



west virginia department of environmental protection

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

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

PERMIT MODIFICATION APPROVAL
Horizontal 6A / Horizontal 6A Well - 1

EQT PRODUCTION COMPANY
120 PROFESSIONAL PLACE
BUILDING II
BRIDGEPORT, WV 26330

Re: Permit Modification Approval for 513922
47-103-03110-00-00

Adding Additional Lease

EQT PRODUCTION COMPANY

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.



James A. Martin
Chief

Operator's Well Number: 513922
Farm Name: DALLISON, RICHARD
U.S. WELL NUMBER: 47-103-03110-00-00
Horizontal 6A / Horizontal 6A Well - 1
Date Issued: 12/30/2016

Promoting a healthy environment.

01/06/2017



June 8, 2016

Mr. Gene Smith
West Virginia Department of Environmental Protection
Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304

Re: Modification of 47-103-03110

Dear Mr. Smith,

Please accept the attached updates for the above referenced permit. Upon inspection of our as-drilled plat, we noted the curve geometry crossed into 1 additional lease, #300752. Enclosed is an updated WW-6A1, WW-6B, mylar plat and rec plan reflecting corrections to update the permit file to be consistent with the as-drilled well bore.

If you have any questions, please do not hesitate to contact me at (304) 848-0076.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Vicki Roark'.

Vicki Roark
Permitting Supervisor-WV

Enc.

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

1) Well Operator: EQT Production Company 306686 Wetzel Grant Big Run
Operator ID County District Quadrangle

2) Operator's Well Number: 513922 Well Pad Name: BIG192

3) Farm Name/Surface Owner: Richard Dallison et al Public Road Access: Rt 20

4) Elevation, current ground: 1452.0 Elevation, proposed post-construction: 1452.0

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

(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus, 7655', 53', 2620 PSI

8) Proposed Total Vertical Depth: 7655

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 13816

11) Proposed Horizontal Leg Length: 4857

12) Approximate Fresh Water Strata Depths: 549, 581, 780

13) Method to Determine Fresh Water Depths: By offset wells

14) Approximate Saltwater Depths: 2257, 2370

15) Approximate Coal Seam Depths: 743, 804, 919, 1009, 1240

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

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 (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	26	New	A-500	85.6	80	80	115.6 ft ³ / CTS
Fresh Water	13 3/8	New	J-55	54.5	974	974	1129.2 ft ³ / CTS
Coal							
Intermediate	9 5/8	New	A-500	40	2767	2767	1233.1 ft ³ / CTS
Production	5 1/2	New	P-110	20	13806	13806	500' above top producing zone
Tubing	2 3/8		J-55	4.7		May not be run, if run set 40' above top perf or 80° inclination	
Liners							

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	26	30	.312	884	707	Class A	1.18
Fresh Water	13 3/8	17 1/2	.38	2700	2160	Class A	1.2
Coal							
Intermediate	9 5/8	12 3/8	.395	3950	3160	Class A	1.18
Production	5 1/2	8 1/2	.361	12640	10112	Class H	1.07/1.84
Tubing	2 3/8	NA	.19	7700			
Liners							

PACKERS

Kind:				
Sizes:				
Depths Set:				

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

Drill and complete a new horizontal well in the Marcellus Formation. Drill the vertical to an approximate depth of 4135'. Kick off and drill curve. Drill the lateral in the Marcellus. Cement casing.

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

Hydraulic fracturing is completed in accordance with state regulations using water recycled from previously fractured wells and obtained from freshwater sources. This water is mixed with sand and a small percentage (less than 0.3%) of chemicals (including 15% Hydrochloric acid, gelling agent, gel breaker, friction reducer, biocide, and scale inhibitor), referred to in the industry as a "slickwater" completion. Maximum anticipated internal casing pressure is expected to be approximately 10000 psi, maximum anticipated treating rates are expected to average approximately 100 bpm. Stage lengths vary from 150 to 300 feet. Average approximately 200,000 barrels of water per stage. Sand sizes vary from 100 mesh to 20/40 mesh. Average approximately 200,000 pounds of sand per stage.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): no additional disturbance

22) Area to be disturbed for well pad only, less access road (acres): no additional disturbance

23) Describe centralizer placement for each casing string:

- Surface: Bow spring centralizers – One centralizer at the shoe and one spaced every 500'.
- Intermediate: Bow spring centralizers– One centralizer at the shoe and one spaced every 500'.
- Production: One solid body centralizer spaced every other joint from production casing shoe to KOP

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

Conductor: Class A no additives
Surface (Class A Cement): 0-3% Calcium Chloride. Used to speed the setting of cement slurries
Intermediate (Class A Cement): 0-3% Calcium Chloride. Used to speed the setting of cement slurries.
Production:
Lead (Type H Cement): 0.2% CD-20 (dispersant makes cement easier to mix). .15% SuperFL-300 (fluid loss/lengthens thickening time) .15% SEC-10 (fluid loss) 50:50 POZ (extender)
Tail (Type H Cement): 0.2% Super CR-1 (Retarder). Lengthens thickening time. .3% Super FL-200 (fluid loss) .2% SEC-10 (Fluid loss). .2% SuperFL-350 (fluid loss) Reduces amount of water lost to formation. 60 % Calcium Carbonate. Acid solubility.

25) Proposed borehole conditioning procedures:

Surface: Circulate hole clean while rotating & reciprocating the drill string until cuttings diminish at surface.
Intermediate: Circulate hole clean while rotating & reciprocating the drill string until cuttings diminish at surface.
Production: Pump marker sweep with nut plug to determine actual hole washout. Calculate a gauge hole bottoms up volume. Perform a cleanup cycle by pumping 3-5 bottoms up or until the shakers are clean. Check volume of cuttings coming across the shakers every 15 minutes.

*Note: Attach additional sheets as needed.

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**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
see attachment				

**Acknowledgement of Possible Permitting/Approval
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: EQT Production Company
 By: Victoria J. Roark
 Its: Permitting Supervisor

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47-103-03110

WW-6A1 attachment

Operator's Well No.

513922

Lease No.	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
	<u>Mills Wetzel Lands, Inc. (Current Royalty Owner)</u>		***	
<u>300752</u>	Mills Wetzel Lands, Inc. Consolidated Gas Supply Corporation	Consolidated Gas Supply Corporation Consolidated Gas Transmission Corp.		OG 52A/421 OG 66A/69 unrecorded name change (see attached)
	Consolidated Gas Transmission Corp. CNG Transmission Corporation	CNG Transmission Corporation		LB 76A/232
	Eastern States Oil & Gas Co., Inc.	Eastern States Oil & Gas, Inc.		CB13/14
	Equitable Production - Eastern States Oil & Gas, Inc.	Equitable Production Co.		CB13/14
	Equitable Production Co.	EQT Production Company		CB13/14
<u>104225</u>	<u>Ed Broome Inc et al (Current Royalty Owner)</u>		***	
	L. G. Robinson, etal	H. L. Smith		LB111/452
	H. L. Smith	Philadelphia Company		LB47A/287
	Philadelphia Company	Pittsburgh & West Virginia Gas Company		DB146/98
	Pittsburgh & West Virginia Gas Company	Equitable Gas Company		DB187/321
	Equitable Gas Company	Equitrans, Inc.		CB71A/453
	Equitrans, LLC	EQT Production Company		DB192/19 Doddridge
<u>1.419724483</u>	<u>Arthur J. Fach et al (Current Royalty Owner)</u>			
now 1009312	Arthur J. Fach	EQT Production Company	min pd 1/8	LB 166A/3
	Eddie D. Dallison & Kim L. Dallison	EQT Production Company		LB 166A/22
	Clay D.C. Dallison	EQT Production Company		LB 166A/24

*** We will pay one-eighth of the total amount paid to or received by or allowed to the owner of the working interest at the wellhead for the oil or gas so extracted, produced, or marketed before deducting the amount to be paid to or set aside for the owner of the oil or gas in place, on all such oil or gas to be extracted, produced, or marketed from the well.

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I, Ken Flechler, - Secretary of State of the State of West Virginia, hereby certify that originals of an application by

CONSOLIDATED GAS TRANSMISSION CORPORATION

for an amended certificate of authority to transact business in West Virginia are filed in my office, as required by the provisions of Chapter 31, Article 1, Sections 57 and 59 of the West Virginia Code and conform to law. Therefore, I issue this

AMENDED CERTIFICATE OF AUTHORITY

to transact business in West Virginia under the name of

CNG TRANSMISSION CORPORATION

and I attach to this certificate a duplicate original of the application.

Given under my hand and the Great Seal of the State of West Virginia, on this

THIRTEENTH day of
JANUARY 19 08

Ken Flechler

Secretary of State



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May 24, 2016

Mr. James Martin
West Virginia Department of Environmental Protection
Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304

Re: BIG192, 513922, 47-10303110

Dear Mr. Martin,

EQT Production Company is submitting an application for a new well work permit for the above well number. Upon information and belief, Operator's lease and/ or other real property rights permit it to conduct drilling operations for the subject well in the location shown on the plat, including under any public roads that the well lateral crosses.

Sincerely,

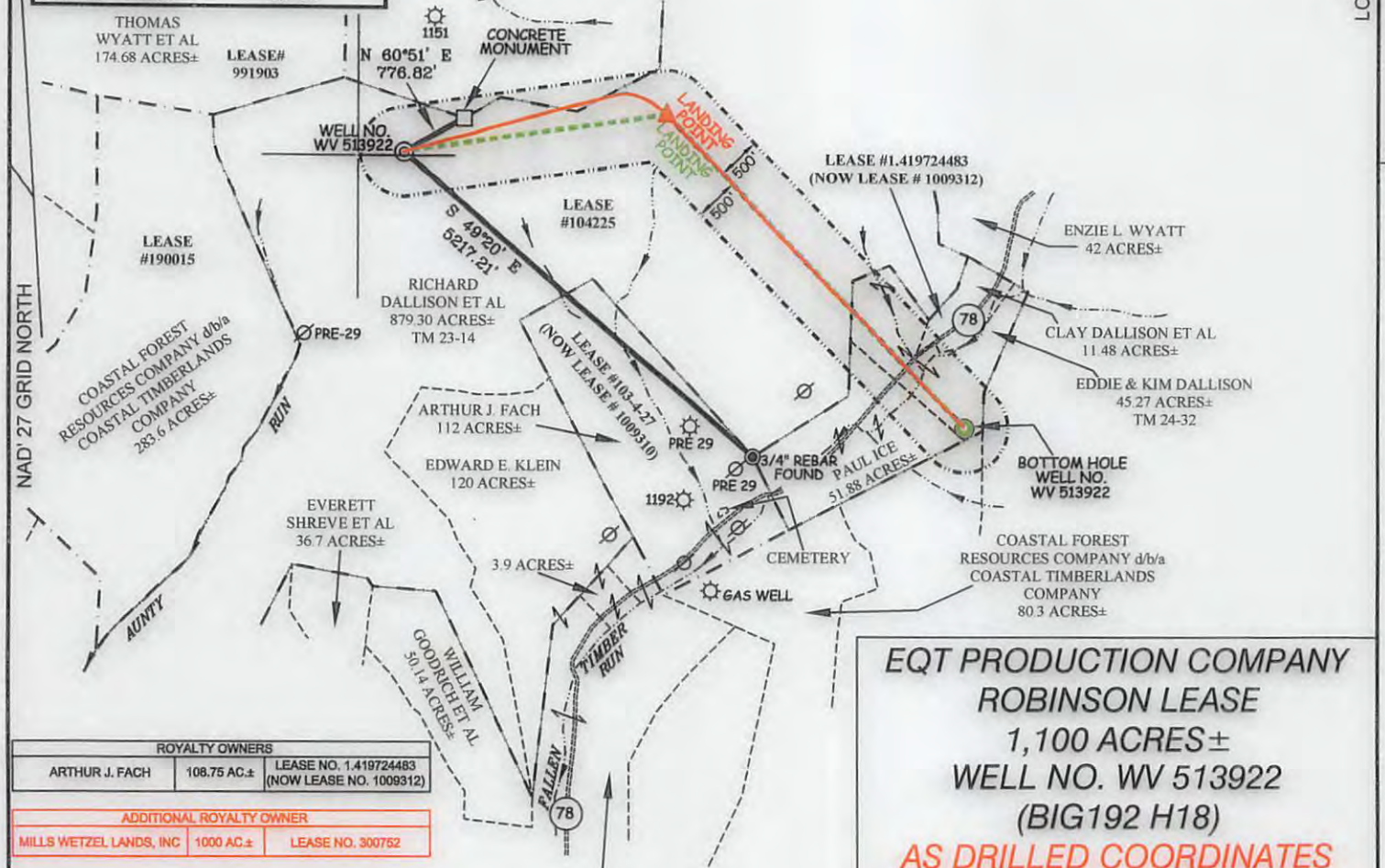
A handwritten signature in blue ink, appearing to read 'Vicki Roark'.

Vicki Roark
Permitting Supervisor-WV

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LEGEND

LEASE LINE	---
SURFACE LINE	- - - -
PROPOSED PATH	---
AS DRILLED PATH	---
OFFSET LINE	---
TIE LINE	---
CREEK	---
ROAD	---
COUNTY ROUTE	---
PROPOSED WELL	⊙
PLUGGED WELL	⊙
EXISTING WELL	⊙
TAX MAP-PARCEL	00-00



ROYALTY OWNERS		
ARTHUR J. FACH	108.75 AC±	LEASE NO. 1.419724483 (NOW LEASE NO. 1009312)
ADDITIONAL ROYALTY OWNER		
MILLS WETZEL LANDS, INC	1000 AC±	LEASE NO. 300752

**EQT PRODUCTION COMPANY
ROBINSON LEASE
1,100 ACRES±
WELL NO. WV 513922
(BIG192 H18)**

AS DRILLED COORDINATES

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'27 S.P.C.(FT)	N. 376,139.37	E. 1,694,589.58
NAD'27 GEO.	LAT-(N) 39.527670	LONG-(W) 80.582755
NAD'83 UTM (M)	N. 4,375,427.75	E. 535,875.94
LANDING POINT		
NAD'27 S.P.C.(FT)	N. 376,560.71	E. 1,697,571.18
NAD'27 GEO.	LAT-(N) 39.528925	LONG-(W) 80.572203
NAD'83 UTM (M)	N. 4,375,571.30	E. 536,782.20
BOTTOM HOLE		
NAD'27 S.P.C.(FT)	N. 373,071.28	E. 1,700,947.15
NAD'27 GEO.	LAT-(N) 39.519455	LONG-(W) 80.560089
NAD'83 UTM (M)	N. 4,374,525.39	E. 537,828.43

NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- AS DRILLED INFORMATION PROVIDED BY EQT.

Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING, INC.

SLS
SURVEYORS
ENGINEERS
ENVIRONMENTAL
PROJECT MGMT.

(304) 482-5834 WWW.SLS.SURVEYS.COM



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.

P.S. 2288 *Earl N. Thompson*

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE FEBRUARY 23, 20 15
REVISED 03/25/15, 07/08/15, 07/21/15, 01/13/16, 04/12/16 & 06/07/16
OPERATORS WELL NO. WV 513922
API WELL NO. 47 - 103 - 03110H
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 200 FILE NO. 7797AD513922R2 SCALE 1" = 2000'
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK)

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

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

LOCATION: PAD ELEVATION 1,452' WATERSHED AUNTY RUN OF SOUTH FORK FISHING CREEK
DISTRICT GRANT COUNTY WETZEL QUADRANGLE BIG RUN 7.5'

SURFACE OWNER RICHARD DALLISON ET AL ACREAGE 879.30±
ROYALTY OWNER ED BROOME, INC ET AL ACREAGE 1,100±

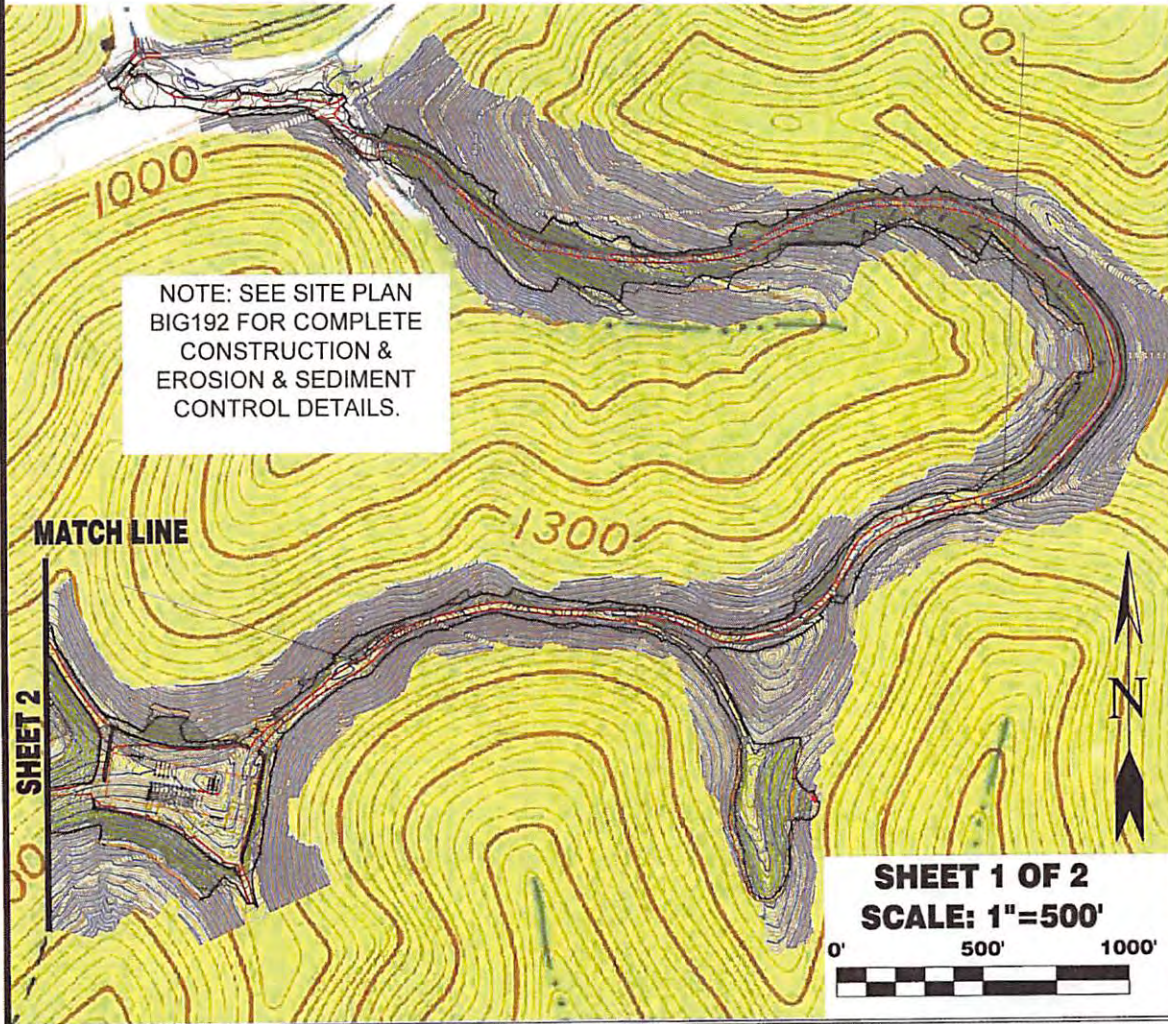
PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) TARGET FORMATION MARCELLUS ESTIMATED DEPTH 7,631'

WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY
ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330

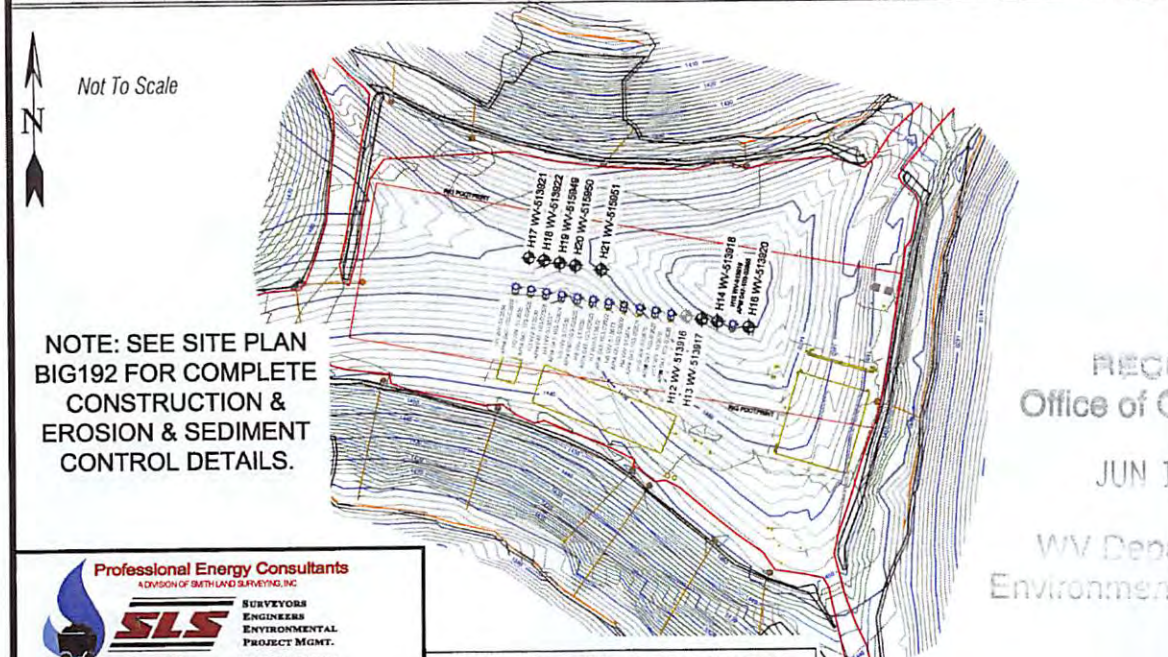
COUNTY NAME PERMIT

01/06/2017

BIG192 WELL NO.S WV 513916, WV 513917, WV 513918, WV 513920, WV 513921, WV 513922, WV 515949, WV 515950 & WV 515951



Detail Sketch for Proposed BIG192 Well No.s WV 513916, WV 513917, WV 513918, WV 513920, WV 513921, WV 513922, WV 515949, WV 515950 & WV 515951



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(304) 462-5834
WWW.SLSURVEYS.COM

DRAWN BY K.D.W.	FILE NO. 7797	DATE 02-24-15	CADD FILE: 7797REC0192L.dwg
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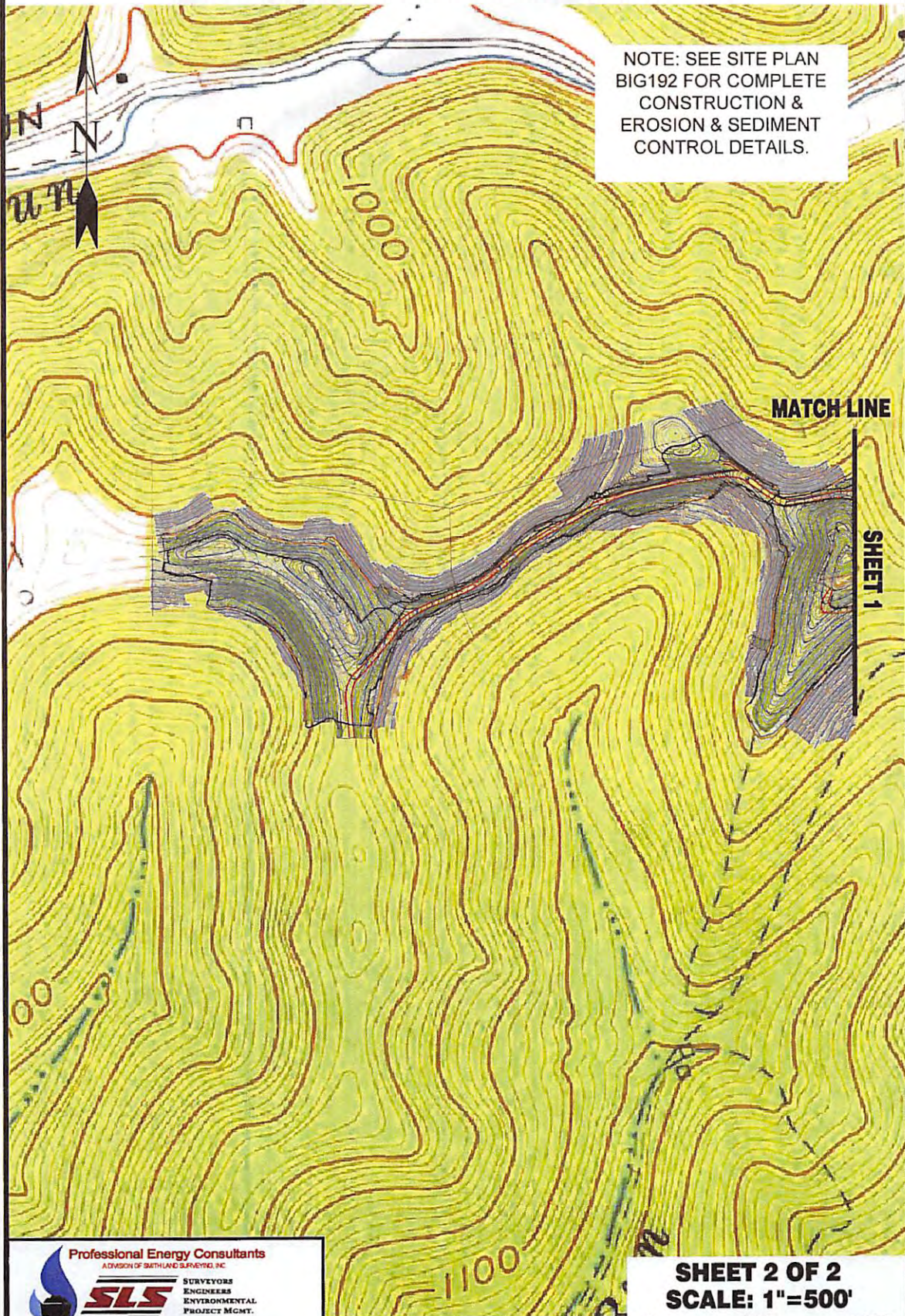
TOPO SECTIONS OF BIG RUN 7.5'
TOPO QUADRANGLE

01/06/2017

47-103-03110

BIG192 WELL NO.S WV 513916, WV 513917, WV 513918, WV 513920, WV 513921, WV 513922, WV 515949, WV 515950 & WV 515951

NOTE: SEE SITE PLAN BIG192 FOR COMPLETE CONSTRUCTION & EROSION & SEDIMENT CONTROL DETAILS.



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 ENGINEERS
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DRAWN BY: K.D.W. **FILE NO.:** 7797 **DATE:** 02-24-15 **CADD FILE:** 7797REC02G192L.dwg

TOPO SECTIONS OF BIG RUN 7.5' TOPO QUADRANGLE

SHEET 2 OF 2
SCALE: 1"=500'

0' 500' 1000'

47-103-03110

01/06/2017