

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

API 47-103-02762 County Wetzel District Green
Quad Pine Grove Pad Name Mills-Wetzel Field/Pool Name Heather
Farm name WV Conservation Commission Well Number #21H
Operator (as registered with the OOG) Stone Energy Corporation
Address 1300 Fort Pierpont Dr. - Suite 201 City Morgantown State WV Zip 26508

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,373,426 Easting 528,111
Landing Point of Curve Northing 4,373,631 Easting 527,839
Bottom Hole Northing 4,374,817 Easting 526,980

Elevation (ft) 1,293 GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine

Mud Type(s) and Additive(s)
Saturated salt mud which includes Caustic Soda, Barite, Lime, New-Drill, Perma-Lose HT, Xan-Plex D, X-Cide 102, Soda Ash, and Sodium Chloride

Date permit issued 6/13/2012 Date drilling commenced 12/21/2012 Date drilling ceased 7/28/2013
Date completion activities began 9/12/2013 Date completion activities ceased 7/14/2014
Verbal plugging (Y/N) N Date permission granted _____ Granted by _____

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

Freshwater depth(s) ft 60 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1,630 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1,020 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed by:
A.L. 5/19/15
W.S. 6/10/15
06/12/2015

API 47-103 - 02762 Farm name WV Conservation Commission Well number #21H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	24"	20"	55'	New	LS		Y - GTS
Surface	17.5"	13.375"	1,310' KB - 1,293' GL	New	J55	118' & 244'	Y - CTS
Coal	17.5"	13.375"	1,310' KB - 1,293' GL	New	J55	118' & 244'	Y - CTS
Intermediate 1	12.25"	9.625"	2,769'	New	J55		Y - CTS
Intermediate 2							
Intermediate 3							
Production	8.75"	5.5"	12,503'	New	P110		Y
Tubing	N/A	2.375"	7,625'	New	N80		N/A
Packer type and depth set							

Comment Details 13.375" casing string circulated 45 bbls cement to surface, 9.625" casing string circulated 45 bbls cement to surface. 5.5" casing string TOC @ 920'.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Type 1	34	15.6	1.18	40	Surface	24.0
Surface	Class "A"	996	15.6	1.19	1,185	Surface	8.0
Coal	Class "A"	996	15.6	1.19	1,185	Surface	8.0
Intermediate 1	Lead-FlexSeal Tail-Class "A"	Lead-540 Tail-420	Lead-15.0 Tail-15.5	Lead-1.27 Tail-1.19	Lead-686 Tail-500	Surface	12.0
Intermediate 2							
Intermediate 3							
Production	Lead-GasBlock Tail-HalCem	Lead-910 Tail-1,530	Lead-15.0 Tail-15.6	Lead-1.26 Tail-1.20	Lead-1,147 Tail-1,836	920'	7.0
Tubing							

Drillers TD (ft) 12,516 MD / 7,253 TVD Loggers TD (ft) N/A
 Deepest formation penetrated Marcellus Shale Plug back to (ft) _____
 Plug back procedure _____

Kick off depth (ft) 6,428 MD / 6,406 TVD

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

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING Surface/Coal casing had bow spring centralizers placed on joints #'s 2,4,6, 8, 10, 12, 14, 16, 18, 20, 22, 24 and 26. Intermediate casing had bow spring centralizers placed on joints #'s 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60, 63 and 66. The production casing has rigid spiral alternating left/right centralizers placed beginning on joint #4 and then every fourth joint up to the top of curve at joint #144. From there bow spring centralizers were placed beginning on joint #151 and then every seventh joint to joint #286. A total of 36 rigid left/right centralizers were used and 18 bow spring centralizers were used. The joint numbers begin at TD of each individual casing string and increase as you climb towards the surface.

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	1/19/14	12,227	12,380	72	Marcellus Shale
2	4/1/14	11,940	12,154	72	Marcellus Shale
3	4/5/14	11,714	11,891	72	Marcellus Shale
4	4/10/14	11,481	11,624	72	Marcellus Shale
5	4/11/14	11,173	11,378	72	Marcellus Shale
6	4/13/14	10,907	11,100	72	Marcellus Shale
7	4/14/14	10,632	10,808	72	Marcellus Shale
8	4/16/14	10,404	10,574	72	Marcellus Shale
9	4/19/14	10,085	10,295	72	Marcellus Shale
10	4/20/14	9,870	10,033	72	Marcellus Shale
11	4/22/14	9,661	9,820	72	Marcellus Shale
12	4/23/14	9,443	9,596	72	Marcellus Shale
13	4/24/14	9,158	9,385	72	Marcellus Shale
14	4/25/14	8,913	9,053	72	Marcellus Shale
15	4/26/14	8,671	8,826	72	Marcellus Shale
16	4/28/14	8,389	8,570	72	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	4/1/14	83.0	8,428	6,890	4,338	352,188	8,788	
2	4/5/14	80.8	8,443	6,789	4,536	412,900	8,578	
3	4/9/14	71.7	8,465	7,039	4,964	484,893	17,299	
4	4/11/14	48.6	8,625	7,358	5,269	0	2,149	
5	4/13/14	85.0	7,904	6,494	4,964	407,180	8,680	
6	4/14/14	80.7	8,294	6,335	5,146	242,286	7,756	
7	4/15/14	80.1	7,853	6,667	5,146	412,750	8,323	
8	4/17/14	77.3	8,264	7,978	5,200	327,385	13,547	
9	4/20/14	79.2	8,140	6,336	5,707	238,462	10,560	
10	4/22/14	77.1	8,056	6,354	3,683	379,537	8,401	
11	4/23/14	79.9	8,137	6,524	4,598	373,476	8,086	
12	4/24/14	85.1	7,623	6,368	4,763	376,274	7,845	
13	4/25/14	83.8	8,027	7,118	5,392	410,740	8,456	
14	4/26/14	82.6	7,737	7,318	4,416	411,320	8,532	
15	4/28/14	80.3	8,025	6,787	4,598	413,680	9,009	
16	4/30/14	82.8	7,677	7,045	4,720	410,460	8,205	

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Please insert additional pages as applicable.

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MILL-WETZEL #21H

API 47-103-02762

Stone Energy Corporation

	Horizontal		Bottom (ft TVD)	Bottom (ft MD)
	Top (ft TVD)	Top (ft MD)		
Sandstone & Shale	Surface	*	1,020	FW @ 60'
Coal	1,020	*	1,024	
Sandstone & Shale	1,024	*	2,190	SW @ 1,630'
Little Lime	2,190	*	2,220	
Big Lime	2,220	*	2,365	
Big Injun	2,365	*	2,422	
Sandstone & Shale	2,422	*	2,851	
Berea Sandstone	2,851	*	2,881	
Shale	2,881	*	3,055	
Gordon	3,055	*	3,105	
Undiff Devonian Shale	3,105	*	5,358	
Riley Shale	5,358	*	5,465	
Benson Siltstone	5,465	*	5,713	
Pipe Creek Shale	5,713	*	5,722	
Undiff Devonian Shale	5,722	~	6,527	6,551
Rhinestreet	6,527	6,551	6,829	6,874
Cashaqua	6,829	6,874	6,901	6,958
Middlesex	6,901	6,958	7,023	7,111
West River	7,023	7,111	7,151	7,310
Geneseo	7,151	7,310	7,185	7,377
Tully Limestone	7,185	7,377	7,206	7,422
Hamilton Shale	7,206	7,422	7,269	7,600
Marcellus	7,269	7,600	7,253	12,516
TD			7,253	12,516

* From Pilot Hole Log and Driller's Log

~ From MWD Gamma Log

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	5/5/2014
State:	West Virginia
County/Parish:	Wetzel County
API Number:	47-103-02762
Operator Name:	Stone Energy
Well Name and Number:	Mills Wetzel #21H
Longitude:	528,111
Latitude:	4,373,426
Long/Lat Projection:	
Production Type:	
True Vertical Depth (TVD):	0
Total Water Volume (gal)*:	7114910

Hydraulic Fracturing Fluid Composition

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Proppant Transport	Schlumberger	Corrosion Inhibitor, Bactericide (Myacide GA25), Scale Inhibitor, AntiFoam Agent, Surfactant, Acid, Breaker, Gelling Agent, Friction Reducer, Iron Control Agent, Clay Control Agent, Accelerator, Propping Agent, Fluid Loss	Water (Including Mix Water Supplied by Client)*	NA		89.99787%	
			Crystalline silica	14808-60-7	98.20176%	9.82227%	
			Hydrochloric acid	7647-01-0	1.07283%	0.10731%	
			Carbohydrate polymer	Proprietary	0.63775%	0.06379%	
			Ammonium sulfate	7783-20-2	0.23817%	0.02382%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.07814%	0.00782%	
			Glutaraldehyde	111-30-8	0.05363%	0.00536%	
			Urea	57-13-6	0.03970%	0.00397%	
			Calcium chloride	10043-52-4	0.01842%	0.00184%	
			Diammonium peroxodisulfate	7727-54-0	0.01642%	0.00164%	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.00601%	0.00060%	
			Ethane-1,2-diol	107-21-1	0.00512%	0.00051%	
			Trisodium ortho phosphate	7601-54-9	0.00512%	0.00051%	
			Sodium erythorbate	6381-77-7	0.00474%	0.00047%	
			Methanol	67-56-1	0.00400%	0.00040%	
			Aliphatic alcohols, ethoxylated #2	Proprietary	0.00300%	0.00030%	
			Aliphatic acids	Proprietary	0.00300%	0.00030%	
			Prop-2-yn-1-ol	107-19-7	0.00100%	0.00010%	
			Polypropylene glycol	25322-69-4	0.00084%	0.00008%	

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

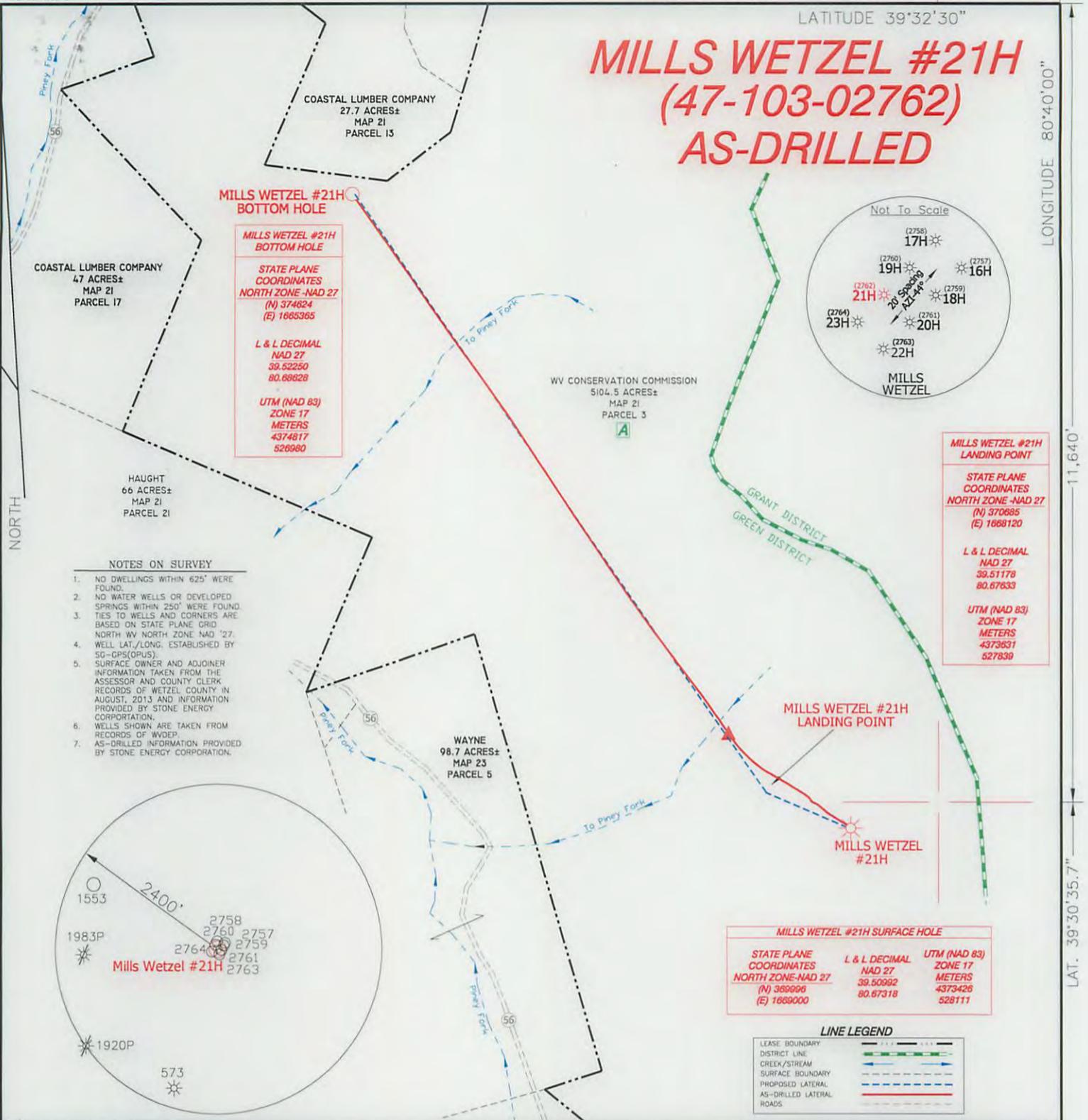
Report ID: RPT-27148 (Generated on 5/14/2014 4:59 PM)

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.

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MILLS WETZEL #21H (47-103-02762) AS-DRILLED



**MILLS WETZEL #21H
BOTTOM HOLE**

**MILLS WETZEL #21H
BOTTOM HOLE**

STATE PLANE
COORDINATES
NORTH ZONE -NAD 27
(N) 374824
(E) 1868365

L & L DECIMAL
NAD 27
39.62250
80.88828

UTM (NAD 83)
ZONE 17
METERS
4374817
528980



**MILLS WETZEL #21H
LANDING POINT**

STATE PLANE
COORDINATES
NORTH ZONE -NAD 27
(N) 370685
(E) 1868120

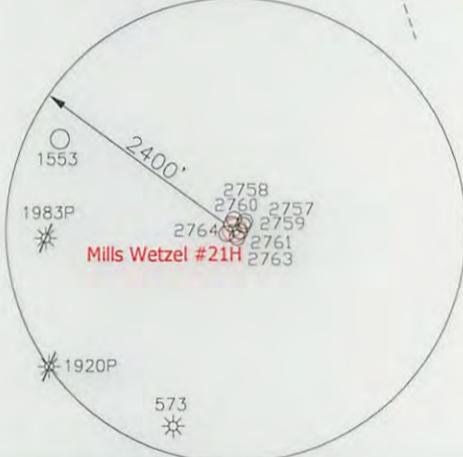
L & L DECIMAL
NAD 27
39.51178
80.87833

UTM (NAD 83)
ZONE 17
METERS
4373631
527839

MILLS WETZEL #21H SURFACE HOLE

STATE PLANE COORDINATES NORTH ZONE-NAD 27	L & L DECIMAL NAD 27	UTM (NAD 83) ZONE 17 METERS
(N) 389006 (E) 1869000	39.50992 80.87318	4373426 528111

- NOTES ON SURVEY**
1. NO DWELLINGS WITHIN 625' WERE FOUND.
 2. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
 3. TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD '27.
 4. WELL LAT./LONG. ESTABLISHED BY SG-GPS(OPUS).
 5. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF WETZEL COUNTY IN AUGUST, 2013 AND INFORMATION PROVIDED BY STONE ENERGY CORPORATION.
 6. WELLS SHOWN ARE TAKEN FROM RECORDS OF WDEP.
 7. AS-DRILLED INFORMATION PROVIDED BY STONE ENERGY CORPORATION.



LINE LEGEND

LEASE BOUNDARY	---
DISTRICT LINE	---
CREEK/STREAM	---
SURFACE BOUNDARY	---
PROPOSED LATERAL	---
AS-DRILLED LATERAL	---
ROADS	---

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE DECEMBER 17, 20 14

OPERATORS WELL NO. MILLS WETZEL #21H

API WELL NO. 47-103-02762

STATE COUNTY PERMIT

P.S. 834

Doyle Hupp, Jr.

HUPP Surveying & Mapping
P.O. Box 647 Grantsville, WV 26147
(304) 354-7035 EMAIL: hupp@frontiernet.net

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. W1719 (BK75-3)

PROVEN SOURCE OF ELEVATION SG-GPS (OPUS) SCALE 1" = 1000'

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

WELL TYPE : OIL GAS INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION :
ELEVATION 1293' WATERSHED TRIBUTARY OF PINEY FORK
DISTRICT GREEN COUNTY WETZEL QUADRANGLE PINE GROVE 7.5'

SURFACE OWNER WEST VIRGINIA CONSERVATION COMMISSION ACREAGE 5104.5 ±

ROYALTY OWNER MILLS WETZEL LAND Inc. LEASE ACREAGE 5104.5± **06/12/2015**

PROPOSED WORK : LEASE NO. _____

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER _____

PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH 7,253' TVD 12,516' MD

WELL OPERATOR STONE ENERGY CORPORATION DESIGNATED AGENT TIM MCGREGOR

ADDRESS P.O. BOX 52807 LAFAYETTE, LA 70508 ADDRESS 1300 FORT PIERPONT DR., SUITE 201 MORGANTOWN, WV 26508

LONGITUDE 80°40'00"

11,640'

LAT. 39°30'35.7"