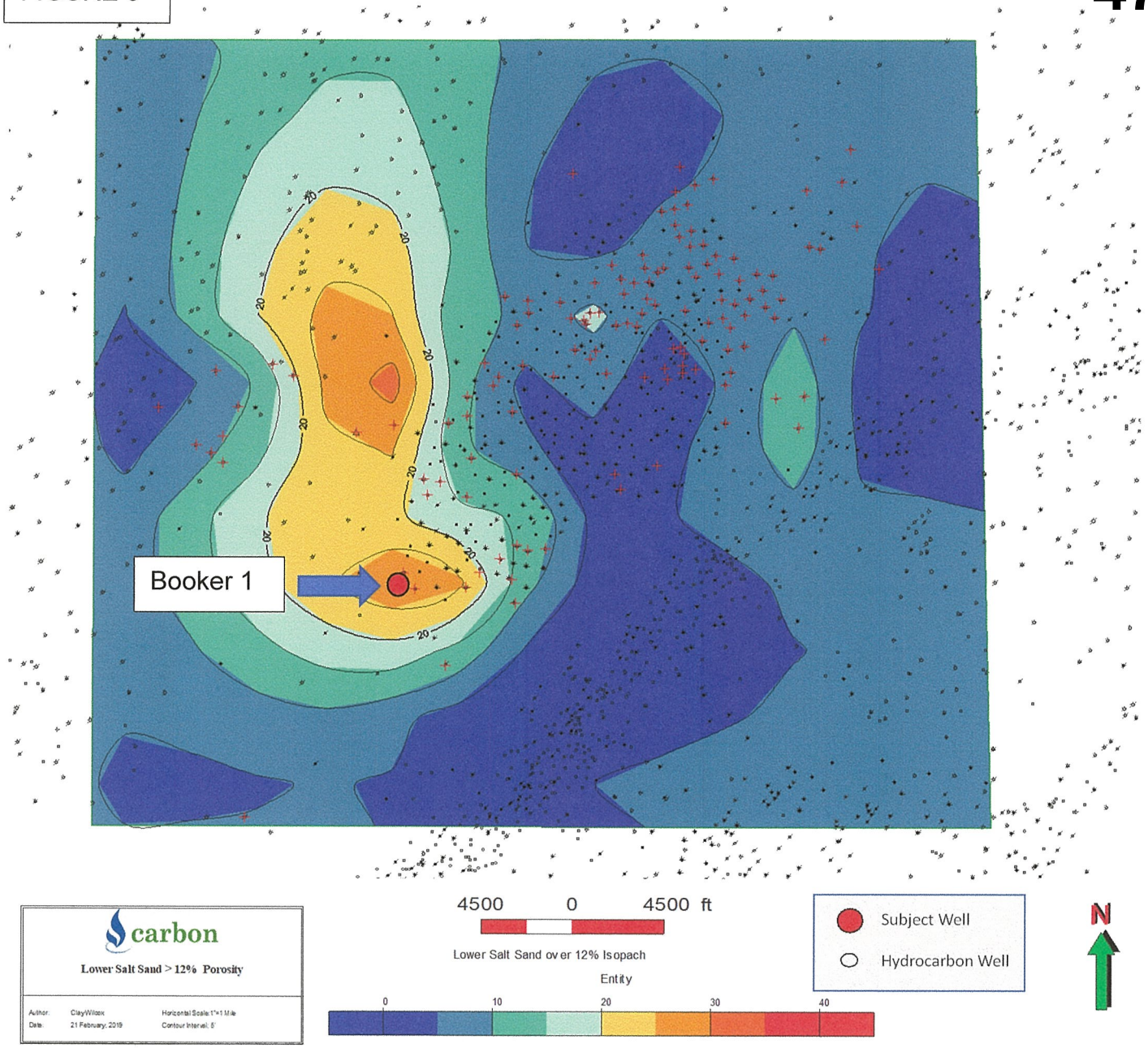


FIGURE 7

4703902327

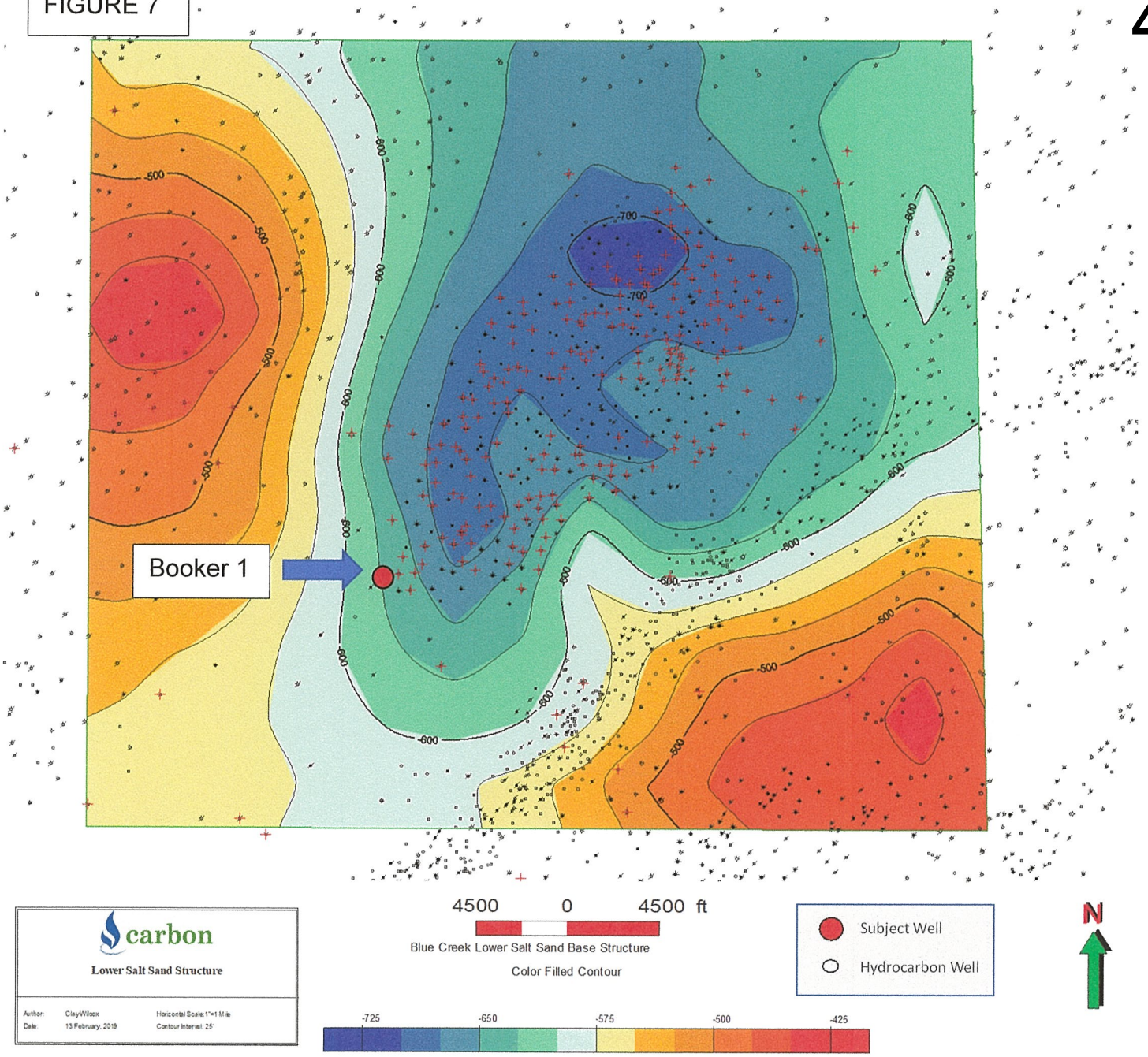


FIGURE 8

4703902327

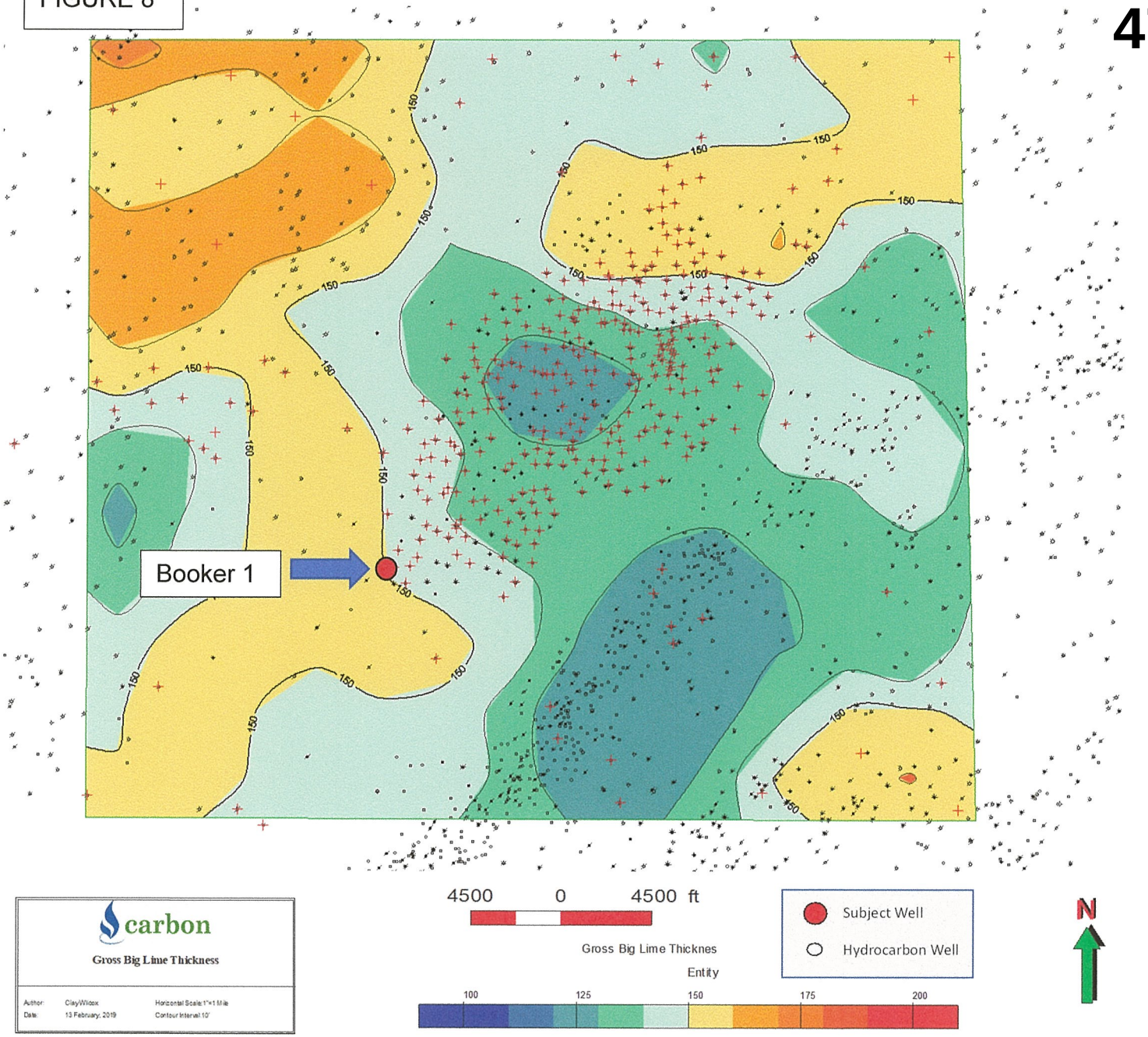
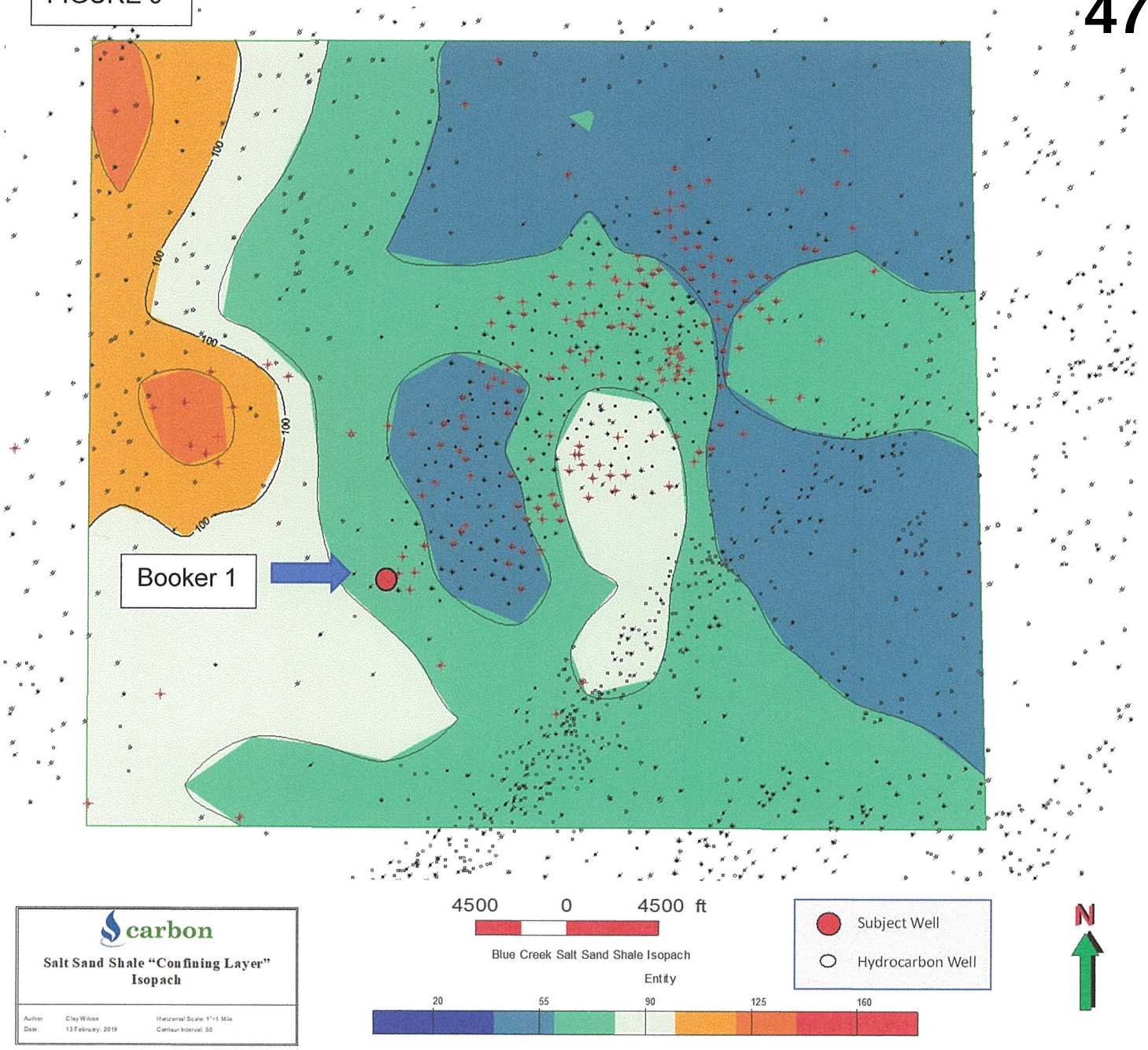


FIGURE 9

4703902327



4703902327

Kanawha County Brine Disposal Wells

Brine Disposal Wells

WellUse

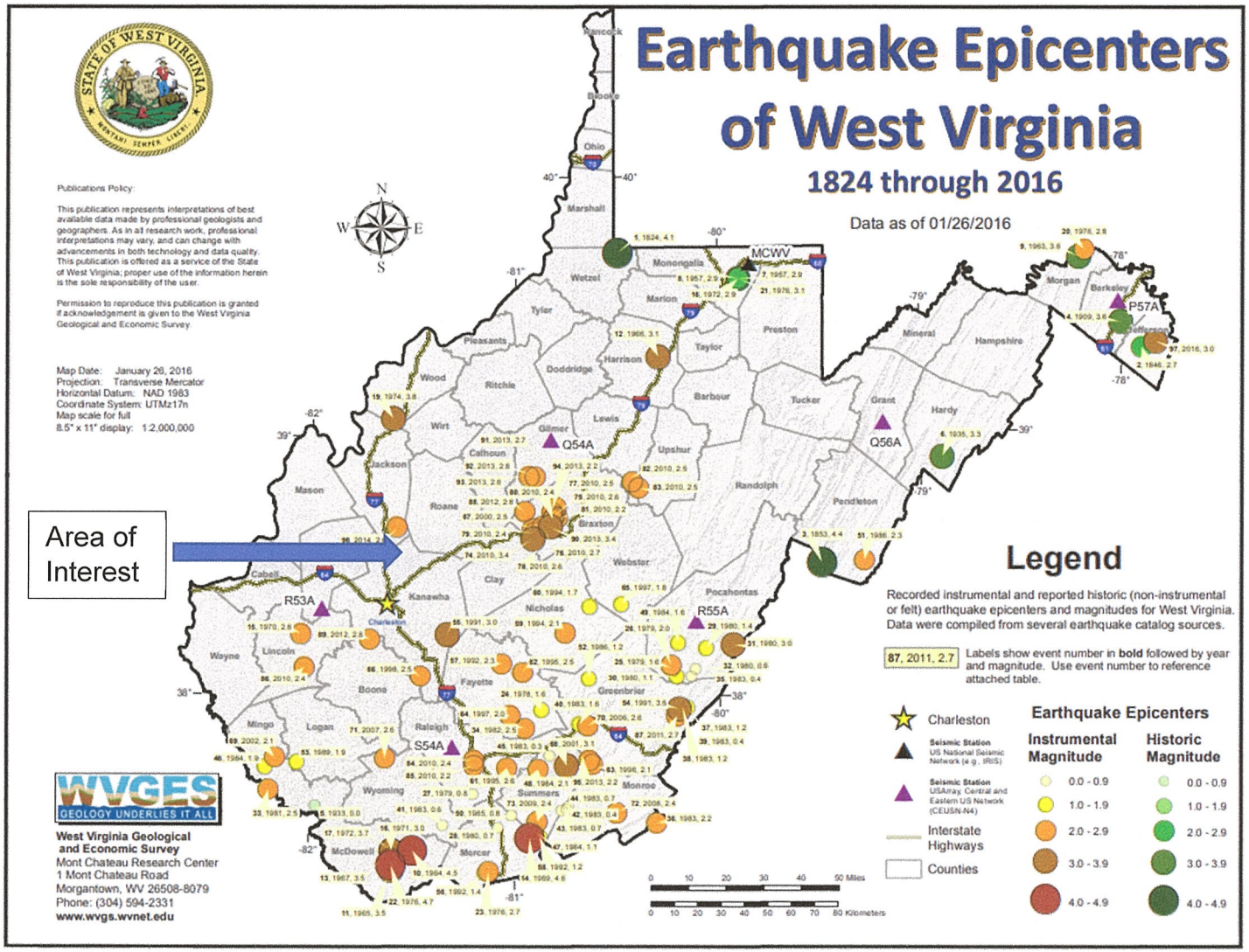
- Brine Disposal
- Greenbrier Thickness (ft)
- Greenbrier Lmst Elev
- PreCambrian_Faults
- Surface Structure

Scale: 1:60,000

5,000 0 5,000 10,000 Feet

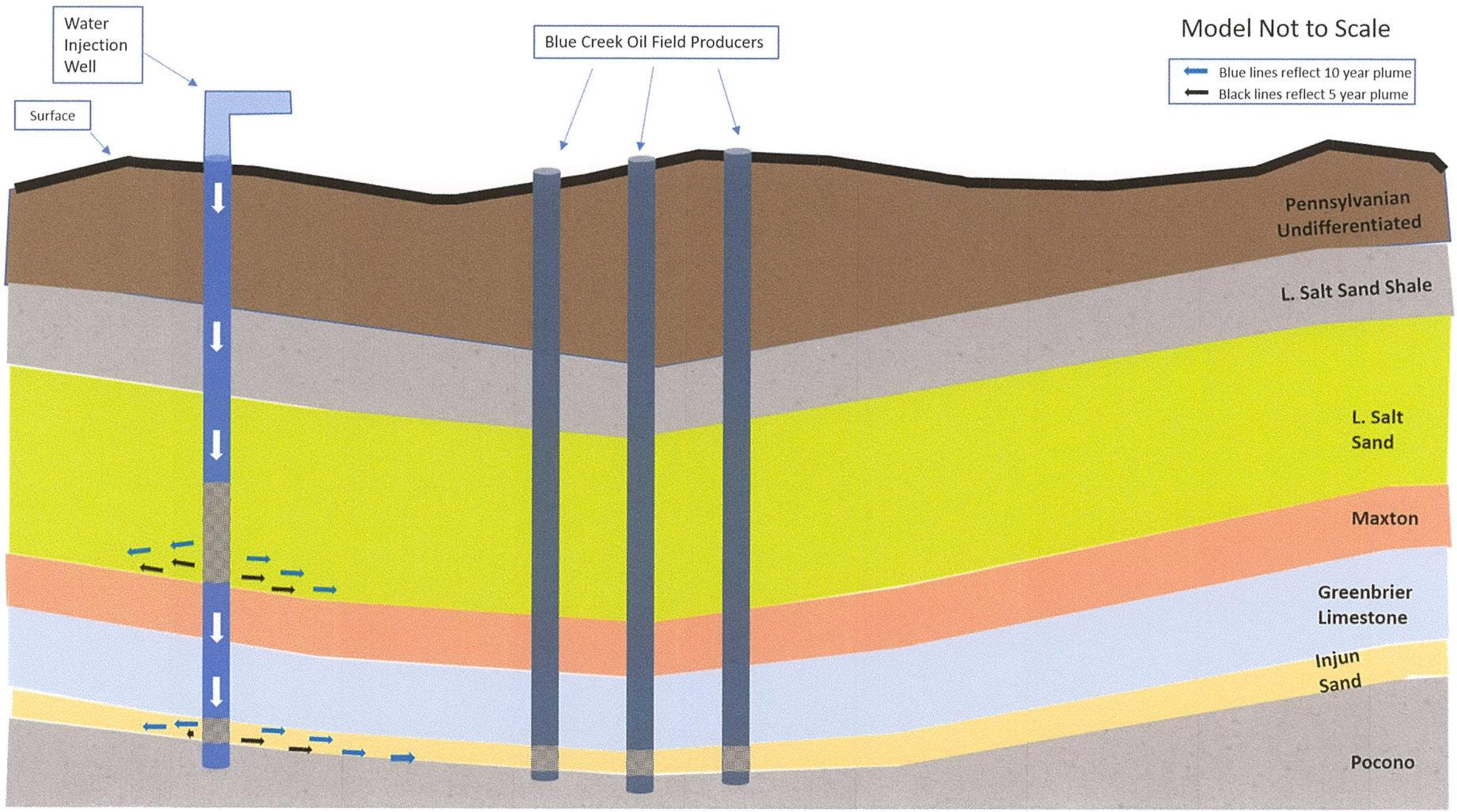
Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOA

FIGURE 10


Earthquake Epicenters of West Virginia
1824 through 2016
Data as of 01/26/2016
Publications Policy:
This publication represents interpretations of best available data made by professional geologists and geographers. As in all research work, professional interpretations may vary, and can change with advancements in both technology and data quality. This publication is offered as a service of the State of West Virginia; proper use of the information herein is the sole responsibility of the user.
Permission to reproduce this publication is granted if acknowledgement is given to the West Virginia Geological and Economic Survey.
Map Date: January 26, 2016
Projection: Transverse Mercator
Horizontal Datum: NAD 1983
Coordinate System: UTMz17n
Map scale for full 8.5" x 11" display: 1:2,000,000
Area of Interest
MCWV
Q54A
Q56A
P57A
R53A
R55A
S54A
Legend
Recorded instrumental and reported historic (non-instrumental or felt) earthquake epicenters and magnitudes for West Virginia. Data were compiled from several earthquake catalog sources.
87, 2011, 2.7 Labels show event number in bold followed by year and magnitude. Use event number to reference attached table.
Charleston
Seismic Station US National Seismic Network (e.g., IRIS)
Seismic Station USArray, Central and Eastern US Network (CEUSN-N4)
Interstate Highways
Counties
Earthquake Epicenters
Instrumental Magnitude
Historic Magnitude
0.0 - 0.9
1.0 - 1.9
2.0 - 2.9
3.0 - 3.9
4.0 - 4.9
0 10 20 30 40 50 Miles
0 10 20 30 40 50 60 70 80 Kilometers
WVGES
GEOLOGY UNDERLIES IT ALL
West Virginia Geological and Economic Survey
Mont Chateau Research Center
1 Mont Chateau Road
Morgantown, WV 26508-8079
Phone: (304) 594-2331
www.wvgs.wvnet.edu

4703902327

FIGURE 11



Diversified Production, LLC
UIC 2D03902327
W.C. Booker No.1

	Injection (bbl)	Thickness (ft)
Salt Sand:	584,998 (90%)	386
Big Injun Sandstone:	72,678 (10%)	44
Total:	651,682	430

Estimation of Fluid Migration - Salt Sand

The following is an estimation of the injection fluid migration over time at the W.C. Booker No.1 (API 4703902327) using the volumetric method. Parameters used in the calculation are cumulative volume, porosity percent, reservoir height, and saturation displacement percent. Below is the formula used for the calculation and the parameter inputs.

$$R = \sqrt{Q \times V / 3.14 \times P \times H \times Sd}$$

		Input		
Q =	Cumulative injection volume (bbls)	(584,998 bbl)		(as of 12/30/2024)
V =	Volume of one barrel of liquid (cf/bbl)	(5.615 cf/bbl)		
P =	Average porosity (%)	(0.28)	28%	
H =	Reservoir height (ft)	(386 ft)	Salt Sand	
Sd =	Saturation displacement (%)	(0.20)	20%	
R =	Estimated radial distance from wellbore	(224 ft)		

Estimation of Fluid Migration - Big Injun

The following is an estimation of the injection fluid migration over time at the W.C. Booker No.1 (API 4703902327) using the volumetric method. Parameters used in the calculation are cumulative volume, porosity percent, reservoir height, and saturation displacement percent. Below is the formula used for the calculation and the parameter inputs.

$$R = \sqrt{Q \times V / 3.14 \times P \times H \times Sd}$$

		Input		
Q =	Cumulative injection volume (bbls)	(72,678 bbl)		(as of 12/30/2024)
V =	Volume of one barrel of liquid (cf/bbl)	(5.615 cf/bbl)		
P =	Average porosity (%)	(0.27)	27%	
H =	Reservoir height (ft)	(44 ft)	Big Injun Sandstone	
Sd =	Saturation displacement (%)	(0.20)	20%	(Estimate)
R =	Estimated radial distance from wellbore	(222 ft)		

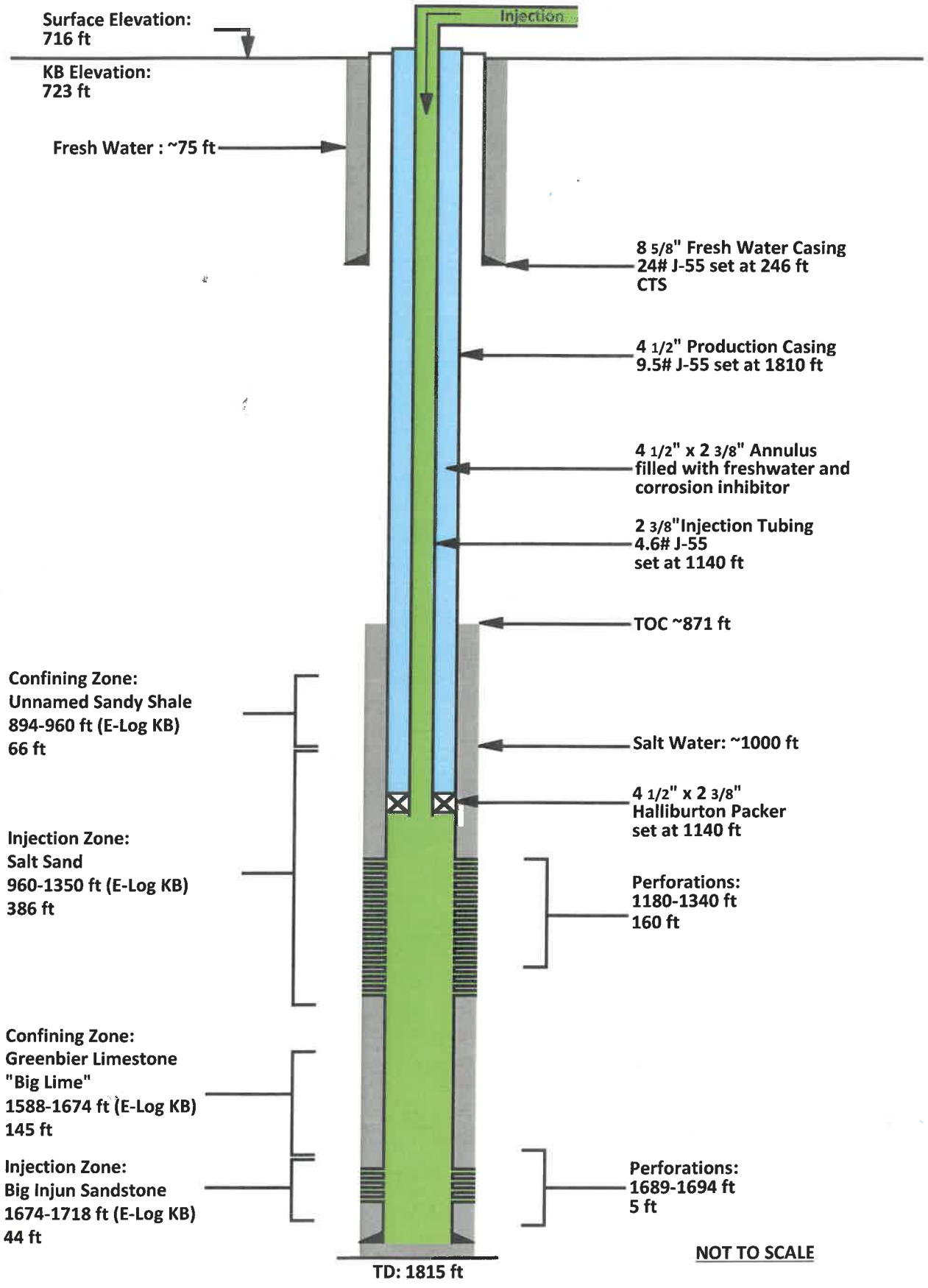
Well Bore Diagram

W. C. Booker No.1

API 47-039-02327

Diversified Production LLC

UIC 2D03902327-003



4703902327

Booker #1 (Partial CBL only available)

Hitwell Surveys, Inc.

GAMMA-RAY CEMENT BOND
CCL
VARIBLE DENSITY

CHF OPS 2.001

COUNTY KANAWHA W.V.
FIELD WILLS CREEK
LOCATION ELK DISTRICT
WELL W.C. BOOKER #1
COMPANY QUAKER STATE CORP
47-039-2327

COMPANY QUAKER STATE CORP.
WELL W.C. BOOKER #1
FIELD WILLS CREEK
COUNTY KANAWHA STATE W. V.

LOCATION
ELK DISTRICT

Sec. Twp. Rge.

Other Services

Permanent datum GROUND LEVEL Elev. 715.8
Log Measured From TOP OF 4.5" Above Perm. Datum
Drilling Measured From KELLY

Elev. K.B. 722.8
D.F. 721.8
G.L. 715.8

Date		1/9/82		Type Fluid in Hole		H2O
Job Tkt.	Run No.		ONE	Dens.	Visc.	
Depth-Driller		1781		Time Well Ready		
Depth-Logger		1843		Logger on Bottom		9:00
Btm Log Interval		1838		Equip.	Location	108 PARKERSBURG
Top Log Interval		700		Recorded By		E. MONROE
Max Rec. Temp.				Witnessed By		MR. T. KNOBLOCK

BOREHOLE RECORD

Run No.	Bit	From	To

TUBING RECORD

Size	Wgt	From	To

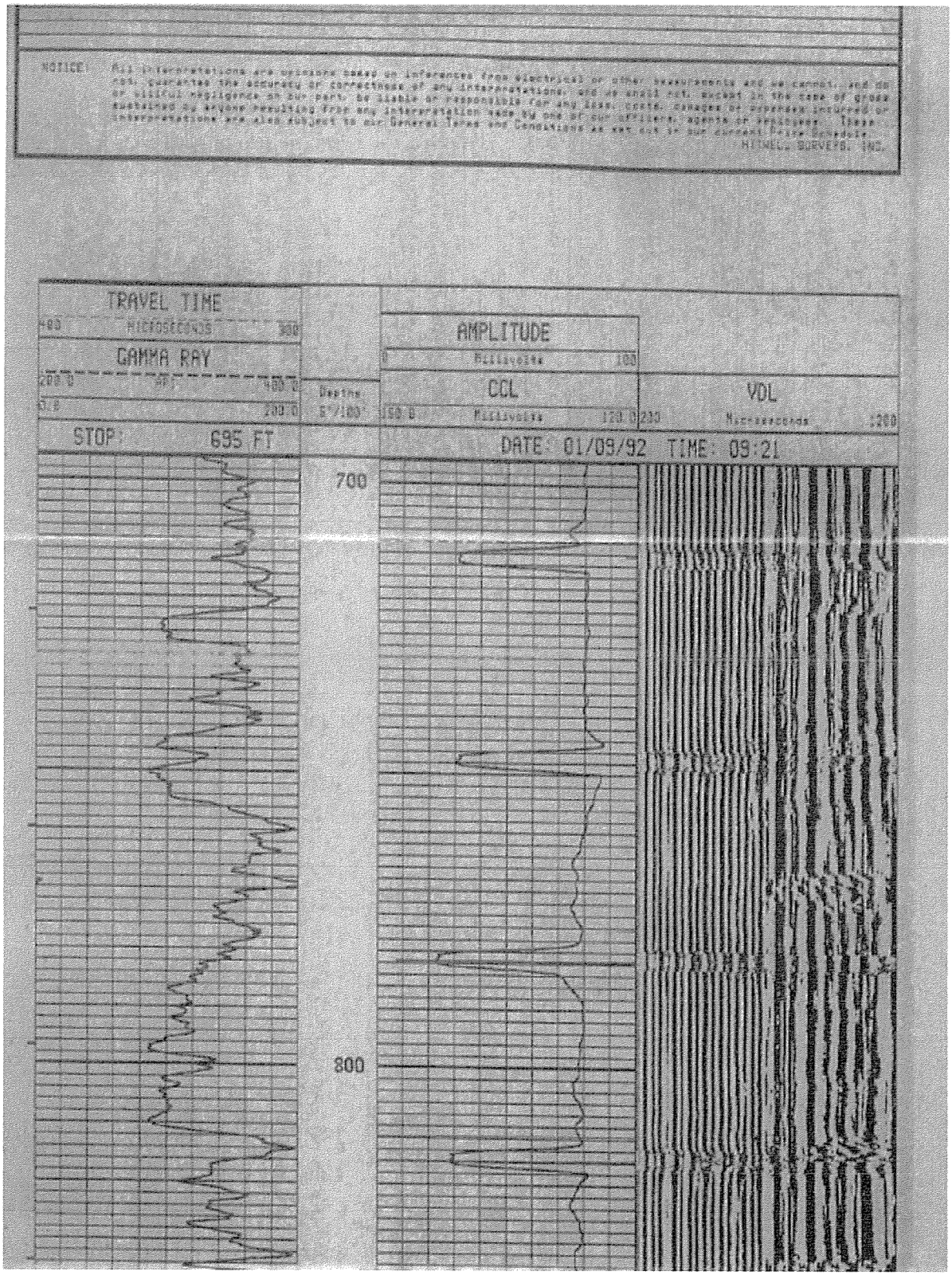
CASING RECORD

Size	Wgt	From	To
4.5"	9.5	SURFACE	TD

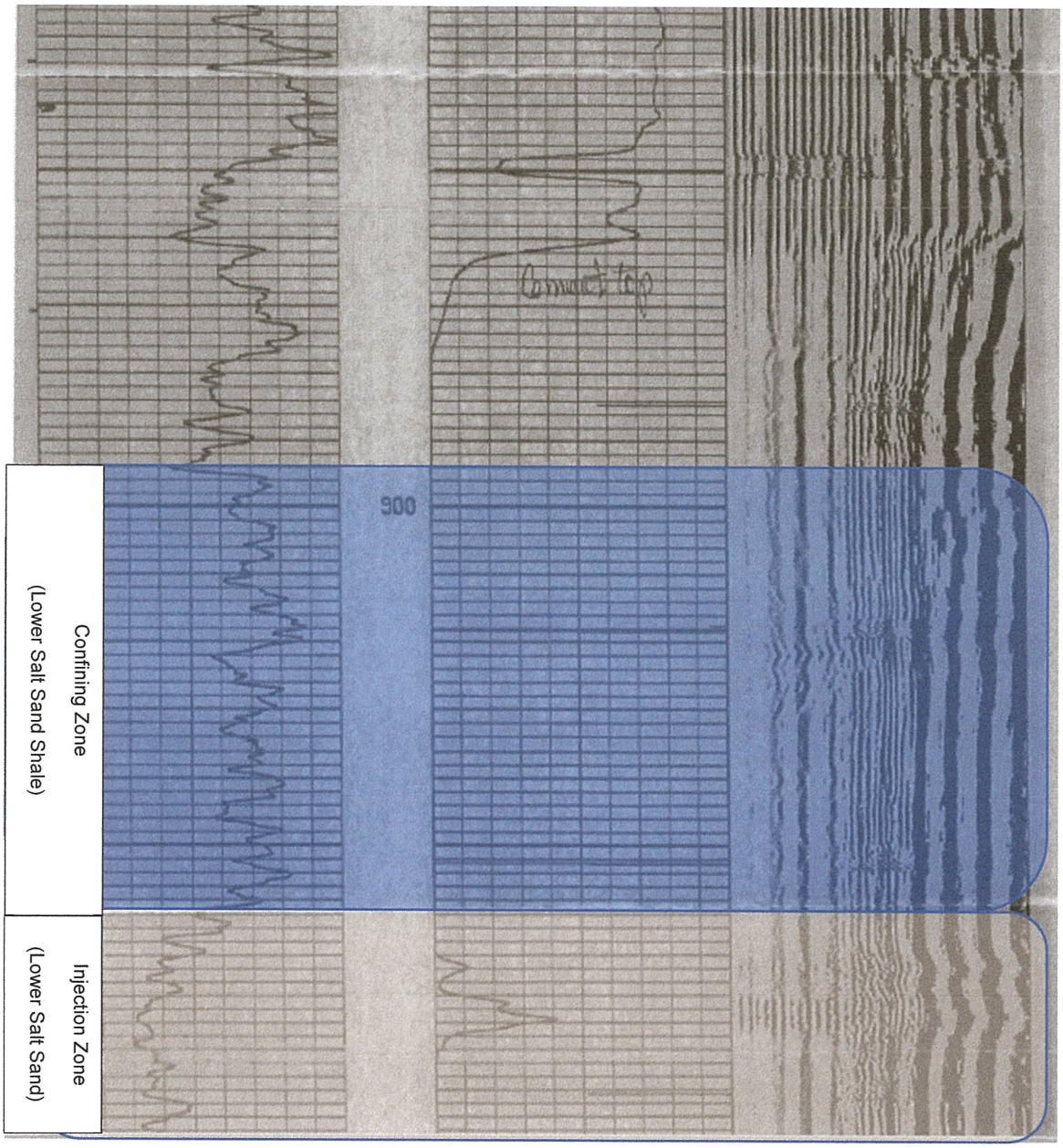
LINER

Size	Wgt	From	To

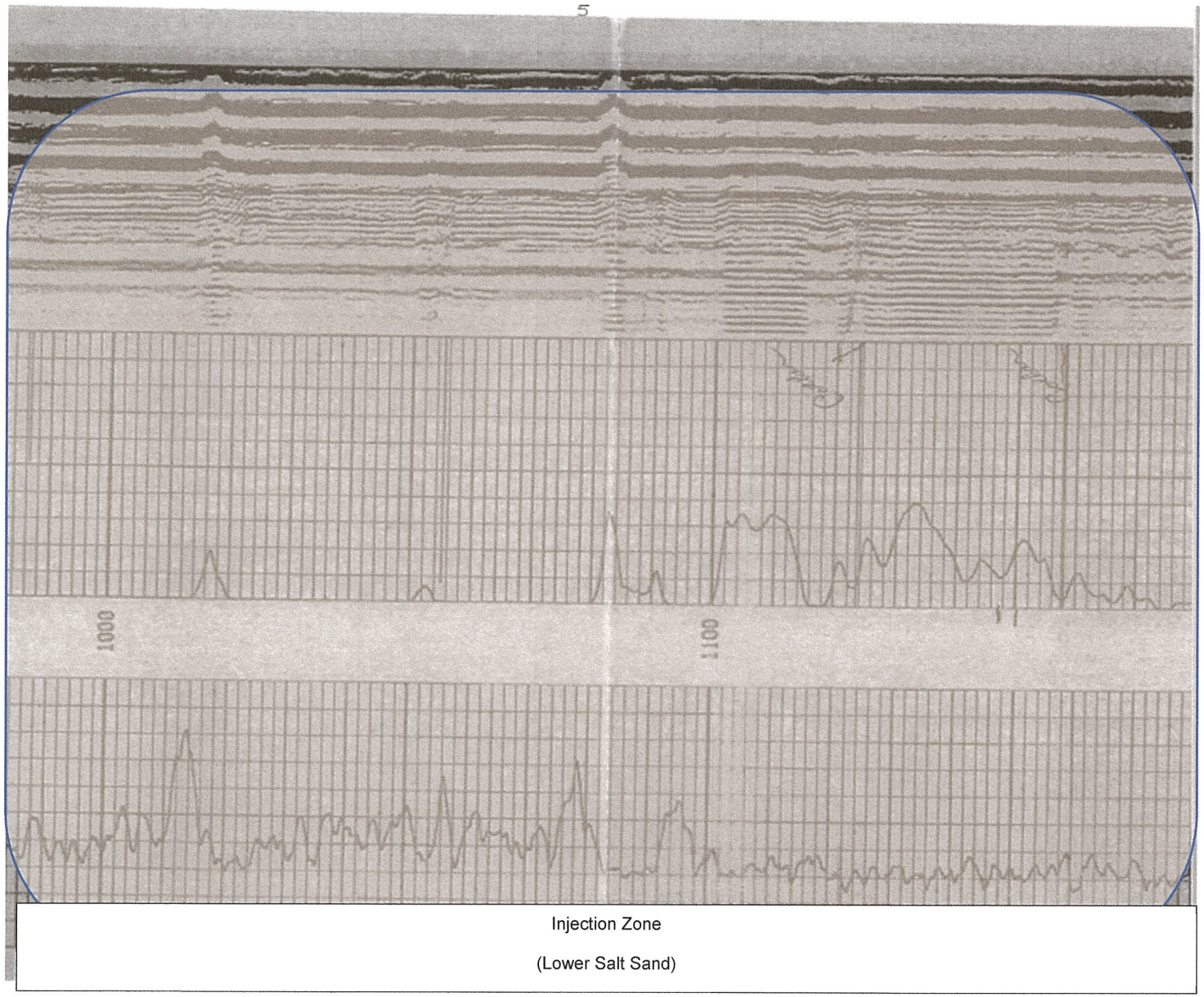
Fold Here
REFERENCE LITERATURE


NOTICE: All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by one of our officers, agents or employees. These interpretations are also subject to our General Terms and Conditions as set out in our current Price Schedule.
MITCHELL SURVEYS, INC.
TRAVEL TIME
MICROSECONDS
GAMMA RAY
API
Depths
5"/100'
AMPLITUDE
Millivolts
CCL
Millivolts
VDL
Microseconds
STOP: 695 FT
DATE: 01/09/92 TIME: 09:21
700
800

4703902327


Confining Zone
(Lower Salt Sand Shale)
Injection Zone
(Lower Salt Sand)
900
Contact top

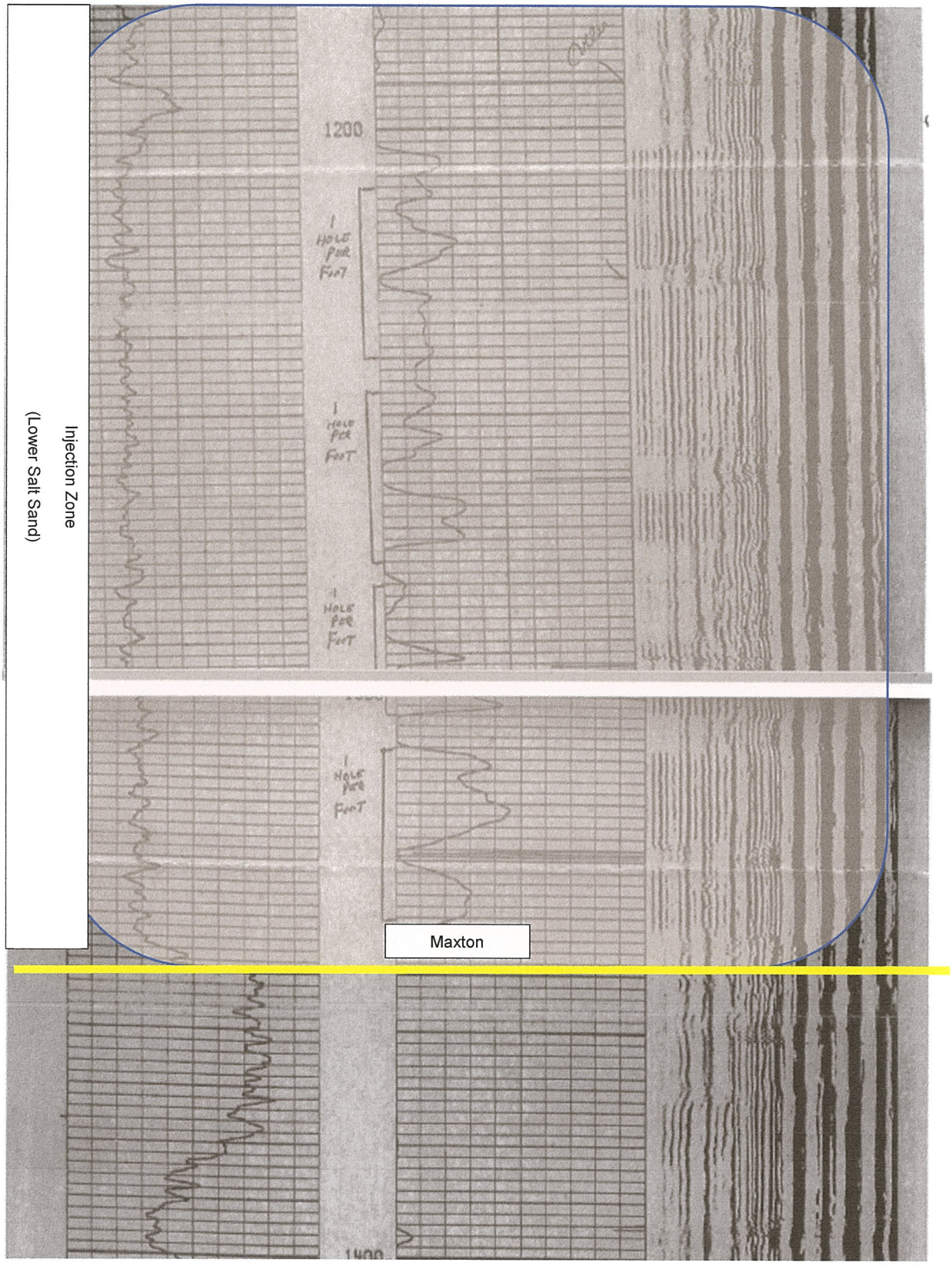
47039023 27



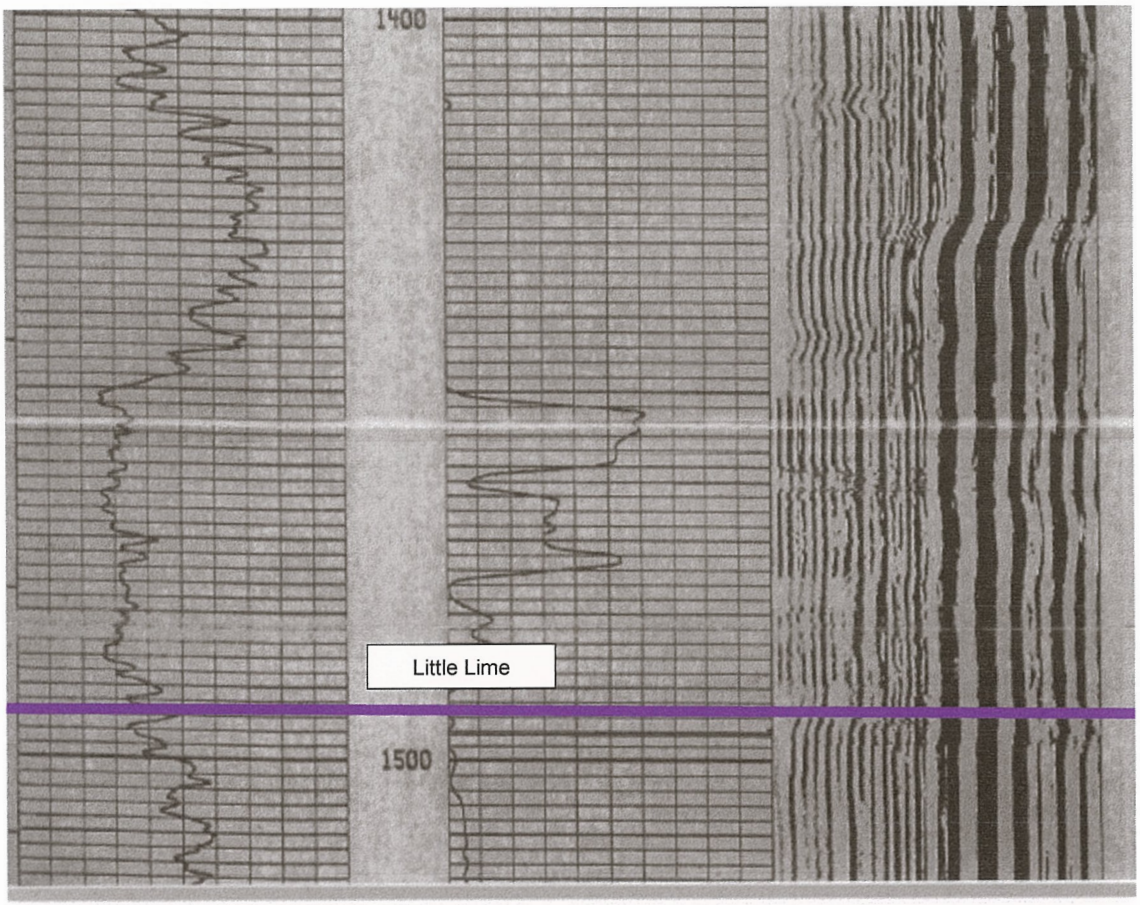
Injection Zone

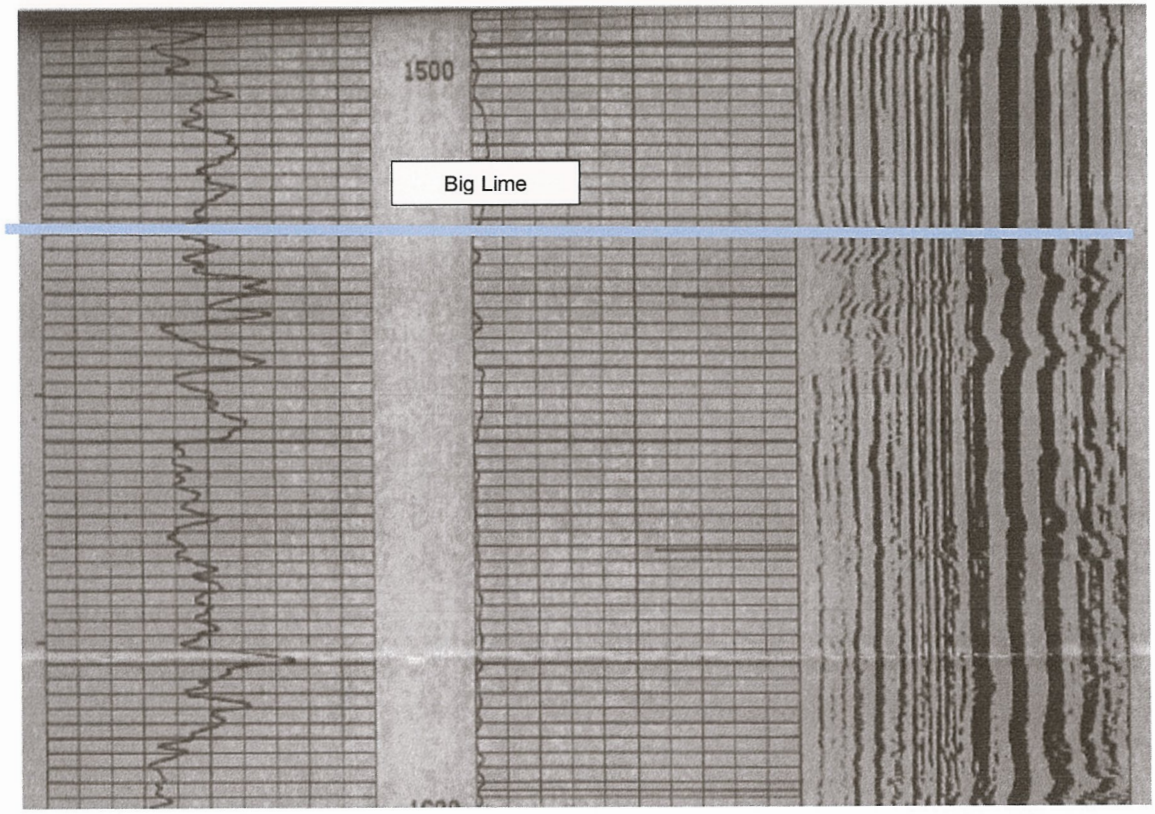
(Lower Salt Sand)

4703902327


Injection Zone
(Lower Salt Sand)
1200
1 HOLE PER FOOT
1 HOLE PER FOOT
1 HOLE PER FOOT
1 HOLE PER FOOT
Maxton
1400

4703902327





4703902327

SCHLUMBERGER

COMPENSATED FORMATION DENSITY LOG

Gamma-Gamma

COMPANY MAREVE OIL CORPORATION

4703902327

WELL W.C. BOOKER #1

FIELD WILL'S CREEK

COUNTY KANAWHA STATE WEST VIRGINIA

COUNTY FIELD or LOCATION WELL COMPANY

Location: ELK DISTRICT
PERMIT #KAN-2337

Sec. Twp. Rge.

Other Services:
DIL

Permanent Datum: GROUND LEVEL ; Elev.: 715.6
Log Measured From K.B. 7 Ft. Above Perm. Datum
Drilling Measured From K.B.

Elev.: K.B. 722.6
D.F. 721.6
G.L. 715.6

Date	11-8-68
Run No.	ONE
Type Log	FDC-GR
Depth—Driller	1815
Depth—Logger	1812
Bottom logged interval	1811
Top logged interval	1475
Type fluid in hole	GEL
Salinity, PPM Cl.	1.87 @ 60°
Density	NA
Level	FULL
Max rec. temp., deg F.	80°
Operating rig time	1 HOUR
Recorded by	MALONE
Witnessed by	HICKOX

O. S. GEOL. FILES
DO NOT REMOVE

L-67

RUN No.	BORE-HOLE RECORD Bit	From	To	CASING RECORD Size	Wgt.	From	To
1	6 3/4	CSG.	TD	8 5/8"	-	SURF.	246

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

EQUIPMENT DATA

	PDH-A	PGH-A	PGS- E	Source No.	SFT-106	SGH E	Logging Unit	Location
PG P-D	152	140	187	2519	196	30	3003	HUNTINGTON
2.56								

CALIBRATION DATA

Gamma Ray API Scale	Background CPS	Total CPS	FDC — Before Log — ACPS P1	P2	FDC — After Log — ACPS P1	P2
200	100	560	480	800	480	800

LOGGING DATA

General Depths

Gamma Ray

FDC Selectors

Liquid Grain Hole Porosity

Speed

TD								
	1430	30	2	200		2.08	LTQ.	30,10,-1

MUD DATA

Rm. @ °F	% Solids by Vol.	% Oil by Vol.	% Water by Vol.	Viscosity, Sec/Qt @ °F	Solids, Av. Sp. Gr.
.87 @ 60 °F	NA			@ °F	
@ °F				@ °F	
@ °F				@ °F	

arks:

4703902327

CALIPER
HOLE DIAM. IN INCHES

15

DEPTHS

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

0 +.25
CORRECTION
GRAMS/CC.

GAMMA RAY
API UNITS

200

200 400

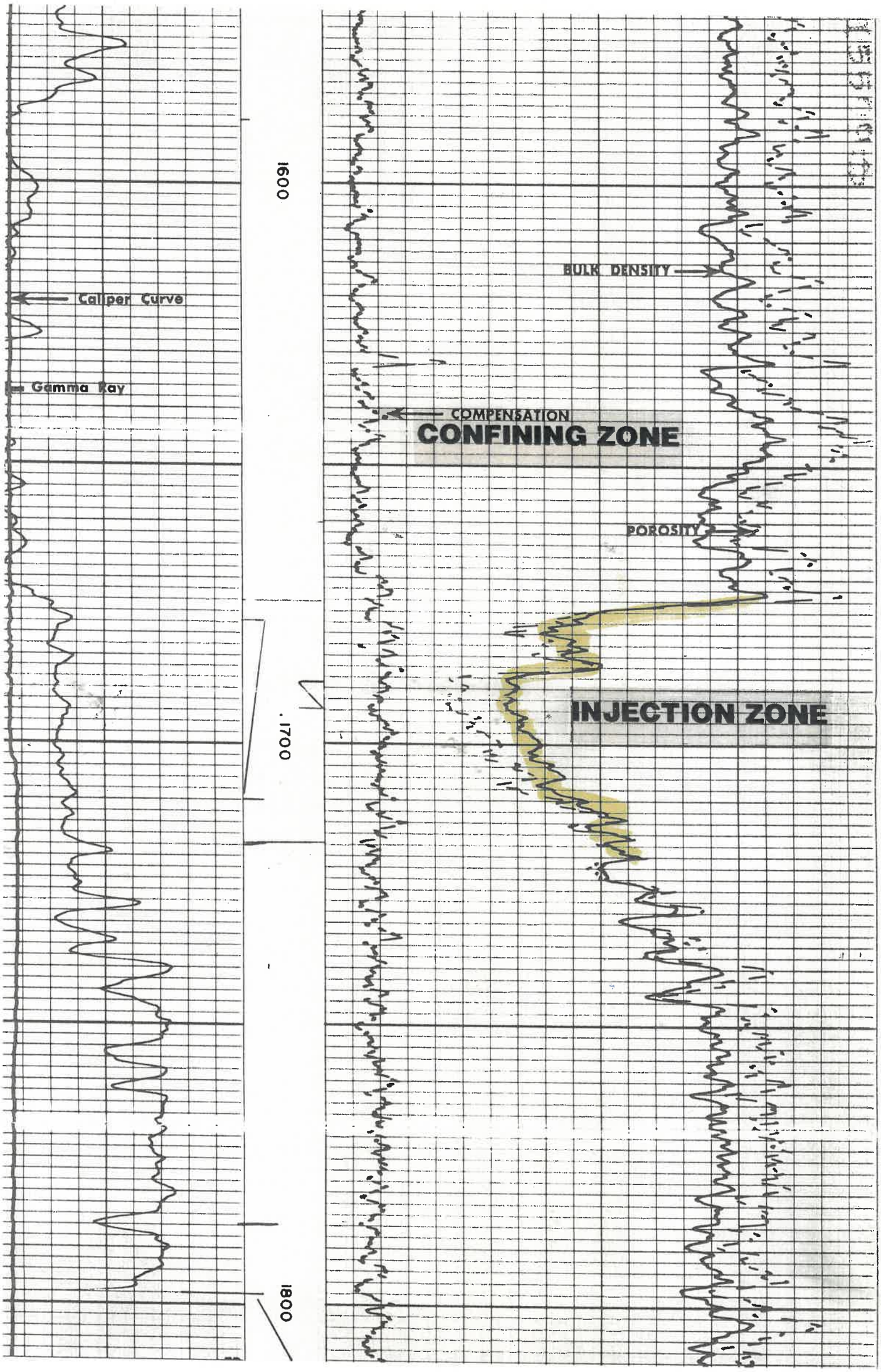
BULK DENSITY
GRAMS/CC.

2.0 2.5 3.0

LR

1500

4703902327


1600
1700
1800
Caliper Curve
Gamma Ray
BULK DENSITY
COMPENSATION
CONFINING ZONE
POROSITY
INJECTION ZONE

4703902327

Hitwell Surveys, Inc.

GAMMA-RAY CEMENT BOND
CCL
VARIBLE DENSITY

COUNTY: KANAWHA W.V.
FIELD: WILLS CREEK
LOCATION: ELK DISTRICT
WELL: W.C. BOOKER #1
COMPANY: QUAKER STATE CORP.
47-037-2337

COMPANY QUAKER STATE CORP.
WELL W. C. BOOKER #1
FIELD WILLS CREEK
COUNTY KANAWHA STATE W. V.

LOCATION
ELK DISTRICT
Sec. Twp. Rge.

Other Services

Permanent datum GROUND LEVEL Elev. 715.6
Log Measured From TOP OF 4.5" Above Perm. Datum
Drilling Measured From KELLY

Elev.: K.B. 722.6
D.F. 721.6
G.L. 715.6

Date	1/9/92		Type Fluid in Hole	H2O	
Job Tkt.	Run No. ONE		Dens.	Visc.	
Depth-Driller	1781		Time Well Ready		
Depth-Logger	1643		Logger on Bottom	9.00	
Btm Log Interval	1638		Equip.	Location 108	PARKERSBURG
Top Log Interval	700		Recorded By	E. MONROE	
Max Rec. Temp.			Witnessed By	MR. T. KNOBLOCK	

BOREHOLE RECORD

Run No	Bit	From	To

TUBING RECORD

Size	Wgt	From	To

CASING RECORD

Size	Wgt	From	To
4.5"	9.5	SURFACE	TD

LINER

Size	Wgt	From	To

REFERENCE LITERATURE

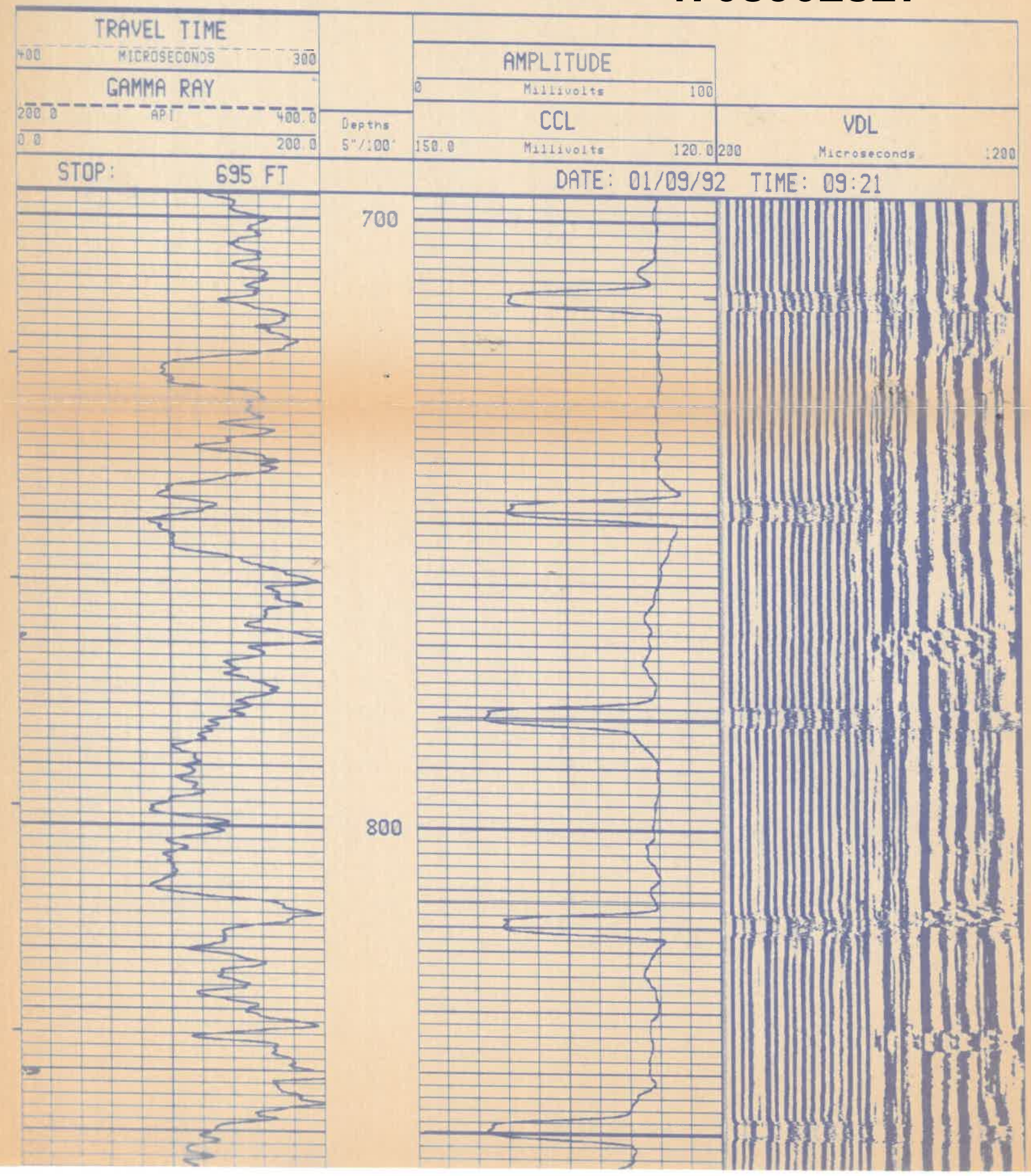
CWP DRS 2.001

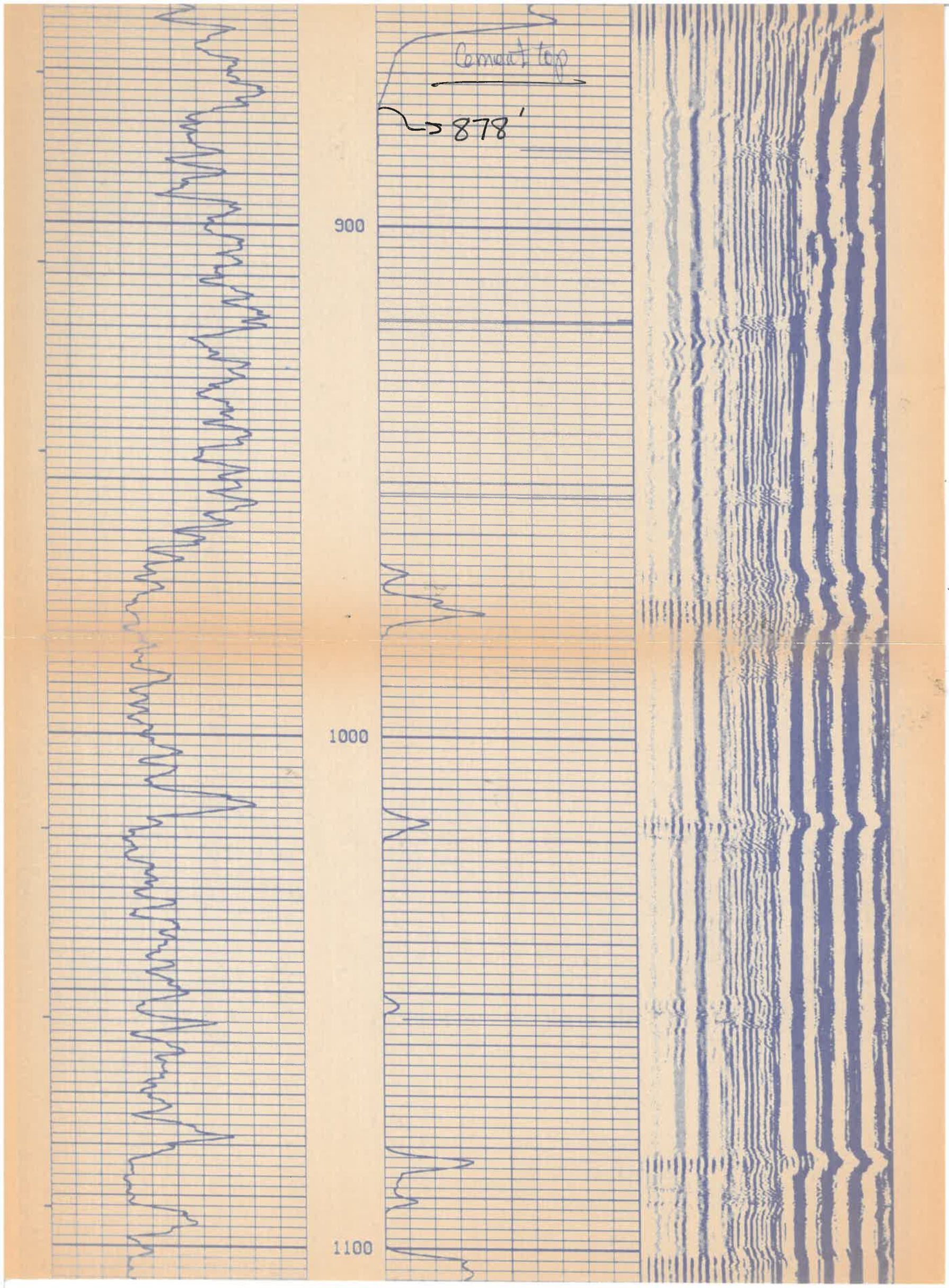
REMARKS

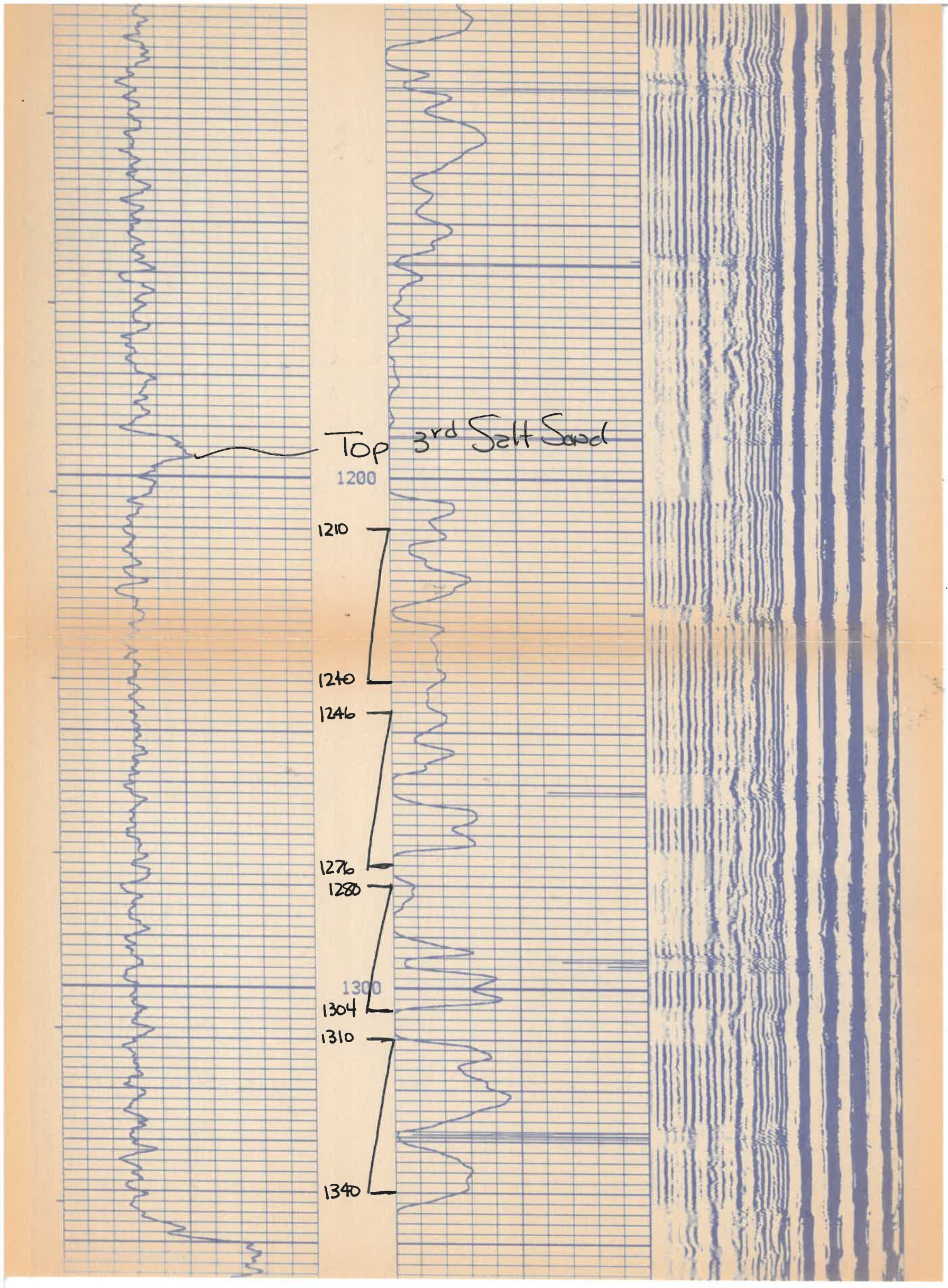
NOTICE: All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by one of our officers, agents or employees. These interpretations are also subject to our General Terms and Conditions as set out in our current Price Schedule.

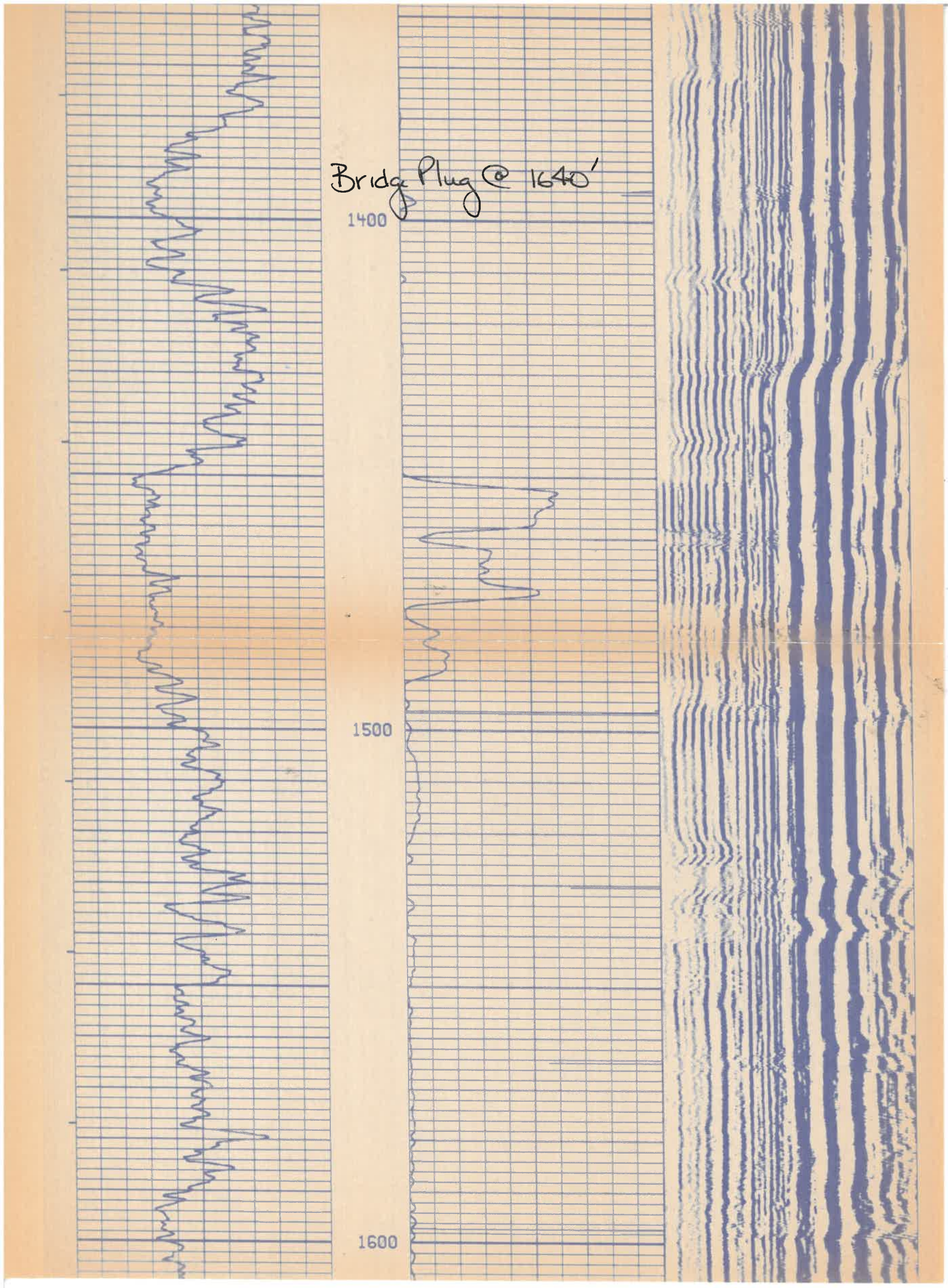
HITWELL SURVEYS, INC.

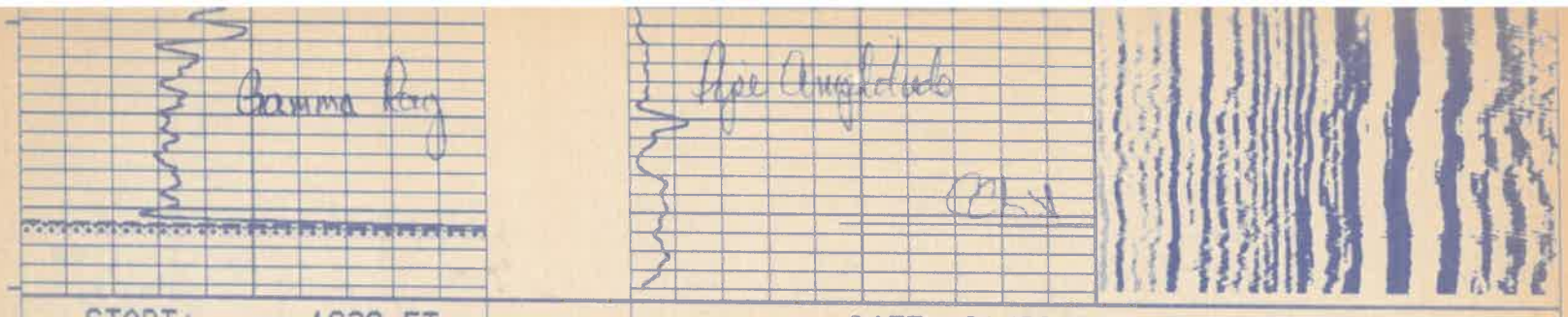
4703902327




Contact top
878'
900
1000
1100


Top 3rd Salt Sand
1200
1210
1240
1246
1276
1280
1300
1304
1310
1340


Bridge Plug @ 1640'
1400
1500
1600



START: 1638 FT

DATE: 01/09/92 TIME: 09:00

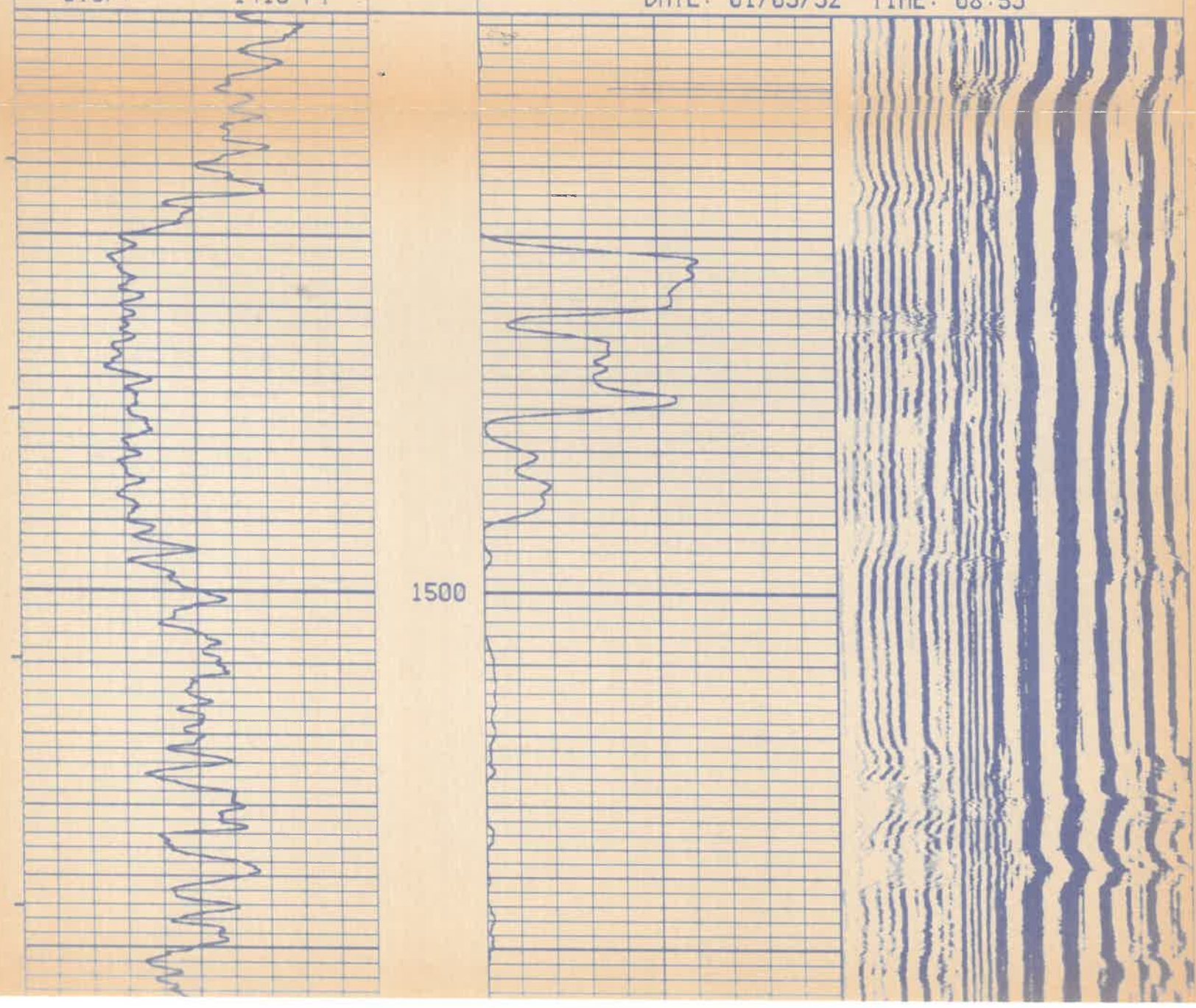
TRAVEL TIME				AMPLITUDE			
400 MICROSECONDS 300				0 Millivolts 100			
GAMMA RAY				CCL		VDL	
200.0 API 400.0	Depths						
0.0 200.0	5"/100'	150.0 Millivolts 120.0		200 Microseconds 1200			

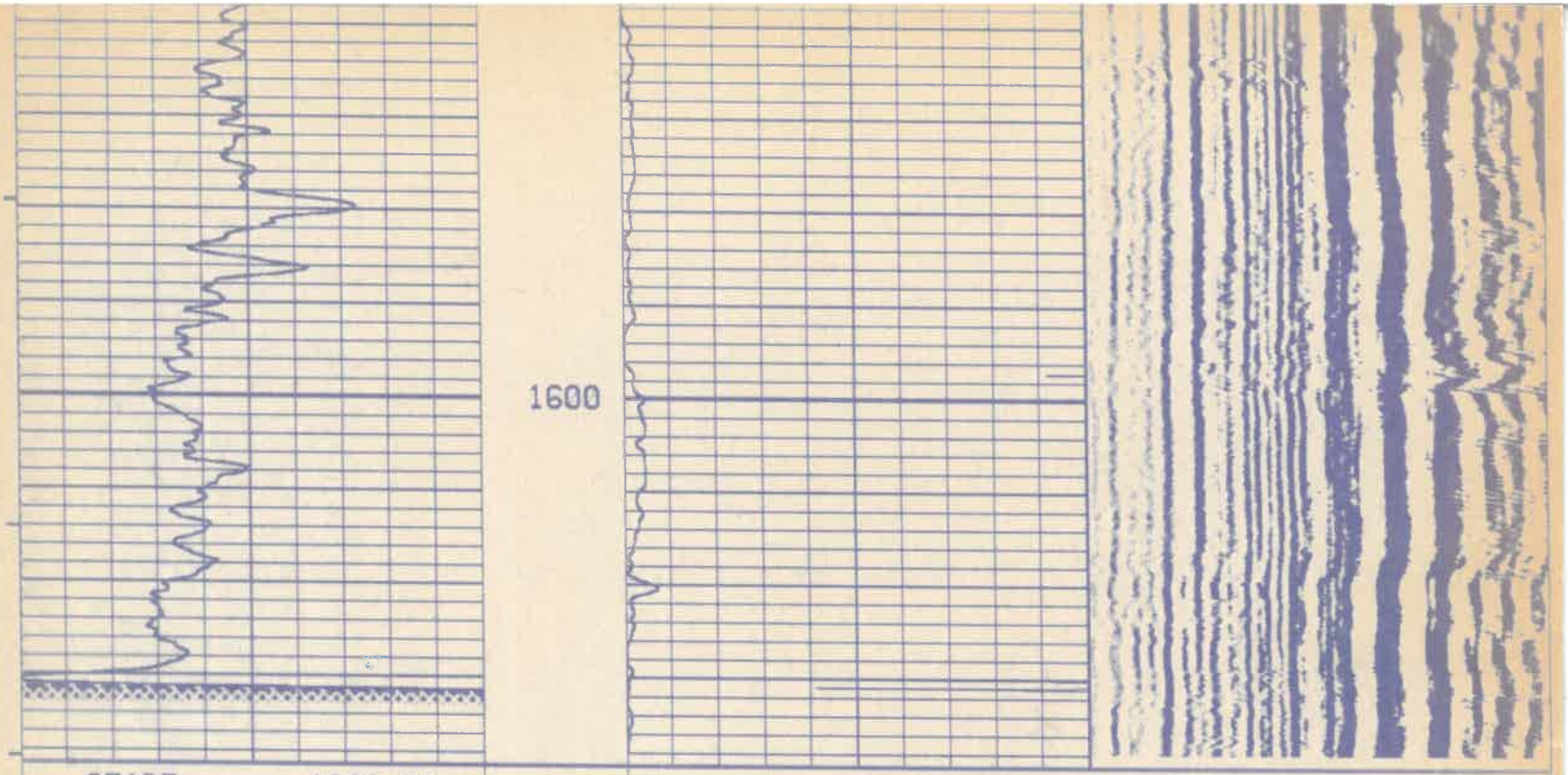
Repeat Section

TRAVEL TIME				AMPLITUDE			
400 MICROSECONDS 300				0 Millivolts 100			
GAMMA RAY				CCL		VDL	
200.0 API 400.0	Depths						
0.0 200.0	5"/100'	150.0 Millivolts 120.0		200 Microseconds 1200			

STOP: 1418 FT

DATE: 01/09/92 TIME: 08:59





START: 1638 FT

DATE: 01/09/92 TIME: 08:54

TRAVEL TIME

400 MICROSECONDS 300

GAMMA RAY

200.0 API 400.0

0.0 200.0

Depths 5"/100'

AMPLITUDE

0 Millivolts 100

CCL

150.0 Millivolts 120.0

VDL

200 Microseconds 200

Section 9 – Operating Requirements

UIC 2D0392327

Section 9 - Operating Requirements/Data:

The W. C. Booker I has previously been permitted as a UIC Class 2D injection facility. Production casing of 4 1/2" 9.5# was run to a depth of 1818' with 2 3/8 Sealtite EUE tubing and R-4 Halliburton 4 1/2 x 2 3/8 packer set at 1140'. Injection fluid makeup is brine water with no corrosion inhibitor and with 0 psig as an annular pressure. Corrosion inhibitor was added during the sealtite installation type or brand were not found in the records. Historical volumes injected at this location are approximately 10 BPH at an average of 300 psig. Bottom hole psig is 965#. The projected future use is expected to be the same.

The facility utilizes two filtration units both using 10-micron filters, one at the plant and one at the well.

A list of API wells by API number to be serviced by a brine disposal well(s) are listed on APPENDIX G

MIT inspections shall be performed a minimum of every five years or anytime service work is performed to the well or anytime routine inspections show the possibility of an integrity problem. Casing and tubing pressures are monitored during operational hours. Routine inspections are performed for monitoring for corrosion, potential leaks and plant maintenance. Inspection check points include wellhead, tanks, containments, equipment including connections and location access.

All routine inspections and tests shall be recorded, logged and filed in the local office until transferred to and filed in the office of the company's regulatory analyst. In the event of any suspect well or pipeline integrity problem the well will be immediately shut in and injection activities shall cease with proper notifications being made. In the event of any well integrity problem the well will be made "static" and evaluation of data shall be performed and remedial work will begin once a plan of action has been put into place. Any injection fluids shall be transported and disposed of in an alternated state approved disposal facility or permitted UIC Class 2D well.

A copy of the current mechanical integrity test is included.

MIT 4703902327

WR-37
12/23/19

WV DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS
PRE-OPERATION CERTIFICATE FOR LIQUID INJECTION
MECHANICAL INTEGRITY TEST RECORD

MIT Date: 5/24/23
Operator's Well Name / #: Booker
API#: 47- 039 - 02327
UIC Permit #: 2D03902327002
Field Name (2R only):

WELL OPERATOR Diversified Production
Address: 414 Summers Street, Charleston, WV 25301

DESIGNATED AGENT Chuck Shafer
Address: 414 Summers Street, Charleston, WV 25301

INJECTION FORMATION Lower Salt Sand/Big Injun Depth 960-1676 feet (top) to 1350-1720 feet (bottom)
Perforation Interval 960'-1720' or Open Hole Interval

INJECTION PERMIT TYPE
☑ 2D Commercial Disposal ☐ 2D Non-Commercial Disposal ☐ 2R Area Permit (EOR) ☐ 3S Solution Mining

INJECTATE TYPE (Check all that apply):
☑ Produced Water ☐ Fresh Water ☐ Completion Flowback Water ☐ Tank & Pipeline Residuals
☐ Drilling Waste Liquids ☐ Solution Mining Waste ☐ Gas (2R) ☐ Other (Specify)
Additives (ie. biocides, inhibitors, etc.) Alpha 3207 corrosion inhibitor

WELL CONSTRUCTION / CASING PROGRAM

CASING OR TUBING TYPE	SIZE	GRADE	WEIGHT PER FT.	NEW	USED	FOOTAGE USED IN DRILLING	FOOTAGE LEFT IN WELL	CEMENT USED
CONDUCTOR								
FRESH WATER	8 5/8	J-55	24	new		246	246	circ. cement 110sx
COAL								
INTERMEDIATE								
PRODUCTION	4 1/2	J-55	9.5	new		1810	21810	150sx/toc 860'
TUBING	2 7/8	J-55	4.6	new		1156		
LINERS								

PACKER	TYPE: R-4 Halliburton	SIZE: 4 1/2" x 2 7/8"	DEPTH: 1156

MECHANICAL INTEGRITY TEST TYPE
☑ Standard Annulus Pressure Test
Is Test Annulus Filled? ☑ Yes ☐ No If Yes, Specify Fluid Type? water and nitrogen
☑ Pump Line Test ☐ Other (Specify) filled with water and nitrogen

MAXIMUM PERMITED WELLHEAD INJECTION PRESSURE 382 psi **MIT PRESSURE** 610 psi

MECHANICAL INTEGRITY TEST DESCRIPTION
Casing was filled with water and nitrogen and tested at 610 psi for 30 minutes and verified with a chart recorder.

(2R Area Permits: If multiple pump lines are tested together, please list wells serviced by the tested pump lines.)

4703902327

WR-37
12/23/19

API#: 47- 039 - 02327

NOTE:

- If the well and the pump line are tested together the MIT pressure must be 1.5 times the maximum permitted injection pressure held for a minimum of 20 minutes with no more than a 5% loss.
- If the well is tested separately, the MIT pressure must be 1.5 times the maximum permitted injection pressure held for a minimum of 20 minutes with no more than a 5% loss.
- If the pump line is tested separately, the MIT pressure shall be the maximum permitted injection pressure plus 100 psi held for a minimum of 20 minutes with no more than a 5% loss. Multiple pump lines can be tested together.
- All MITs must be witnessed by a state inspector. A valid recording chart containing the inspector's signature must accompany this completed form.
- All MITs that fail must be submitted using this form and chart.
- Submit all MIT required documentation to OOG within 30 days of test.
- The mechanical integrity of this well must be demonstrated at least 5 years from this test date and each time work is completed on the well or pump line to continue injection.

The undersigned certify:

The MIT was performed on 5/24/23
The well and/or pump line:
☑ demonstrated mechanical integrity or ☐ failed to demonstrate mechanical integrity.

The MIT was witnessed by Terry Urban, Inspector WVDEP - Office of Oil and Gas.

Diversified Production
Permit Holder Company Name

6/14/23
Date

Chuck Shafer
Agent or Responsible Party (Print Name)

Chuck L Shafer
Signature

Manager-Production
Title

----------**Office of Oil and Gas Use Only:**----------

THIS WELL IS AUTHORIZED FOR INJECTION
UP TO A MAXIMUM WELLHEAD INJECTION PRESSURE OF _____ psi

Special Conditions:

_____

_____

_____

_____

_____

_____ _____
UIC Program Manager Date
WVDEP-Office of Oil and Gas

4703902327


Pipeline MIT
710 PSI
30 Minutes
5-5-23
Graphic Controls
(6.375 ARC LINE GRAD.)
Booker Pipeline
DATE
MCI P 0-2000-0-150-8
PRINTED IN U.S.A.
NIGHT
1 A.M.
2 A.M.
3 A.M.
4 A.M.
5 A.M.
6 A.M.
7 A.M.
8 A.M.
9 A.M.
10 A.M.
11 A.M.
NOON
1 P.M.
2 P.M.
3 P.M.
4 P.M.
5 P.M.
6 P.M.
7 P.M.
8 P.M.
9 P.M.
10 P.M.
11 P.M.
12

4703902327


Booker MIT 610 psi
30 Minutes
5-24-23
Graphic Controls
(6.375 ARC LINE GRAD.)
Booker
DATE
MCI P 0-2000-0-150-8
PRINTED IN U.S.A.
12 NIGHT
1 A.M.
2 A.M.
3 A.M.
4 A.M.
5 A.M.
6 A.M.
7 A.M.
8 A.M.
9 A.M.
10 A.M.
11 A.M.
12 NOON
1 P.M.
2 P.M.
3 P.M.
4 P.M.
5 P.M.
6 P.M.
7 P.M.
8 P.M.
9 P.M.
10 P.M.
11 P.M.

DIVERSIFIED
energy

June 24, 2024

WV Dept. of Environmental Protection
Office of Oil & Gas
Mr. James Martin, Chief
Mr. Andrew Lockwood
601 57th Street, SE
Charleston, WV 25304

RE: May 2024 Site Injectate Sampling Analyses
Permits 2D03902327002

Diversified Production LLC.
101 McQuiston Drive
Jackson Center, PA 16133

Dear Gentlemen,

On behalf of Diversified Production LLC, please find the May 2024 injectate sampling analyses performed and submitted in compliance with Rule 47 CSR 13 and W Va Code §22-11 & 12 and per the parameters of UIC permit 2D03902327002. The sampling was conducted on May 15, 2024 at Diversified Production LLC's WC Booker #1 site. The analysis includes upstream and downstream sampling and was performed by the ALS Group USA – Pace Analytical Services, LLC, a WV DEP authorized laboratory. The report includes the appropriate chain of custody documentation of the sampling.

If you have any questions, or require any additional information, please contact me per the signature contact information below.

Sincerely,

Kim Christian
Diversified Gas & Oil
kchrisitan@dgoc.com
(681) 230-4886
(304) 532-7332
EHS Regulatory Analyst

SEPARATE COPIES SENT
JM
AL

DIVERSIFIED
energy

June 24, 2024

WV Dept. of Environmental Protection
Office of Oil & Gas
Mr. James Martin, Chief
Mr. Andrew Lockwood
601 57th Street, SE
Charleston, WV 25304

RE: May 2024 Site Injectate Sampling Analyses
Permits 2D03902327002

Diversified Production LLC.
101 McQuiston Drive
Jackson Center, PA 16133

Dear Gentlemen,

On behalf of Diversified Production LLC, please find the May 2024 injectate sampling analyses performed and submitted in compliance with Rule 47 CSR 13 and W Va Code §22-11 & 12 and per the parameters of UIC permit 2D03902327002. The sampling was conducted on May 15, 2024 at Diversified Production LLC's WC Booker #1 site. The analysis includes upstream and downstream sampling and was performed by the ALS Group USA – Pace Analytical Services, LLC, a WV DEP authorized laboratory. The report includes the appropriate chain of custody documentation of the sampling.

If you have any questions, or require any additional information, please contact me per the signature contact information below.

Sincerely,

Kim Christian
Diversified Gas & Oil
kchrisitan@dgoc.com
(681) 230-4886
(304) 532-7332
EHS Regulatory Analyst

4703902327

Injectate Analysis

Diversified Production LLC

101 McQuiston Drive
Jackson Center, PA 16133

2024 Annual Injectate Sample

UIC PERMIT #2D03902327 002

WC Booker #1
KANAWHA COUNTY, WEST VIRGINIA

13-Jun-2024

JL Rhudy
Envirocheck of Virginia
375 Mountain Lane
Tazewell, VA 24651

Re: **WV UIC Wells near Charleston, WV** Work Order: **24050992**

Dear JL,

ALS Environmental received 1 sample on 15-May-2024 02:39 PM for the analyses presented in the following report.

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

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

The total number of pages in this report is .

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

ADDRESS: 1740 Union Carbide Drive, South Charleston, WV, USA
PHONE: +1 (304) 356-3168 FAX: +1 (304) 205-6262

Sincerely,

Rebecca Kiser

Electronically approved by: Rebecca Kiser

Rebecca Kiser
Project Manager

Report of Laboratory Analysis

Certificate No: WV: 3 5

ALS Group, USA

Date: 13-Jun-24

Client: Envirocheck of Virginia
Project: WV UIC Wells near Charleston, WV
Work Order: **24050992**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
24050992-01	WC Booker #1 47-039-02327 UIC2D03902327	Liquid		5/15/2024 10:10	5/15/2024 13:06	☐
24050992-01	WC Booker #1 47-039-02327 UIC2D03902327	Liquid		5/15/2024 10:10	5/17/2024 08:00	☐

Client: Envirocheck of Virginia
Project: WV UIC Wells near Charleston, WV
Work Order: 24050992

Case Narrative

Samples for the above noted Work Order were received on 05/15/2024. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Wet Chemistry:
Batch R403803, Method A4500-H B-11, Sample 24050992-01C: Sample was received and analyzed outside of the holding time at the request of the client. Results should be considered estimated. pH

Subcontracted analytical data has been appended to this report in its entirety.

Client:	Envirocheck of Virginia
Project:	WV UIC Wells near Charleston, WV
WorkOrder:	**24050992**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Analyte accreditation is not offered
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

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

Units Reported	Description
as noted	
mg/L	Milligrams per Liter
none	
s.u.	Standard Units

ALS Group, USA

Date: *13-Jun-24*

Client: Envirocheck of Virginia
Project: WV UIC Wells near Charleston, WV
Sample ID: WC Booker #1 47-039-02327 UIC2D03902327
Collection Date: 5/15/2024 10:10 AM

Work Order: 24050992
Lab ID: 24050992-01
Matrix: LIQUID

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
PH (LABORATORY)		Method: **A4500-H B-11**					Analyst: **BJL**
pH (laboratory)	**5.74**	H	**0**	**0.020**	**s.u.**	1	5/15/2024 16:53
Temperature	**21.1**	Hn	**0**		**s.u.**	1	5/15/2024 16:53
SUBCONTRACTED ANALYSES		Method: **SUBCONTRACT**					Analyst: **PACE**
Subcontracted Analyses	**See attached**		**0**		**as noted**	1	6/12/2024

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

ALS Group, USA

Date: 13-Jun-24

Client: Envirocheck of Virginia

QC BATCH REPORT

Work Order: 24050992

Project: WV UIC Wells near Charleston, WV

Batch ID: **R403803** Instrument ID **STC-WC** Method: **A4500-H B-11**

LCS Sample ID: **LCS-R403803-R403803** Units: **s.u.** Analysis Date: **5/15/2024 04:53 PM**

Client ID: Run ID: **STC-WC_240515E** SeqNo: **10764132** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH (laboratory)	4.12	0	0.020	4	0	103	90-110	0			

DUP Sample ID: **24050983-01C DUP** Units: **s.u.** Analysis Date: **5/15/2024 04:53 PM**

Client ID: Run ID: **STC-WC_240515E** SeqNo: **10764134** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH (laboratory)	5.18	0	0.020	0	0	0	0-0	5.17	0.193	20	H
Temperature	21.8	0	0	0	0	0		21.8	0		H

The following samples were analyzed in this batch: 24050992-01C

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

ALS Environmental
1740 Union Carbide Drive
Laboratory location:
South Charleston, WV 25303
(Tel) 304.356.3168
(Fax) 304.205.6262

Chain of Custody Form

Page 1 of 1

ALS Project Manager: | **Work Order #:**

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	**WV UIC Wells near Charleston, WV**	A	**Al, As, Ba, Ca, Fe, Mn, Na, Sr**
Work Order		Project Number		B	**Br, Cl, SO4**
Company Name	Envirocheck of Virginia, Inc.	Bill To Company	**Envirocheck of Virginia, Inc.**	C	**TDS, pH**
Send Report To	JL Rhudy III	Invoice Attn.	**JL Rhudy III**	D	**Specific Gravity**
Address	375 Mountian Lane	Address	**120 Lovelane St.**	E	**Ra226/228**
				F	**Gross alpha/beta**
City/State/Zip	Tazewell/VA/24651	City/State/Zip	**Bluefield/VA/24605**	G	
Phone	276-701-3093	Phone	**276-701-3093**	H	
Fax		Fax		I	
e-Mail Address	jl@e2cofvirginia.com	e-Mail Address	jl@e2cofvirginia.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	**WC Booker #1 47-039-02327 UIC2D03902327**	**05/15/24**	10:10a			**8**	X	X	X	X	X	X					
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

24050992
ENVIROCHECK- VA: Envirocheck of Virginia
Project: WV UIC Wells near Charleston, WV

Sampler(s): Please Print & Sign
Chris Catron

Shipment Method:

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

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
Chris Catron	5/15/24	1:00p		
Relinquished by:	**Date:**	**Time:**	**Received by (Laboratory):**	**Cooler Temp.**
Logged by (Laboratory):	**Date:**	**Time:**	**Checked by (Laboratory):**	

QC Package: (Check Box Below)

- ☐ Level II: Standard QC
- ☐ Level III: Std QC + Raw Data
- ☐ Level IV: SW846 CLP-Like
- ☐ Other: _____
- ☐ TRRP-Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

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

ALS Environmental

1740 Union Carbide Drive
South Charleston, WV 25303

Sample Receiving Checklist

Received by:	ZW
Date/Time:	5.15.24 1306
Carrier Name:	Client
Shipping container/cooler in good condition?	(Yes) / No / Not Present
Custody seals intact on shipping container/cooler?	Yes / No / (Not Present)
Custody seals intact on sample bottles?	Yes / No (Not Present)
Chain of Custody present?	(Yes) / No
COC signed when relinquished and received?	(Yes) / No
COC agrees with sample labels?	(Yes) / No
Samples in proper container/bottle?	(Yes) / No
Sample containers intact?	(Yes) / No
Sufficient sample volume for indicated test?	(Yes) / No
All samples received within holding time?	(Yes) / No
All sample temperatures verified to be in compliance?	(Yes) / No
Temperature(s) (°C):	1.6 °C
Thermometer(s):	IR-Gun
Sample(s) received on ice?	(Yes) / No
Matrix/Matrices:	Water
Cooler(s)/Kit(s):	
Date/Time sample(s) sent to storage:	
Trip Blanks included? (for volatile analysis only)	Yes / (No) / N/A
Water – VOA vials have zero headspace?	Yes / No / (No Vials)
Water – pH acceptable upon receipt?	Yes / No / (N/A)
pH strip lot #: _____	
pH adjusted (note adjustments below)?	Yes / No / (N/A)
pH adjusted by:	

Login Notes:

24050992

ENVIROCHECK- VA: Envirocheck of Virginia
Project: WV UIC Wells near Charleston, WV

QA Control Number: Chklst Rev.03 11/4/2021

13-Jun-2024

JL Rhudy
Envirocheck of Virginia
375 Mountain Lane
Tazewell, VA 24651

Re: **WV UIC Wells near Charleston, WV** Work Order: **24050992**

Dear JL,

ALS Environmental received 1 sample on 17-May-2024 for the analyses presented in the following report.

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

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

The total number of pages in this report is 1 .

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

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Rebecca Kiser

Electronically approved by: Rebecca Kiser

Rebecca Kiser
Project Manager

ALS Group, USA

Date: 13-Jun-24

Client: Envirocheck of Virginia
Project: WV UIC Wells near Charleston, WV
Work Order: **24050992**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
24050992-01	WC Booker #1 47-039-02327 UIC2D03902327	Liquid		5/15/2024 10:10	5/15/2024 13:06	☐
24050992-01	WC Booker #1 47-039-02327 UIC2D03902327	Liquid		5/15/2024 10:10	5/17/2024 08:00	☐

Client:	Envirocheck of Virginia
Project:	WV UIC Wells near Charleston, WV
Work Order:	24050992

Case Narrative

Samples for the above noted Work Order were received on 05/17/2024. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
Batch 240902, Method SW6020B, Sample 24050992-01A: The reporting limit is elevated due to dilution for high concentrations of non-target analytes. Al

Wet Chemistry:
Batch R404326A, Method E300.0, Sample 24050992-01B: The reporting limit is elevated due to dilution needed to eliminate matrix-related interference. Sulfate

Batch R404425A, Method E300.0, Sample 24050992-01B: The reporting limit is elevated due to dilution needed to eliminate matrix-related interference. Bromide

Client:	Envirocheck of Virginia
Project:	WV UIC Wells near Charleston, WV
WorkOrder:	**24050992**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Analyte accreditation is not offered
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

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

Units Reported	Description
as noted	
mg/L	Milligrams per Liter
none	
s.u.	Standard Units

ALS Group, USA

Date: *13-Jun-24*

Client: Envirocheck of Virginia
Project: WV UIC Wells near Charleston, WV
Sample ID: WC Booker #1 47-039-02327 UIC2D03902327
Collection Date: 5/15/2024 10:10 AM

Work Order: 24050992
Lab ID: 24050992-01
Matrix: LIQUID

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS		Method: **SW6020B**		Prep: SW3015A / 5/27/24			Analyst: **STP**
Aluminum	U		0.057	0.10	mg/L	10	5/29/2024 00:04
Arsenic	**0.29**		**0.0019**	**0.050**	**mg/L**	10	5/29/2024 00:04
Barium	**450**		**0.57**	**5.0**	**mg/L**	1000	5/29/2024 16:47
Calcium	**23,000**		**220**	**500**	**mg/L**	1000	5/29/2024 16:47
Iron	**96**		**0.47**	**0.80**	**mg/L**	10	5/29/2024 00:04
Manganese	**4.3**		**0.017**	**0.050**	**mg/L**	10	5/29/2024 00:04
Sodium	**64,000**		**130**	**200**	**mg/L**	1000	5/29/2024 16:47
Strontium	**530**		**0.39**	**5.0**	**mg/L**	1000	5/29/2024 16:47
ANIONS BY ION CHROMATOGRAPHY		Method: **E300.0**					Analyst: **CLJ**
Bromide	U		1,300	8,000	mg/L	40000	5/23/2024 13:04
Chloride	**174,000**		**12,000**	**40,000**	**mg/L**	40000	5/23/2024 13:04
Sulfate	U		30	160	mg/L	160	5/22/2024 16:30
SPECIFIC GRAVITY		Method: **D5057-90**					Analyst: **MTK**
Specific Gravity	**1.17**		**0**		**none**	1	5/23/2024 10:15
TOTAL DISSOLVED SOLIDS		Method: **A2540 C-15**		Prep: FILTER / 5/22/24			Analyst: **LAD**
Total Dissolved Solids	**210,000**		**1,100**	**1,500**	**mg/L**	1	5/28/2024 12:09

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

QC BATCH REPORT

Batch ID: **240902** Instrument ID **ICPMS3** Method: **SW6020B**

MBLK Sample ID: **MBLK-240902-240902** Units: **mg/L** Analysis Date: **5/28/2024 11:16 PM**

Client ID: Run ID: **ICPMS3_240528A** SeqNo: **10808367** Prep Date: **5/27/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	U	0.0057	0.010								
Arsenic	U	0.00019	0.0050								
Barium	U	0.00057	0.0050								
Calcium	U	0.22	0.50								
Iron	U	0.047	0.080								
Manganese	U	0.0017	0.0050								
Sodium	U	0.13	0.20								
Strontium	0.0006644	0.00039	0.0050								J

LCS Sample ID: **LCS-240902-240902** Units: **mg/L** Analysis Date: **5/28/2024 11:18 PM**

Client ID: Run ID: **ICPMS3_240528A** SeqNo: **10808368** Prep Date: **5/27/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1043	0.0057	0.010	0.1	0	104	80-120	0			
Arsenic	0.1029	0.00019	0.0050	0.1	0	103	80-120	0			
Barium	0.1101	0.00057	0.0050	0.1	0	110	80-120	0			
Calcium	10.75	0.22	0.50	10	0	107	80-120	0			
Iron	10.43	0.047	0.080	10	0	104	80-120	0			
Manganese	0.101	0.0017	0.0050	0.1	0	101	80-120	0			
Sodium	10.72	0.13	0.20	10	0	107	80-120	0			
Strontium	0.1047	0.00039	0.0050	0.1	0	105	80-120	0			

MS Sample ID: **24051170-32EMS** Units: **mg/L** Analysis Date: **5/29/2024 12:23 AM**

Client ID: Run ID: **ICPMS3_240528A** SeqNo: **10808394** Prep Date: **5/27/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	3.702	0.0057	0.010	0.1	2.653	1050	75-125	0			SEO
Arsenic	0.115	0.00019	0.0050	0.1	0.00893	106	75-125	0			
Barium	0.1843	0.00057	0.0050	0.1	0.07392	110	75-125	0			
Calcium	127.7	0.22	0.50	10	124.8	28.4	75-125	0			SO
Iron	17.27	0.047	0.080	10	6.683	106	75-125	0			
Manganese	0.2576	0.0017	0.0050	0.1	0.1634	94.2	75-125	0			
Strontium	1.018	0.00039	0.0050	0.1	0.9686	49.3	75-125	0			SO

MS Sample ID: **24051170-32EMS** Units: **mg/L** Analysis Date: **5/29/2024 05:03 PM**

Client ID: Run ID: **ICPMS3_240529A** SeqNo: **10813287** Prep Date: **5/27/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	U	0.13	0.20	10	2818	-28200	75-125	0			SO

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

Client: Envirocheck of Virginia
Work Order: 24050992
Project: WV UIC Wells near Charleston, WV

QC BATCH REPORT

Batch ID: **240902** Instrument ID **ICPMS3** Method: **SW6020B**

MSD	Sample ID: **24051170-32EMSD**				Units: **mg/L**				Analysis Date: **5/29/2024 12:25 AM**		
Client ID:	Run ID: **ICPMS3_240528A**				SeqNo: **10808395**		Prep Date: **5/27/2024**		DF: **1**		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	3.565	0.0057	0.010	0.1	2.653	913	75-125	3.702	3.75	20	SEO
Arsenic	0.1155	0.00019	0.0050	0.1	0.00893	107	75-125	0.115	0.432	20	
Barium	0.1827	0.00057	0.0050	0.1	0.07392	109	75-125	0.1843	0.853	20	
Calcium	128.8	0.22	0.50	10	124.8	40	75-125	127.7	0.908	20	SO
Iron	17.22	0.047	0.080	10	6.683	105	75-125	17.27	0.278	20	
Manganese	0.2597	0.0017	0.0050	0.1	0.1634	96.3	75-125	0.2576	0.794	20	
Strontium	1.028	0.00039	0.0050	0.1	0.9686	59.8	75-125	1.018	1.02	20	SO

MSD	Sample ID: **24051170-32EMSD**				Units: **mg/L**				Analysis Date: **5/29/2024 05:05 PM**		
Client ID:	Run ID: **ICPMS3_240529A**				SeqNo: **10813288**		Prep Date: **5/27/2024**		DF: **1**		
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium	U	0.13	0.20	10	2818	-28200	75-125	0	0	20	SO

The following samples were analyzed in this batch: 24050992-01A

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

Client: Envirocheck of Virginia
Work Order: 24050992
Project: WV UIC Wells near Charleston, WV

QC BATCH REPORT

Batch ID: **240700** Instrument ID **TDS** Method: **A2540 C-15**

MBLK Sample ID: **MBLK-240700-240700** Units: **mg/L** Analysis Date: **5/28/2024 12:09 PM**
Client ID: Run ID: **TDS_240528B** SeqNo: **10805003** Prep Date: **5/22/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	U	22	30								

LCS Sample ID: **LCS-240700-240700** Units: **mg/L** Analysis Date: **5/28/2024 12:09 PM**
Client ID: Run ID: **TDS_240528B** SeqNo: **10805002** Prep Date: **5/22/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	492	22	30	495	0	99.4	85-109	0			

DUP Sample ID: **24050991-04A DUP** Units: **mg/L** Analysis Date: **5/28/2024 12:09 PM**
Client ID: Run ID: **TDS_240528B** SeqNo: **10804981** Prep Date: **5/22/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	436.7	37	50	0	0	0	0-0	433.3	0.766	10	

DUP Sample ID: **24051059-01B DUP** Units: **mg/L** Analysis Date: **5/28/2024 12:09 PM**
Client ID: Run ID: **TDS_240528B** SeqNo: **10804986** Prep Date: **5/22/2024** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids	900	220	300	0	0	0	0-0	900	0	10	

The following samples were analyzed in this batch: 24050992-01C

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

Client: Envirocheck of Virginia
Work Order: 24050992
Project: WV UIC Wells near Charleston, WV

QC BATCH REPORT

Batch ID: **R404326A** Instrument ID **IC3** Method: **E300.0**

MBLK Sample ID: **MBLK-A-R404326A** Units: **mg/L** Analysis Date: **5/22/2024 09:26 AM**
Client ID: Run ID: **IC3_240522A** SeqNo: **10790004** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	U	0.19	1.0								

LCS Sample ID: **LCS-A-R404326A** Units: **mg/L** Analysis Date: **5/22/2024 09:16 AM**
Client ID: Run ID: **IC3_240522A** SeqNo: **10790003** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	9.855	0.19	1.0	10	0	98.6	90-110	0			

MS Sample ID: **24051056-05G MS** Units: **mg/L** Analysis Date: **5/22/2024 02:23 PM**
Client ID: Run ID: **IC3_240522A** SeqNo: **10790006** Prep Date: DF: **40**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	473.9	7.6	40	400	57.83	104	90-110	0			

MS Sample ID: **24051160-01A MS** Units: **mg/L** Analysis Date: **5/22/2024 05:00 PM**
Client ID: Run ID: **IC3_240522A** SeqNo: **10790022** Prep Date: DF: **100**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	1952	19	100	1000	931.8	102	90-110	0			

MSD Sample ID: **24051056-05G MSD** Units: **mg/L** Analysis Date: **5/22/2024 02:33 PM**
Client ID: Run ID: **IC3_240522A** SeqNo: **10790007** Prep Date: DF: **40**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	474.2	7.6	40	400	57.83	104	90-110	473.9	0.0675	10	

MSD Sample ID: **24051160-01A MSD** Units: **mg/L** Analysis Date: **5/22/2024 05:10 PM**
Client ID: Run ID: **IC3_240522A** SeqNo: **10790023** Prep Date: DF: **100**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	1949	19	100	1000	931.8	102	90-110	1952	0.146	10	

The following samples were analyzed in this batch: 24050992-01B

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

Client: Envirocheck of Virginia
Work Order: 24050992
Project: WV UIC Wells near Charleston, WV

QC BATCH REPORT

Batch ID: **R404414** Instrument ID **WETCHEM** Method: **D5057-90**

DUP	Sample ID: **24051181-01A DUP**				Units: **none**			Analysis Date: **5/23/2024 10:15 AM**			
Client ID:		Run ID: **WETCHEM_240523J**			SeqNo: **10794305**			Prep Date:		DF: **1**	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Gravity	1.005	0	0	0	0	0	0-0	1.005	0.01	20	

The following samples were analyzed in this batch: 24050992-01D

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

Client: Envirocheck of Virginia
Work Order: 24050992
Project: WV UIC Wells near Charleston, WV

QC BATCH REPORT

Batch ID: **R404425A** Instrument ID **IC3** Method: **E300.0**

MBLK Sample ID: **MBLK-A-R404425A** Units: **mg/L** Analysis Date: **5/23/2024 10:54 AM**
Client ID: Run ID: **IC3_240523A** SeqNo: **10794619** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	U	0.032	0.20								
Chloride	U	0.31	1.0								

LCS Sample ID: **LCS-A-R404425A** Units: **mg/L** Analysis Date: **5/23/2024 10:45 AM**
Client ID: Run ID: **IC3_240523A** SeqNo: **10794618** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	2.106	0.032	0.20	2	0	105	90-110	0			
Chloride	9.918	0.31	1.0	10	0	99.2	90-110	0			

MS Sample ID: **24051070-01B MS** Units: **mg/L** Analysis Date: **5/23/2024 01:33 PM**
Client ID: Run ID: **IC3_240523A** SeqNo: **10794628** Prep Date: DF: **400**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	805.6	13	80	800	0	101	90-110	0			
Chloride	3870	120	400	4000	88.52	94.5	90-110	0			

MS Sample ID: **24051246-01A MS** Units: **mg/L** Analysis Date: **5/23/2024 03:21 PM**
Client ID: Run ID: **IC3_240523A** SeqNo: **10794639** Prep Date: DF: **10**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	20.24	0.32	2.0	20	0	101	90-110	0			
Chloride	125.6	3.1	10	100	30.27	95.3	90-110	0			

MSD Sample ID: **24051070-01B MSD** Units: **mg/L** Analysis Date: **5/23/2024 01:43 PM**
Client ID: Run ID: **IC3_240523A** SeqNo: **10794629** Prep Date: DF: **400**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	811.5	13	80	800	0	101	90-110	805.6	0.727	10	
Chloride	3875	120	400	4000	88.52	94.6	90-110	3870	0.124	10	

MSD Sample ID: **24051246-01A MSD** Units: **mg/L** Analysis Date: **5/23/2024 03:30 PM**
Client ID: Run ID: **IC3_240523A** SeqNo: **10794640** Prep Date: DF: **10**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromide	20.11	0.32	2.0	20	0	101	90-110	20.24	0.654	10	
Chloride	125.5	3.1	10	100	30.27	95.3	90-110	125.6	0.0374	10	

The following samples were analyzed in this batch: 24050992-01B

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

Subcontractor:
ALS Environmental - Holland
3352 128th Avenue
Holland, MI 49424

TEL: (616) 399-6070
FAX: (616) 399-6185
Acct #:

Salesperson	ALSHN Account

24050992
ENVIROCHECK- VA: Envirocheck of Virginia
Project: WV UIC Wells near Charleston, WV

Date: 15-May-24
COC ID: 25816
Due Date: 24-May-24

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	24050992	A	Total Dissolved Solids (A2540 C-15)
Work Order		Project Number		B	Specific Gravity (D5057-90)
Company Name	ALS Group USA, Corp	Bill To Company	ALS Group USA, Corp	C	Anions by Ion Chromatography (E300.0)
Send Report To	Rebecca Kiser	Inv Attn	Accounts Payable	D	Metals by ICP-MS (SW6020B)
Address	1740 Union Carbide Dr.	Address	1740 Union Carbide Dr.	E	
				F	
City/State/Zip	So. Charleston, WV 25303	City/State/Zip	So. Charleston, WV 25303	G	
Phone	(304) 356-3168	Phone	(304) 356-3168	H	
Fax		Fax		I	
eMail Address	rebecca.kiser@alsglobal.com	eMail CC		J	

ALS Sample ID	Client Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
24050992-01A	WC Booker #1 47-039-02327 UIC2D03902327	Liquid	15/May/2024 10:10	(1) 250PHNO3				X						
24050992-01B	WC Booker #1 47-039-02327 UIC2D03902327	Liquid	15/May/2024 10:10	(1) 125PNEAT			X							
24050992-01D	WC Booker #1 47-039-02327 UIC2D03902327	Liquid	15/May/2024 10:10	(1) 125PNEAT		X								
24050992-01C	WC Booker #1 47-039-02327 UIC2D03902327	Liquid	15/May/2024 10:10	(2) 250PNEAT	X									

Comments:
WV Samples Sampler: C.C.

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
Michelle Holmes	5.16.24 1400	Caleb Kaufman	5-17-24 8:00	L6.0c	Std
Relinquished by:	Date/Time	Received by:	Date/Time	ALSHW CH37	

ALS Group, USA
Holland, Michigan

Sample Receipt Checklist

Client Name: **ENVIROCHECK- VA** Date/Time Received: **15-May-24 14:39**

Work Order: **24050992** Received by: **CMK**

Checklist completed by Caleb Koetje (eSignature) 18-May-24 (Date) Reviewed by: Rebecca Kiser (eSignature) 20-May-24 (Date)

Matrices: Water
Carrier name: Courier

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	<6.0c	DF2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	5/18/2024 8:18:05 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes: pH check <2

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

June 10, 2024

Ms. Rebecca Kiser
ALS Environmental
1740 Union Carbide Drive
Charleston, WV 25303

RE: Project: 24050992
Pace Project No.: 30685736

Dear Ms. Kiser:

Enclosed are the analytical results for sample(s) received by the laboratory on May 17, 2024. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

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

Sincerely,

Carla Cmar
carla.cmar@pacelabs.com
(724)850-5600
Project Manager

Enclosures

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

CERTIFICATIONS

Project: 24050992
Pace Project No.: 30685736

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
ANABISO/IEC 17025:2017 Rad Cert#: L24170
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 2950
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA010
Louisiana DEQ/TNI Certification #: 04086
Maine Certification #: 2023021
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572023-03
New Hampshire/TNI Certification #: 297622
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-015
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN02867
Texas/TNI Certification #: T104704188-22-18
Utah/TNI Certification #: PA014572223-14
USDA Soil Permit #: 525-23-67-77263
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE SUMMARY

Project: 24050992
Pace Project No.: 30685736

Lab ID	Sample ID	Matrix	Date Collected	Date Received
30685736001	**24050992-01E**	Water	05/15/24 10:10	05/17/24 09:15

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

SAMPLE ANALYTE COUNT

Project: 24050992
Pace Project No.: 30685736

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
30685736001	**24050992-01E**	EPA 900.0	KET	2	PASI-PA
		EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 24050992
Pace Project No.: 30685736

Method: **EPA 900.0**
Description: 900.0 Gross Alpha/Beta
Client: ALS Life Sciences Division | Environmental
Date: June 10, 2024

General Information:
1 sample was analyzed for EPA 900.0 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 24050992
Pace Project No.: 30685736

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: ALS Life Sciences Division | Environmental
Date: June 10, 2024

General Information:
1 sample was analyzed for EPA 903.1 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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Greensburg, PA 15601
(724)850-5600

PROJECT NARRATIVE

Project: 24050992
Pace Project No.: 30685736

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: ALS Life Sciences Division | Environmental
Date: June 10, 2024

General Information:
1 sample was analyzed for EPA 904.0 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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Greensburg, PA 15601
(724)850-5600

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 24050992
Pace Project No.: 30685736

Sample: 24050992-01E **Lab ID: 30685736001** Collected: 05/15/24 10:10 Received: 05/17/24 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
		Pace Analytical Services - Greensburg				
Gross Alpha	EPA 900.0	**7,978 ± 1,959 (1,391) C:NA T:NA**	pCi/L	06/05/24 17:57	12587-46-1	
Gross Beta	EPA 900.0	**4,898 ± 1,184 (1,010) C:NA T:NA**	pCi/L	06/05/24 17:57	12587-47-2	
		Pace Analytical Services - Greensburg				
Radium-226	EPA 903.1	**2,116 ± 332 (72.2) C:NA T:90%**	pCi/L	06/02/24 15:51	13982-63-3	
		Pace Analytical Services - Greensburg				
Radium-228	EPA 904.0	**1,062 ± 202 (46.1) C:86% T:91%**	pCi/L	05/31/24 12:39	15262-20-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 24050992
Pace Project No.: 30685736

QC Batch: 670510
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30685736001

METHOD BLANK: 3265294 Matrix: Water
Associated Lab Samples: 30685736001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.123 ± 0.282 (0.167) C:NA T:83%	pCi/L	06/02/24 15:26	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1638 Roseytown Road - Suites 2,3,4
Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 24050992
Pace Project No.: 30685736

QC Batch: 671212
QC Batch Method: EPA 900.0
Analysis Method: EPA 900.0
Analysis Description: 900.0 Gross Alpha/Beta
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30685736001

METHOD BLANK: 3268536 Matrix: Water
Associated Lab Samples: 30685736001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Gross Alpha	0.066 ± 1.04 (2.69) C:NA T:NA	pCi/L	06/07/24 08:18	
Gross Beta	-0.505 ± 1.06 (2.75) C:NA T:NA	pCi/L	06/07/24 08:18	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

QUALITY CONTROL - RADIOCHEMISTRY

Project: 24050992
Pace Project No.: 30685736

QC Batch: 670511
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 30685736001

METHOD BLANK: 3265295 Matrix: Water
Associated Lab Samples: 30685736001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.581 ± 0.437 (0.858) C:74% T:78%	pCi/L	05/31/24 12:37	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Greensburg, PA 15601
(724)850-5600

QUALIFIERS

Project: 24050992
Pace Project No.: 30685736

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: For Safe Drinking Water Act (SDWA) analyses, the reported Unc. Is the calculated Count Uncertainty (95% confidence interval) using a coverage factor of 1.96. For all other matrices (non-SDWA), the reported Unc. is the calculated Expanded Uncertainty (aka Combined Standard Uncertainty, CSU), reported at the 95% confidence interval using a coverage factor of 1.96.

Gamma Spec: The Unc. reported for all gamma-spectroscopy analyses (EPA 901.1), is the calculated Expanded Uncertainty (CSU) at the 95.4% confidence interval, using a coverage factor of 2.0.

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

Subcontractor:
Pace Analytical Services, Inc.
1638 Roseytown Rd
Suites 2,3 & 4
Greensburg, PA 15601

TEL: (724) 850-5600
FAX:
Acct #:

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Date: 16-May-24
COC ID: 25825 Due Date:

Salesperson	ALSHN Account

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order		Project Name	24050992	A Ra226/228, Gross alpha/beta
Work Order		Project Number		B
Company Name	ALS Group USA, Corp	Bill To Company	ALS Group USA, Corp	C
Send Report To	Rebecca Kiser	Inv Attn	Accounts Payable	D
Address	3352 128th Ave	Address	3352 128th Ave	E
				F
City/State/Zip	Holland, Michigan 49424	City/State/Zip	Holland, Michigan 49424	G
Phone	(616) 399-6070	Phone	(616) 399-6070	H
Fax	(616) 399-6185	Fax	(616) 399-6185	I
eMail Address	rebecca.kiser@alsglobal.com	eMail CC		J

ALS Sample ID	Client Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
24050992-01E	WC Booker #1 47-039-02327 UIC2D03902327	Liquid	15/May/2024 10:10	(4) 1LPHNO3	X									

001

WO# : 30685736

30685736

Received by Pace Greensburg
Therm ID ___ Corr Factor +/- ___
Receipt Temp ___
Corrected Temp ___
Correct Preservation (Y) N

Comments:
WV Sample. Sampler: C. Catron

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
[signature]	5/16/24 14:32	[signature]	5/17/24 915		Std
Relinquished by:	Date/Time	Received by:	Date/Time		

DC#_Title: ENV-FRM-GBUR-0088 v07_Sample Condition Upon Receipt
Greensburg
Effective Date: 01/04/2024

WO# : 30685736

PM: CMC Due Date: 06/10/24
CLIENT: ALS-WV

Client Name: ALS PI

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other
Tracking Number: 7764 2004 9074

Initial / Date
Examined By: EJ 5-17-24
Labeled By: EJ 5-17-24
Temped By: —

Custody Seal on Cooler/Box Present: ☑ Yes ☐ No Seals Intact: ☑ Yes ☐ No
Thermometer Used: — Type of Ice: Wet Blue (None)
Cooler Temperature: Observed Temp — °C Correction Factor: — °C Final Temp: — °C
Temp should be above freezing to 6°C

pH paper Lot# 10DZ931 D.P.D. Residual Chlorine Lot # —

Comments:	Yes	No	NA	
Chain of Custody Present	✓			1.
Chain of Custody Filled Out:	✓			2.
-Were client corrections present on COC		✓		
Chain of Custody Relinquished	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC:	✓			5.
-Includes date/time/ID Matrix: WT				
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used		✓		
Containers Intact:	✓			11.
Orthophosphate field filtered:			✓	12.
Hex Cr Aqueous samples field filtered:			✓	13.
Organic Samples checked for dichlorination			✓	14:
Filtered volume received for dissolved tests:			✓	15:
All containers checked for preservation:	✓			16.
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, non-aqueous matrix				pH<2
All containers meet method preservation requirements:	✓			Initial when completed EJ Date/Time of Preservation
				Lot# of added Preservative
8260C/D: Headspace in VOA Vials (> 6mm)			✓	17.
624.1: Headspace in VOA Vials (0mm)			✓	18.
Radon: Headspace in RAD Vials (0mm)			✓	19.
Trip Blank Present:			✓	Trip blank custody seal present? YES or NO
Rad Samples Screened <.05 mrem/hr.	✓			Initial when completed PS Date: 5/17/24 Survey Meter SN: 2501438O

Comments:

Note: For NC compliance samples with discrepancies, a copy of this form must be sent to the DEHNR Certification office.
PM Review is documented electronically in LIMS through the SRF Review schedule in the Workorder Edit Screen.
Qualtrax ID: 55680

Client ALS

Site 24050992

Page _____ of _____

Profile/EZ Login Number 5573

Notes _____

Sample Line Item	Matrix	Amber Glass					Plastic								Vials					Other									
		AG1H	AG3S	AG3U	AG5U	AG5T	BP1N	BP1U	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	DG9S	VG9H	VG9T	VG9U	VOAK	WGFU	WGKU	ZPLC	GCUB	GJN	12GN	AG1U	BG1U	BP2N	
001	WT						4																						

Container Codes

Glass

GJN	1 Gallon Jug with HNO3	DG9S	40mL amber VOA vial H2SO4
AG5U	100mL amber glass unpreserved	VG9U	40mL clear VOA vial
AG5T	100mL amber glass Na Thiosulfate	VG9T	40mL clear VOA vial Na Thiosulfate
GJN	1 Gallon Jug	VG9H	40mL clear VOA vial HCl
AG1S	1L amber glass H2SO4	JGFU	4oz amber wide jar
AG1H	1L amber glass HCl	WGFU	4oz wide jar unpreserved
AG1T	1L amber glass NA Thiosulfate	BG2U	500mL clear glass unpreserved
BG1U	1L clear glass unpreserved	AG2U	500mL amber glass unpreserved
AG3S	250mL amber glass H2SO4	WGKU	8oz wide jar unpreserved
AG3U	250mL amber glass unpreserved	GN	General

Plastic/Misc.

GCUB	1 gallon cubitainer
12GN	1/2
SP5T	12
BP1N	1L
BP1U	1L
BP3S	25
BP3N	25
BP3U	250mL plastic unpreserved
BP3B	250mL plastic NAOH
BP2S	500mL plastic H2SO4
BP2U	500mL plastic unpreserved

EZI	5g Encore
	ile Solid
	vab
	ag
OL	Non-Aq Liquid
WP	Wipe

WO#: 30685736

PM: CMC Due Date: 06/10/24

CLIENT: ALS-WV

Section 10 – Monitoring

UIC 2D0392327

Section 10 – Monitoring

Monitoring of all injection parameters shall be logged during manned site activity and with the assistance of on-site monitoring devices.

Monitoring consists of all parameters necessary to record and report the state required records. These parameters include:

- Disposal station records to ensure the integrity of all tanks, containment, equipment, and manifolds/lines including
  - Filter maintenance
  - Walk around inspections conducted during on-site presents
- Well monitoring
  - Operating hours
  - Injection fluid volumes for total and cumulative injected fluid and flow rate
  - Annulus injection pressures for operational and shut in activity
  - Date specific walk around inspection activity

Documentation of thorough tank inspections exist per the company's scheduled tank inspection procedures.

WR-40s shall be completed and filed in accordance with state regulations and kept on file at the district office to be made available upon request.

Fluid manifest shall be completed documenting every load of fluid delivered to the facility for disposal. These manifests will be kept on file at the district office to be made available upon request and shall report the following:

- Operator
- Date
- Hauler's name with signature
- Receiver's name and signature / initials
- Source well name and API identification
- Amount of fluid in barrel units

Manifest signature acknowledges that responsible person certifies that the contents of each shipment are Class II fluids that were brought to the surface in connection with oil or natural gas production.

Injectate sampling is performed in accordance with the requirements and parameters set forth in the permit.

Section 11 – Groundwater Protection Plan

UIC 2D0392327

4703902327

APPENDIX H

GROUNDWATER PROTECTION PLAN

Facility Name: WC Booker #1

County: Kanawha

Facility Location:

Postal Service Address:	588 Equine Dr, Elkview, WV 25071
Latitude: 38.460666	Longitude: -81.488105

Contact Information:

Person:	Lisa Raffle
Phone Number:	724-579-2320
E-mail Address:	lraffle@dgoc.com

Date: 10/29/2024

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

CONTAMINATION WOULD MOST LIKELY OCCUR FROM A LEAK OR FAILURE OF THE UIC. SPILLS ON-SITE WOULD MOST LIKELY BE THE RESULT OF THE FAILURE OF TANKS OR LIQUIDS UNLOADING OPERATIONS. SECONDARY CONTAINMENT STRUCTURES ARE IN PLACE TO LIMIT THE IMPACTED AREA. INSPECTIONS AND CONTINUED MAINTENANCE ARE ON-GOING AND UTILIZED TO ENSURE THE RISK OF GROUNDWATER CONTAMINATION IS MINIMAL.

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

QUARTERLY INSPECTIONS ARE CONDUCTED TO ENSURE THE FACILITY IS PROPERLY MAINTAINED TO PREVENT GROUNDWATER CONTAMINATION. ANNULUS MONITORING IS OBSERVED AS WELL AS SECONDARY CONTAINMENT INSPECTIONS QUARTERLY.

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

IF NEW EQUIPMENT IS ADDED TO THE SITE, SECONDARY CALCULATIONS AND DESIGN WILL BE CONDUCTED IN ORDER TO ENSURE THAT TANKS HAVE APPROPRIATE CONTAINMENT. FURTHERMORE, RECORDS OF INJECTION WILL BE MAINTAINED, AS WELL AS QUARTERLY INSPECTIONS CONDUCTED TO ENSURE THE WELL IS MAINTAINED PROPERLY.

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

THE FACILITY IS REGULATED UNDER THE UIC PROGRAM, SPCC REGULATIONS, AND WVDEP AST REGULATIONS.

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

See Section 7 of this permit.

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 SITE.

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.

DIVERSIFIED MAINTAINS A FORMAL WRITTEN PROCEDURE AND CONDUCTS ROUTINE TRAINING ON GROUNDWATER CONTAMINATION PREVENTION.

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

QUARTERLY INSPECTIONS ARE CONDUCTED ON-SITE IN ORDER TO FULFILL GPP REQUIREMENTS. THE INSPECTIONS INCLUDE EVALUATIONS OF THE SECONDARY CONTAINMENT, AST'S, AND INJECTION WELL INSPECTIONS ARE RECORDED AND MAINTAINED BY DIVERSIFIED

Signature: Lisa Raffle

Date: 10/29/2024

Section 12 – Plugging and Abandonment UIC

2D0392327

Plugging Prognosis
API #: 47-039-02327
Booker #1
West Virginia, Kanawha County, Elk District, Clendenin 15' Quad, Blue Creek 7.5' Quad
Lat/Long – 38.461662, -81.486031
Nearest ER: Charleston Area Medical Center: Emergency Room – 501 Morris St, Charleston, WV 25301

Casing Schedule

8-5/8", 24 ppf, J-55 @ 246' – CTS w/ 110 sks
4-1/2", 9.5 ppf, J-55 @ 1810' – Cemented w/ 150 sks – Schematic in old permit shows TOC @ 860'+/-
2-7/8", 6.5 ppf, J-55 @ 1156' – 4-1/2" x 2-3/8" R-4 Halliburton Packer @ 1156'
TD @ 1815'

Completion: Big Injun – 6 Perfs 1689'-1694'
3rd Salt Sand – 118 Perfs 1180'-1340'

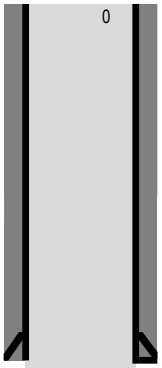
Fresh Water: 75'
Salt Water: 1000'
Gas Shows: None Reported
Oil Shows: None Reported
Coal: None Reported
Open None Reported
Elevation: 716'

1. Notify Inspector Terry Urban @ 304-549-5915, 48 hrs prior to commencing operations.
2. Check and record pressures on csg/tbg.
3. Pump 6% Bentonite Gel between each plug.
4. If necessary, blow down and kill well with fluid.
5. Unset 4-1/2" x 2-3/8" R-4 Halliburton Packer @ 1156' and TOOH w/ 2-3/8" tbg & packer.
6. Check TD w/ sandline/tbg.
7. TIH w/ tbg to 1770'. Kill well as needed with 6% bentonite gel and fill rat hole with gel. Pump at least 10 bbls gel. Pump 860' Class L/Class A cement plug from **1765' to 910' (Completion Plug – Big Injun & 3rd Salt Sand Plug).** Approximately 69 sks @ 1.14 yield. WOC. Tag TOC. Top off as needed. Do not omit any plugs listed below. Perforate as needed. **Can break into two plugs for operational feasibility.**
8. Free point 4-1/2" csg. Cut and TOOH. Set 100' Class L/Class A cement plug across csg cut. 50' in/out of cut. Approximately 14 sks @ 1.14 yield. Do not omit any plugs listed below. Perforate as needed. **Can be combined and set with Elevation Plug if feasible.**
9. TOOH w/ tbg to 756'. Pump 100' Class L/Class A cement plug from **756' to 656' (Elevation Plug).** Approximately 20 sks @ 1.14 yield. WOC. Tag TOC. Top off as needed. Do not omit any plugs listed below. Perforate as needed. **Can be combined and set with 4-1/2" Csg Cut Plug if feasible.**
10. TOOH w/ tbg to 296'. Pump 296' Class L/Class A cement plug from **296' to Surface (8-5/8" Csg Shoe, Fresh Water, & Surface Plug).** Approximately 92 sks @ 1.14 yield. Top off as needed. Perforate as needed.

11. Reclaim location and well road to WV DEP specifications and erect P&A well monument.

4703902327

API: 37-039-02327
WELL: Booker #1
PERMIT:



Fresh Water @ 75'

Cement Plug 296'-Surface

Cemented from Drilling
P&A Ops Cement
6% Bentonite Gel
Water in hole

8-5/8", 24 ppf, J-55 csg @ 246' - CTS

6% Bentonite Gel 656'-296'

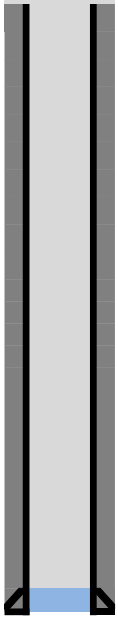
Cement Plug 756'-656'

Not To Scale

6% Bentonite Gel ~810'-756'

Cement Plug ~910'-~810'

4-1/2" TOC @ 860+/-'



Saltwater @ 1000'

3rd Salt Sand Perfs - 1180'-1340' - 118 Shots

Cement Plug 1770'-910'

Big Injun Perfs - 1689'-1694' - 6 Shots

4-1/2", 9.5 ppf, J-55 csg @ 1810' - Cemented w/ 150 sks - Schematic in old permit shows TOC @ 860' +/-

TD @ 1815'

DIVERSIFIED
energy

Section 13 – Additional Bonding

UIC 2D0392327

OP-7
Rev. 1/12

*This Bond Replaces and Supersedes Berkley Insurance Company Bond No. 0231210.

BOND NUMBER 612423830
OPERATOR CODE _____

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS BOND FOR SINGLE OIL OR GAS WELL,
SINGLE LIQUID INJECTION WELL OR SINGLE WASTE DISPOSAL WELL

KNOWN ALL MEN BY THESE PRESENTS:

(1) That we, Diversified Production LLC
(2) 1600 Corporate Drive, Birmingham, AL 35242
As Principal, and **(3)** United States Fire Insurance Company
(4) 305 MADISON AVENUE, MORRISTOWN, NJ 07960

a firm and/or a corporation authorized to do business in the State of West Virginia, as Surety, are held and firmly bound unto the State of West Virginia in the just and full sum of **(5)** Five thousand and No/100 dollars ($ 5,000.00) to the payment whereof well and truly to make, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the above bound Principal in pursuance of the provisions of Chapter 22, Article 6 and 6A of the Code of West Virginia, 1931, as amended, and the regulations promulgated thereunder, has made or intends to make application to the Chief of the Office of Oil and Gas, Department of Environmental Protection, the State of West Virginia for a permit to drill, redrill, deepen, fracture, stimulate, plug, pressure, convert, combine, physically change, partially plug, case and/or reclaim, purchase or acquire, a single oil or gas well or liquid injection well or waste disposal well, located on the waters of **(6)** _____, in **(7)** _____ District, **(8)** Kanawha County, West Virginia, assigned by said Department of Environmental Protection, **(9)** API Well No. 47- 039 - 02327 ; and

WHEREAS, THE Obligee as a condition precedent to the issuance of such Permit or release of other obligation has required the Principal to furnish a SURETY BOND acceptable to the Obligee guaranteeing the performance of said provisions of Chapter 22, Article 6 and/or 6A, of the Code of West Virginia, 1931, as amended, and the regulations promulgated thereunder;

NOW THEREFORE, the condition of this obligation is such that if the Principal, its personal representatives, successors, heirs and assigns shall either (1) in drilling, redrilling, deepening, fracturing, stimulating, plugging, pressuring, converting, combining, physically changing, partiallly plugging, casing, and reclaiming, and furnish all reports, information and affidavits as may be required by the Department of Environmental Protection, Office of Oil and Gas, documenting that said well has been plugged and abandoned in accordance with Chapter 22, Article 6, of the Code of West Virginia, 1931, as amended, and the regulations promulgated thereunder, or (2) deposit with the Chief cash from the sale of the oil and gas or bond in the amount of **(10)** Five Thousand and No/100 dollars ($ 5,000.00) then this obligation to be void; otherwise to remain in full force and effect.

This bond shall be effective from the **(11)** 31st day of July, 20 24, until released by the Department of Environmental Protection.

IN WITNESS WHEREOF the said Principal has hereunder set his or its hand and affixed his or its seal, and the said surety has caused its corporate name to be signed hereto and its corporate seal to be hereunto affixed by its duly authorized officer or agent this instrument this **(12)** 31st day of July, 20 24.

(15) Principal Corporate Seal

(13) Diversified Production LLC (Seal)
(Principal)

(14) By: _____ SVP
(Title)
(Must be President or V. President)

United States Fire Insurance Company

(18) Surety Corporate Seal

(16) _____ (Seal)
(Surety)

Mark W. Edwards, II, Attorney-in-Fact

(REVERSE)

ACKNOWLEDGMENTS

Acknowledgment by Principal If Individual or Partnership

1. STATE OF _____

2. County of _____ to-wit:

3. I, _____, a Notary Public in and for the

4. county and state aforesaid, do hereby certify that _____

whose name is signed to the foregoing writing, has this day acknowledged the same before me in my said county.

5. Given under my hand this _____ day of _____ 20_____.

6. Notary Seal 7. _____

(Notary Public)

8. My commission expires on the _____ day of _____ 20 ____.

Acknowledgment by Principal If Corporation or Limited Liability Company

9. STATE OF Oklahoma

10. County of Oklahoma to-wit:

11. I, Desiree Morain, a Notary Public in and for the

12. county and state aforesaid, do hereby certify that John Crain

13. who as, SVP + Treasurer signed the foregoing writing for

14. Diversified Production LLC a corporation/LLC,

has this day, in my said county, before me, acknowledged the said writing to be the act and deed of the said corp/LLC.

15. Given under my hand this 31st day of July 20 24

16. Notary Seal

DESIREE MORAIN
Notary Public
State of Oklahoma
Commission #24008392
My Comm. Expires July 1, 2028

(Notary Public)

17.

18. My commission expires on the _____ day of _____ 20 _____.

Acknowledgment by Surety

19. STATE OF Alabama

20. County of Jefferson to-wit:

21. I, Tyler Joseph Tucker, a Notary Public in and for the

22. county and state aforesaid, do hereby certify that Mark W. Edwards, II

23. who as, Attorney-in-Fact signed the foregoing writing for

24. United States Fire Insurance Company a corporation

has this day, in my said county, before me, acknowledged the said writing to be the act and deed of the said corporation.

25. Given under my hand this 31st day of July 20 24

26. Notary Seal

27. Tyler Joseph Tucker

(Notary Public)

28. My commission expires on the 3rd day of May 20 26

Sufficiency In Form and Manner Of Execution Approved

Attorney General

This _____ day of _____ 20 ___

By _____
(Assistant Attorney General)

POWER OF ATTORNEY
UNITED STATES FIRE INSURANCE COMPANY
PRINCIPAL OFFICE - MORRISTOWN, NEW JERSEY

KNOW ALL MEN BY THESE PRESENTS: That United States Fire Insurance Company, a corporation duly organized and existing under the laws of the state of Delaware, has made, constituted and appointed, and does hereby make, constitute and appoint:

Mark W. Edwards, II; Jeffrey M. Wilson; Anna Childress; William M. Smith; Alisa B. Ferris; Richard H. Mitchell; Robert R. Freel

each, its true and lawful Attorney(s)-In-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver: Any and all bonds and undertakings of surety and other documents that the ordinary course of surety business may require, and to bind United States Fire Insurance Company thereby as fully and to the same extent as if such bonds or undertakings had been duly executed and acknowledged by the regularly elected officers of United States Fire Insurance Company at its principal office, in amounts or penalties: **One Hundred Twenty Five Million Eight Hundred Thousand Dollars ($125,800,000)**

This Power of Attorney limits the act of those named therein to the bonds and undertakings specifically named therein, and they have no authority to bind United States Fire Insurance Company except in the manner and to the extent therein stated.

This Power of Attorney revokes all previous Powers of Attorney issued on behalf of the Attorneys-In-Fact named above.

This Power of Attorney is granted pursuant to Article IV of the By-Laws of United States Fire Insurance Company as now in full force and effect, and consistent with Article III thereof, which Articles provide, in pertinent part:

Article IV, Execution of Instruments - Except as the Board of Directors may authorize by resolution, the Chairman of the Board, President, any Vice-President, any Assistant Vice President, the Secretary, or any Assistant Secretary shall have power on behalf of the Corporation:

(a) to execute, affix the corporate seal manually or by facsimile to, acknowledge, verify and deliver any contracts, obligations, instruments and documents whatsoever in connection with its business including, without limiting the foregoing, any bonds, guarantees, undertakings, recognizances, powers of attorney or revocations of any powers of attorney, stipulations, policies of insurance, deeds, leases, mortgages, releases, satisfactions and agency agreements;
(b) to appoint, in writing, one or more persons for any or all of the purposes mentioned in the preceding paragraph (a), including affixing the seal of the Corporation.

Article III, Officers, Section 3.11, Facsimile Signatures. The signature of any officer authorized by the Corporation to sign any bonds, guarantees, undertakings, recognizances, stipulations, powers of attorney or revocations of any powers of attorney and policies of insurance issued by the Corporation may be printed, facsimile, lithographed or otherwise produced. In addition, if and as authorized by the Board of Directors, dividend warrants or checks, or other numerous instruments similar to one another in form, may be signed by the facsimile signature or signatures, lithographed or otherwise produced, of such officer or officers of the Corporation as from time to time may be authorized to sign such instruments on behalf of the Corporation. The Corporation may continue to use for the purposes herein stated the facsimile signature of any person or persons who shall have been such officer or officers of the Corporation, notwithstanding the fact that he may have ceased to be such at the time when such instruments shall be issued.

IN WITNESS WHEREOF, United States Fire Insurance Company has caused these presents to be signed and attested by its appropriate officer and its corporate seal hereunto affixed this 28th day of September, 2021.

UNITED STATES FIRE INSURANCE COMPANY

Matthew E. Lubin, President

State of New Jersey}
County of Morris }

On this 28th day of September, 2021, before me, a Notary public of the State of New Jersey, came the above named officer of United States Fire Insurance Company, to me personally known to be the individual and officer described herein, and acknowledged that he executed the foregoing instrument and affixed the seal of United States Fire Insurance Company thereto by the authority of his office.

MELISSA H. D'ALESSIO
NOTARY PUBLIC OF NEW JERSEY
Commission # 50125833
My Commission Expires 4/7/2025

Melissa H. D'Alessio (Notary Public)

I, the undersigned officer of United States Fire Insurance Company, a Delaware corporation, do hereby certify that the original Power of Attorney of which the foregoing is a full, true and correct copy is still in force and effect and has not been revoked.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the corporate seal of United States Fire Insurance Company on the 31st day of July, 20 24.

UNITED STATES FIRE INSURANCE COMPANY

Michael C. Fay, Senior Vice President

*For verification of the authenticity of the Power of Attorney, please contact SuretyInquiries@amyntagroup.com

Section 14 – Financial Responsibility

UIC 2D0392327

APPENDIX I

Requirement for Financial Responsibility to Plug/Abandon an Injection Well

In accordance with WV Code 47CSR13.13.7.g, all UIC permits shall require the permittee to maintain financial responsibility and resources to close, plug, and abandon underground injection wells in a manner prescribed by the Chief. The permittee must show evidence of financial responsibility to the Chief by submission of a surety bond, or other adequate assurance, such as a financial statement or other material acceptable to the Chief. This certification must be signed by one of the following:

1. For a corporation: by a principle corporate officer of at least the level of vice-president;
2. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively;
3. For a municipality, State, Federal, or other public agency: by either a principle executive officer or ranking elected official;
4. Or a duly authorized representative in accordance with 47CSR13.13.11.b.
   (A person may be duly authorized by one of the primary entities (1-3) listed above by submitting a written authorization to the Chief of the WVDEP Office of Oil and Gas designating an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

Diversified Production LLC

(Company Name)

UIC 2D0392327

(UIC Permit Number)

I certify in accordance with 47CSR13.13.7.g., that the company/permit holder cited above 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 and that documents to support this requirement are on record with the same.

Travis Cooke

(Print Name)

VP Upstream Operations

(Print Title)

Travis H. Cooke

(Signature)

12/12/24

(Date)

DIVERSIFIED
energy

Section 15 – Site Security Plan

UIC 2D0392327

The W.C. Booker No.1 well (4703902327) is operated under commercial status and may accept Class 2 fluids from any qualified supplier. The pump facility operates manually twice weekly for five hours. The operations building, front gate, perimeter fence, and storage tanks are securely locked when not in operation.

DIVERSIFIED
energy

Section 16 – Additional Information

UIC 2D0392327

4703902327

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	N/A
NPDES Program	N/A
Prevention of Significant Deterioration (PSD)	N/A
Nonattainment Program	N/A
Dredge or Fill	N/A
NPDES/NPDES – Stormwater	N/A
WVDEP – Office of Waste Management (OWM) – Solid Waste Facility	N/A
WVDEP – OWM – RCRA (Hazardous Waste TSD or Transporter)	N/A
WVDEP – OWM – UST	N/A
CERCLA – Superfund	N/A
WV Voluntary Remediation – Brownfields	N/A
FIFRA – Federal Insecticide, Fungicide and Rodenticide Act	N/A
Well Head Protection Program (WHPP)	N/A
Underground Injection Control (UIC)	UIC2D0292327
Toxic Substances Control Act (TSCA)	N/A
Best Management Plans	N/A
Management of Used Oil	N/A
Other Relevant Permits (Specify):	
AST ACT	Tanks registered