OMB No. 2040-0042 Approval Expires 4/30/2022

United States Environmental Protection Agency

Underground Injection Control
Permit Application for a Class II Well

(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, and 40 CFR Part 144)

For Official Use Only

Date Received

Permit Number

Read Attached Instructions Before Starting

I. Owner Name, Address, Phone Number and/or Email

Bull Run Resources LLC
200 Liberty Street, Suite 20
Warren PA 16365
Sam@bullrunenergy.com
814-706-7302

II. Operator Name, Address, Phone Number and/or Email

Same as Owner

III. Commercial Facility

- [ ] Yes
- [x] No

IV. Ownership

- [x] Private
- [ ] Federal
- [ ] State/Tribal/ Municipal

V. Permit Action Requested

- [x] New Permit
- [ ] Permit Renewal
- [ ] Modification
- [ ] Add Well to Area Permit
- [ ] Other

VI. SIC Code(s)

1311

VII. Indian Country

- [ ] Yes
- [x] No

VIII. Type of Permit (For multiple wells, use additional page(s) to provide the information requested for each additional well)

- [ ] A. Individual
- [x] B. Area

Number of Wells: 2

Well Field and/or Project Names: Curtis Lot 2

IX. Class and Type of Well (see reverse)

A. Class	B. Type (enter code(s))	C. If type code is "X," explain.
II	R	NA

X. Well Status

- [ ] A. Operating
- [x] B. Conversion
- [ ] C. Proposed

Date Injection Started:

Date Well Constructed: 01/01/2011

XI. Well Information

API Number: 37-083-(55309);(55310)

Permit (or EPA ID) Number: Same as API's

Full Well Name: Curtis Lot 2 (#12);(#13)

XII. Location of Well or, for Multiple Wells, Approximate Center of Field or Project

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location

___ 1/4 of ___ 1/4 of Section ___ Township ___ Range ___

___ ft. from (N/S) ___ Line of quarter section

___ ft. from (E/W) ___ Line of quarter section.

Latitude: 41.838749°

Longitude: -78.717399°

XIII. Attachments

In addition to this form, complete Attachments A-U (as appropriate for the specific well class) on separate sheets. Submit complete information, as required in the instructions and list all attachments, maps or other figures, by the applicable letter.

XIV. Certification

I certify under the 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 possibliity of fine and imprisonment. (Ref. 40 CFR § 144.32)

Name and Official Title *(Please Type or Print)*	Signature	Date Signed
Samuel V Harvey President		9/30/20

EPA Form 7520-6 (Rev. 4-19)

ATTACHMENT A

Part I.

Bull Run Resources is proposing injection into the Curtis Lot 2 #12 and #13. These are both vertical wells and have the following coordinates:

Curtis Lot 2 #12
41.838727° N
78.718666° W

Curtis Lot 2 #13
41.838804° N
78.716231° W

Part II.

The AOR is defined by the area inside of two overlapping arcs, each having a ¼ mile radius and center at each of the injection wells.

Part III.

Attached are three maps of the Area Permit project. For each map, the required items are located within the boundaries (AOR, 1/4th mile beyond AOR, and 1 mile beyond AOR). Map areas that extend beyond required buffers may have items omitted.

- **MAP A-1.** Topographic map showing the AOR and the follow items:
  - All wells
  - AOR boundary
  - Springs and surface bodies of water (none)
  - Mines and quarries (none)
  - Residences, schools, hospitals (none)
  - Roads (shown on underlying USGS topo)
  - Table 1-A, details on wells within AOR
- **MAP A-2.** Topographic map extending ¼ mile beyond AOR
  - All wells
  - Springs and surface bodies of water (shown on underlying USGS topo)
  - Mines and quarries (none)
  - Residences, schools, hospitals (none)
  - Roads (shown on underlying USGS topo)
- **MAP A-3.** Topographic map extending 1 mile beyond AOR
  - Project injection wells
  - AOR boundary
  - Outcrops of injection and confining formation (none)
  - All surface water intake and discharge structures (none)
  - All hazardous waste treatment, storage or disposal facilities (none)

Part IV.

See Table 2-A for a tabulation of well construction data for wells within AOR that penetrate the injection formations.

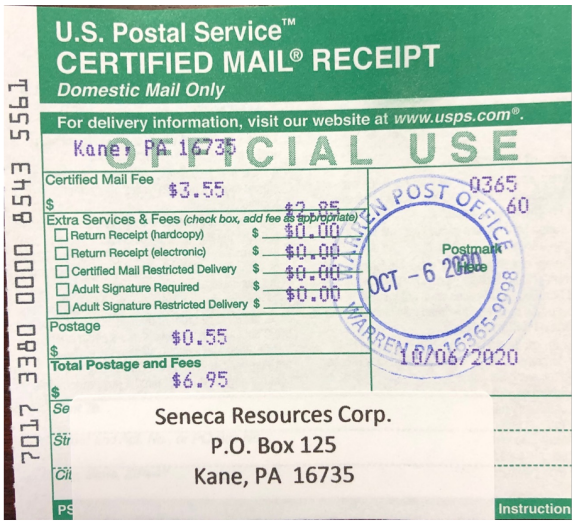
Part V.

The following landowners are identified as following within an area ¼ of a mile from the AOR.

US Department of Agriculture, US Forest Service, 4 Farm Colony Drive, Warren, PA 16365

Seneca Resources Corp, PO BOX 125 Kane, PA 16735

Proof of notification



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Map A-1

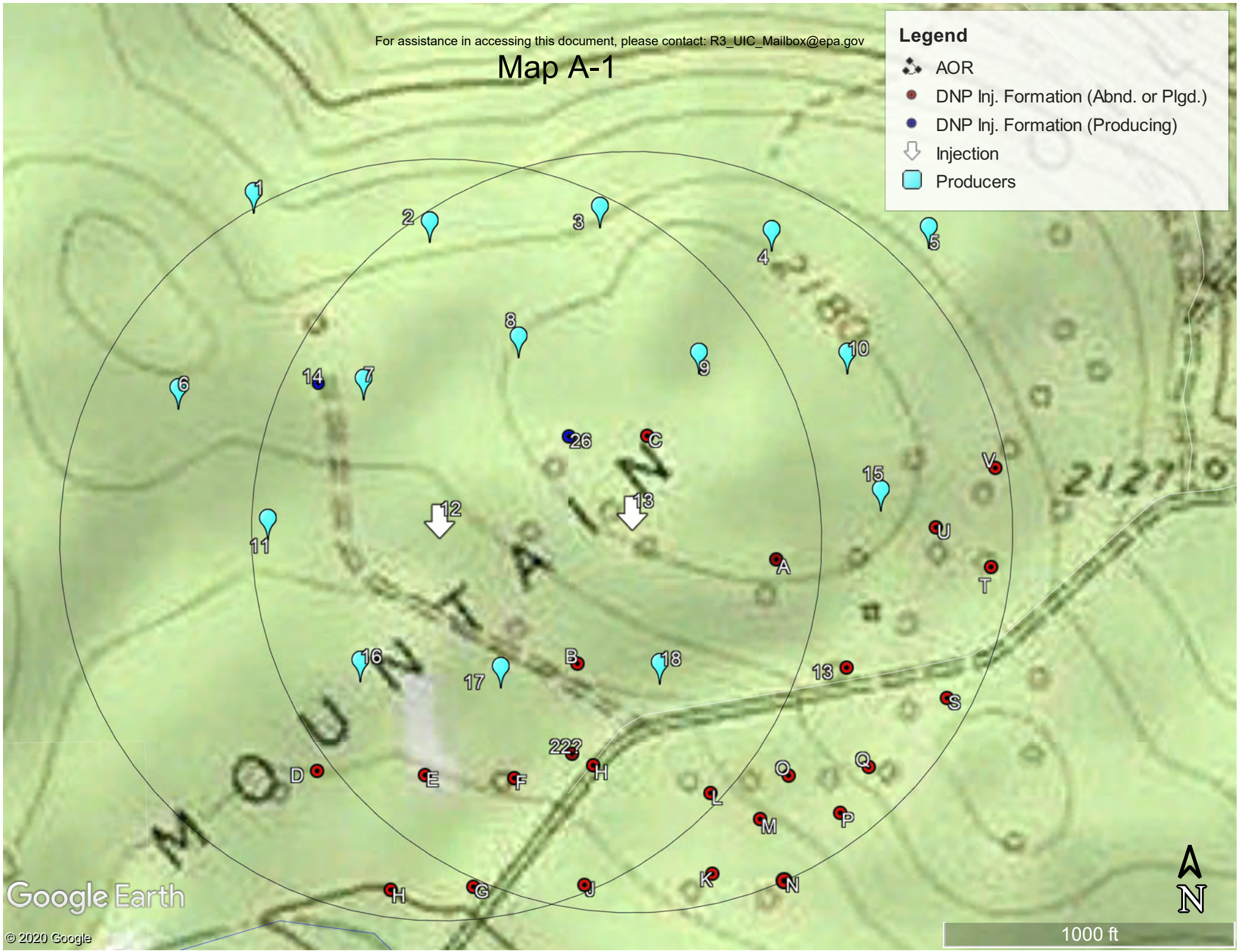


Table 1-A

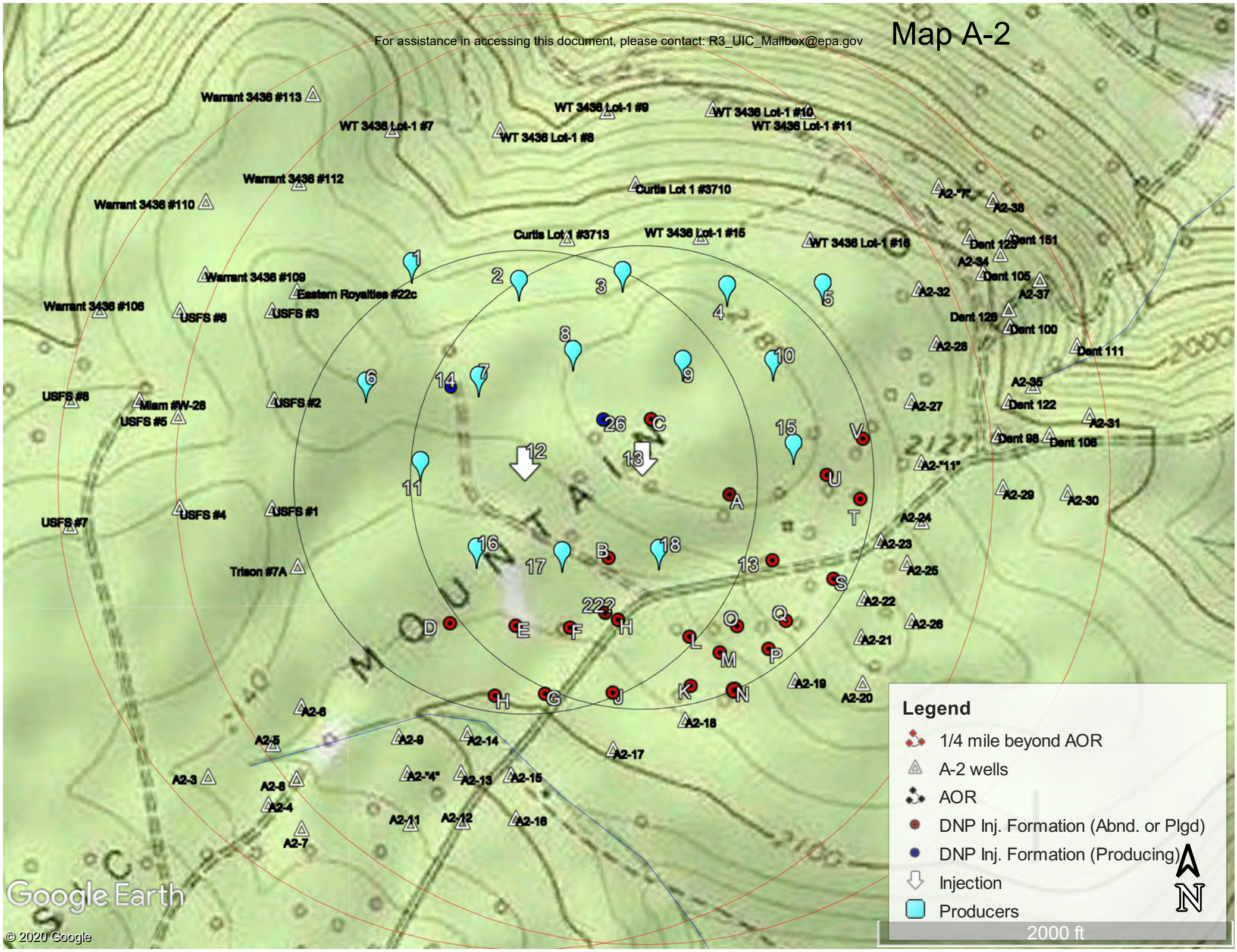
For assistance in accessing this document, please contact: R3_UIC_Mailbox@epa.gov

Icon	Map Number	API	Status for Permit	Operator	Source of Knowledge
white arrow	13	37-083-55310	Injector	Bull Run	Company files
white arrow	12	37-083-55309	Injector	Bull Run	Company files
blue ballon	1	37-083-51246	Producer	Bull Run	Company files
blue ballon	2	37-083-51247	Producer	Bull Run	Company files
blue ballon	3	37-083-51248	Producer	Bull Run	Company files
blue ballon	4	37-083-51249	Producer	Bull Run	Company files
blue ballon	6	37-083-54199	Producer	Bull Run	Company files
blue ballon	7	37-083-55306	Producer	Bull Run	Company files
blue ballon	8	37-083-55307	Producer	Bull Run	Company files
blue ballon	9	37-083-51254	Producer	Bull Run	Company files
blue ballon	10	37-083-51255	Producer	Bull Run	Company files
blue ballon	11	37-083-55308	Producer	Bull Run	Company files
blue ballon	15	37-083-51259	Producer	Bull Run	Company files
blue ballon	16	37-083-55313	Producer	Bull Run	Company files
blue ballon	17	37-083-55312	Producer	Bull Run	Company files
blue ballon	18	37-083-55311	Producer	Bull Run	Company files
Blue Bullseye	14	37-083-14489	DNP	Bull Run	Company files
Blue Bullseye	26	37-083-14477	DNP	Bull Run	Company files
Red Bullseye	A	unknown	DNP	Abon.	Atlas
Red Bullseye	B	unknown	DNP	Abon.	Atlas
Red Bullseye	C	unknown	DNP	Abon.	Atlas
Red Bullseye	D	unknown	DNP	Abon.	Atlas
Red Bullseye	E	unknown	DNP	Abon.	Atlas
Red Bullseye	F	unknown	DNP	Abon.	Atlas
Red Bullseye	G	unknown	DNP	Abon.	Atlas
Red Bullseye	H	unknown	DNP	Abon.	Atlas
Red Bullseye	I	unknown	DNP	Abon.	Atlas
Red Bullseye	J	unknown	DNP	Abon.	Atlas
Red Bullseye	K	unknown	DNP	Abon.	Atlas
Red Bullseye	L	unknown	DNP	Abon.	Atlas
Red Bullseye	M	unknown	DNP	Abon.	Atlas
Red Bullseye	N	unknown	DNP	Abon.	Atlas
Red Bullseye	O	unknown	DNP	Abon.	Atlas
Red Bullseye	P	unknown	DNP	Abon.	Atlas
Red Bullseye	Q	unknown	DNP	Abon.	Atlas
Red Bullseye	S	unknown	DNP	Abon.	Atlas
Red Bullseye	T	unknown	DNP	Abon.	Atlas
Red Bullseye	U	unknown	DNP	Abon.	Atlas
Red Bullseye	V	unknown	DNP	Abon.	Atlas

DNP = "Does/did not Penetrate Injection Formation"

Atlas = "Oil and Gas Field Atlas of the Bradford Quadrangle, PA Dept. of Internal Affairs, 1951"

Map A-2



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Map A-3

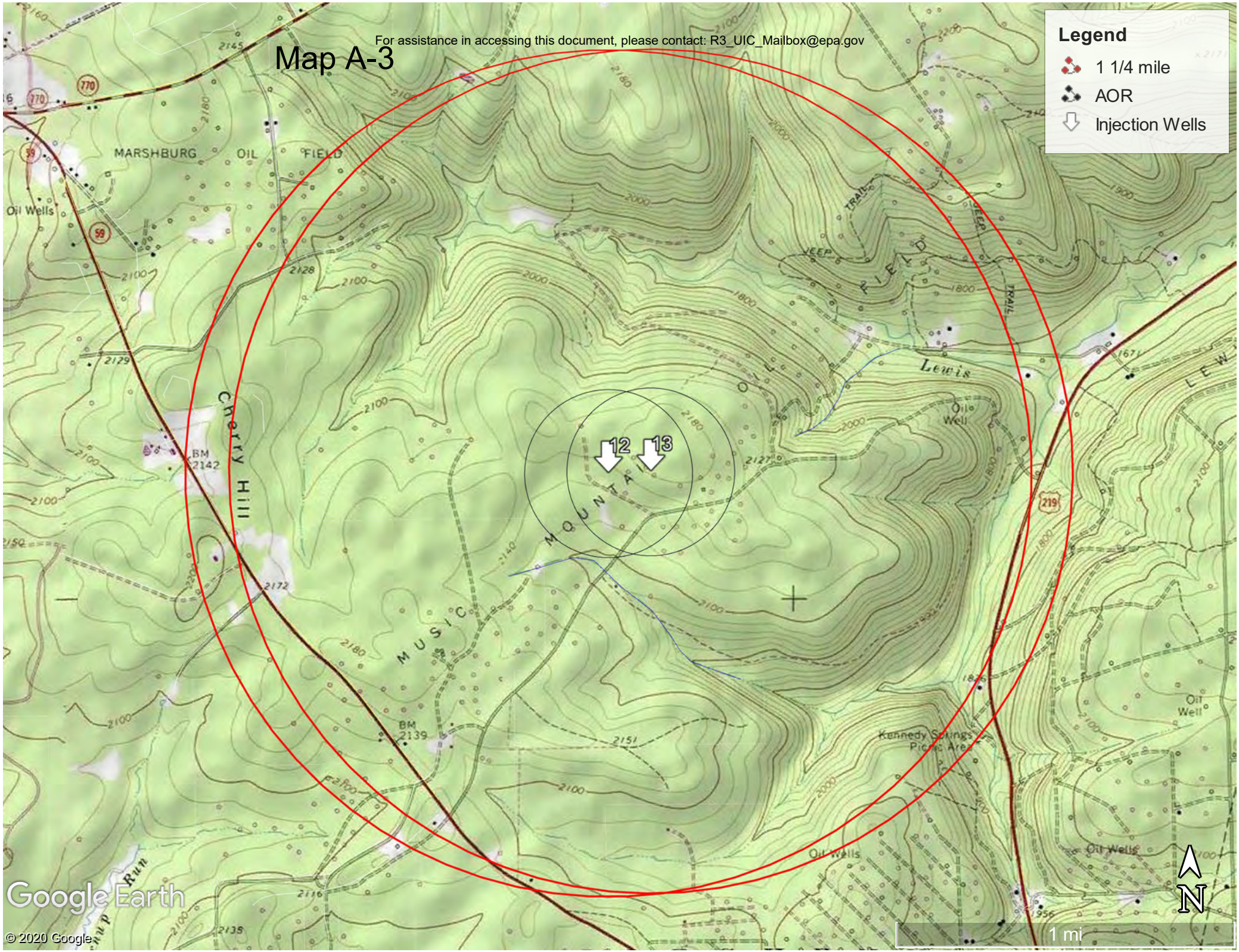


Table 2-A

Map Number	Status for Permit	Measured Depth Feet Conductor Casing	Surface Casing	TD	Data Drilled	Cement Returns	Top Cement
13	Injector	36	450	2223	3/14/2011	yes	NA
12	Injector	23	455	2233	2/21/2011	yes	NA
1	Producer	22	582	2216	11/30/2006	yes	NA
2	Producer	22	586	2225	12/18/2006	yes	NA
3	Producer	21	584	2212	12/13/2006	yes	NA
4	Producer	21	581	2222	12/11/2006	yes	NA
6	Producer	42	455	2200	5/23/2011	yes	NA
7	Producer	27	455	2196	3/2/2011	yes	NA
8	Producer	37	455	2168	2/26/2011	no	4' CLL
9	Producer	21	586	2252	12/6/2006	yes	NA
10	Producer	22	582	2252	12/5/2006	yes	NA
11	Producer	23	455	2169	2/16/2011	yes	NA
15	Producer	23	583	2240	12/11/2006	yes	NA
16	Producer	unkw	452	2166	??/??/2006	yes	CLL*
17	Producer	60	455	2128	5/31/2011	yes	NA
18	Producer	54	455	2183	2/11/2011	yes	NA

CLL = Cement Locator Log

** = Cement report not found, CLL shows cement from shallowest data point*

Attachment B.

Part I

Geologic Data

The stratigraphic and structural geology of the proposed waterflood is extremely simple and well characterized. Modern geophysical logs are available across the area at a well spacing of approximately 500 ft. The Upper Devonian sequence consists of thick mudstones confining layers 50+ feet thick interbedded with 5-100 feet thick sandstone. There is almost no structure across the waterflood area, sandstones are found at consistent subsea depths.

There is less than 30 ft of topographic relief between wells 12 and 13. All depths presented are measured depth from surface. Below are geologic data on the formations from the surface to the base of the proposed injection wells.

The source of the following data is driller's logs and geophysical wireline logs.

Well #12								
Formation	**Driller's Sand**	**Lithology**	**Top**	**Base**	**Thickness**	***USDW's**	**Interprated Pore Fluid**	**Notes**
Pottsville Series	NA	Regolith/Soil	0	39	39	NA	unsaturated groundwater	
Pottsville Series	NA	silty mudstone	39	200	161	80'	fresh water	freshwater found at 200'
Knapp	NA	silty mudstone	200	300	100		fresh water	
Oswayo	NA	silty mudstone	300	436	136	319'	fresh water	
Cattaraugus	NA	red shale	436	610	174	NA		
Cattaraugus	NA	siltstone	610	636	26	NA	brine/gas	low poristy
Conneaut Group	NA	shale	636	1097	461	NA		
Conneaut Group	NA	Red Shale	1097	1122	25	NA		
Conneaut Group	NA	Shale	1122	1400	278	NA		
Conneaut Group	Bradford First	brown sandstone	1400	1432	32	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	1432	1526	94	NA		
Canadaway	Clarendon Sand	Sandstone	1526	1544	18	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	1544	1566	22	NA		
Canadaway	Tiona Sand	Sandstone	1566	1584	18	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	1584	1700	116	NA		
Canadaway	Bradford Second	Sandstone	1700	1770	70	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	1770	1826	56	NA		
Canadaway	Harrisburg Run	Sandstone	1826	1856	30	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	1856	1980	124	NA		
Canadaway	Bradford Third	Sandstone	1980	2008	28	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	2008	2086	78	NA		
Canadaway	Lewis Run	Sandstone	2086	2093	7	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	2093	2233	140	NA		

Well #13								
Formation	**Driller's Sand Names**	**Lithology**	**Top**	**Base**	**Thickness**	***USDW's**	**Interprated Pore Fluid**	**Notes**
Pottsville Series	NA	sandstone	0	39	39	NA	unsaturated groundwater	
Pottsville Series/Knapp	NA	silty mudstone	39	264	225	110'	fresh water	freshwater found 139-264'
Knapp	NA	silty mudstone	264	300	36	I	fresh water	
Oswayo	NA	silty mudstone	300	464	164	349'	fresh water	
Cattaraugus	NA	red shale	464	636	172	NA		
Conneaut Group	NA	shale	636	1432	796	NA		
Conneaut Group	Bradford First	brown sandstone	1432	1462	30	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	1462	1598	136	NA		
Canadaway	Bradford Second	Sandstone	1598	1632	34	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	1632	1730	98	NA		
Canadaway	Harrisburg Run	Sandstone	1730	1802	72	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	1802	2008	206	NA		
Canadaway	Bradford Third	Sandstone	2008	2034	26	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	2034	2114	80	NA		
Canadaway	Lewis Run	Sandstone	2114	2120	6	NA	hydrocarbon/brine	gas/oil show
Canadaway	NA	Shale	2120	2233	113	NA		

*The precise depths that USDW's may be found in an individual well are subject to the interpretation of the driller. There are no know water wells near the proposed waterflood. To account for all potential USDW's, the drilling reports of all 19 wells drilled on the Curtis Lot 2 lease were examined. The deepest freshwater encountered was at 1831' AMSL in well #17. The shallowest freshwater reported was at 2070' AMSL. This 239' thick zone of potential USDW's is presented on the preceding table and in the other attachments to this permit, adjusted to the surface elevation of each well.

Porosity and Permeability of Injection Zones

Well #13

Bradford 3rd: Density log derived porosity from 6-17% with average porosity of 11.5% over 31 net feet of pay. Permeability unknown.

Lewis Run: Density log derived porosity from 7-15% with average porosity of 11.5% over 6 net feet of pay. Permeability unknown.

Well #12

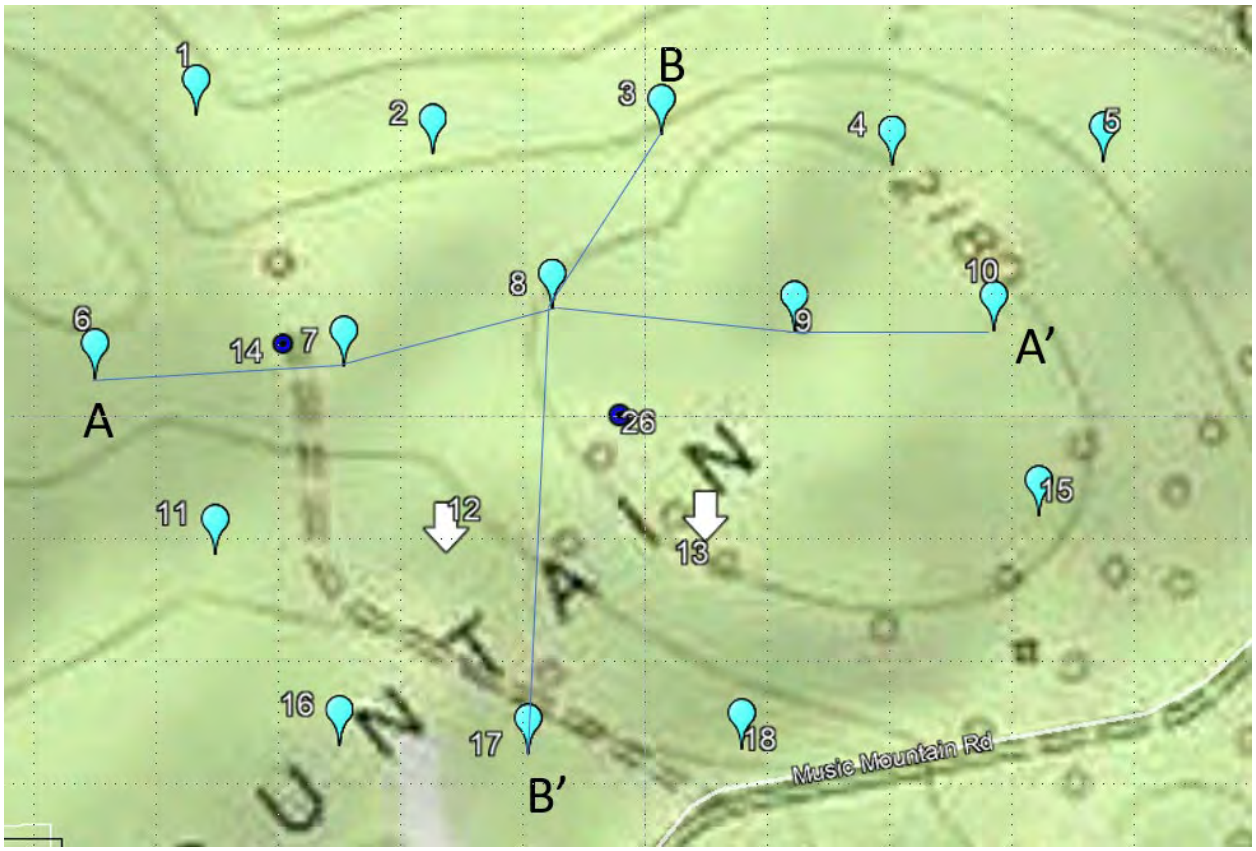
Bradford 3rd: Density log derived porosity from 8-17% with average porosity of 13.6% over 29 net feet of pay. Permeability unknown.

Lewis Run: Density log derived porosity from 8-17% with average porosity of 12.2% over 9 net feet of pay. Permeability unknown.

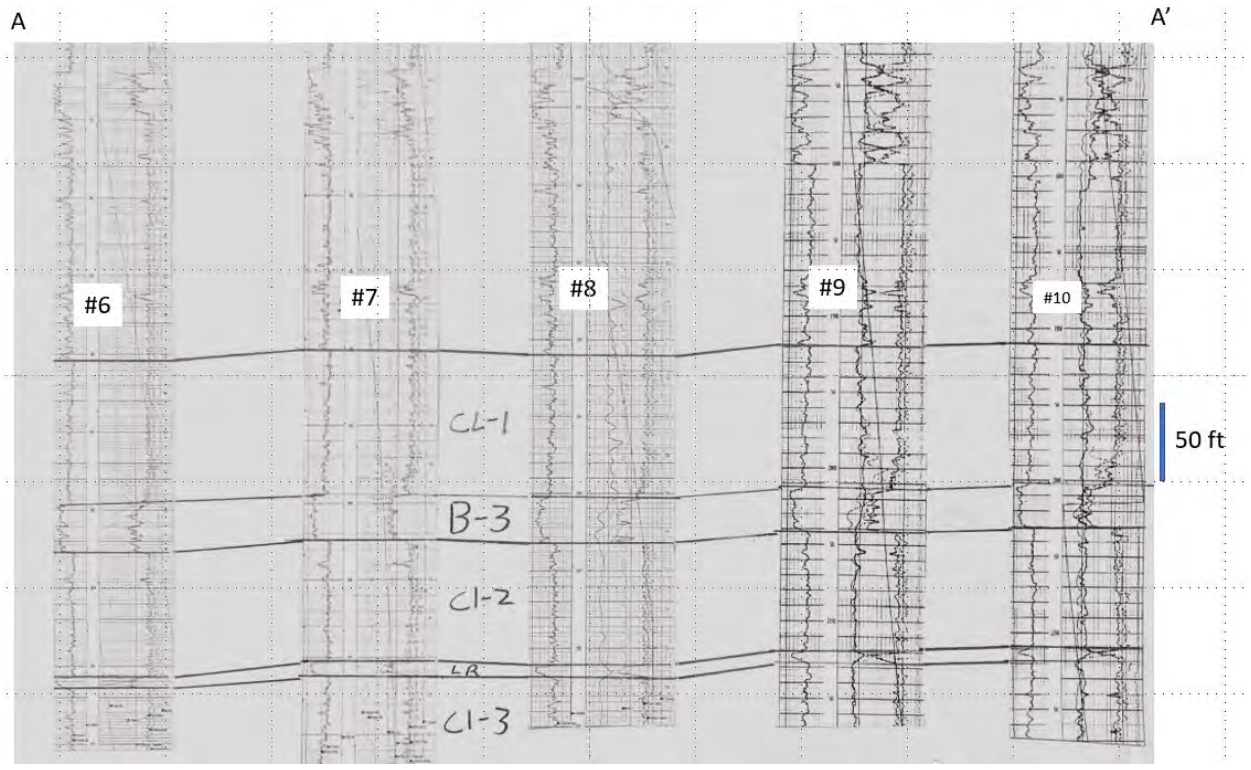
Geologic Cross-sections.

An east-west and north-south cross-section is presented below. The following abbreviations are used in the cross-sections:

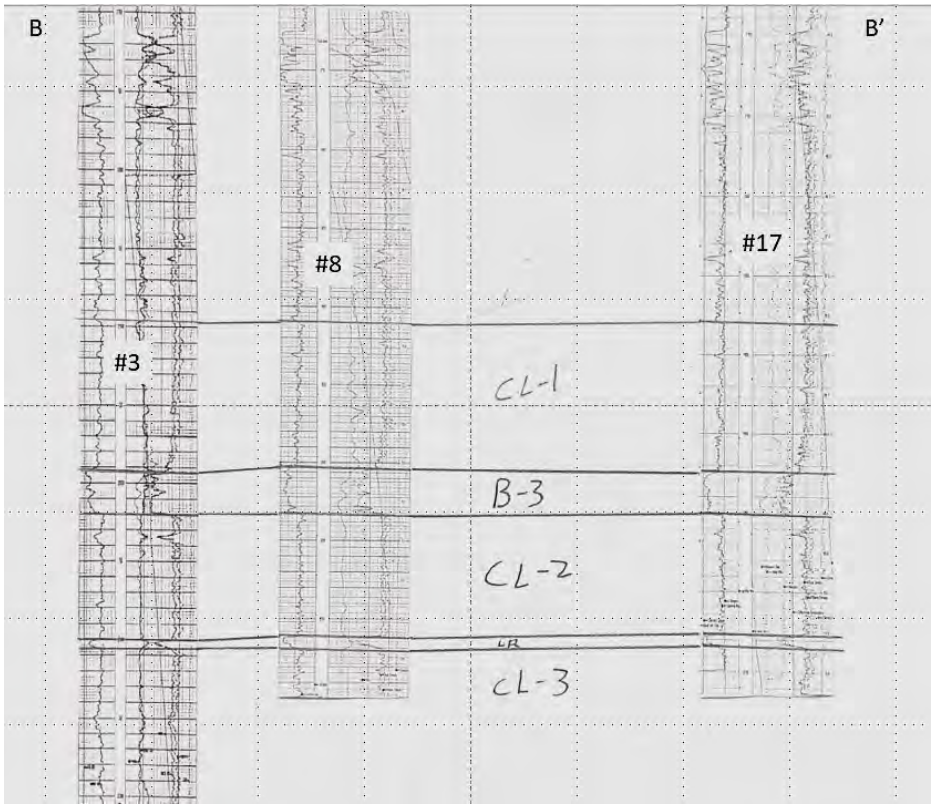
- CL-1 “Confining Layer One”
- B-3 “Bradford Third Injection Zone”
- CL-2 “Confining Layer Two”
- LR “Lewis Run Injection Zone”
- CL-3 “Confining Layer Three”



Key map for cross-sections



Cross-section A-A'.



Cross-section B-B'.

Faults/Fracture Systems

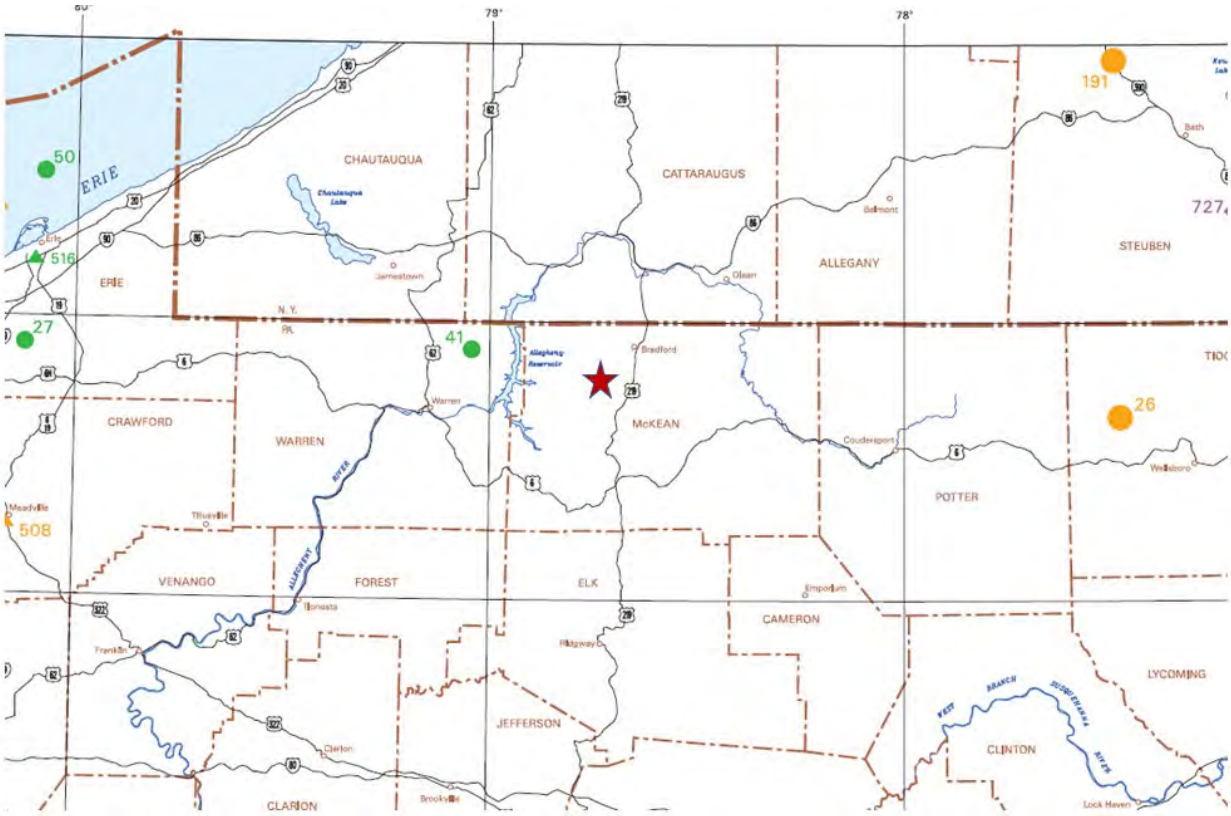
There are no known faults or fracture systems of a scale relevant to this permit application. Well control is very tight with modern geophysical logs throughout the area. There are no missing or repeat stratigraphic sections that would indicate normal or reverse faulting. Published structural maps of key marker beds indicate gently undulating structure inconsistent with major faulting.

There is over 100 years of historical injection into the target zones in the Bradford Oil Field. No issues related to faults or fractures has been identified in the many papers and studies reviewed by Bull Run.

Seismic Activity

There have been no historical earthquakes in McKean County according to "Earthquakes Epicenters in and near Pennsylvania" published by the PA Department of Conservation and Natural Resources in 2004. The red star on map B-1 indicates the proposed waterflood. Precambrian basement is greater than 8,000 feet below the injection zones.

There is over 100 years of historical injection into the target zones in the Bradford Oil Field. No issues related to seismic activity has been identified in the many papers and studies reviewed by Bull Run.



Part II

Fluid Pressure and Estimated Fracture Pressure

Bull Run will be converting existing hydro-fractured (frac'ed) production wells into injection wells so the fracture gradient can be estimated with Instantaneous Shut-in Pressure data (ISIP) observed during completion. It is assumed that the SG of the frac fluid was 1.0 g/cm3.

Lewis Run Fracture Gradient

Well #12 is not frac'ed in the Lewis Run, the well got "wild" and the frac crew was unable to complete the job. The nearest well with clear ISIP data is #13 with an ISIP of 2000 PSI at 2116', yielding an FG of 1.38 psi/Ft.

Bradford 3rd Fracture Gradient

Neither well #12 nor #13 are fractured in the Bradford 3rd. Well #12 was frac'ed in the Harrisburg Run, which is approximately 100' above the Bradford 3rd. In well #12, the ISIP was 1800 PSI at 1845', yielding a FG of 1.41 psi/Ft.

Fluid SG

The proposed injection fluid is produced brine from conventional shallow oil production. Ten samples of conventional oil well brine from across NW Pennsylvania were analyzed and the highest Sg found was 1.089. (Dresel and Rose 2010). This is higher than Bull Run has ever encountered in the field with hydrometer testing of our produced brine. An estimated maximum Sg of 1.1 is used to determine Pmax in the calculations below.

Pmax Calculations

For simplicity, the lower FG of 1.38 PSI/Ft is used for both zones to calculate Pmax's. These Pmax's are well below breakdown pressure of the formations. In addition, breakdown at the low injection rates of a waterflood, in contrast the high rates during a frac job, is extremely unlikely. None the less, should breakdown be observed, Bull Run will cease injection and notify the EPA to determine next steps.

Note: The Lewis Run is cemented off in Well #13. However, Bull Run is applying for this permit with the intention of potentially drilling out the Lewis Run and injecting into this zone. Bull Run may inject into the zones simultaneously or individually. The following table shows calculated Pmax's for each well and zone.

	#12	#13	Units
Fracture Gradient	1.38	1.38	#/Ft
Max Sg of Brine	1.10	1.10	NA
Top of Brad 3rd	1980	2008	Feet MD
Top of Lewis Run	2086	2114	Feet MD
Pmax Brad 3rd	1789	1814	psi
Pmax Lewis Run	1884	1910	psi
Pmax Simultaneous Injection	1789	1814	psi
* Lewis Run is cemented, see text			

Pmax Data

Physical and Chemical Characteristics of the Injection Zone

The Bradford 3rd has been described as a "chocolate-brown sandstone composed predominantly of fine to very fine angular quartz grains" by (Fettke 1938). The chemical composition from a core is presented below.

Table 9. Chemical analysis of Bradford Third sandstone from a depth of 1741.92 feet in core 9.

	Percent		Percent
SiO_2	86.89	Alkalies	Not determ.
Al_2O_3	6.95	H_2O (combined)	0.89
Fe_2O_3 (includes FeO)	2.55	CO_2	trace
MgO	0.42	C (organic)	0.30
CaO	0.07		98.07

From Fettke 1938

The Lewis Run sandstone has been described as "fine-grained chocolate brown sandstone ranging in thickness from 6-12'" by (Fettke 1941). Given the similar appearance and stratigraphic proximity to the Bradford 3rd, one would expect similar chemical composition to the Bradford Third.

The proposed waterflood is within the Bradford Oil Field, which has been in production for more than 140 years. From 1921 until at least 1949, Bradford was the center of the water-flooding activity in the world (Buckwalter 1949). The proposed injection formations have been successfully waterflooded by thousands of injection wells.

The proposed injection fluid is produced brine from Upper Devonian conventional wells. This brine is essentially the same as the in-situ brine occurring in the injection formations. The practice of injecting produced brine into waterfloods is widespread in the area.

Many historical examples have shown that the physical and chemical composition of the both the injection fluid and injection zones is suitable for water flooding.

References Cited:

Dresel, P. Evans, and Rose, Arthur W., 2010, *Chemistry and Origin of Oil and Gas Well Brines in Western Pennsylvania*, Open-File Oil and Gas Report 10-01.0

Fettke, Chas. R., 1938, *The Bradford Oil Field Pennsylvania and New York,* Commonwealth of Pennsylvania Dept. of Env. Resources

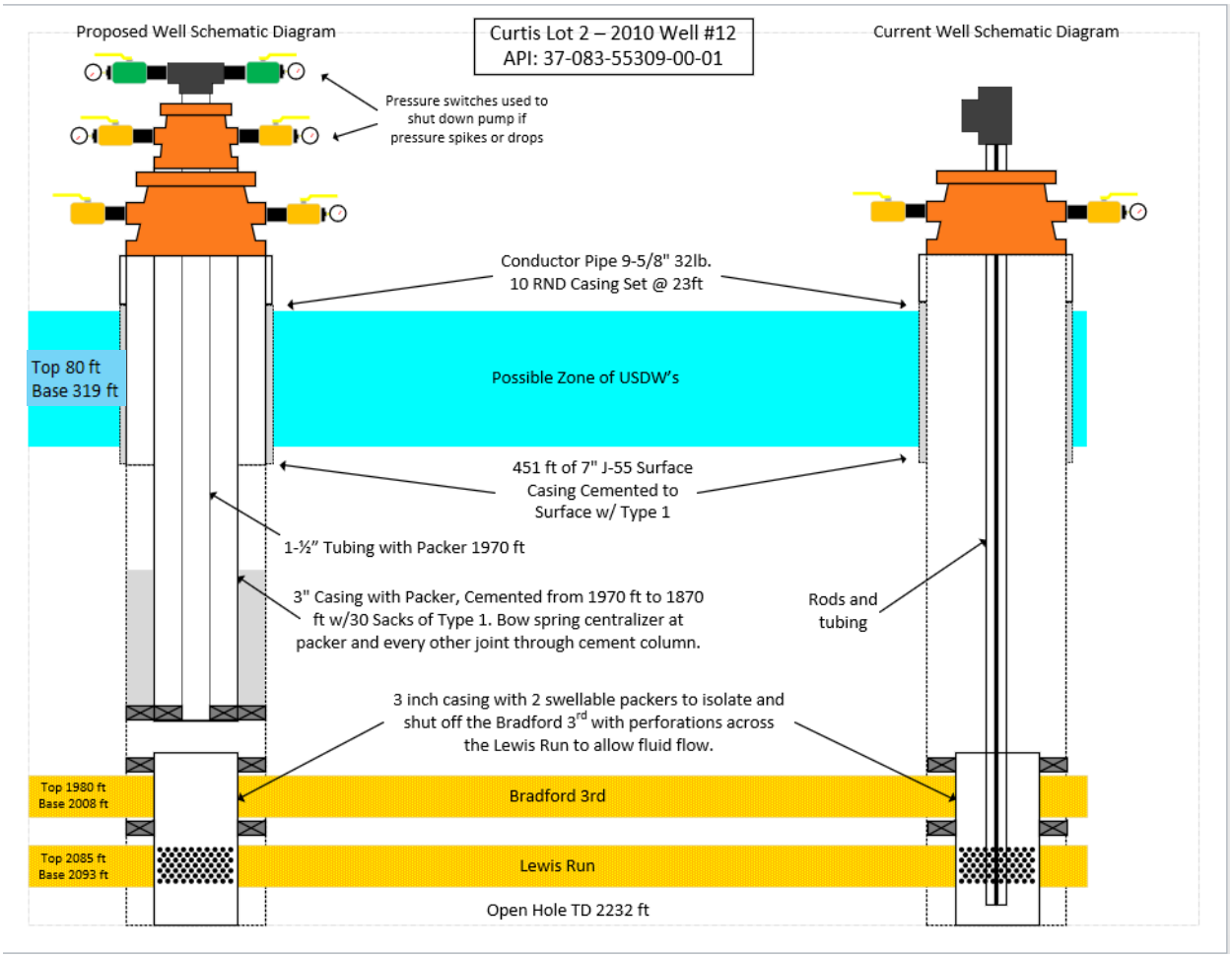
Fettke, Chas, R., 1941, *Music Mountain Oil Pool*, Commonwealth of Pennsylvania Dept. Of Internal Affairs

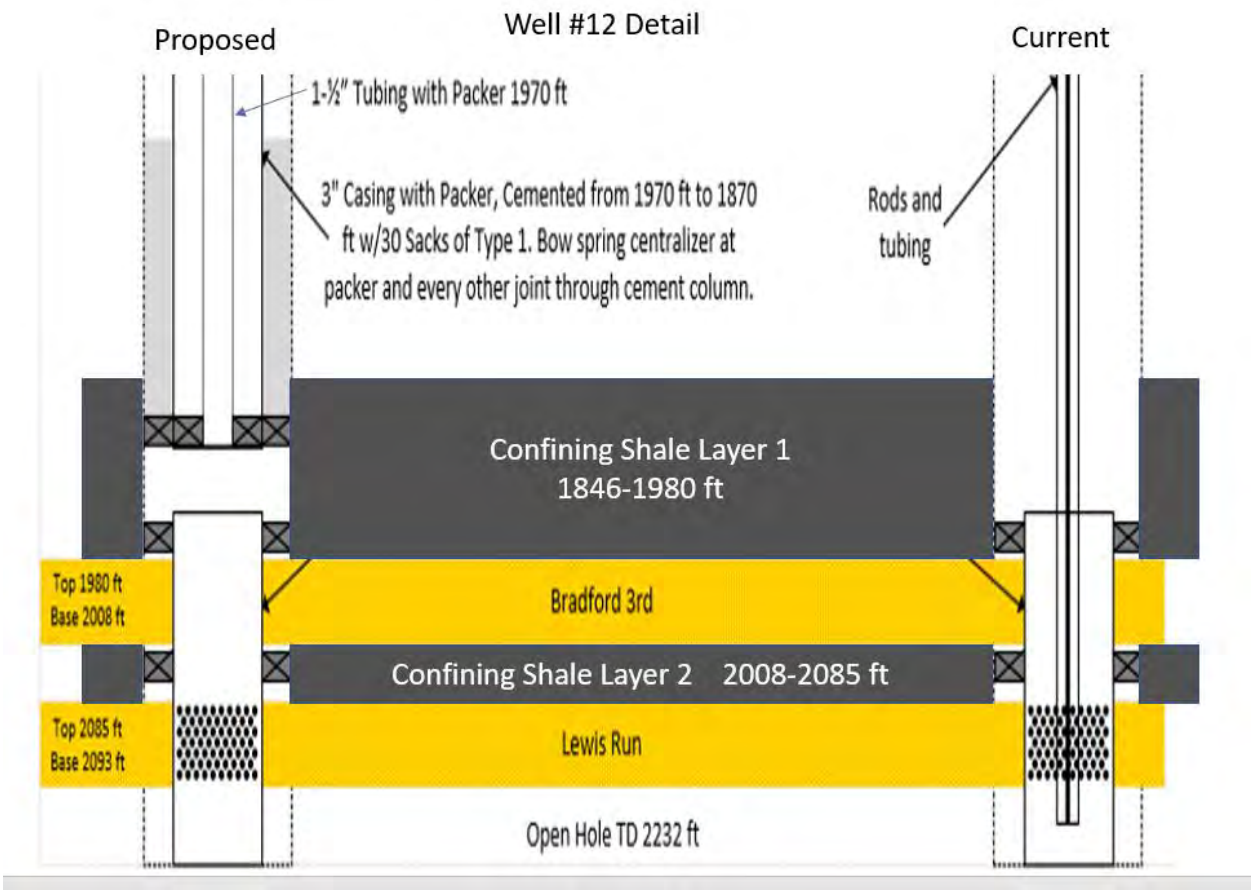
Buckwalter, John F., 1949, *Water Flooding the Bradford Field*, American Geological Society, Vol 1

Attachment C:

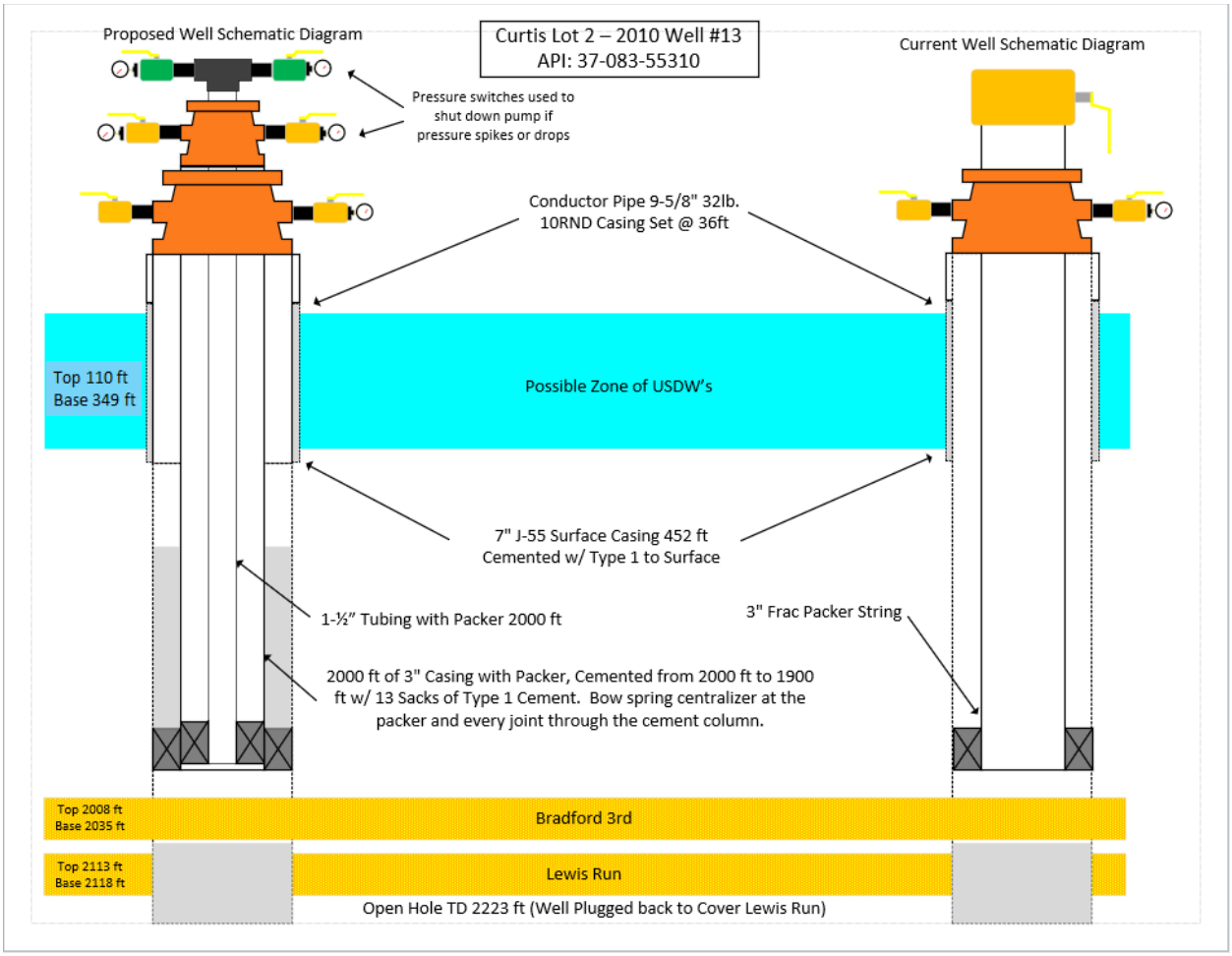
Part I

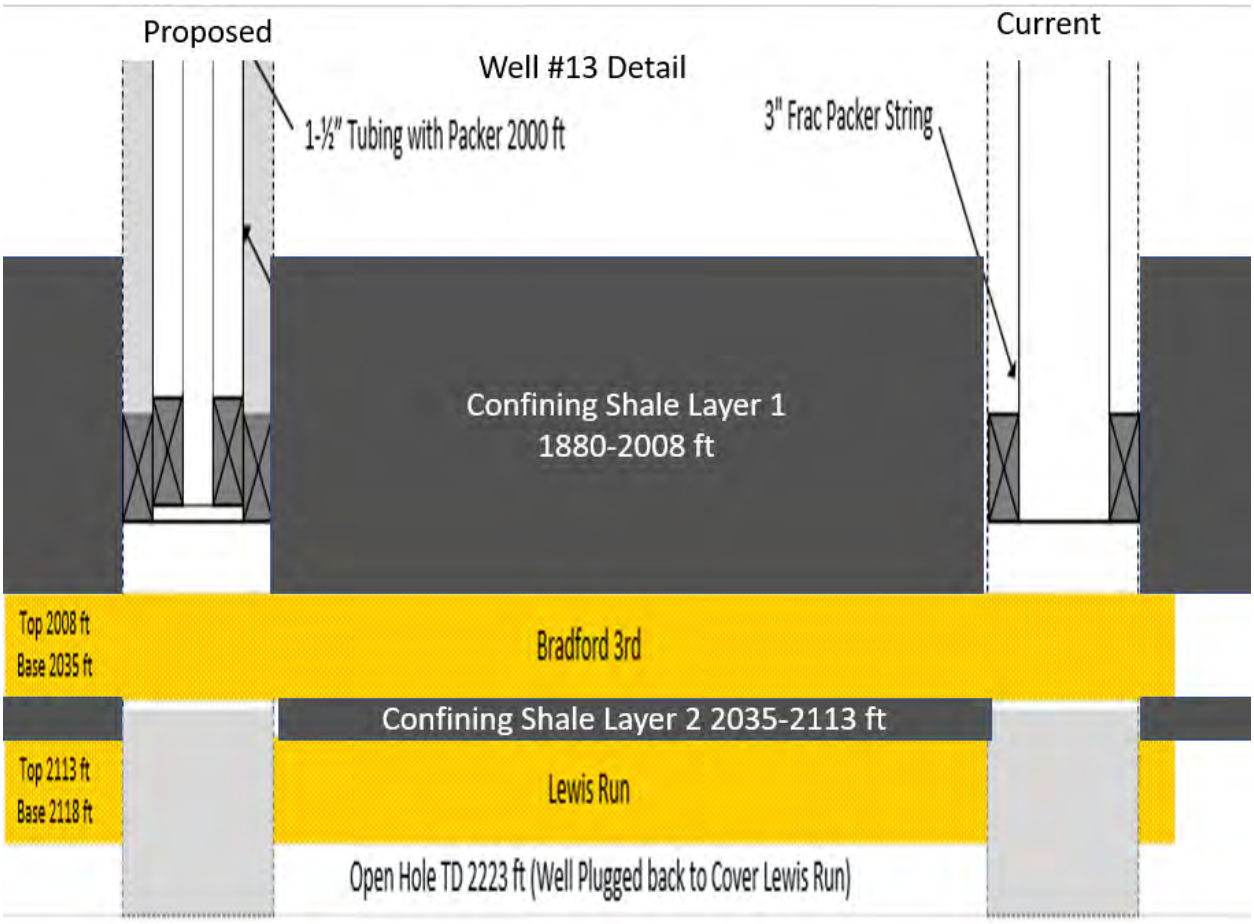
Wellbore # 12 Schematics





Wellbore # 13 Schematics





Part II

Proposed Logs and Tests

Well #12 and #13:

Cement Bond Log will be run to verify more than 50' of cement above packer on 3" protective casing

Proposed Stimulation Plans

Well #12

No Stimulation planned. When Bradford Third is going to be injected into 3" bottom pipe will be perforated.

Well #13

If Lewis Run is drilled out, it may be hydro fractured to penetrate cement skin factor.

Alarms and Shut-Downs

Wells #12 and #13:

“Pressure Up Circuit Open” switches will be installed on backside of injection tubing to shutdown injection in the event of injection tubing or packer failure.

“Pressure Down Circuit Open” switches will be installed on tubing to shutdown injection if surface failure occurs.

Tank Sentinel auto gauge will be used for monitoring and alarms on brine tank levels on surface

Time lapse cellular enabled camera will monitor pump and pressure chart recorder

Well Completion and Cementing Records

See Attachment C-1.

Previously Run Logs/Test

See Attachment C-1 for logs

CURTIS WELL SERVICE
PO BOX 367
SUGAR GROVE, PA 16350

DATE 3-15-11
COMPANY Catalyst
WELL NO #12
FARM Curtis Lot 2

ORDER NO. 03-1628
CUST. REP. Randy Curtis
TYPE OF SERVICE 8 5/8 csg

CASING LENGTH 450 BBLS/FT .0415 = 18.67
BIG HOLE 450 BBLS/FT .0268 = 12.06
(.0195-8 INCH, .0247 - 8 5/8, .0268 8 3/4)
NO. OF SACKS 80 MIX WATER 99 SLURRY 168 SLURRY WT. 15.6
MIX WATER 5.2 X 80 SACKS ÷ 42 = WATER
SLURRY 80 SACKS X 1.18 ÷ 5.61 = SLURRY
CAL. 94 X 80 SACKS X % OF CAL = LBS (25%)
0.025

40%
20% OVER 168 BBLS

REMARKS Cement Return
4 BBLS. Return

mix water = 38°
cement temp. = 58°

BARRELS PER FT.	WEIGHT PER FT.	SIZE O.D. IN.
0.0381	13	6 5/8
0.0366	17	*6 5/8
0.0355	20	6 5/8
0.0348	22	*6 5/8
0.0341	24	6 5/8
0.0333	26	*6 5/8
0.0326	28	6 5/8
0.0322	29	*6 5/8
0.0313	32	6 5/8
0.0415	17	7
0.0405	20	7
0.0398	22	7
0.0394	23	7
0.039	24	7
0.0383	26	7
0.0375	28	7
0.0371	29	7
0.0368	30	7
0.0361	32	7

SACKS	MIX	SLURRY 15.6	CALCIUM 2%	3%
30	3.7	6.3	56	85
35	4.3	7.3	65	99
40	4.9	8.4	75	113
45	5.6	9.5	85	127
50	6.2	10.5	94	141
55	6.8	11.6	103	155
60	7.4	12.6	113	169
65	8	13.7	122	183
70	8.7	14.7	132	197
75	9.3	15.8	141	212
80	9.9	16.8	150	226
85	10.5	17.9	160	240
90	11.1	18.9	169	254
95	11.8	20	179	268
100	12.4	21	188	282
105	13	22	206	296
110	13.6	23.1	207	310
115	14.2	24.2	216	324
120	14.9	25.2	226	338

TIME	INJECTION RATE	INJECTION BBLS IN	PRESSURE CSG.	PRESSURE TBG	REMARKS
8:40	4	20.0	100		Pumped water
8:45	4	4	100		Pumped Gel & Flake
8:46					mixed Cement
8:52	4	168	75		Pumped Cement
8:56	3	19.0	275		Displaced Cement
9:01			350		Plug Down

AVER. RATE 3.0
MAX. PRESSURE 350
AVER. PRESSURE 75
ENGINEER Jim Brgerton

PRODUCTS USED			
CEMENT	80 SKS	MULTI-SEAL	40
CALCIUM	150#	7" PLUG	
GEL (BET)	100	6 5/8" PLUG	

2264727

Proj CE1-C-10

3000-FM-OOGM0004b Rev. 5/2012

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS MANAGEMENT

Completion Report

DEP USE ONLY	
Site ID	Primary Facility ID
Client ID	Sub Facility Id

Well Information

Well Operator Catalyst Energy Inc		DEP ID# 34294	Well API # 37-083-55309	Well Farm Name Curtis Lot 2	Well # 12
Address 424 South 27th St Suite 304			LAT - 41° 50' 19.43" LONG - 79° 43' 07.2" NAD 83	Project Number	Serial #
City Pittaburgh	State PA	Zip Code 15203	Municipality Lafayette	County McKean	
Phone 412-325-4350	Fax 412-325-4356		Email dj@catalystenergyinc.com	USGS 7.5 min. quadrangle map Lewis Run	Section 1

Check the appropriate submission: ☐ Original Completion Report ☒ Amended Completion Report

STIMULATION BASE FLUID

List Water Management Plan Source(s)	Water Management Plan ID	Volume (Gallons)
1.		
2.		
3.		
4.		
5.		
6.		

DEP Biologist Review/Date	Total Gallons of Water Used	Water	Recycled
		40,200	26,800

Other Base Fluid(s) Used	Quantity and /UOM
1.	/
2.	/
Total Quantity all Fluid(s)	67,000/

STIMULATION/PRODUCTION INFORMATION (WELL)

Radioactive tracers used? ☐ Specify Tracer	24 Hr. Open-Flow (MCF/Day) / Date NA /	24 Hr. Shut-in Pressure:/ Date NA /	Completion Date: 3/4/14

Well Products:	☐ Gas Btu	☐ Oil API G	☐ Condensate API G	☐ Other	☐ GOR

WELL SERVICE COMPANIES

Perforation Company	Frac Company	Plug Drill Out/Flow Back Company
Name Penn Air Notch Service Inc	Name Iron Carey	Name
Address 67 Nancy Lane	Address 424 South 27th St Suite 304	Address
City – State- Zip Bradford, PA 16701	City – State – Zip Pittsburgh, PA 15203	City – State – Zip
Phone 814-368-7918	Phone 412-325-4350	Phone

I do hereby certify to the best of my knowledge, information and belief that the information contained on this Completion Report is true and correct. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator's Signature	DEP USE ONLY
Douglas E Jones 4-7-14	Reviewed by: T Curry Date: 4-25-14
Printed Name/Title: Douglas E. Jones / Vice President/ General Manager Date:	Comments:

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APR 18 2014

ENVIRONMENTAL PROTECTION
WARREN DISTRICT OFFICE

8000-FM-OOGM0004b Rev. 5/2012

Well API# 37-083-55309-__-__

PERFORATION RECORD

Stage No.	Perforation Date	Stage Perforated From TMD Ft.	Stage Perforated To TMD Ft.	# of Perforations/Stage	Formation(s)
1	3/4/14	1405.0		1	Well notched not perforated
2	3/4/14	1421.8		1	
3	3/4/14	1424.6		1	
4	3/4/14	1701.4		1	
5	3/4/14	1704.3		1	
6	3/4/14	1707.3		1	
7	3/4/14	1717.0		1	
8	3/4/14	1720.8		1	
9	3/4/14	1724.7		1	
10	3/4/14	1732.1		1	
11	3/4/14	1734.8		1	
12	3/4/14	1742.3		1	
13	3/4/14	1750.1		1	
14	3/4/14	1757.0		1	
15	3/4/14	1829.1		1	
16	3/4/14	1846.5		1	

Please insert additional copies of this page if additional rows/stages are needed.

Page _____ of _____

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55309

Well API# 37-083-~~5539~~ - -

STIMULATION FLUID ADDITVES

Note: Information designated as Trade Secret or Confidential proprietary information must be clearly identified as such and should be submitted on the "Confidential Stimulation Fluid Additives" form.

Trade Name	Supplier	Purpose	Ingredients	CAS # of Chemical Component	Max. Compo-nent % Mass in Additive	Chemical Component % Mass used in Total Base Fluid (Pg 1)	Comment
Bentonite Gel		Gelling agent	Bentonite	NA	NA	NA	

Please insert additional copies of this page if additional rows are needed.

Page _____ of _____

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Well API# 37-083-55309-__-__

STIMULATION INFORMATION / STAGE

Complete a separate record for each stimulation stage. (Please insert additional lines for additional stages or additional pages as applicable).

Stg #	Stimulation Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Proppant Type	Proppant Mesh Size(s)
1	3/4/14	18.0	1600	1700	1050	Sand	20/40
2	3/4/14	17.9	1950	2450	1100	Sand	20/40
3	3/4/14	18.5	1800	1300	1100	Sand	20/40
4	3/4/14	18.5	2000	2200	1300	Sand	20/40
5	3/4/14	18.0	1950	1000	1250	Sand	20/40
6	3/4/14	18.0	2000	1000	1250	Sand	20/40
7	3/4/14	18.0	2500	2200	1300	Sand	20/40
8	3/4/14	17.0	2100	2780	1300	Sand	20/40
9	3/4/14	17.1	2100	1000	1350	Sand	20/40
10	3/4/14	18.0	2400	2200	1400	Sand	20/40
11	3/4/14	18.6	2400	1700	1400	Sand	20/40
12	3/4/14	18.0	2800	2900	1350	Sand	20/40
13	3/4/14	14.0	3850	3700	1500	Sand	20/40
14	3/4/14	14.0	3600	2700	1300	Sand	20/40
15	3/4/14	6.0	4000	2800		Sand	20/40
16	3/4/14		4000	2900	1900	Sand	20/40
17							
18							
19							
20							
21							
22							
23							
24							
25							
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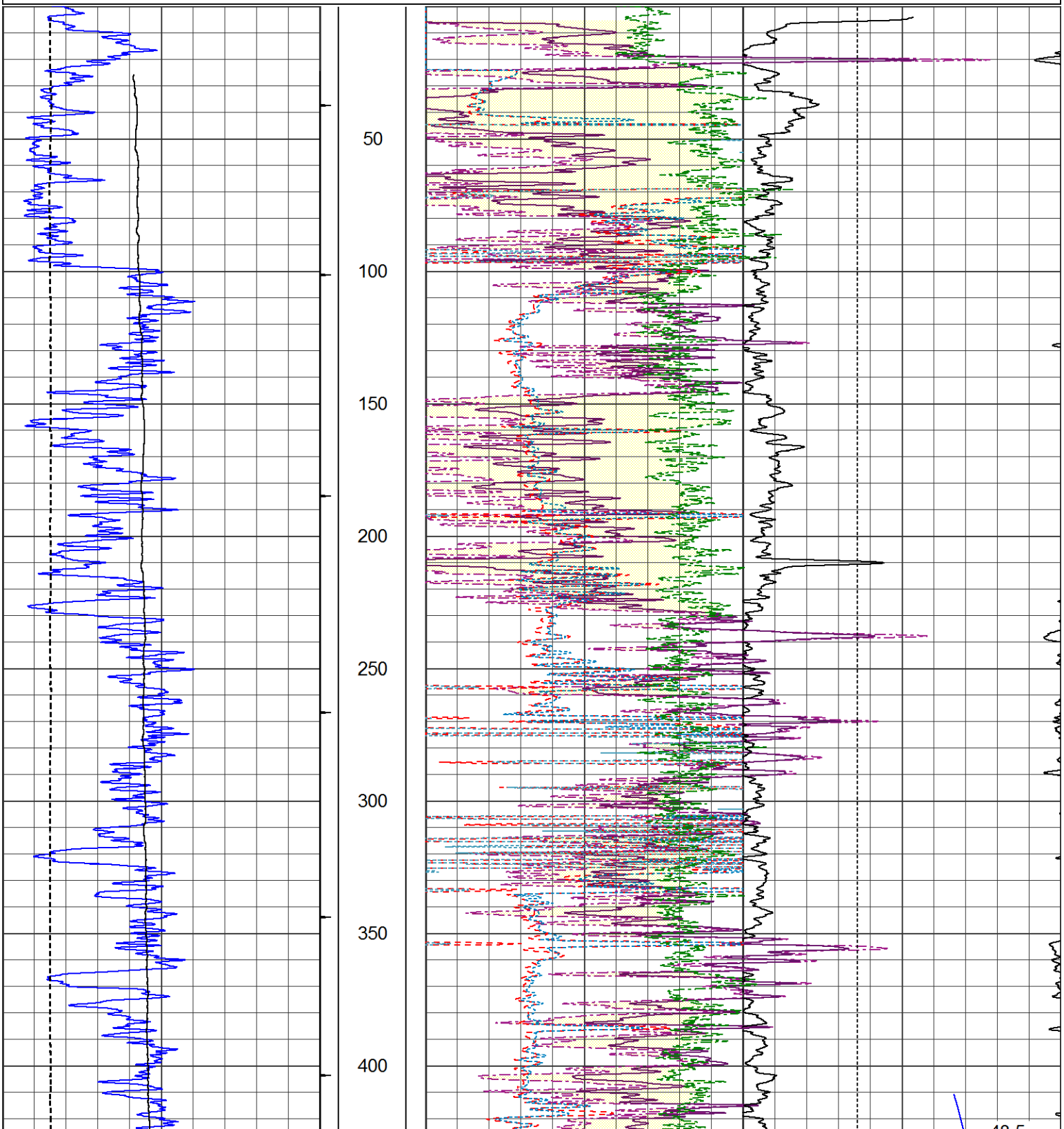
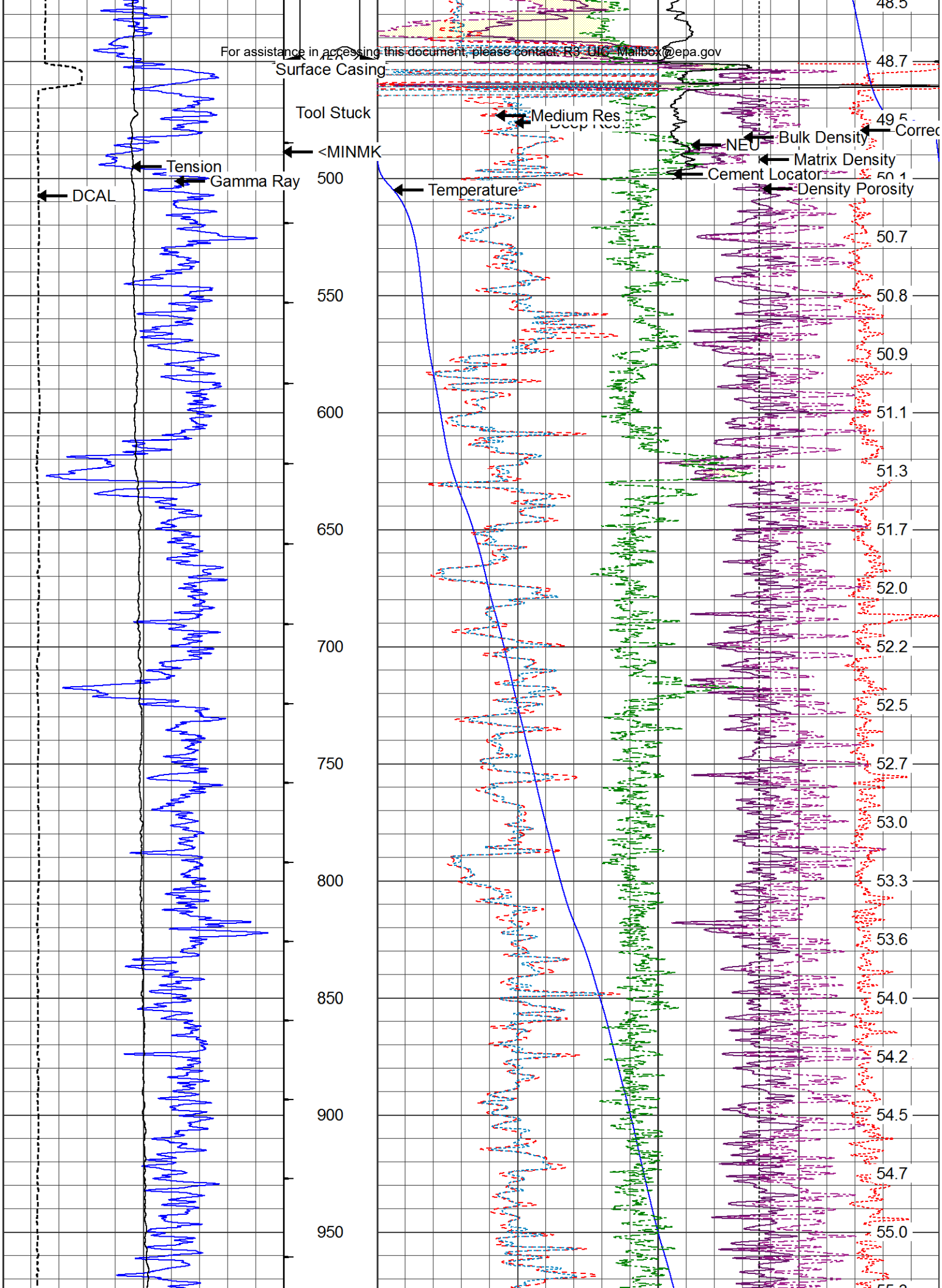
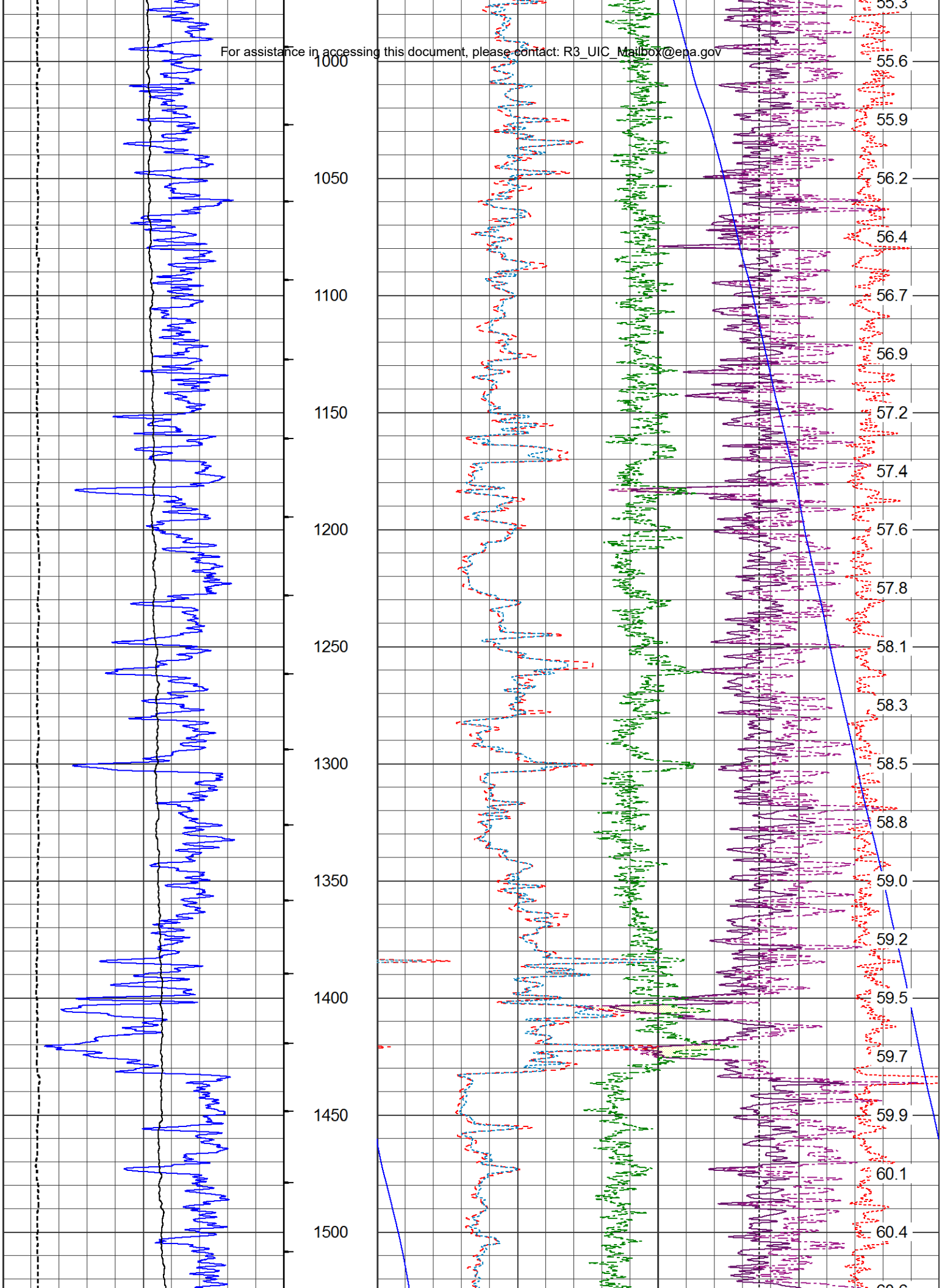
35							
36							
37							
38							
39							
40							

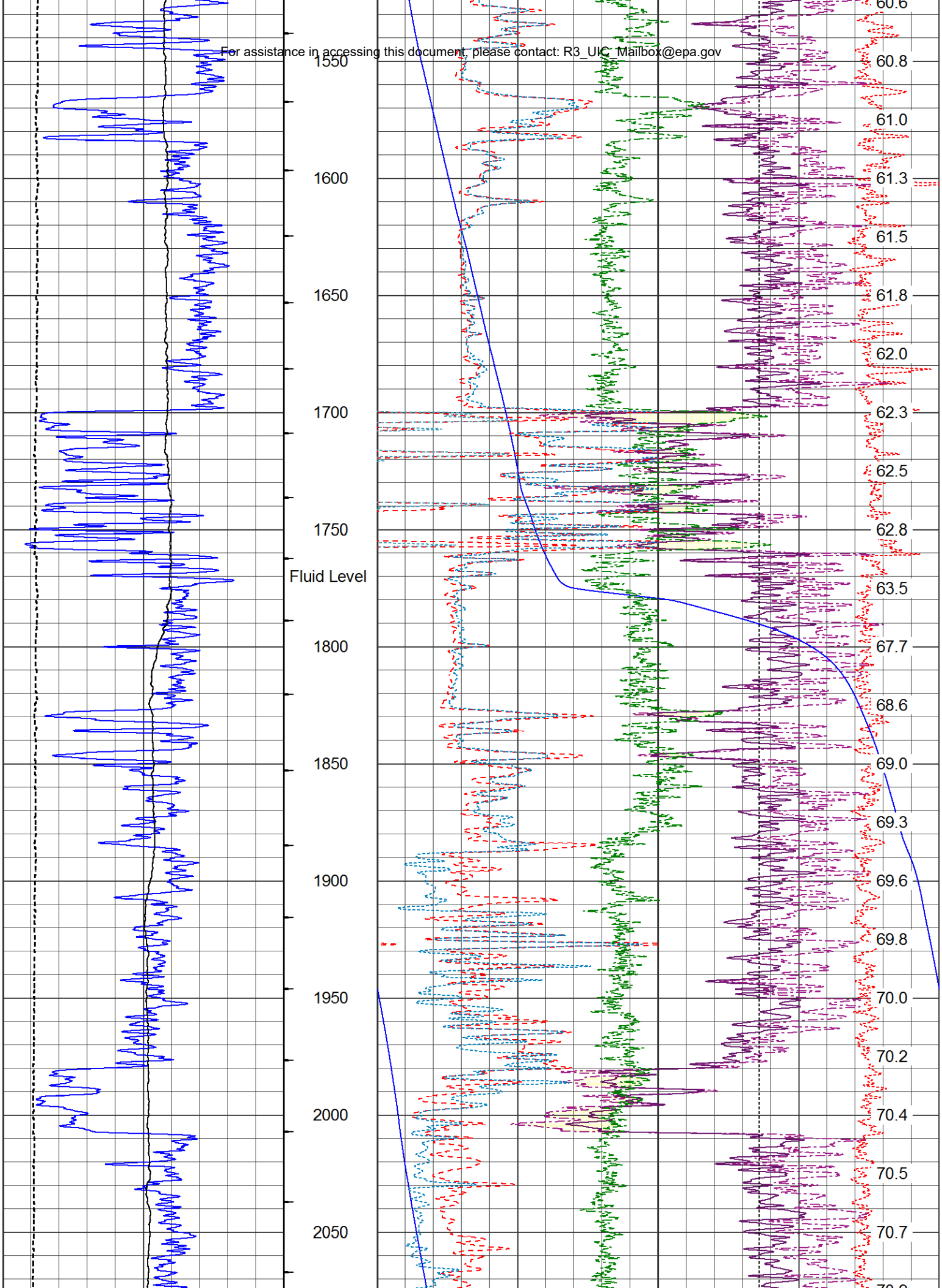
0	Gamma Ray (GAPI)	200	<MINMK	30	Density Porosity (pu)	-10	
	Bore Hole Vol.			2	Bulk Density (g/cc)	3	
0	Tension (lb)	1500		60	Temperature (degF)	70	
5	DCAL (in)	15		0	Deep Res. (Ohm-m)	100	50 Cement Locator (cps) 350
				100	Deep Res. (Ohm-m)	200	Correction
				0	Medium Res. (Ohm-m)	100	-0.25 (g/cc) 0.25
				100	Medium Res. (Ohm-m)	200	TEMP (degF)
				2	Matrix Density (g/cc)	3	
				30	NEU (pu)	-10	

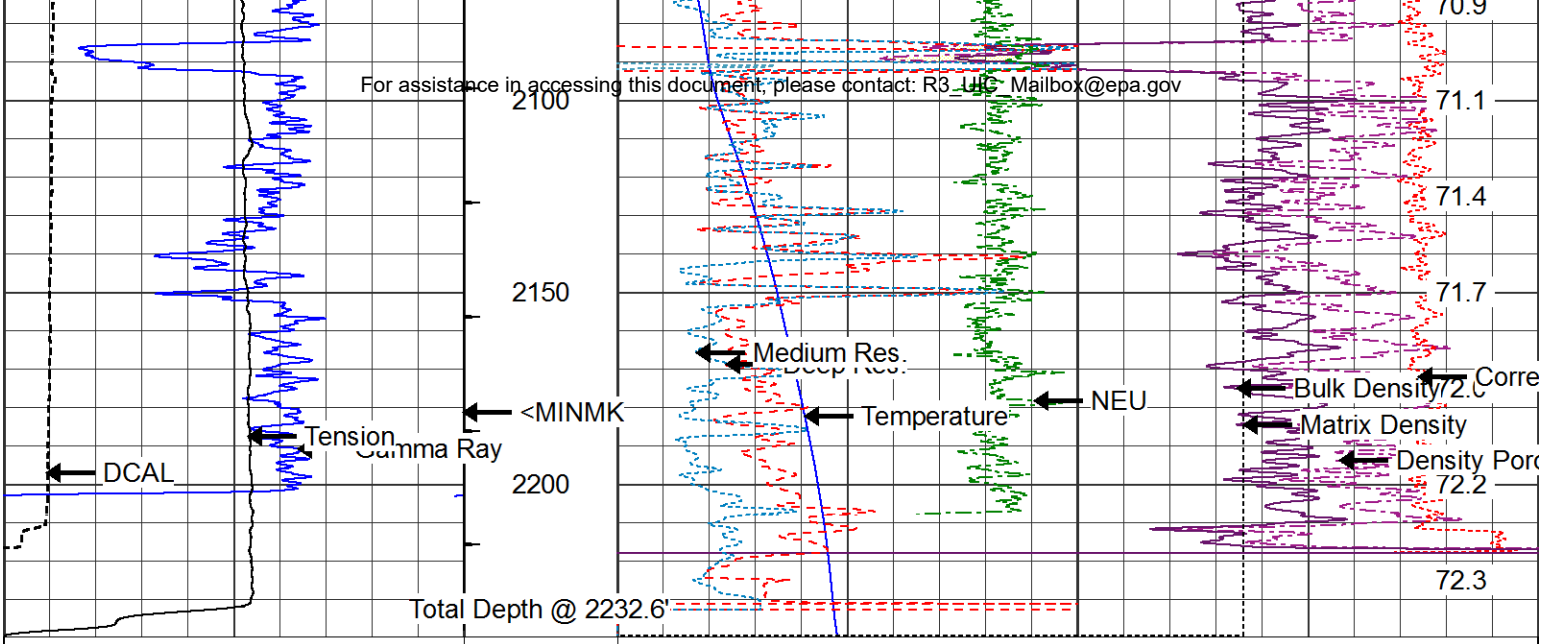
Well #12











0	Gamma Ray (GAPI)	200	<MINMK	30	Density Porosity (pu)		-10
	Bore Hole Vol.			2	Bulk Density (g/cc)		3
0	Tension (lb)	1500		60	Temperature (degF)		70
5	DCAL (in)	15		0	Deep Res. (Ohm-m)	100	50 Cement Locator (cps) 350
				100	Deep Res. (Ohm-m)	200	Correction
				0	Medium Res. (Ohm-m)	100	-0.25 (g/cc) 0.25
				100	Medium Res. (Ohm-m)	200	TEMP (degF)
				2	Matrix Density (g/cc)		3
				30	NEU (pu)		-10

Calibration Report

Database File	cat-curtislot2-l212-hri.db
Dataset Pathname	curtislot/l2-12/run1/merge1
Dataset Creation	Fri Jan 24 17:16:04 2014

Dual Induction Calibration Report

Serial-Model:	DIL4-GEAR
Surface Cal Performed:	

	Readings			References			Results	
Loop:	Air	Loop		Air	Loop		m	b
Deep	0.015	0.655	V	2.000	315.000	mmho/m	489.196	-5.327
Medium	0.017	0.736	V	6.000	295.000	mmho/m	401.814	-0.852

Compensated Density Calibration Report

Serial-Model:	GD-7-GD7
Source / Verifier:	/
Master Calibration Performed:	Tue Aug 20 11:37:53 2013
Before Survey Verification Performed:	
After Survey Verification Performed:	

Master Calibration

	Density	Far Detector	Near Detector

CURTIS WELL SERVICE
PO BOX 367
SUGAR GROVE, PA 16350

DATE 2-22-11
COMPANY CATALYST
WELL NO #13
FARM Curtis Lot 2

ORDER NO. 03-1609
CUST. REP. Randy Curtis
TYPE OF SERVICE Cmt Surf

CASING LENGTH 450 BBLS/FT .0415 = 18.67
BIG HOLE 450 BBLS/FT .0268 = 12.0
(.0195-8 INCH, .0247 - 8 5/8, .0268 8 3/4)
20% OVER 16.88 BBLS
NO. OF SACKS 81 MIX WATER 10.0 SLURRY 17.0 SLURRY WT. 15.6
MIX WATER 5.2 X 81 SACKS ÷ 42 = WATER
SLURRY 81 SACKS X 1.18 ÷ 5.61 = SLURRY
CAL. 94 X 81 SACKS X % OF CAL = LBS (25%)
0.025

REMARKS Cmt to Return!

BARRELS PER FT.	WEIGHT PER FT.	SIZE O.D. IN.
0.0381	13	6 5/8
0.0366	17	*6 5/8
0.0355	20	6 5/8
0.0348	22	*6 5/8
0.0341	24	6 5/8
0.0333	26	*6 5/8
0.0326	28	6 5/8
0.0322	29	*6 5/8
0.0313	32	6 5/8
0.0415	17	7
0.0405	20	7
0.0398	22	7
0.0394	23	7
0.039	24	7
0.0383	26	7
0.0375	28	7
0.0371	29	7
0.0368	30	7
0.0361	32	7

SACKS	MIX	SLURRY 15.6	CALCIUM 2%	3%
30	3.7	6.3	56	85
35	4.3	7.3	65	99
40	4.9	8.4	75	113
45	5.6	9.5	85	127
50	6.2	10.5	94	141
55	6.8	11.6	103	155
60	7.4	12.6	113	169
65	8	13.7	122	183
70	8.7	14.7	132	197
75	9.3	15.8	141	212
80	9.9	16.8	150	226
85	10.5	17.9	160	240
90	11.1	18.9	169	254
95	11.8	20	179	268
100	12.4	21	188	282
105	13	22	206	296
110	13.6	23.1	207	310
115	14.2	24.2	216	324
120	14.9	25.2	226	338

TIME	INJECTION RATE	INJECTION BBLS IN	PRESSURE CSG.	PRESSURE TBG	REMARKS
	4	30.0	50		Pumped water
	4	50	56		Pumped gel & flake
					mixed Cement
	4	17.0	50		Pumped Cement
	3	18.67	250		Displaced Cement
			350		Plug Down

AVER. RATE 3.0
MAX. PRESSURE 356
AVER. PRESSURE 75
ENGINEER Isaac

PRODUCTS USED			
CEMENT	81 SK	MULTI-SEAL	40
CALCIUM	150#	7" PLUG	
GEL (BET)	100	6 5/8" PLUG	

5500-FM-OG0004b 3/2011

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

Completion Report

DEP USE ONLY	
Site ID	Primary Fac ID
Client	Subfacility Id

Well Information

If you are submitting this Completion Report attached to the Well Record, you only need to enter the well API # in this section.

Well Operator Catalyst Energy, Inc.	DEP ID# 76535	Well API # (Permit / Reg) 37 - 083-55310- -	Project Number CEI C 10	Acres
Address 424 South 27th St Suite 304		Well Farm Name Curtis Lot 2	Well # L2-13	Serial # Municipality Lafayette
City Pittsburgh,	State PA	Zip Code 15203	County McKean	USGS 7.5 min. quadrangle map Lewis Run
Phone 412-325-4350	Fax 412-325-4356		Email dj@catalystenergyinc.com	

Check the appropriate submission: ☒ Original Completion Report ☐ Amended Completion Report

STIMULATION BASE FLUID

List Water Management Plan Approved Water Source(s) that were used	Water Management Plan ID No.	Volume (Gallons)
1. n/a		
2.		
3.		
4.		
5.		
6.		
	Recycled Water Used	
Other Base Fluid(s)Components Used		
1.		
2.		
	Total Base Fluid(s)/Components Used	

PERFORATION RECORD

Stage No.	Perforation Date	Stage Perforated From	Stage Perforated To	Perf. Orientation (Vertical, Horizontal, Radial)	Formation
1	5/25/11		1432.9	n/a	Bradford 1st (Note well notched)
2	5/25/11		1453.7		
3	5/25/11		1620.0		Tiona
4	5/25/11		1732.0		Bradford 2nd
5	5/25/11		1735.3		
6	5/25/11		1742.2		
7	5/25/11		1747.7		
8	5/25/11		1750.7		
9	5/25/11		1763.7		
10	5/25/11		1766.7		
11	5/25/11		1769.8		
12	5/25/11 5/25/11		1772.8 2116.1		Lewis Run

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JAN 30 2012
ENVIRONMENTAL PROTECTION
NORTHWEST REGIONAL OFFICE

Well API# 37-083-55310-__-__

STIMULATION FLUID ADDITIVES

Note: Trade secret or confidential proprietary information should be clearly identified as such and should be submitted on a separate sheet attached to this report.

Descriptive Additive Type	Chemical Component(s) listed on Material Safety Data Sheet of the Additive	CAS No. of Chemical Component	Chemical Component % By Volume in Additive	Chemical Component % By Volume used in Each Stage					
				Stage No.	Stage No.	Stage No.	Stage No.	Stage No.	Stage No.
None									

Please insert additional copies of this page if additional rows/stages are needed.

Well API# 37 -083-55310-__-__

STIMULATION INFORMATION (WELL)

Open Flow Production:	24 Hr. Open Flow Production:	24 Hr. Shut-in Pressure:	Flow Back Date:
n/a	n/a	n/a	n/a

STIMULATION INFORMATION (STAGE)

Complete a separate record for each stimulation stage. (Please insert additional copies of this page for additional stages).

Stage No.: 13	Stimulation Date: 6/11/11	Pump Rate: 18.0
Pressure (psi): 2700	Shut-in Surface Pressure: n/a	5 Minute Shut-in Surface Pressure: n/a
Propping Agent Type: 20/40 Ottawa Sand	Propping Agent Amount: 80sx	Propping Agent Size: 20/40
Stage No.: 8	Stimulation Date:	Pump Rate:
Pressure (psi):	Shut-in Surface Pressure:	5 Minute Shut-in Surface Pressure:
Propping Agent Type:	Propping Agent Amount:	Propping Agent Size:
Stage No.:	Stimulation Date:	Pump Rate:
Pressure (psi):	Shut-in Surface Pressure:	5 Minute Shut-in Surface Pressure:
Propping Agent Type:	Propping Agent Amount:	Propping Agent Size:
Stage No.:	Stimulation Date:	Pump Rate:
Pressure (psi):	Shut-in Surface Pressure:	5 Minute Shut-in Surface Pressure:
Propping Agent Type:	Propping Agent Amount:	Propping Agent Size:
Stage No.:	Stimulation Date:	Pump Rate:
Pressure (psi):	Shut-in Surface Pressure:	5 Minute Shut-in Surface Pressure:
Propping Agent Type:	Propping Agent Amount:	Propping Agent Size:
Stage No.:	Stimulation Date:	Pump Rate:
Pressure (psi):	Shut-in Surface Pressure:	5 Minute Shut-in Surface Pressure:
Propping Agent Type:	Propping Agent Amount:	Propping Agent Size:

WELL SERVICE COMPANIES (Provide the name, address, and telephone number of all well service companies involved.)

Name: **Iron Carey**	Name: Iron Carey (Farc work)	Name: Penn Gold Welll Services (Logging)
Address: 424 South 27th St Site 304	Address: 424 South 27th St Site 304	Address: 7 Main St
City – State- Zip: Pittsburgh, PA 15203	City – State – Zip: Pittsburgh, PA 15203	City – State – Zip: Bradford, PA 16701
Phone: 412-325-4350	Phone: 412-325-4350	Phone: 814-368-7119

I do hereby certify to the best of my knowledge, information and belief that the information contained on this Completion Report is true and correct. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment..

Well Operator's Signature	DEP USE ONLY
	Reviewed by: Date:
Title: Vice President/ General Manager Date:	Comments:

5500-FM-OG0004b 3/2011

Well API# 37 -083-55310-__-__

STIMULATION INFORMATION (WELL)

Open Flow Production:	24 Hr. Open Flow Production:	24 Hr. Shut-in Pressure:	Flow Back Date:
n/a	n/a	n/a	n/a

STIMULATION INFORMATION (STAGE)

Complete a separate record for each stimulation stage. (Please insert additional copies of this page for additional stages).

Stage No.: 1	Stimulation Date: 5/25/11	Pump Rate: 17.0
Pressure (psi): 1800	Shut-in Surface Pressure: n/a	5 Minute Shut-in Surface Pressure: n/a
Propping Agent Type: 20/40 Ottawa Sand	Propping Agent Amount: 60sx	Propping Agent Size: 20/40
Stage No.: 2	Stimulation Date: 5/25/11	Pump Rate: 17.8
Pressure (psi): 1800	Shut-in Surface Pressure: n/a	5 Minute Shut-in Surface Pressure: n/a
Propping Agent Type: 20/40 Ottawa Sand	Propping Agent Amount: 70sx	Propping Agent Size: 20/40
Stage No.: 3	Stimulation Date: 5/25/11	Pump Rate: 17.2
Pressure (psi): 2500	Shut-in Surface Pressure: n/a	5 Minute Shut-in Surface Pressure: n/a
Propping Agent Type: 20/40 Ottawa Sand	Propping Agent Amount: 70sx	Propping Agent Size: 20/40
Stage No.: 4	Stimulation Date: 5/25/11	Pump Rate: 17.7
Pressure (psi): 2300	Shut-in Surface Pressure: n/a	5 Minute Shut-in Surface Pressure: n/a
Propping Agent Type: 20/40 Ottawa Sand	Propping Agent Amount: 70sx	Propping Agent Size: 20/40
Stage No.: 5	Stimulation Date: 5/25/11	Pump Rate: 17.7
Pressure (psi): 2500	Shut-in Surface Pressure: n/a	5 Minute Shut-in Surface Pressure: n/a
Propping Agent Type: 20/40 Ottawa Sand	Propping Agent Amount: 60sx	Propping Agent Size: 20/40
Stage No.: 6	Stimulation Date: 5/25/11	Pump Rate: 17.7
Pressure (psi): 2750	Shut-in Surface Pressure: n/a	5 Minute Shut-in Surface Pressure: n/a
Propping Agent Type: 20/40 Ottawa Sand	Propping Agent Amount: 60sx	Propping Agent Size: 20/40

WELL SERVICE COMPANIES (Provide the name, address, and telephone number of all well service companies involved.)

Name: Iron Carey	Name: Iron Carey (Farc work)	Name: Penn Gold Welll Services (Logging)
Address: 424 South 27th St Suite 304	Address: 424 South 27th St Suite 304	Address: 7 Main St
City – State- Zip: Pittsburgh, PA 15203	City – State – Zip: Pitttsburgh, PA 15203	City – State – Zip: Bradford, PA 16701
Phone: 412-325-4350	Phone: 412-325-4350	Phone: 814-368-7119

I do hereby certify to the best of my knowledge, information and belief that the information contained on this Completion Report is true and correct. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment..

Well Operator's Signature	DEP USE ONLY
	Reviewed by: Date:
Title: Vice President/ General Manager Date:	Comments:

5500-FM-OG0004b 3/2011

Well API# 37 -083-55310-__-__

STIMULATION INFORMATION (WELL)

Open Flow Production:	24 Hr. Open Flow Production:	24 Hr. Shut-in Pressure:	Flow Back Date:
n/a	n/a	n/a	n/a

STIMULATION INFORMATION (STAGE)

Complete a separate record for each stimulation stage. (Please insert additional copies of this page for additional stages).

Stage No.: 7	Stimulation Date: 5/25/11	Pump Rate: 187.6
Pressure (psi): 3150	Shut-in Surface Pressure: n/a	5 Minute Shut-in Surface Pressure: n/a
Propping Agent Type: 20/40 Ottawa Sand	Propping Agent Amount: 80sx	Propping Agent Size: 20/40
Stage No.: 8 Skipped	Stimulation Date: 5/25/11	Pump Rate: 17.6
Pressure (psi): 2750	Shut-in Surface Pressure: n/a	5 Minute Shut-in Surface Pressure: n/a
Propping Agent Type: 20/40 Ottawa Sand	Propping Agent Amount: 60sx	Propping Agent Size: 20/40
Stage No.: 9	Stimulation Date: 5/25/11	Pump Rate: 17.6
Pressure (psi): 2900	Shut-in Surface Pressure: n/a	5 Minute Shut-in Surface Pressure: n/a
Propping Agent Type: 20/40 Ottawa Sand	Propping Agent Amount: 60sx	Propping Agent Size: 20/40
Stage No.: 10 Skipped	Stimulation Date: 5/25/11	Pump Rate:
Pressure (psi):	Shut-in Surface Pressure:	5 Minute Shut-in Surface Pressure:
Propping Agent Type:	Propping Agent Amount:	Propping Agent Size:
Stage No.: 11	Stimulation Date: 5/25/11	Pump Rate: 17.8
Pressure (psi): 2900	Shut-in Surface Pressure: n/a	5 Minute Shut-in Surface Pressure: n/a
Propping Agent Type: 20/40 Ottawa Sand	Propping Agent Amount: 114sx	Propping Agent Size: 20/40
Stage No.: 12	Stimulation Date: 5/25/11	Pump Rate: 17.9
Pressure (psi): 3000	Shut-in Surface Pressure: n/a	5 Minute Shut-in Surface Pressure: n/a
Propping Agent Type: 20/40 Ottawa Sand	Propping Agent Amount: 70sx	Propping Agent Size: 20/40

WELL SERVICE COMPANIES (Provide the name, address, and telephone number of all well service companies involved.)

Name: **Iron Carey**	Name: Iron Carey (Farc work)	Name: Penn Gold Welll Services (Logging)
Address: 424 South 27th St Site 304	Address: 424 South 27th St Site 304	Address: 7 Main St
City – State- Zip: Pittsburgh, PA 15203	City – State – Zip: Pittsburgh, PA 15203	City – State – Zip: Bradford, PA 16701
Phone: 412-325-4350	Phone: 412-325-4350	Phone: 814-368-7119

I do hereby certify to the best of my knowledge, information and belief that the information contained on this Completion Report is true and correct. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment..

Well Operator's Signature	DEP USE ONLY
Douglas E Jones Date: 1/27/12	Reviewed by: Date:
Title: Vice President/ General Manager	Comments:

5500-FM-OG0004a 2/2011

LOG OF FORMATIONS

Well API#: 37-083-55310-__-__

(If you will need more space than this page, please photocopy the blank form before filling it in.)

Formation Name or Type	Top (feet)	Bottom (feet)	Gas at (feet)	Oil at (feet)	Water at (fresh / brine; ft.)	Source of Data
Shalee	0'	39'				
Red Rock	39'	464'				Driller
Shale	464'	640'				
Venango 3rd	640'	664'			Fresh Water @ 264'	Driller
Shale	664'	741'				
Magee Hollow	741'	756'			Rate not noted	Driller
Shale	756'	1417'				
Base of C Shale	1167'					Electric Log
Bradford 1st	1417'	1462'				
Shale	1462'	1484'				Electric Log
Clarendon	1484'	1574'				
Shale	1574'	1594'				Electric Log
Tiona	1594'	1633'				
Shale	1633'	1731'				Electric Log
Bradfford 2nd	1731'	1807'				
Shale	1807'	1867'				Electric Log
Harrisburg Run	1867'	1878'				
Shale	1878'	2007'				Electric Log
Bradford 3rd	2007'	2058'				
Shale	2058'	2113'	Show @ 1694'	No Show		Electric Log
Lewis Run	2113'	2120'				
Shale	2120'	2223'				Electric Log

I do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record has been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditions contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow-out preventer with a pressure rating greater than 3,000 psi has passed a pressure test in accordance with 25 Pa. Code §78.84(f). I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator's Signature

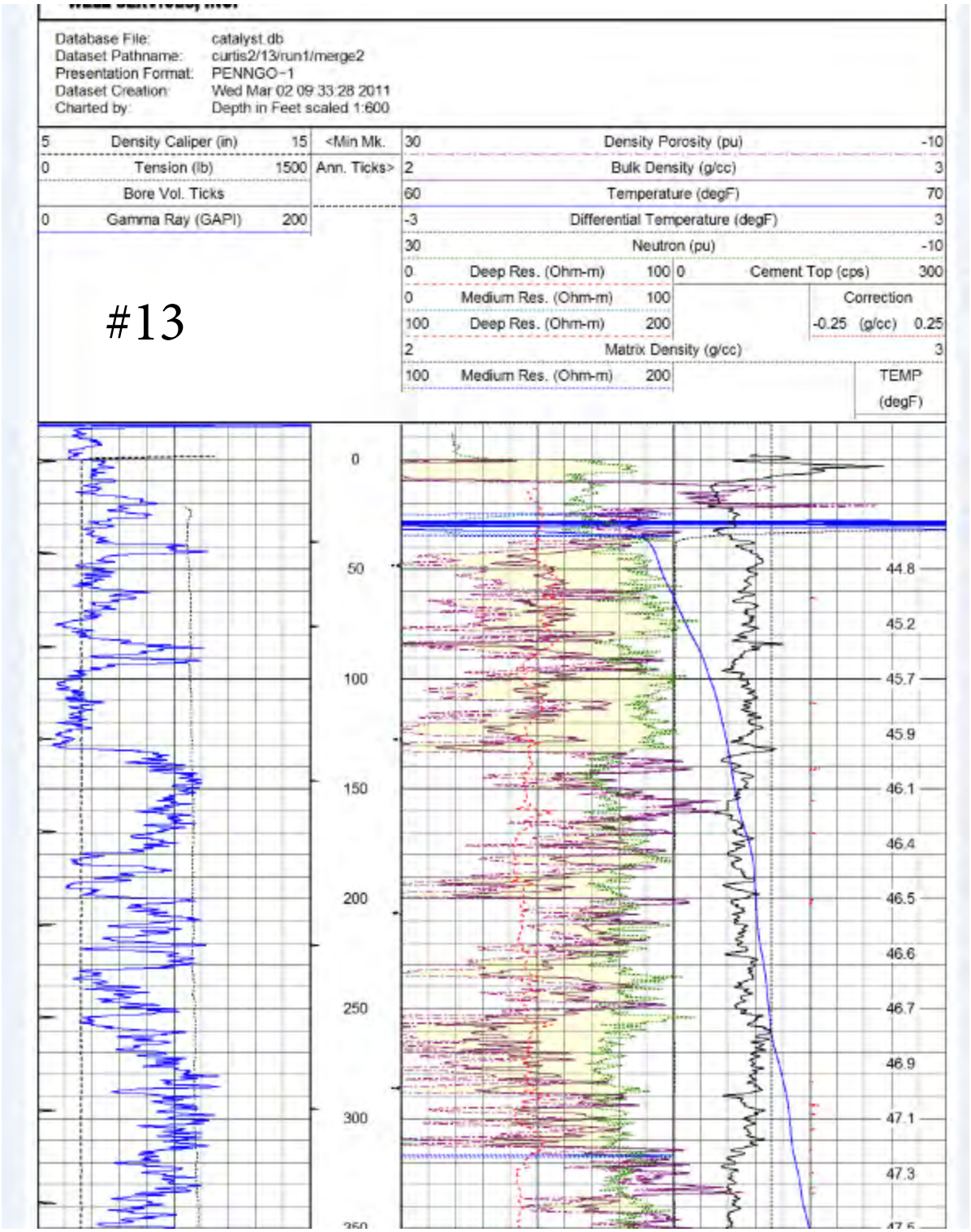
Douglas E. Jones Date: 1/27/12

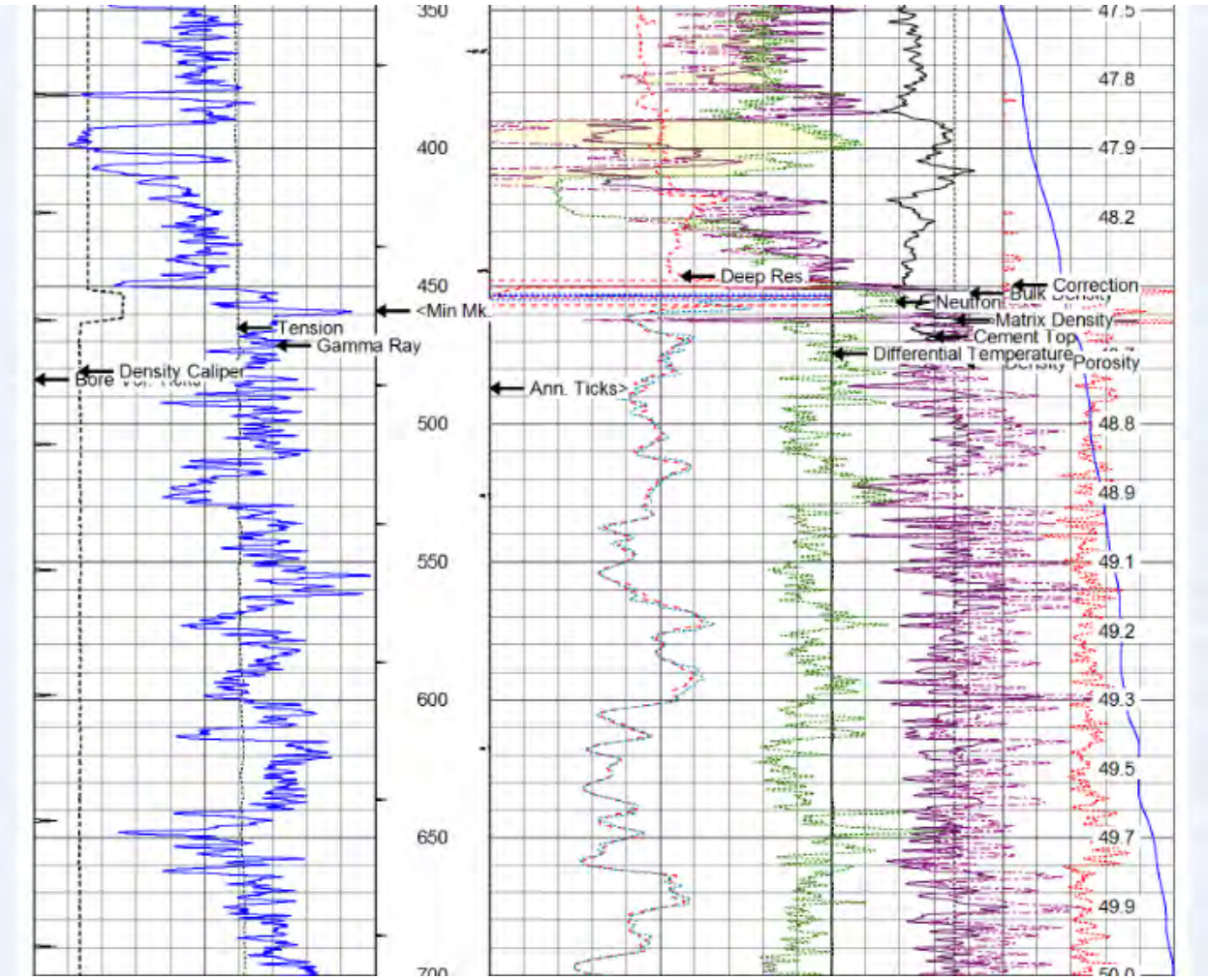
Title: Vice President/ General Manager

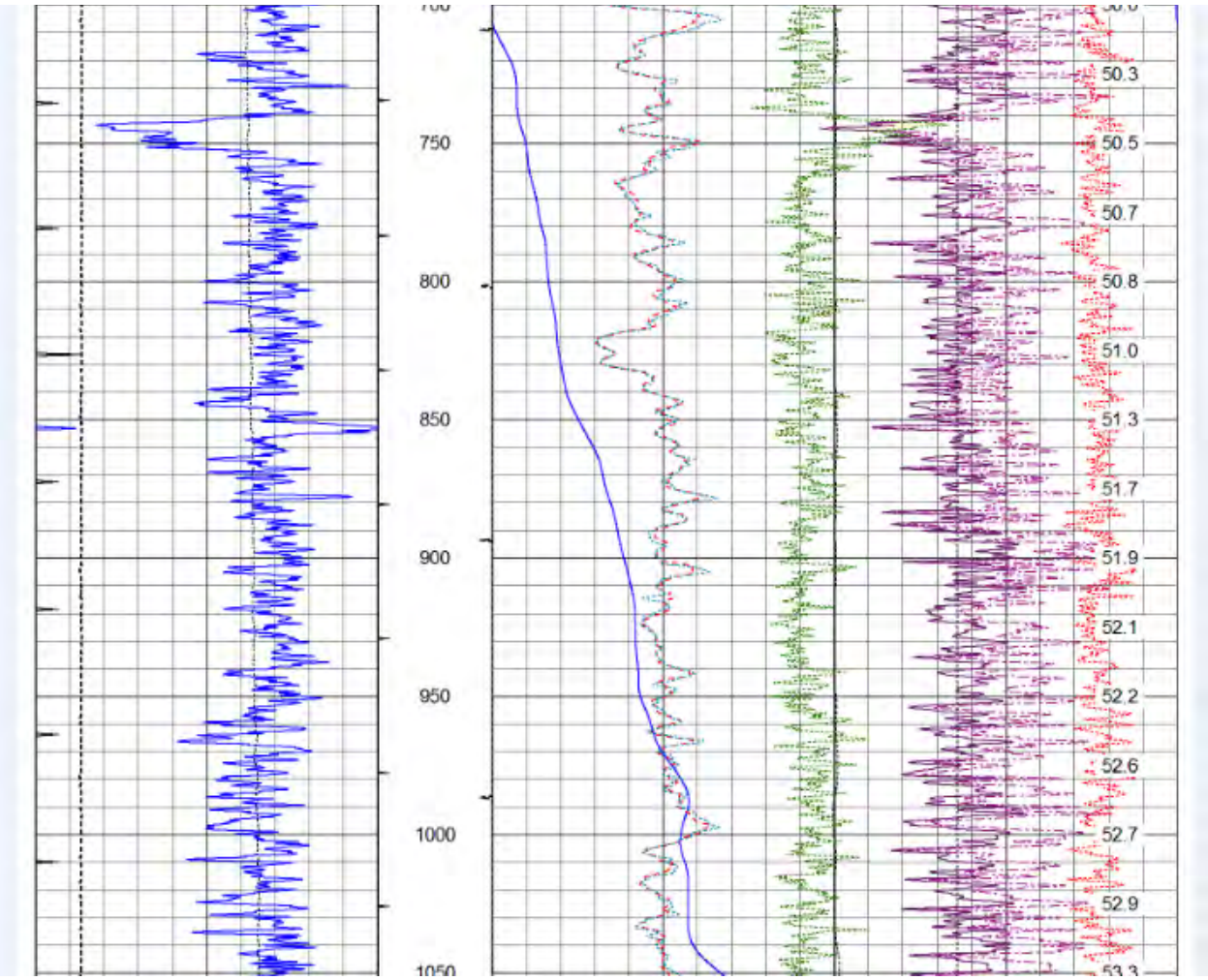
DEP USE ONLY

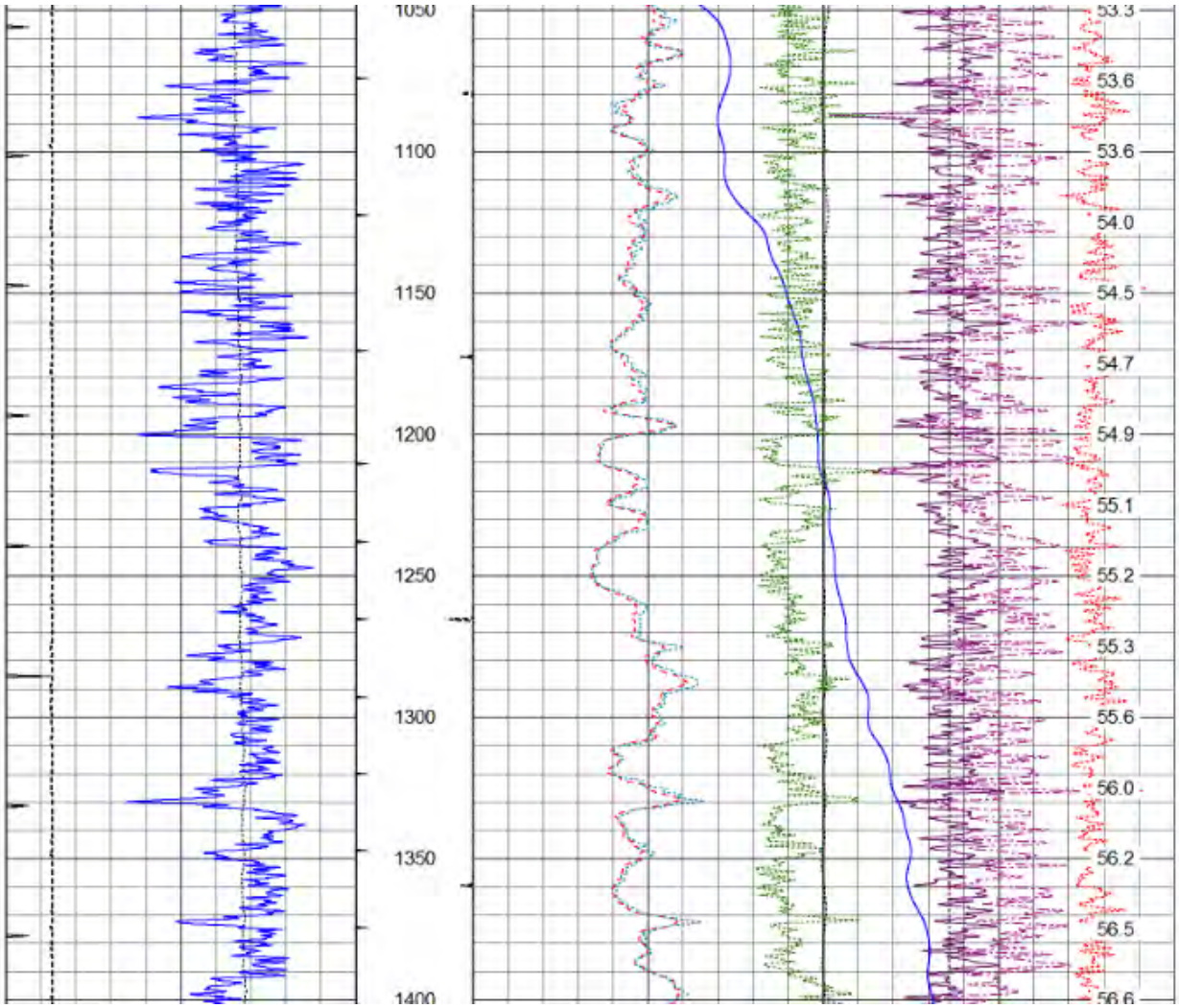
Reviewed by: T Date: 2-21-12

Comments:









2001

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

Well Record and Completion Report

DEP USE ONLY	
Site ID	Primary Fac ID 713332
Client Id 76535	Subfacility Id

Operator	DEP ID#	Well API # (Permit / Reg)	Project Number	Acres
CATALYST ENERGY, INC.	76535	37-083-54007-00	CEI-C-10	

Address	Well Farm Name & Well #	Serial #
800 CRANBERRY WOODS DR STE 290,	CURTIS LOT 2 L2 16	

City	State	Zip Code	County	Municipality
CRANBERRY TOWNSHIP	PA	16066	McKean	Lafayette

Phone	Fax	USGS 7.5 min. quadrangle map
(724) 779-9040		Lewis Run

Check all that apply: ☐ Original Well Record ☐ Original Completion Report ☒ Amended Well Record ☐ Amended Completion Report

WELL RECORD Also complete the Log of Formations on back (page 2)

Well Type: ☐ Gas ☒ Oil ☐ Combination Oil & Gas ☐ Injection ☐ Storage ☐ Disposal

Drilling Method: ☒ Rotary – Air ☐ Rotary – Mud ☐ Cable Tool

Date Drilling Started	Date Drilling Completed	Surface Elevation	Total Depth – Driller	Total Depth - Logger
5/10/11	5/16/11	2130 ft.	2176 ft.	2171 ft.

Cement returned on surface casing? ☐ Yes ☐ No
Cement returned on coal protective casing? ☐ Yes ☐ No ☒ N/A

Casing and Tubing

Hole Size	Pipe Size	Wt.	Thread / Weld	Amount in Well (ft)	Material Behind Pipe Type and Amount	Packer / Hardware / Centralizers Type	Size	Depth	Date Run
11"	9 5/8"	32	T	?	Sanded in				?
8 3/4"	7"	20	T	452'	Type II Cement	Cent.	NA	100/250 400	?

COMPLETION REPORT

Perforation Record

Date	Interval Perforated From	To
6/23/11	1348	NA
	1695	
	1699	
	1708	
	1712	
	1840	
	2078	
	2081	

Stimulation Record

Date	Interval Treated	Fluid Type	Fluid Amount	Propping Agent Type	Propping Agent Amount	Average Injection
		H_2O	6000		60	17.4
			6000		60	
			7000		70	
			7000		70	
			7000		70	
			8000		60	
			8000		80	
			8000		80	

		Hours	Days
Natural Open Flow	none		
After Treatment Open Flow	ukwn		
Natural Rock Pressure	ukwn	Hours	Days
After Treatment Rock Pressure	ukwn	Hours	Days

Well Service Companies -- Provide the name, address, and phone number of all well service companies involved.

Name: Keene Drilling	Name: Superior Well Services	Name:
Address: Keene Drive	Address: Holley Ave	Address:
City - State – Zip: Brafford PA	City - State – Zip: Brafford, PA	City - State – Zip:
Phone: 814-362-6579	Phone: 814-368-6228	Phone:

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

Well Record

DEP USE ONLY	
Site ID	Primary Fac ID
Client Id	Subfacility Id

WELL INFORMATION

Well Operator: Catalyst Energy Inc	DEP ID#: 76535	Well API # (Permit / Reg): 37-083-55311- -	Project Number: CEIC 10	Acres:
Address: 424 South 27th St Suite 304		Well Farm Name: Curtis Lot 2	Well #: L2-18	Serial #:
City: Pittsburgh	State: PA / Zip Code: 15203	County: McKean	Municipality: Lafayette	
Phone: 412-325-4350	Fax: 412-425-4356	Email: dj@catalystenergyinc.com	USGS 7.5 min. quadrangle map: Lewis Run	

Check the appropriate Submission: ☒ Original Well Record ☐ Amended Well Record

Well Type	☐ Gas	☒ Oil	☐ Combination Oil & Gas	☐ Injection	☐ Storage	☐ Disposal
Well Orientation	☒ Vertical	☐ Deviated from Vertical (Side view and Deviated Survey must be attached)				
Drilling Method	☒ Rotary – Air	☐ Rotary – Mud	☐ Cable Tool			
Date Drilling Started: 2/11/11	Date Drilling Completed: 2/15/11	Surface Elevation: 2140 ft.	Total Depth – Driller: 2183 ft.	Total Depth – Logger: 2183 ft.	Depth of Deepest Fresh Groundwater: 0 ft.	

CEMENT

Cement returned on surface casing? ☒ Yes ☐ No — If No, provide top of cement and method used to determine:

Cement returned on coal protective casing? ☐ Yes ☐ No — If No, provide top of cement and method used to determine: ☐ N/A

Cement returned on intermediate casing? ☐ Yes ☐ No — If No, provide top of cement and method used to determine: ☐ N/A

Casing String	Type of Cement	Amount of Cement	Gas Block (or equivalent) Used
Conductor	n/a		☐ Yes ☒ No ☐ N/A
Surface	Class A	80sx	☐ Yes ☐ No ☒ N/A
Coal Protective	n/a		☐ Yes ☐ No ☒ N/A
Intermediate	n/a		☐ Yes ☐ No ☒ N/A
Production	n/a		☐ Yes ☐ No ☐ N/A
			☐ Yes ☐ No ☐ N/A
			☐ Yes ☐ No ☐ N/A
			☐ Yes ☐ No ☐ N/A

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CASING AND TUBING

Hole Size	Pipe Size	Wt.	Thread / Weld	Casing / Tubing Type	Amount in Well (ft.)	Packer / Hardware / Centralizers Type	Size	Depth	Date Run
11"	9 5/8"	32lb.	Thread	10 RND	53.8				
8 3/4"	7"	20lb.	Thread		455'	422' / 323'	224' / 125'	26'	2/11/11
6 1/4'	1 1/2"	1.9 lb	thread		2122	573'	Hookwall		6/21/11
6'1/4'	3 1/2"	9.2lb	" "		200.5'	1975'	Swelling		6/21/11
						2019'	Swelling		

If any casing is welded, provide the name of the welder: n/a

Also complete the Log of Formations on back (page 2)

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LOG OF FORMATIONS

Well API#: 37-083-55311-__-__

(If you will need more space than this page, please photocopy the blank form before filling it in.)

Formation Name or Type	Top (feet)	Bottom (feet)	Gas at (feet)	Oil at (feet)	Water at (fresh / brine; ft.)	Source of Data
Sandstone	0'	114'				Driller
Shale	114'	464'				
Red Rock	464'	520'			Not noted	Driller
Shale	520'	606'				
Venango 3rd	606'	639'				Driller
Shale	639'	688'				
Magee Hollow	688'	728'				Electric Log
Shale	728'	1395'				
Base of C Shale	1150'					Electric Log
Bradford 1st	1395'	1439'				
Shale	1439'	1461'				Electric Log
Clarendon	1461'	1553'				
Shale	1553'	1574'				Electric Log
Tiona	1574'	1594'				
Shale	1604'	1609'				Electric Log
Bradfford 2nd	1709'	1776'				
Shale	1776'	1834'				Electric Log
Harrisburg Run	1834'	1851'				
Shale	1851'	1982'				Electric Log
Bradford 3rd	1982'	2021'				
Shale	2021'	2079'	No Show	No Show		Electric Log
Lewis Run	2079'	2085'				
Shale	2092'	2183				

I do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record has been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditions contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow-out preventer with a pressure rating greater than 3,000 psi has passed a pressure test in accordance with 25 Pa. Code §78.84(f). I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator's Signature

Douglas E Jones 12-14-11

Title: Vice President/ General Manager Date:

DEP USE ONLY

Reviewed by: Date:

Comments:

Rec MAY 7 '02

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

DEP USE ONLY
Site Id | Primary Facility Id
Client Id | Sub-facility Id

WELL RECORD AND COMPLETION REPORT

Operator: CURTIS OIL INC. | DEP ID#: 39784
Address: BOX 287
City: DUKE CENTER | State: PA | Zip Code: 16729
Phone: 814-966 3452 | Fax:
Well API # (Permit / Reg): 37-083-14477-R | Project Number | Acres
Well Farm Name: LOT II | Well #: 26 | Serial #
County: MCKEAN | Municipality: LAFAYETTE
USGS 7.5 min. quadrangle map: LEWIS RUN PA.

Check all that apply: [X] Original Well Record [X] Original Completion Report [ ] Amended Well Record [ ] Amended Completion Report

WELL RECORD
Also complete Log of Formations on back (page 2)

Well Type: [ ] Gas [X] Oil [ ] Combination Oil & Gas [ ] Injection [ ] Storage [ ] Disposal
Drilling Method: [ ] Rotary – Air [ ] Rotary – Mud [X] Cable Tool

Date Drilling Started	Date Drilling Completed	Surface Elevation	Total Depth – Driller	Total Depth – Logger
8/5/41	9/17/41	2181 ft	1828 ft	1828 ft

Casing and Tubing

Cement returned on surface casing? [ ] Yes [X] No
Cement returned on coal protective casing? [ ] Yes [ ] No [ ] N/A

Hole Size	Pipe Size	Wt	Thread / Weld	Amount in Well (ft)	Material Behind Pipe Type and Amount	Packer / Hardware / Centralizers Type	Size	Depth	Date Run
8"	7 OD	17	THREAD	485	40 SACK CEMENT				3/27/41
&	2"		THREAD	1800					7/25/41

COMPLETION REPORT

Perforation Record			Stimulation Record					
Date	Interval Perforated From	To	Date	Interval Treated	Fluid Type	Fluid Amount	Propping Agent Type	Propping Agent Amount	Average Injection

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ATTACHED

NOV 19 [illegible]

Natural Open Flow	NA	Natural Rock Pressure	NA	Hours	Days
After Treatment Open Flow	NA	After Treatment Rock Pressure	NA	Hours	Days

Well Service Companies — Provide the name, address, and phone number of all well service companies involved

Name: CURTIS WELL SERVICE	Name:	Name:
Address: BOX 367	Address:	Address:
City - State - Zip: SCGGS GROVE PA 16350	City - State - Zip:	City - State - Zip:
Phone:	Phone:	Phone:

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

DEP USE ONLY	
Site Id	Primary Facility Id
Client Id	Sub-facility Id

WELL RECORD AND COMPLETION REPORT

Well Operator: CURTIS OIL INC. DEP ID# 39784
Address: BOX 287
City: DUKE CENTER State: PA. Zip Code: 16729
Phone: 814-966-3452 Fax:

Well API # (Permit / Reg): 37-083-14484-R Project Number: Acres:
Well Farm Name: LOT II Well #: 14 Serial #:
County: MCKEAN Municipality: LAYFAYETTE
USGS 7.5 min quadrangle map: LEWIS RUN PA.

Check all that apply. [X] Original Well Record [X] Original Completion Report [ ] Amended Well Record [ ] Amended Completion Report

WELL RECORD

Also complete Log of Formations on back (page 2)

Well Type: [ ] Gas [X] Oil [ ] Combination Oil & Gas [ ] Injection [ ] Storage [ ] Disposal
Drilling Method: [ ] Rotary – Air [ ] Rotary – Mud [ ] Cable Tool

Date Drilling Started	Date Drilling Completed	Surface Elevation	Total Depth – Driller	Total Depth - Logger
NA	NA	2169 ft	1872.9 ft	1872.9 ft

Casing and Tubing

Cement returned on surface casing? [ ] Yes [ ] No
Cement returned on coal protective casing? [ ] Yes [ ] No [ ] N/A

Hole Size	Pipe Size	Wt.	Thread / Weld	Amount in Well (ft)	Material Behind Pipe Type and Amount	Packer / Hardware / Centralizers Type	Size	Depth	Date Run
8¼	7OD	17	TH.	460	45 SACKS CEMENT				1/23/01
6¼	2"		TH.	1850					7/19/01

NOV 19 2001

COMPLETION REPORT

Perforation Record			Stimulation Record					
Date	Interval Perforated From	To	Date	Interval Treated	Fluid Type	Fluid Amount	Propping Agent Type	Propping Agent Amount	Average Injection
ATTACHED									

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Natural Open Flow: Natural Rock Pressure: Hours: Days:
After Treatment Open Flow: After Treatment Rock Pressure: Hours: Days:

Well Service Companies -- Provide the name, address, and phone number of all well service companies involved

Name	Address	City - State - Zip	Phone
CURTIS WELL SERVICE	BOX 367	SUGAR GROVE PA. 16350	

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

Well Record

DEP USE ONLY	
Site ID	Primary Fac ID
Client Id	Subfacility Id

WELL INFORMATION

Well Operator	DEP ID#	Well API # (Permit / Reg)	Project Number	Acres
Catalyst Energy Inc	76535	37-083-55312- -	CEIC10	

Address	Well Farm Name	Well #	Serial #
424 South 27th St Suite 304	Curtis Lot 2	L2-17	

City	State	Zip Code	County	Municipality
Pittsburgh	PA	15203	McKean	Lafayette

Phone	Fax	Email	USGS 7.5 min. quadrangle map
412-325-4350	412-425-4356	dj@catalystenergyinc.com	Lewis Run

Check the appropriate Submission: ☒ Original Well Record ☐ Amended Well Record

Well Type	☐ Gas	☒ Oil	☐ Combination Oil & Gas	☐ Injection	☐ Storage	☐ Disposal
Well Orientation	☒ Vertical	☐ Deviated from Vertical (Side view and Deviated Survey must be attached)				
Drilling Method	☒ Rotary – Air	☐ Rotary – Mud	☐ Cable Tool			

Date Drilling Started	Date Drilling Completed	Surface Elevation	Total Depth – Driller	Total Depth – Logger	Depth of Deepest Fresh Groundwater
5/31/11	6/4/11	2130 ft.	2128.3 ft.	2128.3 ft.	364 ft.

CEMENT

Cement returned on surface casing? ☒ Yes ☐ No — If No, provide top of cement and method used to determine:

Cement returned on coal protective casing? ☐ Yes ☐ No — If No, provide top of cement and method used to determine: ☐ N/A

Cement returned on intermediate casing? ☐ Yes ☐ No — If No, provide top of cement and method used to determine: ☐ N/A

Casing String	Type of Cement	Amount of Cement	Gas Block (or equivalent) Used
Conductor	n/a		
Surface	Class A	80 sx	☐ Yes ☒ No ☐ N/A
Coal Protective	n/a		☐ Yes ☐ No ☒ N/A
Intermediate	n/a		☐ Yes ☐ No ☒ N/A
Production	n/a		☐ Yes ☐ No ☒ N/A
			☐ Yes ☐ No ☐ N/A
			☐ Yes ☐ No ☐ N/A
			☐ Yes ☐ No ☐ N/A

CASING AND TUBING

Hole Size	Pipe Size	Wt.	Thread / Weld	Casing / Tubing Type	Amount in Well (ft.)	Packer / Hardware / Centralizers Type	Size	Depth	Date Run
11"	9 5/8"	32lb.	Thread	10 RND	60'				
8 3/4"	7"	20lb.	Thread		455'	422' 323'	224' 125'	26'	5/32/11
6 1/4'	1 1/2"	1/9 lb	thread		2114.3	Hook Wall		526'	6/27/11
									✓

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If any casing is welded, provide the name of the welder: n/a

Also complete the Log of Formations on back (page 2)

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LOG OF FORMATIONS

Well API#: 37-083-55312-__-__

(If you will need more space than this page, please photocopy the blank form before filling it in.)

Formation Name or Type	Top (feet)	Bottom (feet)	Gas at (feet)	Oil at (feet)	Water at (fresh / brine; ft.)	Source of Data
Sandstone	0'	64'				
Shale	64'	439'			Fresh Water @89'	Driller
Red Rock	439'	545'				
Shale	545'	607'			No rate noted	Driller
Venango 3rd	607'	630'				
Shale	630'	683'			@ 214'	Driller
Magee Hollow	683'	720'			No rate noted @ 264'	Electric Log
Shale	720'	1386'				
Base of C Shale	1135'					
Bradford 1st	1386'	1431'			No rate noted	Electric Log
Shale	1431'	1454'				
Clarendon	1454'	1543'				Electric Log
Shale	1543'	1564'				
Tiona	1564'	1594'				Electric Log
Shale	1594'	1698'				
Bradfford 2nd	1698'	1767'				Electric Log
Shale	1767'	1838'				
Harrisburg Run	1838'	1879'				Electric Log
Shale	1879'	1973'				
Bradford 3rd	1973'	2014'				Electric Log
Shale	2014'	2077'	No Show	No Show		
Lewis Run	2077'	2085'				Electric Log
Shale	2085'	2128.3'				

I do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record has been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditions contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow-out preventer with a pressure rating greater than 3,000 psi has passed a pressure test in accordance with 25 Pa. Code §78.84(f). I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator's Signature

Douglas E Jones 12-14-11

Title: Vice President/ General Manager

Date:

DEP USE ONLY

Reviewed by:

Date:

Comments:

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

DEP USE ONLY	
Site Id	Primary Facility Id
Client Id	Sub-facility Id

WELL RECORD AND COMPLETION REPORT

Well Operator: Catalyst Energy, Inc.	DEP ID#: 34294	Well API # (Permit / Reg): 37-083-51259	Project Number:	Acres:
Address: 800 Cranberry Wood Dr. Suite 290		Well Farm Name: Curtis Lot 2	Well #: L2-15	Serial #:
City: Cranberry Twp	State: PA / Zip Code: 16066	County: McKean	Municipality: Lafayette	
Phone: 724-779-9053	Fax: 724-779-9040	USGS 7.5 min. quadrangle map: Lewis Run		

Check all that apply: ☒ Original Well Record ☒ Original Completion Report ☐ Amended Well Record ☐ Amended Completion Report

WELL RECORD

Also complete Log of Formations on back (page 2)

Well Type: ☐ Gas ☒ Oil ☐ Combination Oil & Gas ☐ Injection ☐ Storage ☐ Disposal

Drilling Method: ☒ Rotary – Air ☐ Rotary – Mud ☐ Cable Tool

Date Drilling Started	Date Drilling Completed	Surface Elevation	Total Depth – Driller	Total Depth - Logger
12/11/06	12/13/06	2180 ft.	2240 ft.	2240 ft.

Casing and Tubing

Cement returned on surface casing? ☒ Yes ☐ No
Cement returned on coal protective casing? ☐ Yes ☐ No ☒ N/A

Hole Size	Pipe Size	Wt.	Thread / Weld	Amount in Well (ft)	Material Behind Pipe Type and Amount	Packer / Hardware / Centralizers Type	Size	Depth	Date Run
11"	9 5/8"	32 lb.	Thread	22.6					
8 3/4"	7"	20 lb.	Thread	583.0	125 sx Class A cement w 3% CaCl2				12/11/06
6 ¼"	2"		Thread	2109.0					3/1/07

COMPLETION REPORT

Perforation Record

Date	Interval Perforated From	To
2/28/07	Notched	1382.0
		1393.5
		1396.1
		1553.0
		1692.0
		1694.7
		1702.0
		1706.0
		1719.7
		1749.0
		1829.0
		1839.7
		2077.0

Stimulation Record

Date	Interval Treated	Fluid Type	Fluid Amount	Propping Agent Type	Propping Agent Amount	Average Injection Rate
3/1/07	Bradford 1st	Water	7000	20/40	70sx	17.8 BPM @ 1890 psi
			7000		70sx	17.7 BPM @ 2080 psi
			7000		70sx	17.8 BPM @ 1920 psi
			7000	Ottawa	70sx	17.8 BPM @ 2100 psi
			8000		80sx	17.7 BPM @ 2670 psi
			8000	Sand	80sx	17.7 BPM @ 3090 psi
			8000		80sx	17.6 BPM @ 2800 psi
	Tiona		7000		70sx	17.6 BPM @ 2830 psi
			7000		70sx	Skipped
			7000		70sx	17.6 BPM @ 2930 psi
	Harrisburg Run Bradford 3rd		8000		80sx	17.7 BPM @ 2340 psi
			7000		70sx	17.5 BPM @ 2650 psi
			8000		80sx	Skipped

Natural Open Flow	NA	Natural Rock Pressure	NA	Hours	Days
After Treatment Open Flow	NA	After Treatment Rock Pressure	NA	Hours	Days

Well Service Companies -- Provide the name, address, and phone number of all well service companies involved.

Name: Keane Drilling	Name: Superior Well Services (Fracture Work)	Name: Superior Well Services (Logging)
Address: Keane Drive	Address: Holley Avenue	Address: Route 119
City - State – Zip: Bradford, PA	City - State – Zip: Bradford, PA	City - State – Zip: Blacklick, PA
Phone: 814-362-6579	Phone: 814-368-6228	Phone: 724-248-1001

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

Well Record

DEP USE ONLY	
Site ID	Primary Fac ID
Client Id	Subfacility Id

WELL INFORMATION

Well Operator: Catalyst Energy Inc	DEP ID#: 76535	Well API # (Permit / Reg): 37-083-55308- -	Project Number: CEI C10	Acres
Address: 424 South 27th St Suite 304		Well Farm Name: Curtis Lot 2	Well #: L2-11	Serial #:
City: Pittsburgh	State: PA / Zip Code: 15203	County: McKean	Municipality: Lafayette	
Phone: 412-325-4350	Fax: 412-425-4356	Email: dj@catalystenergyinc.com	USGS 7.5 min. quadrangle map: Lewis Run	

Check the appropriate Submission: ☒ Original Well Record ☐ Amended Well Record

Well Type	☐ Gas	☒ Oil	☐ Combination Oil & Gas	☐ Injection	☐ Storage	☐ Disposal
Well Orientation	☒ Vertical	☐ Deviated from Vertical (Side view and Deviated Survey must be attached)				
Drilling Method	☒ Rotary – Air	☐ Rotary – Mud	☐ Cable Tool			

Date Drilling Started	Date Drilling Completed	Surface Elevation	Total Depth – Driller	Total Depth – Logger	Depth of Deepest Fresh Groundwater
2/16/11	2/18/11	2140 ft.	2168.7 ft.	2168.7 ft.	200 ft.

CEMENT

Cement returned on surface casing? ☒ Yes ☐ No — If No, provide top of cement and method used to determine:

Cement returned on coal protective casing? ☐ Yes ☐ No — If No, provide top of cement and method used to determine: ☐ N/A

Cement returned on intermediate casing? ☐ Yes ☐ No — If No, provide top of cement and method used to determine: ☐ N/A

Casing String	Type of Cement	Amount of Cement	Gas Block (or equivalent) Used
Conductor	n/a	RECEIVED ✓	
Surface	Class A	DEC 16 2011	☐ Yes ☒ No ☐ N/A
Coal Protective	n/a	ENVIRONMENTAL PROTECTION NORTHWEST REGIONAL OFFICE	☐ Yes ☐ No ☒ N/A
Intermediate	n/a		☐ Yes ☐ No ☒ N/A
Production	n/a		☐ Yes ☐ No ☒ N/A
			☐ Yes ☐ No ☐ N/A
			☐ Yes ☐ No ☐ N/A
			☐ Yes ☐ No ☐ N/A

CASING AND TUBING

Hole Size	Pipe Size	Wt.	Thread / Weld	Casing / Tubing Type	Amount in Well (ft.)	Packer / Hardware / Centralizers Type	Size	Depth	Date Run
11"	9 5/8"	32lb.	Thread	10 RND	23.4				
8 3/4"	7"	20lb.	Thread		455'	422' 323'	224' 125'	26'	2/16/11
6 1/4'	1 1/2"	1.9 lb	thread		2121.9				6/15/11
6 1/4"	3 1/2"	9#	"		561'	Hook wall packer	@ 561'		6/15/11
					1965'	Swelling Packer			6/15/11
					2021'	Swelling Packer			6/15/11

If any casing is welded, provide the name of the welder: n/a

Also complete the Log of Formations on back (page 2)

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LOG OF FORMATIONS

Well API#: 37-083-55308-__-__

(If you will need more space than this page, please photocopy the blank form before filling it in.)

Formation Name or Type	Top (feet)	Bottom (feet)	Gas at (feet)	Oil at (feet)	Water at (fresh / brine; ft.)	Source of Data
Shalee	0'	464'				
Red Rock	464'	545'				Driller
Shale	545'	615'				
Venango 3rd	615'	640'			Fresh Water	Driller
Shale	640'	702'			@ 200'	
Magee Hollow	702'	722'			Rate not	Driller
Shale	722'	1383'			noted	
Base of C Shale	1138'					Electric Log
Bradford 1st	1383'	1430'				
Shale	1430'	1452'				Electric Log
Clarendon	1452'	1454'				
Shale	1454'	1564'				Electric Log
Tiona	1564'	1610'				
Shale	1610'	1699'				Electric Log
Bradfford 2nd	1699'	1795'				
Shale	1795'	1825'				Electric Log
Harrisburg Run	1825'	1840'				
Shale	1840'	1974'				Electric Log
Bradford 3rd	1974'	2022'				
Shale	2022'	2084'	Show	No		Electric Log
Lewis Run	2084'	2094'	@ 1699'	Show		
Shale	2094'	2168.7				Electric Log

I do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record has been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditions contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow-out preventer with a pressure rating greater than 3,000 psi has passed a pressure test in accordance with 25 Pa. Code §78.84(f). I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator's Signature

Douglas G Jones 12-14-11

Title: Vice President/ General Manager

Date:

DEP USE ONLY

Reviewed by:

Date:

Comments:

5500-FM-OG0004 Rev. 2/2001

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

DEP USE ONLY	
Site Id	Primary Facility Id
Client Id	Sub-facility Id

WELL RECORD AND COMPLETION REPORT

Well Operator	DEP ID#	Well API # (Permit / Reg)	Project Number	Acres
Catalyst Energy, Inc.	34294	37-083-51255		

Address	Well Farm Name	Well #	Serial #
800 Cranberry Wood Dr. Suite 290	Curtis Lot 2	L2-10	

City	State	Zip Code	County	Municipality
Cranberry Twp	PA	16066	McKean	Lafayette

Phone	Fax	USGS 7.5 min. quadrangle map
724-779-9053	724-779-9040	Lewis Run

Check all that apply: ☒ Original Well Record ☒ Original Completion Report ☐ Amended Well Record ☐ Amended Completion Report

WELL RECORD

Also complete Log of Formations on back (page 2)

Well Type ☐ Gas ☒ Oil ☐ Combination Oil & Gas ☐ Injection ☐ Storage ☐ Disposal

Drilling Method ☒ Rotary – Air ☐ Rotary – Mud ☐ Cable Tool

Date Drilling Started	Date Drilling Completed	Surface Elevation	Total Depth – Driller	Total Depth - Logger
12/4/06	12/5/06	2190 ft.	2252 ft.	2252ft.

Casing and Tubing

Cement returned on surface casing? ☒ Yes ☐ No
Cement returned on coal protective casing? ☐ Yes ☐ No ☒ N/A

Hole Size	Pipe Size	Wt.	Thread / Weld	Amount in Well (ft)	*Material Behind Pipe* Type and Amount	*Packer / Hardware / Centralizers* Type	Size	Depth	Date Run
11"	9 5/8"	32 lb.	Thread	21.8					
8 3/4"	7"	20 lb.	Thread	582.0	125 sx Class A cement w 3% CaCl2				12/4/06
6 ¼"	2"		Thread	2145.0					2/21/07

COMPLETION REPORT

Perforation Record

Date	*Interval Perforated* From	To
2/20/07	Notched	1421.0
		1430.8
		1433.5
		1448.3
		1451.4
		1595.0
		1604.3
		1732.5
		1743.8
		1747.7
		1758.7
		1763.8
		1771.5
		1788.5
		1871.5
		1876.5
		2113.0

Stimulation Record

Date	Interval Treated	*Fluid* Type	Amount	*Propping Agent* Type	Amount	Average Injection
2/21/07	Bradford 1st	Water	7000	20/40	70sx	17.8 BPM @ 1900 psi
			6000		60sx	17.8 BPM @ 1850 psi
			6000	Ottawa	60sx	17.8 BPM @ 1830 psi
	Tiona		6000		60sx	17.8 BPM @ 1960 psi
			6000	Sand	60sx	17.8 BPM @ 1860 psi
	Bradford 2nd		7000		70sx	17.8 BPM @ 2100 psi
			6000		60sx	17.8 BPM @ 2020 psi
			8000		80sx	17.8 BPM @ 2200 psi
			8000		80sx	17.8 BPM @ 2050 psi
			6000		60sx	17.7 BPM @ 2170 psi
			7000		70sx	17.7 BPM @ 2180 psi
			6000		60sx	17.7 BPM @ 2170 psi
			7000		70sx	17.7 BPM @ 2500 psi
			7000		70sx	17.7 BPM @ 2600 psi
	Harrisburg Run		6000		60sx	17.7 BPM @ 2140 psi
	Bradford 3rd		7000		70sx	17.7 BPM @ 2090 psi
	Lewis Run		8000		80sx	17.7 BPM @ 2360 psi

Natural Open Flow	NA	Natural Rock Pressure	NA	Hours	Days
After Treatment Open Flow	NA	After Treatment Rock Pressure	NA	Hours	Days

Well Service Companies -- Provide the name, address, and phone number of all well service companies involved.

Name	Name	Name
Keane Drilling	Superior Well Services (Fracture Work)	Superior Well Services (Logging)
Address	Address	Address
Keane Drive	Holley Avenue	Route 119
City - State – Zip	City - State – Zip	City - State – Zip
Bradford, PA	Bradford, PA	Blacklick, PA
Phone	Phone	Phone
814-362-6579	814-368-6228	724-248-1001

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

DEP USE ONLY	
Site Id	Primary Facility Id
Client Id	Sub-facility Id

WELL RECORD AND COMPLETION REPORT

Well Operator: Catalyst Energy, Inc.	DEP ID#: 34294	Well API # (Permit / Reg): 37-083-51254	Project Number:	Acres:
Address: 800 Cranberry Wood Dr. Suite 290		Well Farm Name: Curtis Lot 2	Well #: L2-9	Serial #:
City: Cranberry Twp	State: PA / Zip Code: 16066	County: McKean	Municipality: Lafayette	
Phone: 724-779-9053	Fax: 724-779-9040	USGS 7.5 min. quadrangle map: Lewis Run		

Check all that apply: ☒ Original Well Record ☒ Original Completion Report ☐ Amended Well Record ☐ Amended Completion Report

WELL RECORD

Also complete Log of Formations on back (page 2)

Well Type: ☐ Gas ☒ Oil ☐ Combination Oil & Gas ☐ Injection ☐ Storage ☐ Disposal

Drilling Method: ☒ Rotary – Air ☐ Rotary – Mud ☐ Cable Tool

Date Drilling Started	Date Drilling Completed	Surface Elevation	Total Depth – Driller	Total Depth - Logger
12/6/06	12/7/06	2190 ft.	2252 ft.	2252ft.

Casing and Tubing

Cement returned on surface casing? ☒ Yes ☐ No
Cement returned on coal protective casing? ☐ Yes ☐ No ☒ N/A

Hole Size	Pipe Size	Wt.	Thread / Weld	Amount in Well (ft)	Material Behind Pipe Type and Amount	Packer / Hardware / Centralizers Type	Size	Depth	Date Run
11"	9 5/8"	32 lb.	Thread	20.8					
8 3/4"	7"	20 lb.	Thread	586.0	125 sx Class A cement w 3% CaCl2				12/6/06
6 ¼"	2"		Thread	2155.5					2/26/07

COMPLETION REPORT

Perforation Record

Date	Interval Perforated From	To
2/25/07	Notched	1441.5
		1457.4
		1461.6
		1604.0
		1728.9
		1741.5
		1744.0
		1751.8
		1755.0
		1768.8
		1774.0
		1779.0
		1790.7
		1798.5
		1884.6
		2123.5

Stimulation Record

Date	Interval Treated	Fluid Type	Fluid Amount	Propping Agent Type	Propping Agent Amount	Average Injection Rate
2/26/07	Bradford 1st	Water	7000	20/40	70sx	17.8 BPM @ 1020 psi
			7000		70sx	17.8 BPM @ 1810 psi
	Tiona		7000	Ottawa	70sx	17.8 BPM @ 1910 psi
			7000		70sx	17.7 BPM @ 2100 psi
	Bradford 2nd		7000		70sx	17.8 BPM @ 2050 psi
			8000	Sand	80sx	17.8 BPM @ 2010 psi
			6000		60sx	17.8 BPM @ 2900 psi
			8000		80sx	17.8 BPM @ 2020 psi
			6000		60sx	17.7 BPM @ 2190 psi
			8000		80sx	17.4 BPM @ 3320 psi
			8000		80sx	17.4 BPM @ 3120 psi
			7000		70sx	17.5 BPM @ 3350 psi
			4500		45sx	17.5 BPM @ 3100 psi
			8000		80sx	15.2 BPM @ 3280 psi
	Harrisburg Run		7000		70sx	17.6 BPM @ 2940 psi
	Bradford 3rd		8000		80sx	17.7 BPM @ 2260 psi
	Lewis Run					

Natural Open Flow	NA	Natural Rock Pressure	NA	Hours / Days
After Treatment Open Flow	NA	After Treatment Rock Pressure	NA	Hours / Days

Well Service Companies -- Provide the name, address, and phone number of all well service companies involved.

Name	Address	City - State – Zip	Phone
Keane Drilling	Keane Drive	Bradford, PA	814-362-6579
Superior Well Services (Fracture Work)	Holley Avenue	Bradford, PA	814-368-6228
Superior Well Services (Logging)	Route 119	Blacklick, PA	724-248-1001

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

Well Record

DEP USE ONLY	
Site ID	Primary Fac ID
Client Id	Subfacility Id

WELL INFORMATION

Well Operator	DEP ID#	Well API # (Permit / Reg)	Project Number	Acres
Catalyst Energy Inc	76535	37-083-55307- -	CEL-C-LD	

Address	Well Farm Name	Well #	Serial #
424 South 27th St Suite 304	Curtis Lot 2	L2-8	

City	State	Zip Code	County	Municipality
Pittsburgh	PA	15203	McKean	Lafayette

Phone	Fax	Email	USGS 7.5 min. quadrangle map
412-325-4350	412-425-4356	dj@catalystenergyinc.com	Lewis Run

Check the appropriate Submission: ☒ Original Well Record ☐ Amended Well Record

Well Type	☐ Gas	☒ Oil	☐ Combination Oil & Gas	☐ Injection	☐ Storage	☐ Disposal
Well Orientation	☒ Vertical	☐ Deviated from Vertical (Side view and Deviated Survey must be attached)				
Drilling Method	☒ Rotary – Air	☐ Rotary – Mud	☐ Cable Tool			

Date Drilling Started	Date Drilling Completed	Surface Elevation	Total Depth – Driller	Total Depth – Logger	Depth of Deepest Fresh Groundwater
2/26/11	3/1/11	2180 ft.	2167.5 ft.	2167.5 ft.	214 ft.

CEMENT

Cement returned on surface casing? ☐ Yes ☒ No — If No, provide top of cement and method used to determine: 4' CBL ✓

Cement returned on coal protective casing? ☐ Yes ☐ No — If No, provide top of cement and method used to determine: ☐ N/A

Cement returned on intermediate casing? ☐ Yes ☐ No — If No, provide top of cement and method used to determine: ☐ N/A

Casing String	Type of Cement	Amount of Cement	Gas Block (or equivalent) Used
Conductor	n/a		
Surface	Class A	75sx	☐ Yes ☒ No ☐ N/A
Coal Protective	n/a		☐ Yes ☐ No ☒ N/A
Intermediate	n/a		☐ Yes ☐ No ☒ N/A
Production	n/a		☐ Yes ☐ No ☒ N/A
			☐ Yes ☐ No ☐ N/A
			☐ Yes ☐ No ☐ N/A
			☐ Yes ☐ No ☐ N/A

CASING AND TUBING

Hole Size	Pipe Size	Wt.	Thread / Weld	Casing / Tubing Type	Amount in Well (ft.)	Packer / Hardware / Centralizers Type	Size	Depth	Date Run
11"	9 5/8"	32lb.	Thread	10 RND	36.5				
8 3/4"	7"	20lb.	Thread		455'	422' 323'	224' 125'	26'	2/26/11
6 1/4'	1 1/2"	1.9 lb	thread		2147'	Hook wall		649'	5/19/11

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If any casing is welded, provide the name of the welder: n/a

Also complete the Log of Formations on back (page 2)

5500-FM-OG0004a 2/2011

LOG OF FORMATIONS

Well API#: 37-083-55307-__-__

(If you will need more space than this page, please photocopy the blank form before filling it in.)

Formation Name or Type	Top (feet)	Bottom (feet)	Gas at (feet)	Oil at (feet)	Water at (fresh / brine; ft.)	Source of Data
Shale	0'	39'				
Sandstone/ Shale	39'	89'				Driller
Shale	89'	495'				
Red Rock/ Shale	495'	640'			Fresh Water @ 214'	Driller
Venango 3rd	640'	665'			Rate not noted	
Shale	665'	1415'				Electric Log
Base of C Shale	1168'					
Bradford 1st	1415'	1458'				Electric Log
Shale	1458'	1480'				
Clarendon	1480'	1570'				Electric Log
Shale	1570'	1589'				
Tiona	1589'	1646'				Electric Log
Shale	1646'	1726'				
Bradfford 2nd	1726'	1806'				Electric Log
Shale	1806'	1860'				
Harrisburg Run	1860'	1884'				Electric Log
Shale	1884'	2003'				
Bradford 3rd	2003'	2032'	Show @ 1699'	No Show		Electric Log
Shale	2032'	2111'				
Lewis Run	2111'	2119'				Electric Log
Shale	2119'	2167.5'				

I do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record has been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditions contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow-out preventer with a pressure rating greater than 3,000 psi has passed a pressure test in accordance with 25 Pa. Code §78.84(f). I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator's Signature

Douglas E Jones 2/7/12

Title: Vice President/ General Manager Date:

DEP USE ONLY

Reviewed by: Date:

Comments:

5500-FM-OG0004a 2/2011

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

Well Record

DEP USE ONLY	
Site ID	Primary Fac ID
Client Id	Subfacility Id

WELL INFORMATION

Well Operator: Catalyst Energy Inc	DEP ID#: 76535	Well API # (Permit / Reg): 37-083-55306- -	Project Number: CEIC10	Acres
Address: 424 South 27th St Suite 304		Well Farm Name: Curtis Lot 2	Well #: L2-7	Serial #:
City: Pittsburgh	State: PA	Zip Code: 15203	County: McKean	Municipality: Lafayette
Phone: 412-325-4350	Fax: 412-425-4356	Email: dj@catalystenergyinc.com	USGS 7.5 min. quadrangle map: Lewis Run	

Check the appropriate Submission: ☒ Original Well Record ☐ Amended Well Record

Well Type	☐ Gas	☒ Oil	☐ Combination Oil & Gas	☐ Injection	☐ Storage	☐ Disposal
Well Orientation	☒ Vertical	☐ Deviated from Vertical (Side view and Deviated Survey must be attached)				
Drilling Method	☒ Rotary – Air	☐ Rotary – Mud	☐ Cable Tool			

Date Drilling Started	Date Drilling Completed	Surface Elevation	Total Depth – Driller	Total Depth – Logger	Depth of Deepest Fresh Groundwater
3/2/11	3/5/11	2165 ft.	2196 ft.	2196 ft.	200 ft.

CEMENT

Cement returned on surface casing? ☒ Yes ☐ No — If No, provide top of cement and method used to determine:

Cement returned on coal protective casing? ☐ Yes ☐ No — If No, provide top of cement and method used to determine: ☐ N/A

Cement returned on intermediate casing? ☐ Yes ☐ No — If No, provide top of cement and method used to determine: ☐ N/A

Casing String	Type of Cement	Amount of Cement	Gas Block (or equivalent) Used
Conductor	n/a		
Surface	Class A	80sx	☐ Yes ☒ No ☐ N/A
Coal Protective	n/a		☐ Yes ☐ No ☒ N/A
Intermediate	n/a		☐ Yes ☐ No ☒ N/A
Production	n/a		☐ Yes ☐ No ☒ N/A
			☐ Yes ☐ No ☐ N/A
			☐ Yes ☐ No ☐ N/A
			☐ Yes ☐ No ☐ N/A

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NORTHWEST REGIONAL OFFICE

CASING AND TUBING

Hole Size	Pipe Size	Wt.	Thread / Weld	Casing / Tubing Type	Amount in Well (ft.)	Packer / Hardware / Centralizers Type	Size	Depth	Date Run
11"	9 5/8"	32lb.	Thread	10 RND	27				
8 3/4"	7"	20lb.	Thread		455'	422' 323'	224' 125'	26'	3/2/11
6 1/4'	1 1/2"	1.9 lb	thread		2140.5	Hook Wall		637'-641'	6/9/11

If any casing is welded, provide the name of the welder: n/a

Also complete the Log of Formations on back (page 2)

5500-FM-OG0004a 2/2011

LOG OF FORMATIONS

Well API#: 37-083-55306-__-__

(If you will need more space than this page, please photocopy the blank form before filling it in.)

Formation Name or Type	Top (feet)	Bottom (feet)	Gas at (feet)	Oil at (feet)	Water at (fresh / brine; ft.)	Source of Data
Shale	0'	464'				
Red Rock	464'	570'				Driller
Shale	570'	629'				
Venango 3rd	629'	654'			Fresh Water	Driller
Shale	654'	1399'			@ 200'	
Base of C Shale	1153'				Rate not	Electric Log
Bradford 1st	1399'	1449'			noted	
Shale	1449'	1471'				Electric Log
Clarendon	1471'	1561'				
Shale	1561'	1582'				Electric Log
Tiona	1582'	1625'				
Shale	1625'	1719'				Electric Log
Bradfford 2nd	1719'	1788'				
Shale	1788'	1845'				Electric Log
Harrisburg Run	1845'	1864'				
Shale	1864'	1995'				Electric Log
Bradford 3rd	1995'	2041'				
Shale	2041'	2104'	Show	No		Electric Log
Lewis Run	2104'	2112'	@ 2104'	Show		
Shale	2112'	2196'				Electric Log

I do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record has been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditions contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow-out preventer with a pressure rating greater than 3,000 psi has passed a pressure test in accordance with 25 Pa. Code §78.84(f). I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator's Signature

Douglas E Jones 12-14-11

Title: Vice President/ General Manager

Date:

DEP USE ONLY

Reviewed by:

Date:

Comments:

5500-FM-OG0004a 2/2011

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

Well Record

DEP USE ONLY	
Site ID	Primary Fac ID
Client Id	Subfacility Id

WELL INFORMATION

Well Operator: Catalyst Energy Inc	DEP ID#: 76535	Well API # (Permit / Reg): 37-083-55351- -	Project Number: CEI C10	Acres
Address: 424 South 27th St Suite 304		Well Farm Name: Curtis Lot 2	Well #: L2-6	Serial #:
City: Pittsburgh	State: PA / Zip Code: 15203	County: McKean	Municipality: Lafayette	
Phone: 412-325-4350	Fax: 412-425-4356	Email: dj@catalystenergyinc.com	USGS 7.5 min. quadrangle map: Lewis Run	

Check the appropriate Submission: ☒ Original Well Record ☐ Amended Well Record

Well Type	☐ Gas	☒ Oil	☐ Combination Oil & Gas	☐ Injection	☐ Storage	☐ Disposal
Well Orientation	☒ Vertical	☐ Deviated from Vertical (Side view and Deviated Survey must be attached)				
Drilling Method	☒ Rotary – Air	☐ Rotary – Mud	☐ Cable Tool			

Date Drilling Started	Date Drilling Completed	Surface Elevation	Total Depth – Driller	Total Depth – Logger	Depth of Deepest Fresh Groundwater
5/23/11	5/26/11	2170 ft.	2200 ft.	2200 ft.	339 ft.

CEMENT

Cement returned on surface casing? ☒ Yes ☐ No — If No, provide top of cement and method used to determine:

Cement returned on coal protective casing? ☐ Yes ☐ No — If No, provide top of cement and method used to determine: ☐ N/A

Cement returned on intermediate casing? ☐ Yes ☐ No — If No, provide top of cement and method used to determine: ☐ N/A

Casing String	Type of Cement	Amount of Cement	Gas Block (or equivalent) Used
Conductor	n/a		
Surface	Class A	65sx	☐ Yes ☒ No ☐ N/A
Coal Protective	n/a		☐ Yes ☐ No ☒ N/A
Intermediate	n/a		☐ Yes ☐ No ☒ N/A
Production	n/a		☐ Yes ☐ No ☒ N/A
			☐ Yes ☐ No ☐ N/A
			☐ Yes ☐ No ☐ N/A
			☐ Yes ☐ No ☐ N/A

CASING AND TUBING

Hole Size	Pipe Size	Wt.	Thread / Weld	Casing / Tubing Type	Amount in Well (ft.)	Packer / Hardware / Centralizers Type	Size	Depth	Date Run
11"	9 5/8"	32lb.	Thread	10 RND	42.4				
8 3/4"	7"	20lb.	Thread		455'	422' 323'	224' 125'	26'	5/23/11
6 1/4'	1 1/2"	1/9 lb	thread		2114.5	Hook Wall		522'	6/30/11

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NORTHWEST REGIONAL OFFICE

If any casing is welded, provide the name of the welder: n/a

Also complete the Log of Formations on back (page 2)

5500-FM-OG0004a 2/2011

LOG OF FORMATIONS

Well API#: 37-083-55351-__-__

(If you will need more space than this page, please photocopy the blank form before filling it in.)

Formation Name or Type	Top (feet)	Bottom (feet)	Gas at (feet)	Oil at (feet)	Water at (fresh / brine; ft.)	Source of Data
Sandstone/Shale	0'	64'				
Shale	64'	464'			Fresh Water @214'	Driller
Red Rock	464'	570'				
Shale	570'	634'			No rate noted	Driller
Venango 3rd	634'	640'				
Shale	640'	704'			@ 339'	Driller
Magee Hollow	704'	708'			No rate noted	Electric Log
Shale	708'	1400'				
Base of C Shale	1173'					Electric Log
Bradford 1st	1400'	1449'				
Shale	1449'	1484'				Electric Log
Clarendon	1484'	1564'				
Shale	1564'	1582'				Electric Log
Tiona	1582'	1634'				
Shale	1634'	1720'				Electric Log
Bradfford 2nd	1720'	1804'				
Shale	1804'	1861'				Electric Log
Harrisburg Run	1861'	1902'				
Shale	1902'	1998'				Electric Log
Bradford 3rd	1998'	2046'				
Shale	2046'	2107'	Show @ 1720'	No Show		Electric Log
Lewis Run	2107'	2115'				
Shale	2115'	2200'				Electric Log

I do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record has been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditions contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow-out preventer with a pressure rating greater than 3,000 psi has passed a pressure test in accordance with 25 Pa. Code §78.84(f). I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator's Signature

Douglas E. James Date: 12/6/11

Title: Vice President/ General Manager

DEP USE ONLY

Reviewed by: Date:

Comments:

APPROVAL PENDING

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

MAY 1 1 2007

DEP USE ONLY	
Site Id	Primary Facility Id
Client Id	Sub-facility Id

WELL RECORD AND COMPLETION REPORT

Well Operator	DEP ID#	Well API # (Permit / Reg)	Project Number	Acres
Catalyst Energy, Inc.	34294	37-083-51249	CEI-C-10	

Address	Well Farm Name	Well #	Serial #
800 Cranberry Wood Dr. Suite 290	Curtis Lot 2	L2-4	

City	State	Zip Code	County	Municipality
Cranberry Twp	PA	16066	McKean	Lafayette

Phone	Fax	USGS 7.5 min. quadrangle map
724-779-9053	724-779-9040	Lewis Run

Check all that apply: ☒ Original Well Record ☒ Original Completion Report ☐ Amended Well Record ☐ Amended Completion Report

WELL RECORD

Also complete Log of Formations on back (page 2)

Well Type ☐ Gas ☒ Oil ☐ Combination Oil & Gas ☐ Injection ☐ Storage ☐ Disposal

Drilling Method ☒ Rotary – Air ☐ Rotary – Mud ☐ Cable Tool

Date Drilling Started	Date Drilling Completed	Surface Elevation	Total Depth – Driller	Total Depth - Logger
12/11/06	12/12/06	2180 ft.	2222 ft.	2222ft.

Casing and Tubing

Cement returned on surface casing? ☒ Yes ☐ No

Cement returned on coal protective casing? ☐ Yes ☐ No ☒ N/A

Hole Size	Pipe Size	Wt.	Thread / Weld	Amount in Well (ft)	Material Behind Pipe Type and Amount	Packer / Hardware / Centralizers Type	Size	Depth	Date Run
11"	9 5/8"	32 lb.	Thread	21.0					
8 3/4"	7"	20 lb.	Thread	581.0	125 sx Class A cement w 3% CaCl2				12/11/06
6 ¼"	2"		Thread	2135.0					2/14/07

COMPLETION REPORT

Perforation Record

Date	Interval Perforated From	To
2/13/07	Notched	1416.3
		1418.9
		1421.5
		1424.0
		1438.2
		1441.8
		1580.5
		1588.3
		1640.5
		1722.7
		1725.5
		1731.0
		1734.7
		1738.4
		1745.4
		1751.8
		1772.0
		1864.0
		2034.0
		2103.0

Stimulation Record

Date	Interval Treated	Fluid Type	Fluid Amount	Propping Agent Type	Propping Agent Amount	Average Injection
2/14/07	Bradford 1st	Water	6000	20/40	60sx	17.8 BPM @ 1880 psi
			6000		60sx	17.8 BPM @ 1860 psi
			7000		70sx	17.8 BPM @ 1870 psi
			6000	Ottawa	60sx	17.8 BPM @ 1910 psi
			7000		70sx	17.8 BPM @ 2080 psi
	Tiona		6000	Sand	60sx	17.8 BPM @ 2090 psi
			7000		70sx	17.8 BPM @ 2090 psi
	Bradford 2nd		7000		70sx	17.7 BPM @ 2120 psi
			9000		90sx	17.7 BPM @ 2440 psi
			8000		80sx	17.7 BPM @ 2510 psi
			7000		70sx	Skipped
			7000		70sx	skipped
			7000		70sx	17.6 BPM @ 2350 psi
			7000		70sx	17.7 BPM @ 2650 psi
			7000		70sx	10.6 BPM @ 3560 psi
			7000		70sx	16.3 BPM @ 3530 psi
			7000		70sx	13.5 BPM @ 3660 psi
	Bradford 3rd		7000		70sx	17.8 BPM @ 2180 psi
	Lewis Run		5000		50sx	17.7 BPM @ 2160 psi
			9000		90sx	17.0 BPM @ 2730 psi

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Natural Open Flow	NA	Natural Rock Pressure	NA	MAY 11 2007 Hours	Days
After Treatment Open Flow	NA	After Treatment Rock Pressure	NA	Hours	Days

ENVIRONMENTAL PROTECTION
NORTHWEST REGIONAL OFFICE

Well Service Companies -- Provide the name, address, and phone number of all well service companies involved.

Name	Address	City - State – Zip	Phone
Keane Drilling	Keane Drive	Bradford, PA	814-362-6579
Superior Well Services (Fracture Work)	Holley Avenue	Bradford, PA	814-368-6228
Superior Well Services (Logging)	Route 119	Blacklick, PA	724-248-1001

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LOG OF FORMATIONS

Well API#: 37-083-51249

Formation Name or Type	Top (feet)	Bottom (feet)	Gas at (feet)	Oil at (feet)	Water at (fresh / brine; ft.)	Source of Data
Sandstone	0	45'				Driller
Sandstone/Shale	45'	75'				
Shale	75'	405'			Fresh Water	Driller
Sandstone	405'	465'			@165'	
Red Rock/Shale	465'	795'			3GPM	Driller
Shale	795'	1374'				
Bradford 1st Sandstone	1374'	1450'	No Show			Electric Log
Shale	1450'	1574'				
Tiona	1574'	1645'	No Show			Electric Log
Shale	1645'	1716'				
Bradford 2nd Sandstone	1716'	1792'	No Show			Electric Log
Shale	1792'	1974'				
Bradford 3rd	1974'	2021'	No Show			Electric Log
Shale	2021'	2094'				
Lewis Run Sandstone	2094'	2108'	Show @			Electric Log
Shale	2108'	TD	2103'			
						Electric Log

Please delete empty rows if necessary to make all of page 2 fit on one page.

Well Operator's Signature: Douglas E Jones

Title: Vice President and General Manager

Date: 5/10/07

DEP USE ONLY

Reviewed by: Date:

Comments:

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

DEP USE ONLY	
Site Id	Primary Facility Id
Client Id	Sub-facility Id

WELL RECORD AND COMPLETION REPORT

Well Operator: Catalyst Energy, Inc.	DEP ID#: 34294	Well API # (Permit / Reg): 37-083-51248	Project Number:	Acres:	
Address: 800 Cranberry Wood Dr. Suite 290		Well Farm Name: Curtis Lot 2	Well #: #3	Serial #:	
City: Cranberry Twp	State: PA / Zip Code: 16066	County: McKean	Municipality: Lafayette		
Phone: 724-779-9053	Fax: 724-779-9040	USGS 7.5 min. quadrangle map: Lewis Run			

Check all that apply: ☒ Original Well Record ☒ Original Completion Report ☐ Amended Well Record ☐ Amended Completion Report

WELL RECORD

Also complete Log of Formations on back (page 2)

Well Type: ☐ Gas ☒ Oil ☐ Combination Oil & Gas ☐ Injection ☐ Storage ☐ Disposal

Drilling Method: ☒ Rotary – Air ☐ Rotary – Mud ☐ Cable Tool

Date Drilling Started	Date Drilling Completed	Surface Elevation	Total Depth – Driller	Total Depth - Logger
12/13/06	12/14/06	2160ft.	2212 ft.	2212 ft.

Casing and Tubing

Cement returned on surface casing? ☒ Yes ☐ No
Cement returned on coal protective casing? ☐ Yes ☐ No ☒ N/A

Hole Size	Pipe Size	Wt.	Thread / Weld	Amount in Well (ft)	Material Behind Pipe Type and Amount	Packer / Hardware / Centralizers Type	Size	Depth	Date Run
11"	9 5/8"	32 lb.	Thread	21.0					
8 3/4"	7"	20 lb.	Thread	584.0	125 sx Class A cement w 3% CaCl2				12/13/06
6 ¼"	2"		Thread	2134.9					2/2/07

COMPLETION REPORT

Perforation Record

Date	Interval Perforated From	To
2/1/07	Notched	1418.0
		1423.3
		1434.8
		1439.8
		1579.0
		1604.8
		1717.1
		1719.8
		1728.5
		1731.3
		1744.7
		1762.1
		1764.8
		2035.0
		2102.9

Stimulation Record

Date	Interval Treated	Fluid Type	Fluid Amount	Propping Agent Type	Propping Agent Amount	Average Injection
2/2/07	Bradford 1st	Water	8000	20/40	80sx	17.8 BPM @ 1950 psi
			7000	Ottawa	70sx	17.8 BPM @ 1880 psi
			7000		70sx	17.8 BPM @ 2200 psi
			7000	Sand	70sx	17.8 BPM @ 1960 psi
			7000		70sx	17.8 BPM @ 2170 psi
	Tiona Bradford 2nd		7000		70sx	17.8 BPM @ 2060 psi
			8000		80sx	17.8 BPM @2130 psi
			8000		80sx	17.8 BPM @ 2030 psi
			8000		80sx	17.7 BPM @ 2330 psi
			8000		80sx	17.7 BPM @ 2190 psi
			7000		70sx	17.7 BPM @ 2290 psi
	no SvH 6/26 ~~Bradford 3rd~~ Lewis Run		8000		80sx	17.6 BPM @ 2830 psi
			8000		80sx	17.7 BPM @ 2690 psi
			3000		30sx	17.6 BPM @ 2570 psi
			8000		80sx	17.7 BPM @ 2490 psi

Natural Open Flow	NA	Natural Rock Pressure	NA	Hours	Days
After Treatment Open Flow	NA	After Treatment Rock Pressure	NA	Hours	Days

Well Service Companies -- Provide the name, address, and phone number of all well service companies involved.

Name	Address	City - State – Zip	Phone
Keane Drilling	Keane Drive	Bradford, PA	814-362-6579
Superior Well Services (Fracture Work)	Holley Avenue	Bradford, PA	814-368-6228
Superior Well Services (Logging)	Route 119	Blacklick, PA	724-248-1001

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

DEP USE ONLY	
Site Id	Primary Facility Id
Client Id	Sub-facility Id

WELL RECORD AND COMPLETION REPORT

Well Operator: Catalyst Energy, Inc.	DEP ID#: 34294	Well API # (Permit / Reg): 37-083-51247	Project Number:	Acres:	
Address: 800 Cranberry Wood Dr. Suite 290		Well Farm Name: Curtis Lot 2	Well #: L2 2	Serial #:	
City: Cranberry Twp	State: PA	Zip Code: 16066	County: McKean	Municipality: Lafayette	
Phone: 724-779-9053	Fax: 724-779-9040		USGS 7.5 min. quadrangle map: Lewis Run		

Check all that apply: ☒ Original Well Record ☒ Original Completion Report ☐ Amended Well Record ☐ Amended Completion Report

WELL RECORD

Also complete Log of Formations on back (page 2)

Well Type: ☐ Gas ☒ Oil ☐ Combination Oil & Gas ☐ Injection ☐ Storage ☐ Disposal

Drilling Method: ☒ Rotary – Air ☐ Rotary – Mud ☐ Cable Tool

Date Drilling Started	Date Drilling Completed	Surface Elevation	Total Depth – Driller	Total Depth - Logger
12/18/06	12/20/06	2160ft.	2225 ft.	2225 ft.

Casing and Tubing

Cement returned on surface casing? ☒ Yes ☐ No
Cement returned on coal protective casing? ☐ Yes ☐ No ☒ N/A

Hole Size	Pipe Size	Wt.	Thread / Weld	Amount in Well (ft)	Material Behind Pipe Type and Amount	Packer / Hardware / Centralizers Type	Size	Depth	Date Run
11"	9 5/8"	32 lb.	Thread	21.7					
8 3/4"	7"	20 lb.	Thread	586.0	125 sx Class A cement w 3% CaCl2				12/18/06
6 ¼"	2"		Thread	2119.8					1/30/07

COMPLETION REPORT

Perforation Record

Date	Interval Perforated From	To
1/29/07	Notched	1390.5
		1402.0
		1404.8
		1419.0
		1423.0
		1564.0
		1705.0
		1708.0
		1713.3
		1719.0
		1727.8
		1739.5
		1824.8
		1845.9
		2087.8

Stimulation Record

Date	Interval Treated	Fluid Type	Fluid Amount	Propping Agent Type	Propping Agent Amount	Average Injection
1/30/07	Bradford 1st	Water	7000	20/40	70sx	17.8 BPM @ 1860 psi
			7000		70sx	17.8 BPM @ 1940 psi
			7000	Ottawa	70sx	17.8 BPM @ 1940 psi
			7000		70sx	17.8 BPM @ 2080 psi
			7000	Sand	70sx	17.8 BPM @ 2150 psi
	Tiona Bradford 2nd		7000		70sx	17.8 BPM @ 2180 psi
			8000		80sx	17.6 BPM @ 2830 psi
			8000		80sx	17.7 BPM @2110 psi
			8000		80sx	skipped
			8000		80sx	17.7 BPM @ 2350 psi
			7000		70sx	17.7 BPM @ 2840 psi
			7000		70sx	17.7 BPM @ 2350 psi
	Harrisburg Run		6000		60sx	17.7 BPM @ 2320 psi
	Bradford 3rd – No sd 6/20		7000		70sx	17.7 BPM @ 2260 psi
	Lewis Run		8000		80sx	17.7 BPM @ 2300 psi

Natural Open Flow	NA	Natural Rock Pressure	NA	Hours	Days
After Treatment Open Flow	NA	After Treatment Rock Pressure	NA	Hours	Days

Well Service Companies -- Provide the name, address, and phone number of all well service companies involved.

Name: Keane Drilling	Name: Superior Well Services (Fracture Work)	Name: Superior Well Services (Logging)
Address: Keane Drive	Address: Holley Avenue	Address: Route 119
City - State – Zip: Bradford, PA	City - State – Zip: Bradford, PA	City - State – Zip: Blacklick, PA
Phone: 814-362-6579	Phone: 814-368-6228	Phone: 724-248-1001

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

DEP USE ONLY	
Site Id	Primary Facility Id
Client Id	Sub-facility Id

WELL RECORD AND COMPLETION REPORT

Well Operator	DEP ID#	Well API # (Permit / Reg)	Project Number	Acres
Catalyst Energy, Inc.	34294	37-083-51246		

Address	Well Farm Name	Well #	Serial #
800 Cranberry Wood Dr. Suite 290	Curtis Lot 2	L2-1	

City	State	Zip Code	County	Municipality
Cranberry Twp	PA	16066	McKean	Lafayette

Phone	Fax	USGS 7.5 min. quadrangle map
724-779-9053	724-779-9040	Lewis Run

Check all that apply: ☒ Original Well Record ☒ Original Completion Report ☐ Amended Well Record ☐ Amended Completion Report

WELL RECORD

Also complete Log of Formations on back (page 2)

Well Type ☐ Gas ☒ Oil ☐ Combination Oil & Gas ☐ Injection ☐ Storage ☐ Disposal

Drilling Method ☒ Rotary – Air ☐ Rotary – Mud ☐ Cable Tool

Date Drilling Started	Date Drilling Completed	Surface Elevation	Total Depth – Driller	Total Depth - Logger
11/30/06	12/1/06	2155 ft.	2216 ft.	2216ft.

Casing and Tubing

Cement returned on surface casing? ☒ Yes ☐ No
Cement returned on coal protective casing? ☐ Yes ☐ No ☒ N/A

Hole Size	Pipe Size	Wt.	Thread / Weld	Amount in Well (ft)	*Material Behind Pipe* Type and Amount	*Packer / Hardware / Centralizers* Type	Size	Depth	Date Run
11"	9 5/8"	32 lb.	Thread	22.3					
8 3/4"	7"	20 lb.	Thread	582.0	125 sx Class A cement w 3% CaCl2				11/30/06
6 ¼"	2"		Thread	2120.5					1/24/07

COMPLETION REPORT

Perforation Record

Date	*Interval Perforated* From	To
1/23/07	Notched	1398.2
		1401.5
		1405.0
		1416.0
		1419.4
		1422.1
		1561.3
		1564.0
		1571.2
		1700.8
		1703.6
		1706.5
		1716.8
		1841.0
		1973.5
		1976.5
		2088.5

Stimulation Record

Date	Interval Treated	*Fluid* Type	Amount	*Propping Agent* Type	Amount	Average Injection
1/24/07	Bradford 1st	Water	7000	20/40	70sx	17.8 BPM @ 1780 psi
			7000	Ottawa	70sx	17.9 BPM @ 1760 psi
			7000		70sx	17.9 BPM @ 1710 psi
	Tiona		8000	Sand	80sx	17.8 BPM @ 1830 psi
			7000		70sx	17.8 BPM @ 1930 psi
			6000		60sx	17.8 BPM @ 2040 psi
			7000		70sx	17.8 BPM @ 2000 psi
			7000		70sx	17.8 BPM @ 2070 psi
	Bradford 2nd		6000		60sx	17.7 BPM @ 2360 psi
			8000		80sx	17.8 BPM @ 2010 psi
			8000		80sx	17.8 BPM @ 2100 psi
	Harrisburg Run		7000		70sx	17.8 BPM @ 2220 psi
			7000		70sx	17.8 BPM @ 2160 psi
			7000		70sx	17.7 BPM @ 2710 psi
	Bradford 3rd		5000		50sx	12.1 BPM @ 1690 psi
	Lewis Run		5000		50sx	Skipped
			8000		80sx	17.7 BPM @ 2510 psi

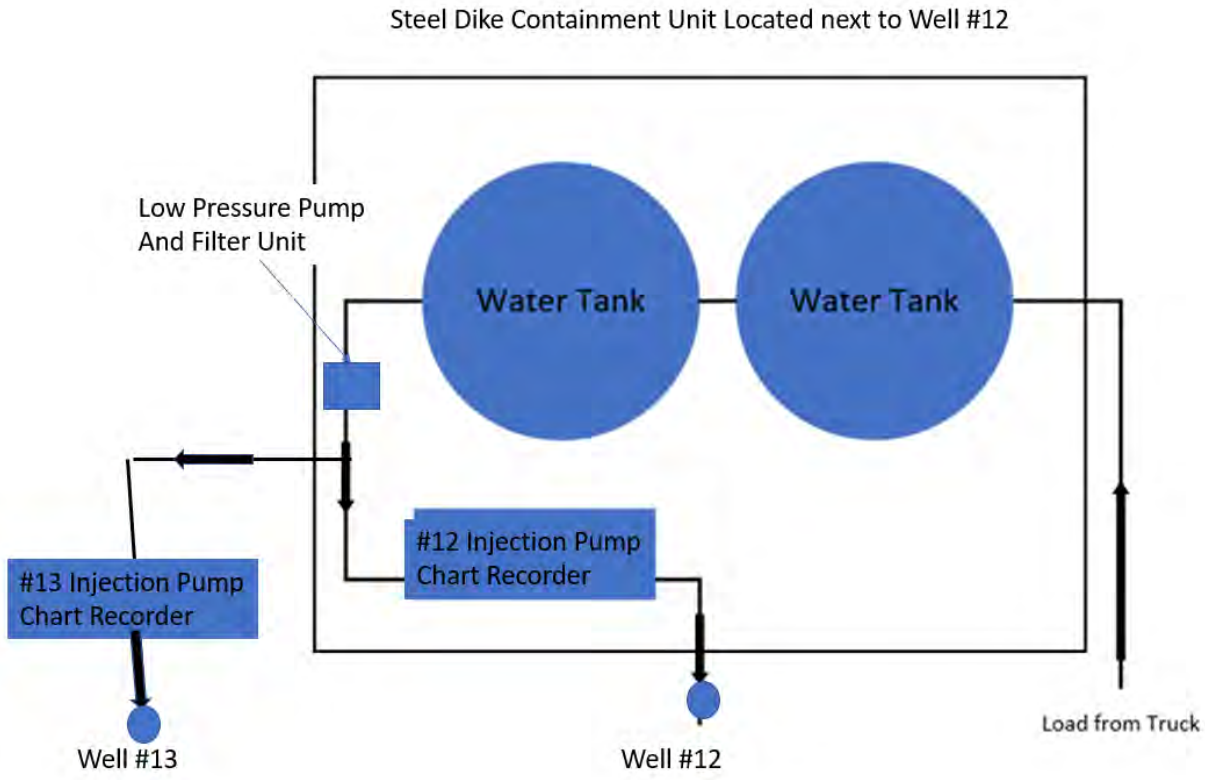
Natural Open Flow	NA	Natural Rock Pressure	NA	Hours	Days
After Treatment Open Flow	NA	After Treatment Rock Pressure	NA	Hours	Days

Well Service Companies -- Provide the name, address, and phone number of all well service companies involved.

Name	Name	Name
Keane Drilling	Superior Well Services (Fracture Work)	Superior Well Services (Logging)
Address: Keane Drive	Address: Holley Avenue	Address: Route 119
City - State – Zip: Bradford, PA	City - State – Zip: Bradford, PA	City - State – Zip: Blacklick, PA
Phone: 814-362-6579	Phone: 814-368-6228	Phone: 724-248-1001

Attachment D: Injection Operation and Monitoring Program

Flow Diagram



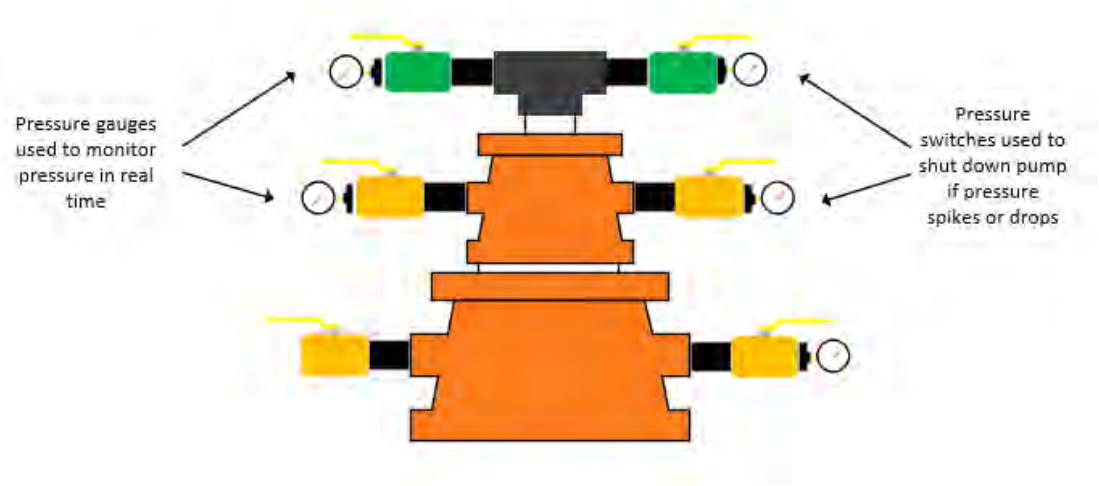
Contingency Plan

The well heads will be equipped with gauges to monitor tubing and annular pressures of the 1-1/2" and 3". Pressure switches will be installed to shut the pump down in the event of an abnormal pressure changes as described in Attachment C Part II. This event will be reported to the EPA and investigated why pressure migration has occurred. Injection operations will cease until approval from the EPA.

Surface Construction

A steel containment 14' x 40' x 6' tall will be placed on well location #12 as per diagram above. Water tanks are 240-barrel polyurethane. Drawing is provided above in flow diagram.

Monitoring Ports



Sampling and Monitoring Devices

The fluid injected will be conventional shallow oil and gas well brine. The only relevant parameter that may change from time to time is the Sg of the brine. Once monthly a sample will be drawn from the water tanks and tested with a hydrometer to ensure Sg remains less then < 1.1.

Each injection pump will have a 30-day chart recorder to record injection pressure. Each well head will have a rotary meter to record volume of injected fluid. Pumps are positive displacement and injection rate is controlled by RPM's of the drive shaft. Rates will be confirmed by monthly checks of volume.

Manifold Monitoring Devices

Not applicable

Operating Data Information

	#12	#13	
Average Rate	**75**	**75**	**BWPD**
Max Rate	**300**	**300**	**BWPD**

Averge Injection Pressure	**1650**	**1650**	**PSI**
Maximum Injection Pressure	**#12**	**#13**	**Units**
Pmax Brad 3rd	1789	1814	PSI
Pmax Lewis Run	1884	1910*	PSI
Pmax Simultaneous Injection	1789	1814	PSI
* Lewis Run is cemented but may be reopened			

Injection Fluid

The source of injection fluid is conventional shallow oil and gas well production brine. The formations these wells produce from are the Upper Deviation Venango Sandstones and the Upper Devonian Bradford Sandstones. The oilfields produced from are the Bradford, Warren, Clarendon, Lewis Run, Marshburg and Pleasant.

Annular fluid info not applicable.

Analysis of the Injection Fluid is found in attachment D-1.

Analytical Services, Inc.

P.O. Box 237
Brockway, PA 15824-0237

Laboratory (814) 265-8749
FAX (814) 265-8749

GENERAL CHEMICAL ANALYSIS REPORT

CUSTOMER: Hansen Services
7 Mead Boulevard
Clarendon, PA 16313
Attn: Justin Hansen

SAMPLE DATE: 01/07/16 at 12:50 pm
RECEIPT DATE: 01/07/16 at 5:40 pm

REPORT DATE: 02/10/16
ASI ID#: 140687

DESCRIPTION OF SAMPLE: Hansen Services

TOTAL ANALYSIS RESULTS:

PARAMETER	RESULT	UNIT	QUANTITATION LIMIT	METHOD	BY	DATE & TIME	DATA QUALIFIER
TPH-HEM Oil & Grease	8	mg/L	5	SM 5520B	WB	01/21/16 @ 11:00 am	R3
TPH-DRO	2,450	µg/L	--	EPA 8015D	FL	02/04/16 @ 3:22 pm	3a
TPH-GRO	9,720	µg/L	--	EPA 8015D	FL	02/03/16 @ 9:12 am	3a
Nitrate-N	< 50.0	mg/L	50.0	EPA 300.0	BB	01/18/16 @ 7:47 pm	
Nitrite-N	< 50.0	mg/L	50.0	EPA 300.0	BB	01/18/16 @ 7:47 pm	
Sulfate	791	mg/L	5	EPA 300.0	BB	01/18/16 @ 7:47 pm	E1
Fluoride	<0.5	mg/L	.15	SM 4500 F-C	CC	02/03/16 @ 11:16 am	
Bromide	585	mg/L	0.1	EPA 300.0	BB	01/18/16 @ 7:47 pm	
Dissolved Phosphorus	<.15	mg/L	.15	SM 4500 P-B, 5-E	WB	02/10/16 @ 10:30 am	
Dissolved Vanadium	<0.500	mg/L	0.500	EPA 200.8	CH	02/03/16 @ 4:46 pm	
Dissolved Zinc	<0.500	mg/L	0.500	EPA 200.8	CH	02/03/16 @ 4:46 pm	
Dissolved Titanium	<0.500	mg/L	0.500	EPA 200.8	CH	02/03/16 @ 4:46 pm	
Dissolved Strontium	66.1	mg/L	0.500	EPA 200.8	CH	02/03/16 @ 4:46 pm	
Dissolved Tin	<0.500	mg/L	0.500	EPA 200.8	CH	02/03/16 @ 4:46 pm	
Dissolved Selenium	<0.500	mg/L	0.500	EPA 200.8	CH	02/03/16 @ 4:46 pm	
Dissolved Antimony	<0.500	mg/L	0.500	EPA 200.8	CH	02/03/16 @ 4:46 pm	
Dissolved Lead	<0.500	mg/L	0.500	EPA 200.8	CH	02/03/16 @ 4:46 pm	
Dissolved Nickel	<0.500	mg/L	0.500	EPA 200.8	CH	02/03/16 @ 4:46 pm	
Dissolved Sodium	24,700	mg/L	500	EPA 200.8	CH	02/04/16 @ 1:25 pm	
Dissolved Molybdenum	<0.500	mg/L	0.500	EPA 200.8	CH	02/03/16 @ 4:46 pm	
Dissolved Manganese	8.40	mg/L	0.500	EPA 200.8	CH	02/03/16 @ 4:46 pm	
Dissolved Magnesium	1,230	mg/L	500	EPA 200.8	CH	02/04/16 @ 1:25 pm	
Dissolved Lithium	4.1	mg/L	--	SM 3111B	CC	02/08/16 @ 4:00 pm	
Dissolved Potassium	69.5	mg/L	10.0	EPA 200.8	CH	02/04/16 @ 12:09 pm	
Dissolved Iron	88.8	mg/L	10.0	EPA 200.8	CH	02/03/16 @ 4:46 pm	
Dissolved Copper	0.708	mg/L	0.5	EPA 200.8	CH	02/03/16 @ 4:46 pm	
Dissolved Chromium	<0.500	mg/L	0.5	EPA 200.8	CH	02/03/16 @ 4:46 pm	

R3: No duplicate due to insufficient sample volume.
E1: Diluted sample result exceeded the calibrated range and high CCV, but is within the Linear Calibration Range. Concentration is considered an estimate.
3a: this sample was received outside the EPA recommended holding time.

Analytical Services, Inc.

P.O. Box 237
Brockway, PA 15824-0237

Laboratory (814) 265-8749
FAX (814) 265-8749

GENERAL CHEMICAL ANALYSIS REPORT

CUSTOMER: Hansen Services
7 Mead Boulevard
Clarendon, PA 16313
Attn: Justin Hansen

SAMPLE DATE: 01/07/16 at 12:50 pm
RECEIPT DATE: 01/07/16 at 5:40 pm

REPORT DATE: 02/10/16
ASI ID#: 140687

DESCRIPTION OF SAMPLE: Hansen Services

TOTAL ANALYSIS RESULTS:

PARAMETER	RESULT	UNIT	QUANTITATION LIMIT	METHOD	BY	DATE & TIME	DATA QUALIFIER
Dissolved Cobalt	<0.500	mg/L	5	SM 5520B	CH	02/03/16 @ 4:46 pm	
Dissolved Cadmium	<0.100	mg/L	50.0	EPA 300.0	CH	02/03/16 @ 4:46 pm	
Dissolved Beryllium	<0.100	mg/L	50.0	EPA 300.0	CH	02/03/16 @ 4:46 pm	
Dissolved Barium	1.47	mg/L	5	EPA 300.0	CH	02/03/16 @ 4:46 pm	
Dissolved Boron	2.97	mg/L	.15	SM 4500 F-C	CH	02/04/16 @ 12:09 pm	
Dissolved Arsenic	0.648	mg/L	0.1	EPA 300.0	CH	02/03/16 @ 4:46 pm	
Dissolved Aluminum	0.923	mg/L	0.500	EPA 200.8	CH	02/03/16 @ 4:46 pm	
Total Inorganic Carbon	27.8	mg/L	0.5	SM 5210B	WS	02/0816	
TOC	211.5	mg/L	0.5	SM 5310B	WS	02/0816	
Hardness	22,600	mg/L	3310	SM 2340B	CH	02/04/16 @ 1:06 pm	
Alkalinity to pH 4.5 as $CaCO_3$	38	mg/L	1	SM 2320B	PW	01/12/16 @ 12:00 pm	
Barium	1.31	mg/L	0.500	EPA 200.8	CH	02/03/16 @ 4:10 pm	
TDS	81,860	mg/L	10	SM 2540C	PW	01/11/16 @ 9:45 am	
Manganese	8.58	mg/L	.500	EPA 200.8	CH	02/04/16 @ 1:06 pm	
Chloride	52,167	mg/L	3	EPA 300.0	BB	01/18/16 @ 7:47 pm	
Magnesium	1,270	mg/L	500	EPA 200.8	CH	02/04/16 @ 1:06 pm	
Iron	115	mg/L	10.0	EPA 200.8	CH	02/03/16 @ 4:10 pm	
Sodium	23,100	mg/L	500	EPA 200.8	CH	02/04/16 @ 1:06 pm	
Conductivity	110,700	mg/L	0.1	SM 2510B	WB	01/20/16 @ 1:00 pm	
Specific Gravity	1.080	mg/L	--	--	WS	02/08/16	
Sulfide	2.6	mg/L	0.05	SM 4500 S-D	WB	02/10/16 @ 10:00 am	
Temperature	2.4	°C	--	SM 2550B	MC	01/07/16 @ 5:40 pm	
Dissolved Oxygen	1.70	mg/L	--	SM 4500 O-G	MC	01/07/16 @ 5:40 pm	
Density	1.080	S.G	--	--	MC	01/07/16 @ 5:40 pm	
PH (Field)	6.63	--	--	SM 4500 H+-B	MC	01/07/16 @ 5:40 pm	

Analytical Services, Inc.

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FAX (814) 265-8749

GENERAL CHEMICAL ANALYSIS REPORT

CUSTOMER: Hansen Services
7 Mead Boulevard
Clarendon, PA 16313
Attn: Justin Hansen

SAMPLE DATE: 01/07/16 at 12:50 pm
RECEIPT DATE: 01/07/16 at 5:40 pm
REPORT DATE: 02/10/16
ASI ID#: 140687

DESCRIPTION OF SAMPLE: Hansen Services

TOTAL ANALYSIS RESULTS:

PARAMETER	RESULT	UNIT	QUANTITATION LIMIT	METHOD	BY	DATE & TIME
Iron Bacteria	YES	--	--	Hot	WS	01/07/16 , Ended 01/10/16

We certify that the above reported values were obtained by use of procedures appropriate for the sample as submitted.

By: William Sabatose Date: 02/10/16

For: William J. Sabatose, Chief Chemical Analyst

PADEP LAB ID#: 33-00411

Analytical Services, Inc.

P.O. Box 237
Brockway, PA 15824-0237

Laboratory (814) 265-8749
FAX (814) 265-8749

CHEMICAL ANALYSIS REPORT

CUSTOMER: Hansen Services
7 Mead Blvd.
Clarendon, PA 16313

ATTN: Justin Hansen

ASI ID#: 140687
SAMPLE DATE: 01/07/16 @ 12:50
RECEIVED: 01/07/16 @ 17:40
REPORTED: 02/09/16

SAMPLE DESCRIPTION:

TOTAL ANALYSIS RESULTS:

Parameter	Results	Units	Reporting Limit	Method	Date Analyzed	Time	Qualifier
1,3,5-trimethylbenzene	59.3	µg/L	10.0	SW 846-8260B	02/02/16	23:27	3a
1,2,4-trimethylbenzene	136	µg/L	10.0	SW 846-8260B	02/02/16	23:27	3a
Benzene	2090	µg/L	25.0	SW 846-8260B	02/03/16	17:50	3a
Toluene	1870	µg/L	25.0	SW 846-8260B	02/03/16	17:50	3a
Ethylbenzene	90.2	µg/L	10.0	SW 846-8260B	02/02/16	23:27	3a
Xylenes (total)	957	µg/L	20.0	SW 846-8260B	02/02/16	23:27	3a
Isopropylbenzene	< 10.0	µg/L	10.0	SW 846-8260B	02/02/16	23:27	3a
Naphthalene	10.2	µg/L	10.0	SW 846-8260B	02/02/16	23:27	3a
sec-butylbenzene	< 10.0	µg/L	10.0	SW 846-8260B	02/02/16	23:27	3a
tert-butylbenzene	< 10.0	µg/L	10.0	SW 846-8260B	02/02/16	23:27	3a

Sample analyzed by Fairway Laboratories, PA Lab # 07-062

Qualifier 3a: This sample was received outside the EPA recommended holding time.

We certify that the above reported values were obtained by use of procedures appropriate for the sample as submitted.

Reviewed and Approved By: William Sabatose
For: William Sabatose, Chief Chemical Analyst

PADEP LAB ID#: 33-00411

Analytical Services, Inc.

P.O. Box 237
Brockway, PA 15824-0237

Laboratory (814) 265-8749
FAX (814) 265-8749

CHEMICAL ANALYSIS REPORT

CUSTOMER: Hansen Services
7 Mead Blvd.
Clarendon, PA 16313

ATTN: Justin Hansen

ASI ID#: 140687
SAMPLE DATE: 01/07/16 @ 12:50
RECEIVED: 01/07/16 @ 17:40
REPORTED: 02/09/16

SAMPLE DESCRIPTION:

TOTAL ANALYSIS RESULTS:

Parameter	Results	Units	Reporting Limit	Method	Date Analyzed	Time	Qualifier
Pyridine	< 40.0	µg/L	40.0	SW 846-8270D	02/03/16	14:53	3a, 2d
Acetophenone	< 20.0	µg/L	20.0	SW 846-8270D	02/03/16	14:53	3a, 2d
3 & 4-methylphenol	124	µg/L	20.0	SW 846-8270D	02/03/16	14:53	3a, 2d
2-methylphenol	101	µg/L	20.0	SW 846-8270D	02/03/16	14:53	3a, 2d

Sample analyzed by Fairway Laboratories, PA Lab # 07-062

Qualifier 3a: This sample was received outside the EPA recommended holding time.
Qualifier 2d: The LCS spike recovery was outside acceptance limits for the noted analyte. Data accepted based on additional batch QC.

We certify that the above reported values were obtained by use of procedures appropriate for the sample as submitted.

Reviewed and Approved By: William Sabatose
For: William Sabatose, Chief Chemical Analyst

PADEP LAB ID#: 33-00411

Analytical Services Inc. www.asibrockway.com analytical@windstream.net
Mail: P.O. Box 237 Brockway, Pa 15824 Ship: 51 ProChemTech Dr. Brockway Pa 15824 Phone: 814-265-8749 Fax: 814-265-8749

Chain of Custody

Client: Hansen Services		Report To: Justin Hansen	Phone: 814-688-4634		Fax:
Address: 5 Mead Blvd. Clarendon PA 16313			Email: JLH646@gmail.com		PWSID #

	Sample Name	Date/Time	Type	Containers	Matrix	Sampler	Notes	Analysis Requested
1		1/7/16 12:35 PM	Comp or Grab				DO - 1.70	See list (attached)
2		12:45 1/7/16	Comp or Grab				Temp. 2.4°C	↓
3		12 45 1/7/16	Comp or Grab				PH 6.63	
4		12 50 1/7/16	Comp or Grab				Specific Conduct 1,080	
5			Comp or Grab					
6			Comp or Grab					
7			Comp or Grab					
8			Comp or Grab					
9			Comp or Grab					
10			Comp or Grab					

Matrix Code	
DW=Drinking Water	OL= Oil
WW=Waste Water	AQ=Aqueous
SL= Sludge	SW= Storm Water
S= Solid	OT= Other (specify)

Special Requirements / Billing Information

Sample Condition	
Sample on Ice	(Y) / N
Bottles Intact	(Y) / N
Temperature	0.5 °C
sample pH	

Relinquished By	Date/Time	Organization
Mike Comer	1/7/16 1255	

Received By	Date/Time	Organization
[signature]	1-7-16 1740	ASI

ASI ID # 140687

Attachment E: Plugging & Abandonment

Please see EPA Forms 7520-19 for required information. Required diagrams are below.

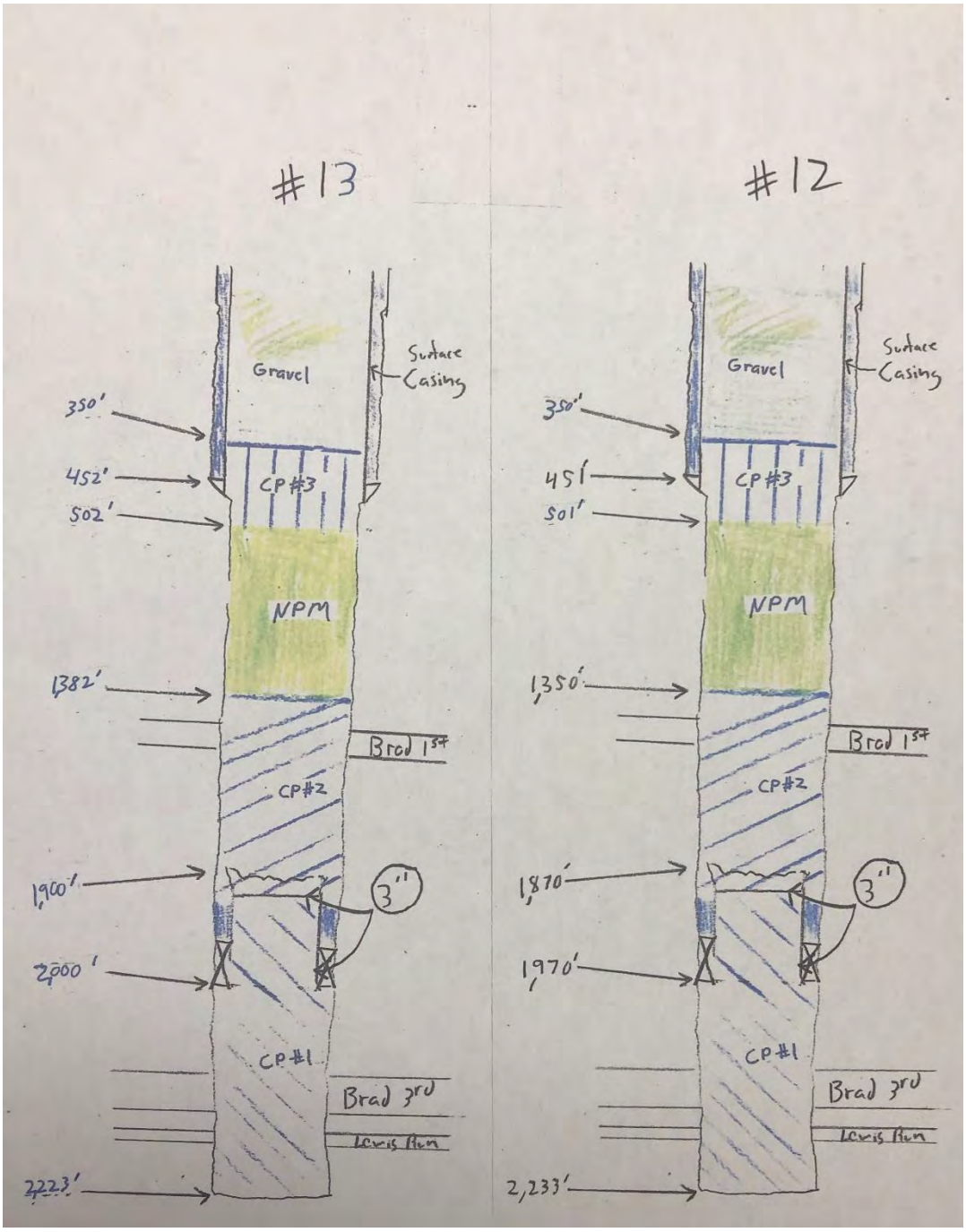

Diagram with depths for cement plugs

OMB No. 2040-0042 Approval Expires 4/30/2022

United States Environmental Protection Agency

EPA

WELL REWORK RECORD, PLUGGING AND ABANDONMENT PLAN, OR PLUGGING AND ABANDONMENT AFFIDAVIT

Name and Address, Phone Number and/or Email of Permittee

Bull Run Resources LLC
200 Liberty Street;Suite 20
Warren, PA
814-706-7302
sam@bullrunenergy.com

Permit or EPA ID Number	API Number	Full Well Name
PAS2R450BMCK	37-083-55309-00-01	Curtis Lot 2 #12

State	County
Pennsylvania	McKean

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location

[ ] 1/4 of [ ] 1/4 of Section [ ] Township [ ] Range [ ]

[ ] ft. from (N/S) [ ] Line of quarter section

[ ] ft. from (E/W) [ ] Line of quarter section.

Latitude 41.838727

Longitude -78.718666

Well Class	Timing of Action (pick one)	Type of Action (pick one)
[ ] Class I	[✓] Notice Prior to Work	[ ] Well Rework
[✓] Class II	Date Expected to Commence: When injection stops	[✓] Plugging and Abandonment
[ ] Class III	[ ] Report After Work	[ ] Conversion to a Non-Injection Well
[ ] Class V	Date Work Ended:	

Provide a narrative description of the work planned to be performed, or that was performed. Use additional pages as necessary. See instructions.

Injection wells will be plugged in accordance with Chapter 78. "Oil and Gas Wells" of the Pennsylvania Code.

1. 1-1/2" tubing and packer will be retrieved from the 3" casing
2. Cement plug #1 will be set from 2233' into the open hole section and extending into the 3" casing to a depth of 1870'
3. Free standing 3" casing will be shot near the cement top and retrieved from the well
4. Cement plug #2 will be set directly above the first plug and extend to 1350'
5. The well will be filled with a nonporous material (NPM) to 100 feet below the casing seat
6. Cement plug #3 (CP#3) will be set from 501' to 350'
7. The well will then be filled with gravel to the surface.
8. A permanent marker will be cemented in at the surface with a tag displaying the API number.

The total cement slurry volume will be ~32 bbls (~155 sks) of Type 1 cement per well. All plugs will be set from their bottom by pumping type 1 cement through 1/-1/2" tubing. The anticipated plugging cost is $3,800.50 (see quote on next page).

Certification

I certify under the 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 possibliity of fine and imprisonment. (Ref. 40 CFR § 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
Samuel V Harvey		10/01/2020

EPA Form 7520-19 (Rev. 4-19)

T & K Well Service
1365 Matthews Run Road
Youngsville, PA 16371
814 (688-1225)
tkwellservice16@gmail.com

FIELD TICKET #'S	Quote
TOTAL HOURS	12
AMOUNT:	$ 3,800.50

Field Ticket #: Quote
Service Date: TBD
Status: To Be Completed
Company: Bull Run Resources
Lease Well No: Curtis Lot 2 Injection Well

Additional Services (see attached)		WELL SUPPLIES	$/unit	Total	TOTAL HOURS
Rig Work	T & K Well Service	Work required for plugging and abandonment	$ 12.00	$ 960.00	
Equipment Charge	Curtis Well Service	Cement truck charge	$ 1.00	$ 1,350.00	
Type 1 Cement	Curtis Well Service	150 Sks of Type 1 cement	$ 12.50	$ 1,875.00	
Bentonite	Curtis Well Service	2 Sks	$ 18.00	$ 36.00	12
LCM (Multiseal)	Curtis Well Service	2 Sks	$ 44.75	$ 89.50	
Water Truck	Northern Tier	4 Hrs - Haul fresh water to rig	$ 75.00	$ 150.00	
Salvage	Goodman's	~8 Gross Ton @$165.00 (50%)	$ 165.00	$ (660.00)	
			Total:	$ 3,800.50	

OMB No. 2040-0042 Approval Expires 4/30/2022

United States Environmental Protection Agency

EPA

WELL REWORK RECORD, PLUGGING AND ABANDONMENT PLAN, OR PLUGGING AND ABANDONMENT AFFIDAVIT

Name and Address, Phone Number and/or Email of Permittee

Bull Run Resources LLC
200 Liberty Street;Suite 20
Warren, PA
814-706-7302
sam@bullrunenergy.com

Permit or EPA ID Number	API Number	Full Well Name
PAS2R450BMCK	37-083-55310-00-00	Curtis Lot 2 #13

State	County
Pennsylvania	McKean

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location

[ ] 1/4 of [ ] 1/4 of Section [ ] Township [ ] Range [ ]

[ ] ft. from (N/S) [ ] Line of quarter section

[ ] ft. from (E/W) [ ] Line of quarter section.

Latitude 41.838804

Longitude -78.716231

Well Class	Timing of Action (pick one)	Type of Action (pick one)
[ ] Class I	[✓] Notice Prior to Work	[ ] Well Rework
[✓] Class II	Date Expected to Commence: When injection stops	[✓] Plugging and Abandonment
[ ] Class III	[ ] Report After Work	[ ] Conversion to a Non-Injection Well
[ ] Class V	Date Work Ended:	

Provide a narrative description of the work planned to be performed, or that was performed. Use additional pages as necessary. See instructions.

Injection wells will be plugged in accordance with Chapter 78. "Oil and Gas Wells" of the Pennsylvania Code.

1. 1-1/2" tubing and packer will be retrieved from the 3" casing
2. Cement plug #1 will be set from 2233' into the open hole section and extending into the 3" casing to a depth of 1900'
3. Free standing 3" casing will be shot near the cement top and retrieved from the well
4. Cement plug #2 will be set directly above the first plug and extend to 1382'
5. The well will be filled with a nonporous material (NPM) to 100 feet below the casing seat
6. Cement plug #3 (CP#3) will be set from 502' to 350'
7. The well will then be filled with gravel to the surface.
8. A permanent marker will be cemented in at the surface with a tag displaying the API number.

The total cement slurry volume will be ~32 bbls (~155 sks) of Type 1 cement per well. All plugs will be set from their bottom by pumping type 1 cement through 1/-1/2" tubing. The anticipated plugging cost is $3,800.50 (see quote on next page).

Certification

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Samuel V Harvey		10/01/2020

EPA Form 7520-19 (Rev. 4-19)

T & K Well Service
1365 Matthews Run Road
Youngsville, PA 16371
814 (688-1225)
tkwellservice16@gmail.com

FIELD TICKET #'S	Quote
TOTAL HOURS	12
AMOUNT:	$ 3,800.50

Field Ticket #: Quote
Service Date: TBD
Status: To Be Completed
Company: Bull Run Resources
Lease Well No: Curtis Lot 2 Injection Well

Additional Services (see attached)		WELL SUPPLIES	$/unit	Total	TOTAL HOURS
Rig Work	T & K Well Service	Work required for plugging and abandonment	$ 12.00	$ 960.00	
Equipment Charge	Curtis Well Service	Cement truck charge	$ 1.00	$ 1,350.00	
Type 1 Cement	Curtis Well Service	150 Sks of Type 1 cement	$ 12.50	$ 1,875.00	
Bentonite	Curtis Well Service	2 Sks	$ 18.00	$ 36.00	12
LCM (Multiseal)	Curtis Well Service	2 Sks	$ 44.75	$ 89.50	
Water Truck	Northern Tier	4 Hrs - Haul fresh water to rig	$ 75.00	$ 150.00	
Salvage	Goodman's	~8 Gross Ton @$165.00 (50%)	$ 165.00	$ (660.00)	
			Total:	$ 3,800.50	

Attachment F

STANDBY TRUST AGREEMENT

U.S. Environmental Protection Agency
Underground Injection Control
Financial Responsibility Requirement

THIS TRUST AGREEMENT (the "Agreement") is entered into as of October 5, 2020 by and between Bull Run Resources LLC, owner or operator, a propietership corporation / partnership / association / proprietorship (the "Grantor"), and Hamlin Bank and Trust Company (the "Trustee"), a Financial corporation/financial institution.

Whereas, the United States Environmental Protection Agency ("EPA"), an agency of the United States Government, has established certain regulations applicable to the Grantor, requiring that an owner or operator of an injection well shall provide assurance that funds will be available when needed for plugging and abandonment of the injection well or wells,

Whereas, the Grantor has elected to establish a trust to provide all or part of such financial assurance for the facility or facilities identified herein, and

Whereas, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this Agreement, and the Trustee is willing to act as trustee,

NOW THEREFORE, the Grantor and the Trustee agree as follows:

Section 1. Definitions. As used in this Agreement: (a) The term "Grantor" means the owner or operator who enters into this Agreement and any successors or assigns of the Grantor. (b) The term " Trustee" means the Trustee who enters into this Agreement and any successor Trustee. (c) Facility or activity means any "underground injection well" or any other facility or activity that is subject to regulation under the Underground Injection Control Program.

Section 2. Identification of Facilities and Cost Estimates. This Agreement pertains to the facilities and cost estimates identified on attached Schedule A.

Section 3. Establishment of Fund. The Grantor and the Trustee hereby establish a trust fund (the "Fund") for the purpose of assuring compliance with the plugging and abandonment requirements established by EPA for the facilities identified on Schedule A. The Underground Injection Control regulations which govern the authorization to inject include a requirement for such financial assurance that the well or wells shall be plugged and abandoned at the time designated by EPA. The Grantor and the Trustee acknowledge that the Fund and all expenditures from the Fund shall be to fulfill the legal obligations of the Grantor under such regulations, and not any obligation of EPA. The Grantor and the Trustee intend that no third party have access to the Fund except as herein provided. The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule B attached hereto. Such property and any other property subsequently transferred to the Trustee is referred

to as the Fund, together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST, as hereinafter provided. The Trustee shall not be responsible, nor shall it undertake any responsibility, for the amount or adequacy of any additional payments necessary to discharge any liabilities of the Grantor established by EPA, nor shall the Trustee have any duty to collect such additional amounts from the Grantor.

Section 4. Payment for Plugging and Abandonment. The Trustee shall make payments from the Fund only for the costs of plugging and abandonment ("P&A") of the injection wells covered by this Agreement and the associated P&A Plan, only after EPA has advised the Trustee that work has been completed under the P&A Plan that complies with 40 C.F.R. § 144.28 and/or § 144.52. The Trustee shall not refund to the Grantor any amounts from the Fund unless and until EPA has advised the Trustee that the P&A Plan has been successfully completed. The Trustee shall not release any funds to the Grantor that are necessary to cover liability for any injection wells covered by this Agreement that remain unplugged.

Section 5. Payments Comprising the Fund. Payments made to the Trustee for the Fund shall consist of cash or securities acceptable to the Trustee.

Section 6. Trustee Management. The Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this Section. In investing, reinvesting, exchanging, selling, and managing the Fund, the Trustee shall discharge his duties with respect to the trust fund solely in the interest of the beneficiary and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; *except that:*

(i) Securities or other obligations of the Grantor, or any other owner or operator of the facilities, or any of their affiliates as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-2.(a), shall not be acquired or held, unless they are securities or other obligations of the Federal or a State government;

(ii) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal or State government; and

(iii) The Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

Section 7. Commingling and Investment. The Trustee is expressly authorized in its discretion: (a) To transfer from time to time any or all of the assets of the Fund to any common, commingled, or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other

trusts participating therein; and (b) To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U. S. C. 80a-1 *et seq.*, including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote shares in its discretion.

Section 8. Express Powers of Trustee. Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered: (a) To sell, exchange, convey, transfer, or otherwise dispose of any property held by it, by public or private sale. No person dealing with the Trustee shall be bound to see to the application of the purchase money or to inquire into the validity or expediency of any such sale or other disposition; (b) To make, execute, acknowledge, and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted; (c) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depositary with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentality thereof, with a Federal Reserve bank, but the books and records of the Trustee shall at all times show that all such securities are part of the Fund; (d) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal or State government; and (e) To compromise or otherwise adjust all claims in favor of or against the Fund.

Section 9. Taxes and Expenses. All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and all other proper charges and disbursements of the Trustee shall be paid from the Fund.

Section 10. Annual Valuation. The Trustee shall annually, at least 30 days prior to the anniversary date of establishment of the Fund, furnish to the Grantor and to the appropriate EPA Regional Administrator a statement confirming the value of the Trust. Any securities in the Fund shall be valued at market value as of no more than 60 days prior to the anniversary date of establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within 90 days after the statement has been furnished to the Grantor and the EPA Regional Administrator shall constitute a conclusively binding assent by the Grantor, barring the Grantor from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

Section 11. Advice of Counsel. The Trustee may from time to time consult with counsel, who may be counsel to the Grantor, with respect to any question arising as to the construction of this

Agreement of any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

Section 12. Trustee Compensation. The Trustee shall be entitled to reasonable compensation for its services as agreed upon in writing from time to time with the Grantor.

Section 13. Successor Trustee. The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor trustee and this successor accepts the appointment. The successor trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor trustee's acceptance of the appointment, the Trustee shall assign, transfer, and pay over to the successor trustee the funds and properties then constituting the Fund. If for any reason the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall specify the date on which it assumes administration of the trust in a writing sent to the Grantor, the EPA Regional Administrator, and the present Trustee by certified mail 10 days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section shall be paid as provided in Section 9.

Section 14. Instructions to the Trustee. All orders, requests, and instructions by the Grantor to the Trustee shall be in writing, signed by such persons as are designated in the attached Exhibit A or such other designees as the Grantor may designate by amendment to Exhibit A. The Trustee shall be fully protected in acting without inquiry in accordance with the Grantor's orders, requests, and instructions. All orders, requests, and instructions by the EPA Regional Administrator to the Trustee shall be in writing, signed by the EPA Regional Administrators of the Regions in which the facilities are located, or their designees, and the Trustee shall act and shall be fully protected in acting in accordance with such orders, requests, and instructions. The Trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or EPA hereunder has occurred. The Trustee shall have no duty to act in the absence of such orders, requests, and instructions from the Grantor and/or EPA, except as provided for herein.

Section 15. Notice of Nonpayment. The Trustee shall notify the Grantor and the appropriate EPA Regional Administrator, by certified mail within 10 days following the expiration of the 30-day period after the anniversary of the establishment of the Trust, if no payment is received from the Grantor during that period. After the pay-in period is completed, the Trustee shall not be required to send a notice of nonpayment.

Section 16. Amendment of Agreement. This Agreement may be amended by an instrument in writing executed by the Grantor, the Trustee, and the appropriate EPA Regional

Administrator, or by the Trustee and the appropriate EPA Regional Administrator if the Grantor ceases to exist.

Section 17. Irrevocability and Termination. Subject to the right of the parties to amend this Agreement as provided in Section 16, this Trust shall be irrevocable and shall continue until terminated at the written agreement of the Grantor, the Trustee, and the EPA Regional Administrator, or by the Trustee and the EPA Regional Administrator if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, shall be delivered to the Grantor.

Section 18. Immunity and Indemnification. The Trustee shall not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this Trust, or in carrying out any directions by the Grantor or the EPA Regional Administrator issued in accordance with this Agreement. The Trustee shall be indemnified and saved harmless by the Grantor or from the Trust Fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

Section 19. Choice of Law. This Agreement shall be administered, construed, and enforced according to the laws of the State of Pennsylvania.

Section 20. Interpretation. As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each Section of this Agreement shall not affect the interpretation or the legal efficacy of this Agreement.

IN WITNESS WHEREOF the parties have caused this Agreement to be executed by their respective representatives duly authorized and their seals to be hereunto affixed and attested as of the date first above written.

GRANTOR

Bull Run Resources LLC

By: Samuel V. Harvey
[Print name]

Its: President
[Title]

Attest:

Its: President
[Title]

[SEAL]

Before me came the individual whose identity I confirmed as Samuel V. Harvey, and whose true signature is set forth above; wherefor have I set my hand and seal this 5th day of October, 2020.

Notary Public

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Mischelle G. Heffner, Notary Public
Smethport Boro, McKean County
My Commission Expires Aug. 27, 2021
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

TRUSTEE

Hamlin Bank and Trust Company

By: David Seipp
[Print name]

Its: Trust Officer
[Title]

Attest:

Its: Trust Officer
[Title]

[SEAL]

Before me came the individual whose identity I confirmed as David Seipp, and whose true signature is set forth above; wherefor have I set my hand and seal this 5th day of October, 2020.

Notary Public

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Mischelle G. Heffner, Notary Public
Smethport Boro, McKean County
My Commission Expires Aug. 27, 2021
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

CERTIFICATE OF ACKNOWLEDGMENT
FOR
STANDBY TRUST FUND AGREEMENT

STATE OF Pennsylvania

COUNTY OF McKean

On this 5th day of October, 20 20, before me personally came

Samuuel V. Harvey to me known, who, being by me duly sworn, did depose
(Owner or Operator)

and say that he/she resides at 504 West 3rd Avenue, Warren PA 16365;
(Address)

That he/she is President of Bull Run Resources LLC,
(Title) (Corporation)

the corporation described in and which executed the above instrument; that he/she knows the seal of said corporation; that the seal affixed to such instrument in such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he/she signed his/her name thereto by like order.

(Notary Public)

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Mischelle G. Heffner, Notary Public
Smethport Boro, McKean County
My Commission Expires Aug. 27, 2021
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

[Seal]

SCHEDULE A

Identification of Facilities and Cost Estimates

Schedule A is referenced in the standby trust agreement dated 10/5/2020 by and between Bull Run Resources, LLC (Name of owner or operator), the Grantor and Hamlin Bank and Trust Company (Name of trustee), the Trustee.

EPA identification number	PAS2R450BMCK
Name of facility	Curtis Lot 2 #12
Address of facility	41.838749;-78.717399 Lewis Run, PA 16738
Current plugging and abandonment cost estimate	$3,800.50
Date of estimate	9/29/2020
EPA identification number	PAS2R450BMCK
Name of facility	Curtis Lot 2 #13
Address of facility	41.838749;-78.717399 Lewis Run, PA 16738
Current plugging and abandonment cost estimate	$3,800.50
Date of estimate	9/29/2020

SCHEDULE B

Description of Property / Financial Instrument

[Surety, Letter of Credit, etc.]

Schedule B is referenced in the Standby Trust Agreement (Section 3) dated October 6, 2020

by and between Bull Run Resources, LLC (name of owner or operator), the "Grantor,"

and Hamlin Bank and Trust Company (name of the trustee), the "Trustee."

The fund consists of: (Check on e and provide identification number)

- ○ Irrevocable Letter of Credit No. _____
- ○ Surety Performance Bond No. _____
- ◉ Other (Describe) Certificate of Deposit #13273046

NOT NEGOTIABLE – NOT SUBJECT TO CHECK

132 73046

THIS CERTIFICATE EVIDENCES A DEPOSIT IN THE NAME(S) OF: BULL RUN RESOURCES LLC

Certificate Number

Account Number

Date OCTOBER 6, 2020

IN THE AMOUNT OF HAMLIN 7,601 and 00/100 DOLLARS $ 7,601.00

TERM, MATURITY AND DESCRIPTION: This certificate has a term of 30 MONTHS. It will (first) mature APRIL 6, 2023

The minimum balance is $ 1,000.00

INTEREST: Your deposit will earn interest at the rate of .80 % per year to the first maturity date. We calculate interest using the actual / 365 days per year method. We will compound interest (accrue interest on interest)

We will pay interest SEMI-ANNUALLY BY CHECK

UNLESS WE TELL YOU OTHERWISE IN A SEPARATE DOCUMENT, INTEREST WILL NOT ACCRUE ON THIS DEPOSIT AFTER FINAL MATURITY.

RENEWALS: [XX] If checked, we will automatically renew this certificate on each succeeding maturity date. Each renewal term will be the same as the original term, beginning on the maturity date. We will not automatically renew this certificate (1) if you tell us not to do so, in writing, on or before the next maturity date; or (2) if you present this certificate to us for payment (or other disposition) on or within 10 calendar days after the maturity date if it has a term of more than 31 days, and one calendar day if it has a term of seven to 31 days.

SINGLE MATURITY: [ ] If checked, we will not automatically renew this certificate. It will mature once on the maturity date.

HAMLIN BANK AND TRUST COMPANY

BY Julie Van Ender

SONAL ACCOUNTS: You have requested and d the type of account marked below.

ndividual

oint Account - With Survivorship (and not as tenants in common)

oint Account - No Survivorship (as tenants in common)

rust: Separate Agreement Dated

ay-On-Death or [ ] Revocable Trust

ination as defined in this agreement eficiaries named below)

EVOCABLE
IST OR PAY-
N-DEATH
ACCOUNT
IEFICIARIES

NONPERSONAL ACCOUNTS: Depositor is a:

[ ] Partnership [ ] Corporation

[X] LLC

Authorization dated

The NUMBER OF ENDORSEMENTS needed for withdrawal or any other purpose is:

T.I.N.: 45-2055068

SOCIAL SECURITY OR EMPLOYER'S I.D. NUMBER - A correct taxpayer identification number is required for almost every type of account. A certification of this number is also required and is contained on the first copy of this certificate.

BACKUP WITHHOLDING - A certification that you are not subject to backup withholding is necessary for almost all accounts (except for persons who are exempt altogether). This certification is contained on the first copy of this form. Failure to provide this certification when required will cause us to withhold the percentage allowed under the Internal Revenue Code of the interest earned (for payment to the IRS). Providing a false certification can result in serious federal penalties.

ENDORSEMENTS - SIGN ONLY WHEN YOU REQUEST WITHDRAWAL

X

X

X

READ OTHER SIDE FOR ADDITIONAL TERMS

T & K Well Service
1365 Matthews Run Road
Youngsville, PA 16371
814 (688-1225)
tkwellservice16@gmail.com

FIELD TICKET #'S	Quote
TOTAL HOURS	12
AMOUNT:	$ 3,800.50

Field Ticket #: Quote
Service Date: TBD
Status: To Be Completed
Company: Bull Run Resources
Lease Well No: Curtis Lot 2 Injection Well

Additional Services (see attached)		WELL SUPPLIES	$/unit	Total	TOTAL HOURS
Rig Work	T & K Well Service	Work required for plugging and abandonment	$ 12.00	$ 960.00	
Equipment Charge	Curtis Well Service	Cement truck charge	$ 1.00	$ 1,350.00	
Type 1 Cement	Curtis Well Service	150 Sks of Type 1 cement	$ 12.50	$ 1,875.00	
Bentonite	Curtis Well Service	2 Sks	$ 18.00	$ 36.00	12
LCM (Multiseal)	Curtis Well Service	2 Sks	$ 44.75	$ 89.50	
Water Truck	Northern Tier	4 Hrs - Haul fresh water to rig	$ 75.00	$ 150.00	
Salvage	Goodman's	~8 Gross Ton @$165.00 (50%)	$ 165.00	$ (660.00)	
			Total:	$ 3,800.50	

Work to be Performed

Pull tubing and casing. Set all plugs required by the state of PA. Dump gravel and set monument.
PRICES SUBJECT TO CHANGE WITHOUT NOTICE

Attachment G.

Not Applicable

Attachment H.

Not Applicable

Attachment I.

No Existing Permits

Attachment J.

Bull Run Resources produces oil and gas from conventional oil and gas wells located in Elk, Forest, Warren and McKean Counties, Pennsylvania.

Attachment K.

Wild and Scenic River Act

Not Applicable. The proposed surface activities related to this project will occur on the existing cleared well locations and access roads. For the purposes of the Act, the proposed activities are substantially the same as current production activities.

Historic Preservation Act

Not Applicable. The proposed surface activities related to this project will occur on the existing cleared well locations and access roads. For the purposes of the Act, the proposed activities are substantially the same as current production activities.

Endangered Species Act

Not Applicable. The proposed surface activities related to this project will occur on the existing cleared well locations and access roads. For the purposes of the Act, the proposed activities are substantially the same as current production activities.

Coastal Zone Management Act

Not Applicable due to distance to coastal zones.