



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
(304) 926-0450
(304) 926-0452 fax

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

January 08, 2014

WELL WORK PERMIT

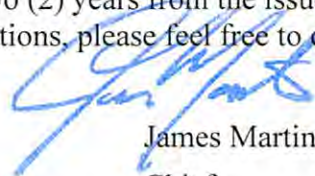
Horizontal 6A Well

This permit, API Well Number: 47-10302952, issued to STONE ENERGY CORPORATION, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.



James Martin
Chief

Operator's Well No: ERLEWINE 4H
Farm Name: ERLEWINE, RICHARD
API Well Number: 47-10302952
Permit Type: Horizontal 6A Well
Date Issued: 01/08/2014

Promoting a healthy environment.

01/10/2014

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PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACOE). Through this permit, you are hereby being advised to consult with USACOE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the fill material shall be within plus or minus 2% of the optimum moisture content as determined by the standard proctor density test, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort. Each lift must meet 95 % compaction of the optimum density based on results from the standard proctor density test of the actual soils used in specific engineered fill sites. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
8. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

103 07 509

1) Well Operator: Stone Energy Corporation Operator ID: 494490923 County: Wetzel District: Proctor Quadrangle: New Martinsville

2) Operator's Well Number: Erlewine #4H Well Pad Name: Erlewine

3) Farm Name/Surface Owner: Richard Erlewine, et al Public Road Access: Wetzel County Route 1/2

4) Elevation, current ground: 1,220' Elevation, proposed post-construction: 1,212'

5) Well Type (a) Gas Oil Underground Storage
Other

(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No No

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7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Target Formation is the Marcellus Shale @ 6,765' TVD (-5,535' SL), 50' thick, anticipated pressure is 3,800 to 4,400 psig

8) Proposed Total Vertical Depth: 6,840' TVD @ TD

9) Formation at Total Vertical Depth: Marcellus Shale

10) Proposed Total Measured Depth: 12,700' MD @ TD

11) Proposed Horizontal Leg Length: 5,200' from LP and 6,623' from KOP

12) Approximate Fresh Water Strata Depths: Shallowest @ 75' and Deepest @ 930'

13) Method to Determine Fresh Water Depths: Depth of bit when water shows in the flowline or when drilling soap is injected

14) Approximate Saltwater Depths: 1,800'

15) Approximate Coal Seam Depths: 925'

16) Approximate Depth to Possible Void (coal mine, karst, other): None Anticipated

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes No

(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

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18)

CASING AND TUBING PROGRAM

TYPE	Size	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill-up (Cu. Ft.)
Conductor	20"	New	LS	94.0	80'	80'	77 - CTS
Fresh Water	13.375"	New	J55	54.5	1,190'	1,190'	1,142 - CTS
Coal	13.375"	New	J55	54.5	1,190'	1,190'	1,142 - CTS
Intermediate	9.625"	New	J55	36.0	2,400'	2,400'	655 Lead - 333 Tail CTS
Production	5.5"	New	P110	20.0		12,700'	1,013 Lead - 2,128 Tail TOC @ 1,400'
Tubing	2.375"	New	J55	4.7		6,200'	N/A
Liners	N/A						

Note: The Fresh Water/Coal casing setting depth is just above Sea Level. At no time will the casing be set below Sea Level. The setting depth is due to sloughing formation below the Pittsburgh Coal seam.

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	0.375"	N/A	Type 1	1.18
Fresh Water	13.375"	17.5"	0.380"	2,730 psi	Class A	1.19
Coal	13.375"	17.5"	0.380"	2,730 psi	Class A	1.19
Intermediate	9.625"	12.25"	0.352"	3,520 psi	Class A	1.26 Lead - 1.19 Tail
Production	5.5"	8.75"	0.361"	12,360 psi	Class A	1.25 Lead - 1.23 Tail
Tubing	2.375"	N/A	0.190"	7,700 psi	N/A	N/A
Liners						

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PACKERS

Kind:	N/A			
Sizes:				
Depths Set:				

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19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

MIRU conductor rig and set 20" conductor into solid rock cementing back to surface. Typically the setting depth is 80'. RDMO conductor rig and MIRU top-hole rig. Drill and set 13.375" fresh water/coal casing cementing back to surface. Drill and set 9.625" intermediate casing cementing back to surface. Drill 8-3/4" production hole to just above KOP. This section will be drilled using a slant in order to maintain and reduce anti-collision concerns. Run gyro and displace with KCl fluid back to surface. RDMO top-hole rig and MIRU horizontal rig. Displace KCl fluid out of well bore with salt saturated drilling fluid. Drill to KOP and then drill curve to landing point. Continue drilling horizontal section of well bore to TD. Condition well bore at TD, TOOH, and run 5.5" production casing to TD. Cement production casing to 1000' inside of the 9.625" casing string. RDMO horizontal rig after installing night cap on top of well head.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

MIRU coil tubing unit or service rig and clean out well bore to PBTD. Run CBL to approximately 30-60 degrees in curve back to surface. Toe prep horizontal for fracturing. RDMO coil tubing unit or service rig. MIRU stimulation equipment. Begin stimulation on first stage. Anticipated maximum treating pressure is 9000 psi. Anticipated maximum pump rate is between 85 and 90 bmp of slick-water with sand. Frac plugs will be pumped down during night-time operations. The number of stages to be pumped will be determined once the well is drilled and log information is reviewed. All other stages will be pumped as described above. Once well is fraced the coil tubing unit or service rig (with snubbing unit) will be moved back on site and the frac plugs will be drilled out and the well bore will be cleaned up. Flow back time for the well will be dependent upon fluid return and gas production. All gas will be flared until the well is capable of production.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 20.6

22) Area to be disturbed for well pad only, less access road (acres): 7.6

23) Describe centralizer placement for each casing string:

Fresh Water/Coal string will use bow spring centralizers w/ one just above guide shoe and then every 2nd jt. to surface. Intermediate string will use bow spring centralizers w/ one just above the guide shoe, one just above the float collar and then on every 3rd jt. to surface. One straight vane rigid centralizer will be placed as close as practical to the surface. Production string will use alternating left/right rigid centralizers on every 4th jt. from TD to 500' above KOP and on every 3rd jt. from 500' above KOP to top of slant. Bow spring centralizers every 3rd jt. will be used from this point to top of cement.

24) Describe all cement additives associated with each cement type:

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Fresh Water/Coal cement is typically Class A w/ 0.25 pps Cello-Flake and 1.0% to 3.0% CaCl₂. Intermediate cement is a lead/tail blend with the lead being Class A w/ 10% Salt and 0.25 pps Cello-Flake. Tail is Class A w/ 0.25 pps Cello-flake and 1.0% to 3.0% CaCl₂. Production cement is a lead/tail blend with the lead being HES's GASSTOP blend w/ 0.8% Retarder and tail being HES's HALCEM blend w/ 0.65% Retarder and 0.1% Dispersant or SLB with lead/tail with the lead being Class A w/ 10% Salt or Class A w/ FlexSeal and the tail being Class A w/ 0.2% Dispersant, 0.4% Fluid Loss, 0.2% Anti-Foam, 0.15% Retarder, and 0.2% Anti-Settling Agent.

25) Proposed borehole conditioning procedures:

Fresh Water/Coal section will be done by circulating air through the drill string at TD between 30 and 90 minutes or until the well bore clears of cuttings. Intermediate section will be done by circulating air and/or stiff foam through the drill string at TD between 30 and 120 minutes or until the well bore clears of cuttings. Production section will be done by circulating drilling fluid through the drill string at TD between 120 to 720 minutes (a minimum of 3 bottoms up) until the shakers are clear of cuttings.

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*Note: Attach additional sheets as needed.



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STONE ENERGY CORPORATION

Addendum for

Planned Additives to be Used in Fracturing or Stimulations

Listed below are the chemicals used in addition to water and sand (CAS-No 14808-60-7) and their respective quantities for slick water fracturing;

- 0.5 gal/thousand gallons of water – Friction Reducer (CAS-No 7783-20-2)
- 0.25 gal/thousand gallons of water – Bacteria Control (CAS-No 11-30-8)
- 0.25 gal/thousand gallons of water – Clay Stabilizer (CAS- No 75-57-0)
- 0.75 gal/thousand gallons of water – Surfactant (CAS-No Proprietary)
- 0.25 gal/thousand gallons of water – Scale Inhibitor (CAS-No 7601-54-9 & 107-21-1)
- 2000 gal of 15% HCl (CAS-No 7647-01-0) per stage with/ 2 gal/thousand gallons of acid Corrosion Inhibitor (CAS-No 67-56-1, 107-19-7, & Proprietary) and 6 pints/thousand gallons of acid – Iron Stabilizer (CAS-No 6381-77-7)
- A 15 lb. Linear Gel and breaker is sometimes used during a stage but the exact amount is not known until the stimulation is in progress (CAS-No Proprietary & 7727-54-0)

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WW-9
(9/13)

API Number 47 - 103 -
Operator's Well No. Erlewine #4H

10302952

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Stone Energy Corporation OP Code 494490923

Watershed (HUC 10) Tributary of Proctor Creek Quadrangle New Martinsville

Elevation 1,212' County Wetzel District Proctor

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes No

Will a pit be used? Yes No

If so, please describe anticipated pit waste: _____

Will a synthetic liner be used in the pit? Yes No If so, what ml.? _____

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number 2D0859721, 34-121-24037, 34-121-24086)
- Reuse (at API Number _____ Flow Back will be collected and used for other stimulations, wells not permitted yet)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

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Will closed loop system be used? If so, describe: Both the Top-Hole Rig and Horizontal Rig will incorporate the use of a closed loop system

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air, Air/Soap, Brine Water

-If oil based, what type? Synthetic, petroleum, etc.

Additives to be used in drilling medium? See WW-9 Addendum

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. All cuttings to be disposed of in an approved landfill

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) _____

-Landfill or offsite name/permit number? Wetzel County Sanitary Landfill (SWF-1021/WV109185)

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

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

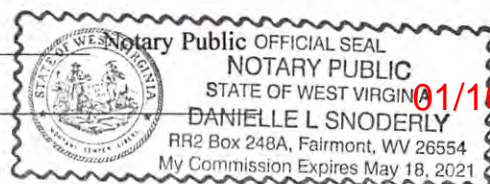
Company Official Signature [Signature] Office of Oil and Gas

Company Official (Typed Name) Timothy P. McGregor OCT 07 2013

Company Official Title Land Coordinator

Subscribed and sworn before me this 1st day of October, 20 13

My commission expires 5/18/2021



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Form WW-9

Operator's Well No. Erlewine #4H

Stone Energy Corporation

Proposed Revegetation Treatment: Acres Disturbed 20.6 Prevegetation pH _____

Lime 2.0 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20 or Equivalent

Fertilizer amount 500 - 750 lbs/acre

Mulch 0.50 to 0.75 + Straw Tons/acre

Seed Mixtures

Temporary

Permanent

Seed Type	lbs/acre
Marcellus Mix	100.0
White or Ladino Clover	10.0
Orchard Grass	40.0
Winter Rye	50.0

Seed Type	lbs/acre
Marcellus Mix	100.0
White or Ladino Clover	10.0
Orchard Grass	40.0
Winter Rye	50.0

Attach:

Drawing(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided)

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: [Signature]

Comments: _____

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Title: Oil + Gas Inspector

Date: 10-2-13 WV Department of Environmental Protection

Field Reviewed? () Yes () No

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WW-9 ADDENDUM

Drilling Medium Anticipated for This well

- Vertical section of well bore, down to KOP, will be drilled on air and/or a combination of air and drilling soap.
- From KOP through the curve section and horizontal section of well bore will be drilled on a brine-water based mud system.

Additives to be Used While Drilling

- Common additives when air drilling: KCl (CAS No. 1302-78-9 & 14808-60-7), soda ash (CAS No. 497-19-8), shale stabilizer (CAS No. 67-48-1 & 7732-1835), drilling soap (CAS No. 111-76-2), air hammer/motor lubricant.
- Common water based additives for mud drilling: NaCl (CAS No. 7647-14-5), KCl (CAS No. 7447-40-7), barite (CAS No. 13462-86-7 & 14808-60-7), starch (CAS No. 9005-25-8), PAC (CAS No. 9004-32-4), xanthum gum (CAS No. 11138-66-2), PHPA (CAS No. 64742-47-8), polysaccharide (CAS No. 11138-66-2), sulfonated asphaltic material (CAS No. 269-212-0 & 238-878-4), aluminum silicate (CAS No. 37287-16-4), gilsonite (CAS No. 12002-43-6), graphite (CAS No. 14808-60-7 & 7782-42-5), shale stabilizer (CAS No. 67-48-1 & 7732-18-5), fluid loss control polymers (CAS No. 9004-34-6), viscosity control polymers (CAS No. 11138-66-2 & 107-22-2), soda ash (CAS No. 497-19-8), sodium bicarbonate (CAS No. 144-55-8), NaOH (CAS No. 1310-73-2, 7647-14-5, & 7732-18-5), lime (CAS No. 1305-62-0), gypsum (CAS No. 778-18-9), citric acid (CAS No. 77-92-9), biocide (CAS No. 52-51-7 or 7732-18-5 + 67-56-1 + 141-43-5), CaCO₃ (CAS No. 471-34-1), cellulose fibers (CAS No. 14808-60-7), nut plug (CAS No. 9004-34-6 & 14808-60-7), cross-linking polymers (CAS No. 107-22-2 & 11138-66-2), other LCMs, surfactants (CAS No. 64-17-5), ROP enhancer/lubricant (CAS No. 8002-13-9), beads, corrosion inhibitor (CAS No. 7732-18-5), aluminum stearate (CAS No. 300-92-5), defoamer (CAS No. 246-771-9).

MSDS are available upon request.

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WW-9 ADDENDUM

Drill Cuttings Disposal Method

- Closed loop drilling system will be incorporated. No waste pits will be constructed. All drill cuttings are put through a drier system and hauled to and disposed of at approved and permitted landfills.

Landfills or Offsite Names and Permit Numbers

Wetzel County Sanitary Landfill
Rt. 1, Box 156A
New Martinsville, WV 26155
SWF-1021 / WV01909185

Brooke County Sanitary Landfill
Colliers, WV 26035
SWF-1013 / WV0109029

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Well: Erlewine #4H
 State: West Virginia
 County: Wetzel
 District: Proctor
 Prospect: Mary
 Location: Surface: North = 4,392,641 East = 517,387 (UTM NAD 83)
 PBHL: North = 4,390,884 East = 517,641 (UTM NAD 83)
 PTD: 12700' MD / 6840' TVD

STONE ENERGY - PROPOSED HORIZONTAL

Revision: 1-Oct-13

Permit Number: 47-103-
 Permit Issued:
 Post Construction Ground Elevation: 1212'
 Kelly Bushing: 18'
 Rig:
 Spud Date:
 TD Date:
 Rig Release Date:

HOLE SIZE	PILOT HOLE FORMATION TOPS	WELLBORE DIAGRAM	CASING & CEMENTING DATA DIRECTIONAL DATA	MW & FLUID TYPE	HOLE DEV.	
24" Hole then Driven	80' KB (62' BGL)		CONDUCTOR PIPE 20" x 3/8" wall L/S PE @ 80' (set in bedrock & grouted to surface)		Vertical	
17-1/2" Hole	Shallowest FW 75' TVD Pittsburgh Coal 925' TVD Deepest FW 930' TVD 1190' TVD		SURFACE CASING 13-3/8" 54.5# J-55 STC @ 1190' MD/TVD Set through fresh water zones Set through coal zones Cemented to surface	Air / Mist	Vertical	
12-1/4" Hole	Salt Water 1800' TVD Little Lime 2022' TVD Big Lime 2052' TVD Big Injun Sandstone 2152' TVD Base of Big Injun 2252' TVD 2400' TVD		INTERMEDIATE CASING 9-5/8" 36.0# J-55 LTC @ 2400' MD/TVD Set through potential salt water zones Set below base of Big Injun Cemented to surface	Stiff Foam	Vertical	
8-3/4" Hole	Berea Sandstone 2620' TVD Gordon Sandstone 2865' TVD			Air / Dust		
8-3/4" Hole	Rhines Street Shale (Base) 6186' TVD		KOP @ 6077' TVD		WBM in Curve	
8-3/4" Hole	Middlesex Shale 6280' TVD West River Shale 6310' TVD Genesee Shale 6645' TVD Tully Limestone 6665' TVD Hamilton Shale 6725' TVD					
8-3/4" Hole in Lateral	Marcellus Shale 6765' TVD				WBM in Lateral	~89.5°
	Onondaga Limestone 6815' TVD					
			Landing Point (LP) @ 7500' MD / 6790' TVD ~89.5° angle ~164° azimuth			
				TD @ 12700' MD / 6840' TVD PRODUCTION CASING 5-1/2" 20.0# P-110 CDC @ 12700' MD Top of Cement @ 1400' (~1000' inside 9-5/8")		

Notes: Formation tops as per vertical pilot hole
 Curve & lateral tops will vary due to structural changes
 Directional plan based upon best estimate of structure

WV Department of Environmental Protection
 Office of Oil and Gas

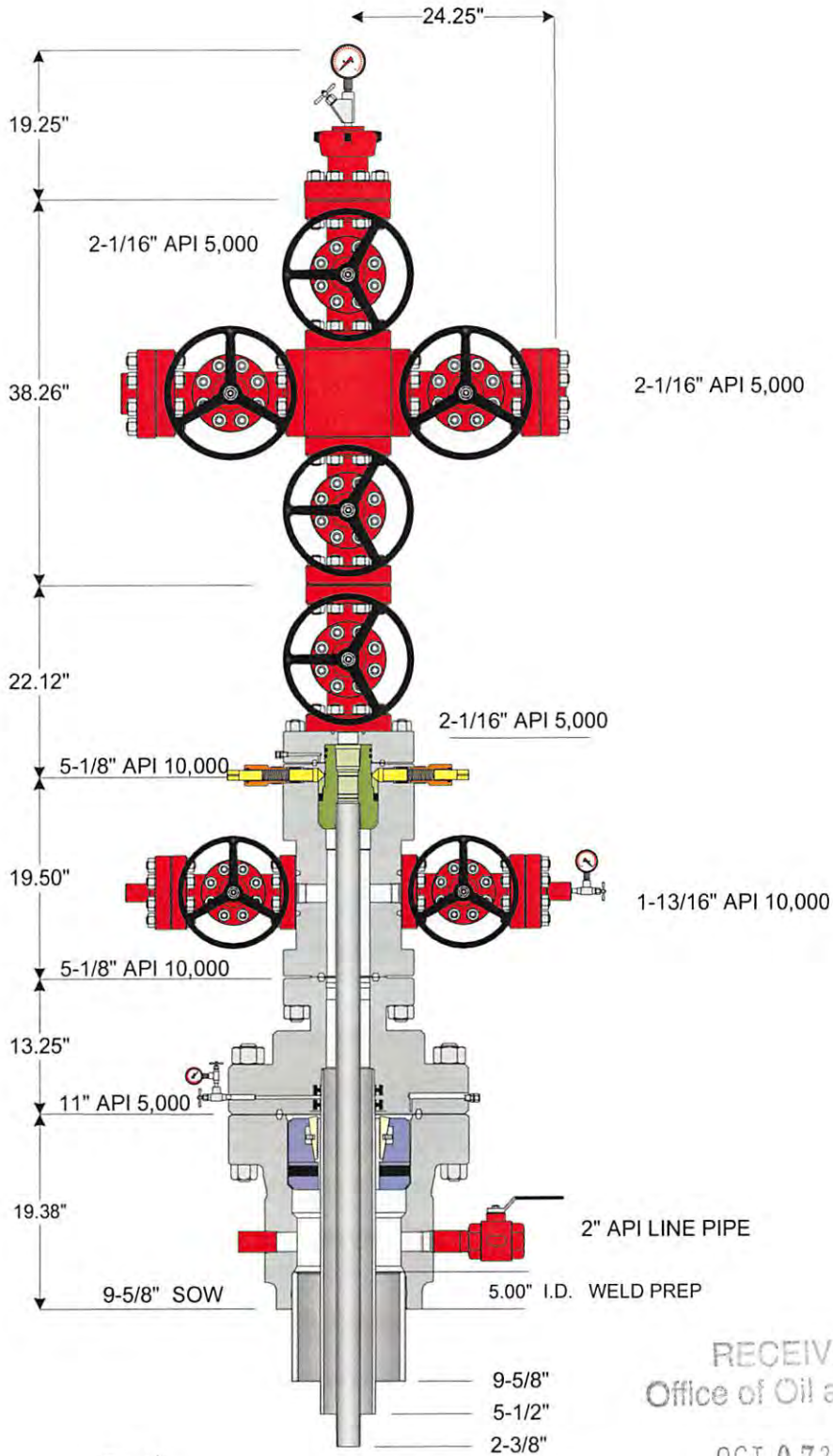
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NOTE: THIS DRAWING IS NOT TO SCALE. THE DIMENSIONS REFLECTED ON THE DRAWING ARE ESTIMATED MEASUREMENTS AND FOR REFERENCE ONLY.



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Customer: STONE ENERGY

Project: 46705

Quote: 99565 v 3

Tender, Project or Well: 2011- 2012 CONVENTIONAL MARCELLUS

Date: 07-17-2011

Drawn By: RZ
01/10/2014



Water Management Plan: Primary Water Sources



WMP- 01619

API/ID Number: 047-103-02952

Operator:

Stone Energy Corporation

Erlewine #4H

Important:

For each proposed primary water source (including source intakes for purchased water sources) identified in your water management plan, and summarized herein, DEP has made an evaluation concerning water availability over the specified date range. DEP's assessment is based on the following considerations:

- Statistical analysis of historical USGS stream gauge data (transferred to un-gauged locations as necessary);
- Identification of sensitive aquatic life (endangered species, mussels, etc.);
- Quantification of known existing demands on the water supply (Large Quantity Users);
- Minimum flows required by the Army Corps of Engineers; and
- Designated stream uses.

Based on these factors, DEP has provided, for each intake location (and origination point for purchased water), a reference gauge location and discharge flow reading which must be surpassed prior to withdrawals. Additionally, DEP has established a minimum passby flow at the withdrawal location which must also be surpassed prior to withdrawals. These thresholds are considered terms of the permit and are enforceable as such.

DEP is aware that some intake points will be used for multiple wells and well sites. In these cases, the thresholds set by the Water Management Plan are to be interpreted as total withdrawal limits for each location over the specified date range regardless of how many wells are supported by that intake.

For all purchased water intakes, determinations of water availability are made at the original source intake location. It is the responsibility of the Oil and Gas Operator, not the seller, to cease withdrawal of water from the seller when flows are less than the minimum gauge reading at the stream gauge referenced by the Water Management Plan in order to protect stream uses.

Note that the determinations made herein are based on the best available data, but it is impossible to predict water availability in the future. While the DEP has carefully established these minimum withdrawal thresholds, it remains the operator's responsibility to protect aquatic life at all times. Approval to withdrawal is contingent upon permission from the land owner. It is the responsibility of the operator to secure and maintain permission prior to any withdrawals.

The operator is reminded that 24-48 hours prior to withdrawing (or purchasing) water, DEP must be notified by email at DEP.water.use@wv.gov.

APPROVED DEC 04 2013

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Source Summary

WMP-01619

API Number:

047-103-02952

Operator:

Stone Energy Corporation

Erlewine #4H

Stream/River

● Source **Ohio River @ The Spielers Club** Wetzel Owner: **The Spielers Club**

Start Date	End Date	Total Volume (gal)	Max. daily purchase (gal)	Intake Latitude:	Intake Longitude:
1/15/2015	1/15/2013	5,700,000		39.709677	-80.826384

Regulated Stream? Ohio River Min. Flow Ref. Gauge ID: 9999999 Ohio River Station: Willow Island Lock & Dam

Max. Pump rate (gpm): **833** Min. Gauge Reading (cfs): **6,468.00** Min. Passby (cfs)

DEP Comments: Refer to the specified station on the National Weather Service's Ohio River forecast website: <http://www.erh.noaa.gov/ohrfc//flows.shtml>

01/10/2014

Source Detail

WMP-01619

API/ID Number: 047-103-02952

Operator: Stone Energy Corporation

Erlewine #4H

Source ID: 30418 Source Name: Ohio River @ The Spielers Club
The Spielers Club

Source Latitude: 39.709677
Source Longitude: -80.826384

HUC-8 Code: 5030201

Drainage Area (sq. mi.): 25000 County: Wetzel

Anticipated withdrawal start date: 1/15/2015

Anticipated withdrawal end date: 1/15/2013

Endangered Species? Mussel Stream?

Total Volume from Source (gal): 5,700,000

Trout Stream?

Tier 3?

Max. Pump rate (gpm): 833

Regulated Stream? Ohio River Min. Flow

Max. Simultaneous Trucks: 0

Proximate PSD? Grandview-Doolin PSD

Max. Truck pump rate (gpm): 0

Gauged Stream?

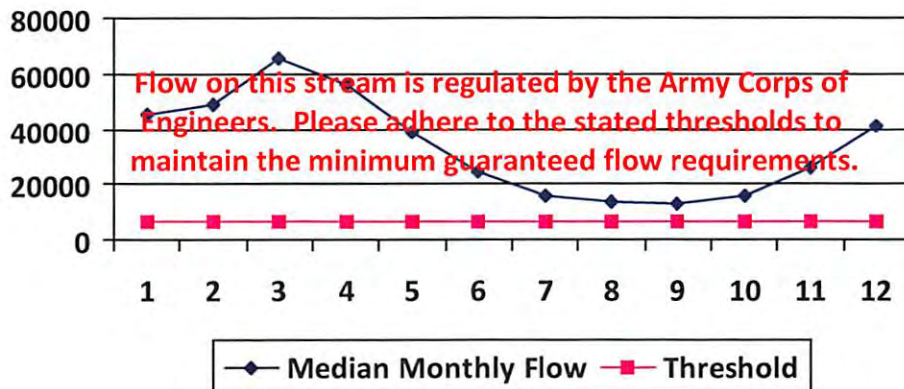
Reference Gaug: 9999999 Ohio River Station: Willow Island Lock & Dam

Drainage Area (sq. mi.): 25,000.00

Gauge Threshold (cfs): 6468

Month	Median monthly flow (cfs)	Threshold (+ pump)	Estimated Available water (cfs)
1	45,700.00	-	-
2	49,200.00	-	-
3	65,700.00	-	-
4	56,100.00	-	-
5	38,700.00	-	-
6	24,300.00	-	-
7	16,000.00	-	-
8	13,400.00	-	-
9	12,800.00	-	-
10	15,500.00	-	-
11	26,300.00	-	-
12	41,300.00	-	-

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs):	-
Upstream Demand (cfs):	0.00
Downstream Demand (cfs):	0.00
Pump rate (cfs):	1.86
Headwater Safety (cfs):	0.00
Ungauged Stream Safety (cfs):	0.00

Min. Gauge Reading (cfs):	-
Passby at Location (cfs):	-

"Threshold", as depicted in the chart above is meant only to indicate the calculated base threshold at the proposed withdrawal location. This value does not include the proposed pump rate or existing demand on the stream. Refer to the monthly breakdown above for a more complete estimation of water availability by month.

01/10/2014



Water Management Plan: Secondary Water Sources



WMP-01619

API/ID Number: 047-103-02952

Operator: Stone Energy Corporation

Erlewine #4H

Important:

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Multi-site impoundment

Source ID:	30419	Source Name:	Pribble Centralized Freshwater Impoundment		Source start date:	1/15/2015
					Source end date:	1/15/2013
Source Lat:	39.685144	Source Long:	-80.820002	County:	Wetzel	
Max. Daily Purchase (gal)				Total Volume from Source (gal):	5,700,000	

DEP Comments:

The intake identified above has been defined in a previous water management plan. The thresholds established in that plan govern this water management plan unless otherwise noted.

Reference: WMP-277

01/10/2014

Important:

For each proposed secondary water source identified in your water management plan (i.e., groundwater well, lake/reservoir, recycled frac water, multi-site impoundment, out-of-state source), DEP makes no estimation of the availability of water. These sources may prove to be unsuitable water supplies. Please review the following notes:

- For groundwater supply wells, DEP recommends that the operator contact the local health department prior to drilling any new well; and reminds the operator that all drinking water wells within 1,500 feet of a water supply well shall be flow- and quality-tested by the operator at the request of the drinking well owner prior to operation of the water supply well.
- For each proposed multi-site impoundment water source identified in your water management plan (if applicable), DEP will review the withdrawal limits established in the referenced Water Management Plan for current suitability and provide to the operator these limits for each identified intake. Note that withdrawal limits may be modified as necessary based on changing demands upon that water supply.

Recycled Frac Water

Source ID: 30420 Source Name Various

Source start date: 1/15/2015

Source end date: 1/15/2013

Source Lat:

Source Long:

County

Max. Daily Purchase (gal)

Total Volume from Source (gal): 5,700,000

DEP Comments:

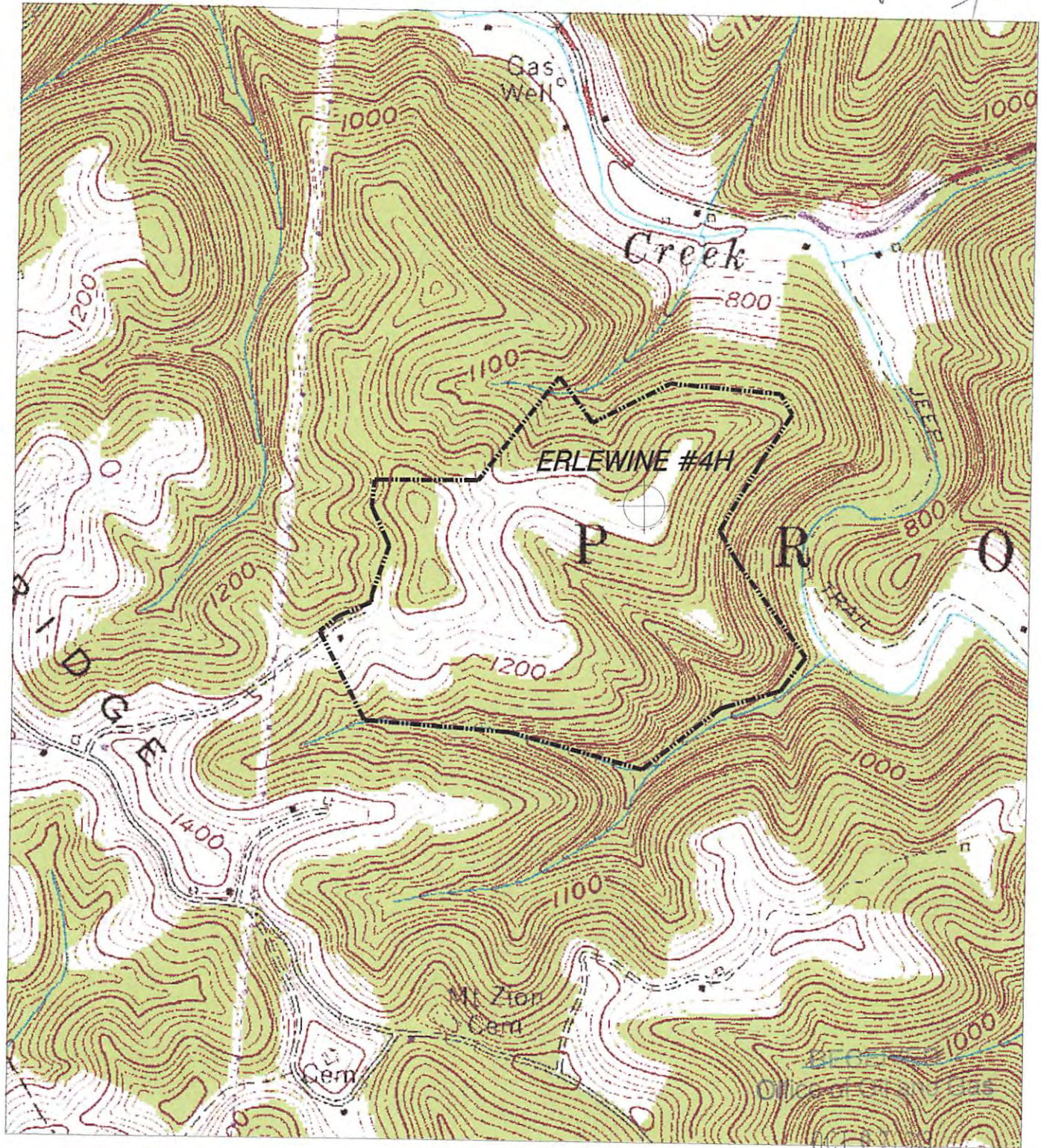
10302952

Stone Energy Corporation Erlewine #4H

Form W-9

Page 1 of 1

plot spotted



NORTH

*DmH
10-2-13*

HUPP Surveying & Mapping

P.O. BOX 647 GRANTSVILLE, WV 26147
PH: (304)354-7035 E-MAIL: hupp@frontiernet.net

1" = 1000'
New Martinsville 7.5'

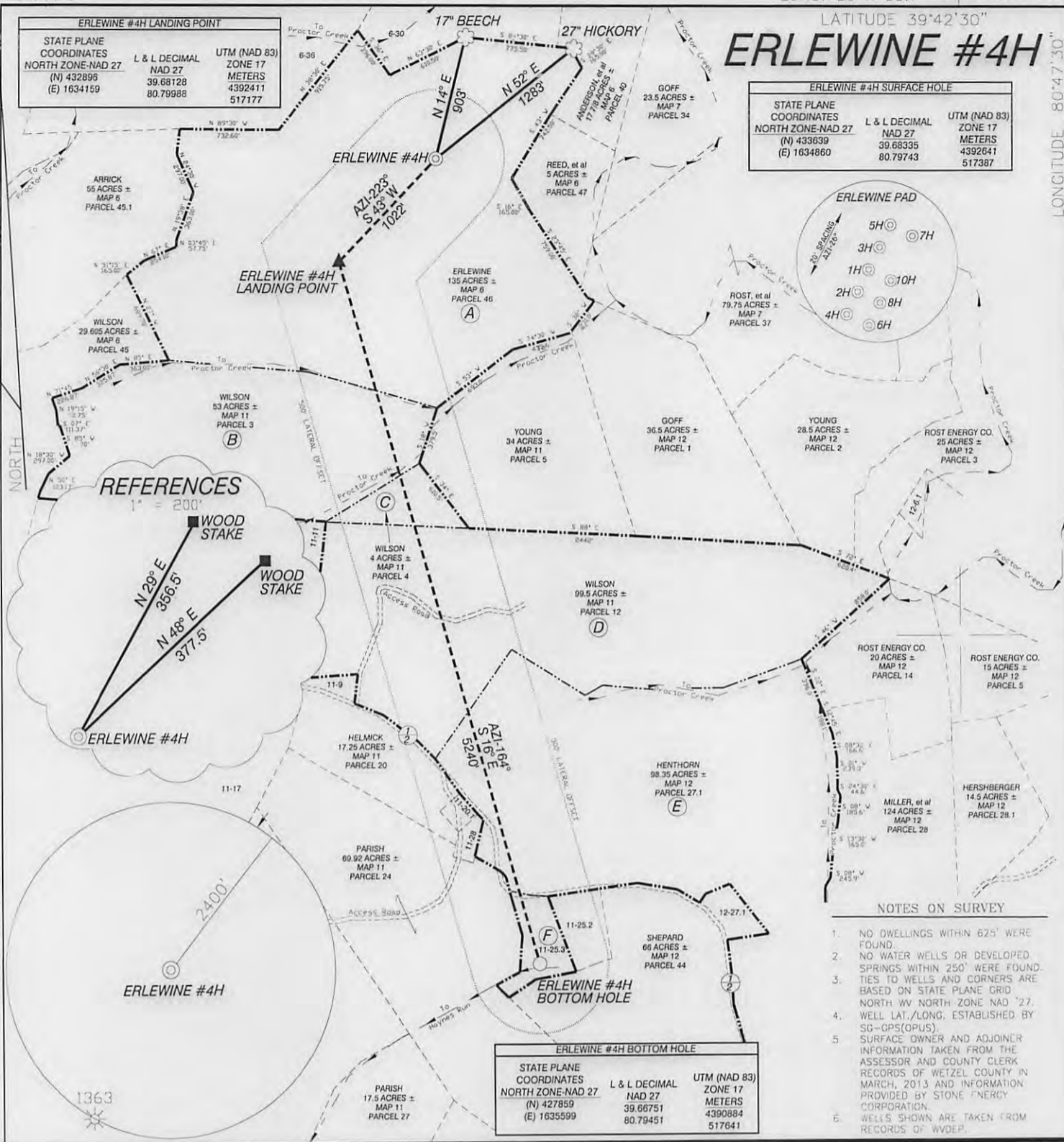
WV Department of
Stone Energy Corporation
P.O. Box 52807
Lafayette, LA 70508

01/10/2014

ERLEWINE #4H LANDING POINT		
STATE PLANE COORDINATES NORTH ZONE-NAD 27 (N) 432896 (E) 1634159	L & L DECIMAL NAD 27 39.68128 80.79988	UTM (NAD 83) ZONE 17 METERS 4392411 517177

ERLEWINE #4H

ERLEWINE #4H SURFACE HOLE		
STATE PLANE COORDINATES NORTH ZONE-NAD 27 (N) 433639 (E) 1634860	L & L DECIMAL NAD 27 39.68335 80.79743	UTM (NAD 83) ZONE 17 METERS 4392641 517387



ERLEWINE #4H BOTTOM HOLE		
STATE PLANE COORDINATES NORTH ZONE-NAD 27 (N) 427859 (E) 1635599	L & L DECIMAL NAD 27 39.68751 80.79451	UTM (NAD 83) ZONE 17 METERS 4390884 517641

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 RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
 DATE SEPTEMBER 19, 20 13
 OPERATORS WELL NO. ERLEWINE #4H
 AP NO. 47-103-2952
 STATE COUNTY PERMIT H6A

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. W2192 (BK 65-61)
 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 LIQUID INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION :
 ELEVATION 1,220' WATERSHED TRIBUTARY OF PROCTOR CREEK
 DISTRICT PROCTOR COUNTY WETZEL QUADRANGLE NEW MARTINSVILLE 7.5'

SURFACE OWNER RICHARD ERLEWINE ACREAGE 135±
 ROYALTY OWNER RICHARD ERLEWINE, et al LEASE ACREAGE 394.45± LEASE NO.

PROPOSED WORK :
 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 TVD 6,840' MD 12,700'

WELL OPERATOR STONE ENERGY CORPORATION DESIGNATED AGENT TIM MCGREGOR
 ADDRESS P.O. BOX 52807 LAFAYETTE, LA 70508 ADDRESS 6000 HAMPTON CENTER SUITE B MORGANTOWN WV 26505