

#### 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

February 09, 2015

#### WELL WORK PERMIT

#### Horizontal 6A Well

This permit, API Well Number: 47-3305842, issued to XTO ENERGY, INC., 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: BOGGESS A NORTH UNIT 6H

Farm Name: XTO ENERGY, INC.

API Well Number: 47-3305842

Permit Type: Horizontal 6A Well

Date Issued: 02/09/2015

### 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 (USACE). Through this permit, you are hereby being advised to consult with USACE 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 moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. 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.
- 9. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced on this well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov within 30 days of commencement of drilling.

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

					9	W33
1) Well Operate	or: XTO E	Energy Inc.	494487940	Harrison	Eagle	Wallace
			Operator ID	County	District	Quadrangle
2) Operator's V	Vell Number	Boggess A North	h Unit 6H Well Pac	Name: Bogg	jess A Pa	ad
3) Farm Name/	Surface Own	ner: XTO Energy	Inc. Public Roa	d Access: Ree	se's Run (l	Harrison Co. Rt. 20/7)
4) Elevation, cu	urrent ground	d: <u>1183'</u>	Elevation, proposed	post-constructi	on: 1183'	
5) Well Type	(a) Gas	Oil _	Unde	erground Storag	ge	
	Other					
	(b)If Gas	Shallow	Deep			
Horizontal Soci						
6) Existing Pad				•		9/30/2014
7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):  Target Formation: Marcellus, Depth 7,089', Anticipated Thickness: 150', Associated pressure 4,650 psi						
8) Proposed Total Vertical Depth: 7,100'						
9) Formation at Total Vertical Depth: 7,100  Marcellus						
10) Proposed Total Measured Depth: 12,000'						
11) Proposed Horizontal Leg Length: 4,450'						
	12) Approximate Fresh Water Strata Depths: 114', 125'					
		A STATE OF THE STA	Offsetting Reports			
	13) Method to Determine Fresh Water Depths: Offsetting Reports  14) Approximate Saltwater Depths: 1012'					
15) Approxima	15) Approximate Coal Seam Depths: Pittsburgh Coal was strip mined at this location					
16) Approxima	16) Approximate Depth to Possible Void (coal mine, karst, other): None anticipated - Pittsburgh Coal was strip mined					
		eation contain coal se ent to an active mine		No	V	
(a) If Yes, pro						
(s) 1. 100, pro		Depth:				
		Seam:				
		Owner:			<del></del>	

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WV Department of Environmental Profession WW-68 (9/13)

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#### 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	H-40	94#	40'	40'	40 cuft - C.T.S
Fresh Water	13 3/8"	New	MS-50	48#	(300)	300'	300 cuft - C.T.S.
Coal						000	300 Cuit - C. 1.S.
Intermediate	9 5/8"	New	J-55	36#	2,700'	2,700'	Lead 600/Tel 600' - 0,7.5.
Production	5 1/2"	New	CYP-110	17#	12,000'	12,000'	2600 cuft
Tubing					12,000	12,000	2000 Cuit
Liners					<del> </del>		<del> </del>

5Dev 2/4/2015

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield (cu. ft./k)
Conductor	20°	24"	0.438"	960	Type 1	1.19
Fresh Water	13 3/8"	17.5"	0.33"	2,160	Type 1	1.19
Coal					1,750 1	7.13
Intermediate	9 5/8"	12.25"	0.352"	3,520	Type 1	Lead 1.26/Tail 1.19
Production	5 1/2"	8.75" 8.5"/7.875"	0.304"	10,640	Type 1	1.32
Tubing					.,,,,,	1.02
Liners						

#### **PACKERS**

Kind:		
Sizes:		
Depths Set:		

Page 2 of 3

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:
Drill a new horizontal Marcellus well, utilizing synthetic mud and a closed loop system for both drilling and completion. Install new casing with centralizers.
20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:
1. Acid Stage - Typically 1500 gallons of 7.5% hydrochloric acid to clear the perforation path in the wellbore. 1500 gals 15% HCl acid. 2. Sand / Proppant Stages - Several stages of pumping water combined with sand at a targeted 80 bpm rate. The maximum pressure and rate used is 10,000 psig and 120 bpm. The sand size may vary from 100 mesh to30/50 mesh size. 12,500 bbls slick water with 220,000 lbs 40/70, 270,000 lbs 100 mesh sands and 2,200 gals FR 133, 1,500 gals Bioplex 301 and 1,500 gals Bioplex 301 and 1,190 gals antiscale 30. 3. Flush Stage - Slickwater water stage to fill the wellbore to flush the sand from the wellbore. Depending on the water quality, a biocide, friction reducer, iron control, and scale inhibitor may be injected during the completion as well.
21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres):
22) Area to be disturbed for well pad only, less access road (acres):  5.26+/-
22) Area to be disturbed for well pad only, less access road (acres).
23) Describe centralizer placement for each casing string:
Conductor: none Fresh Water: 1"-6" above float shoe, 1 at float collar, & 1 at every 4th joint to surface Intermediate: 1"-6" above float shoe, 1 at float collar, & 1 at every 4th joint to surface Production: 1 at every 4th joint from the kickoff point to 1000' above the kickoff point
24) Describe all cement additives associated with each cement type:
Conductor - Type 1 - no additives
Fresh Water - Tail - Type 1 - 2% Calcium Chloride, Super Flake Intermediate - Lead - Type 1 - 2% Calcium Chloride, Super Flake
Tail - Type 1 - 2% Calcium Chloride, Super Flake
Production - Tail 50/50 POZ - Type 1 - Sodium Chloride, Bentonite, Super Flake, Air-Out, R-1, AG-350
25) Proposed borehole conditioning procedures:
See attached sheet
*Note: Attach additional sheets as needed.
'NOIC: Attach auditional sheets as needed.

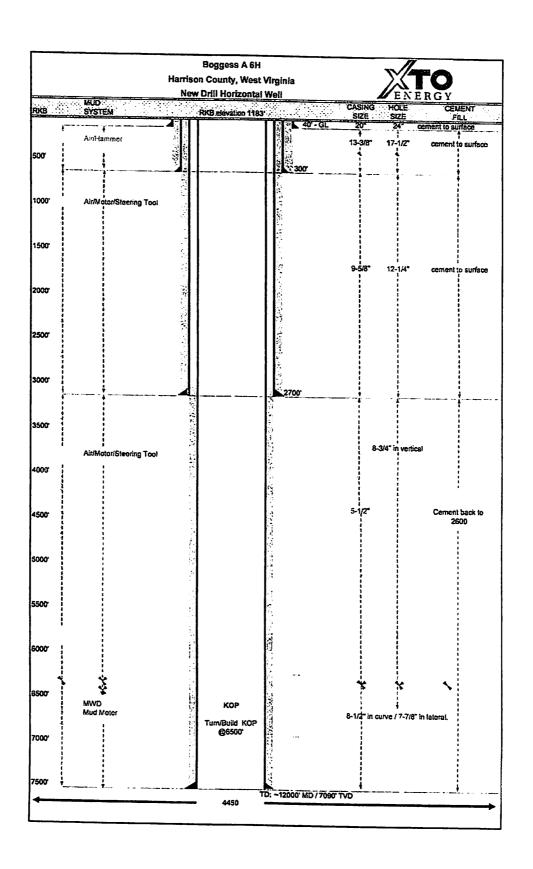
Page 3 of 3 02/13/2015 RECEIVED Office of Oil and Gas

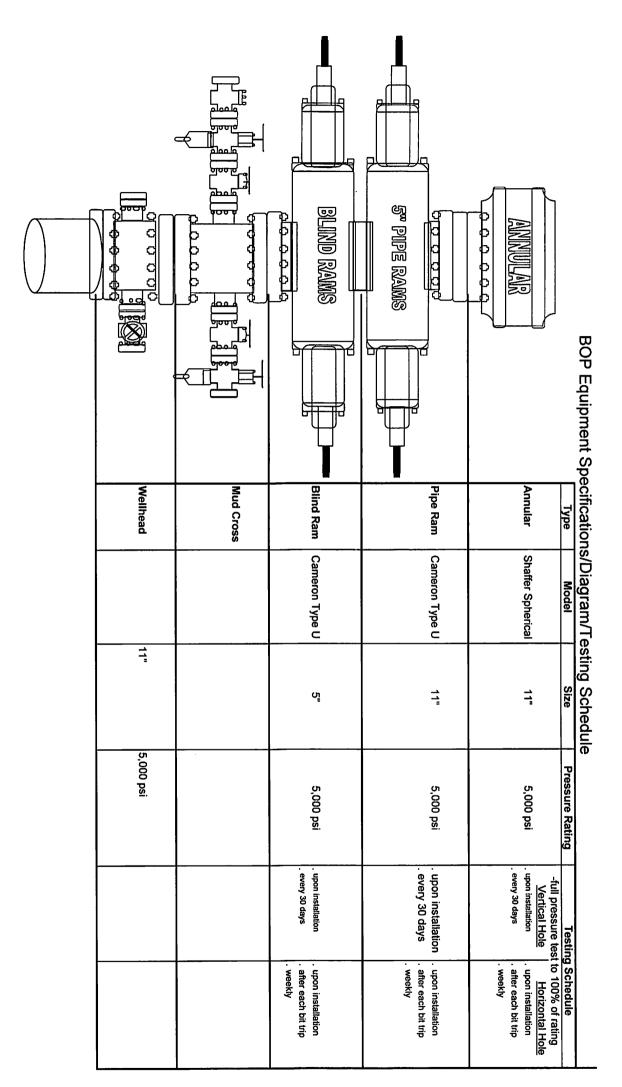
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	- 1	Hale and the completed with high processor do	hade set the transmittees with sorprior to profit or of pale to pure you spring.	Price will be itsed such that and checkeds in	a guelloca d
Bess A 6H Proposed Directional Date	- !	this will be charboned with high process on a	Histor will be blown steps with as price to puting out of hole to just space of	Hade wed ten talend wern flags beed effectabled considering many in	te quarters 8
gess A &H Proposed Directional Date	2	cutings out of the high, WAV will be appearantably 11.5(m) (4.0(m) the statesty real merhadises. An Incident the base of the cuttoffed at legal pump.		Hole will be catalant as proceeding wh	An Ade will be created at least one technical up prior to purity of carry at
Boggess A 6H Proposed Directional Data Other direction	-				
Other din KOP LP		Вов	gese A 6H Proposed Dire	ctional Data	
				Other directional data KOP 6500 LP 7550	onal data 6500 7550

Boggess A 6H Proposed Directional Data

	]			Bog	gess A	6H Detail	ed Casi	ng and (	Boggess A 6H Detailed Casing and Cementing Program	Program		Paradia Brown	
Туре	Hole Stre (Inches)	(inches) Cog Stre (in) Length (it)	Langth (11)	Top/Bottom of String	Casing (	Gesing Design/Program Was Grado Weight (ppl) Trickness	Wati Trickness	Burst Pressure Reting	Centralizer Placement	Type	Yield (cu. 10mb)	Constitut Program  Vield (Irade names are Superior, Estimated Volume (cs. (cs. (cs. Trak) Wall Services), R.)	Estimated Volume (ce.
Conductor	24	96	-6	0310	14.60	£	0.438	W60	none	lypo 1	1 10	none	*.0
Cool													
Surface / Fresh Water	17.5	Ove Ct	(H) di	u: / 300	WG 50	ŧ	0 39*	2100	1.6" above 1 bat sitos 1.al foad cofar 1-every 4th jt to stefaso	Tail-Type 1	1 18	Tail-Type 1 1 19 Carium chance, Luper Flake	ŧ
Intermediate	12.25	9143 G		0. 1.2.700.	ŝ	ž	0357	J. S. P.	1-6" above float ahos 1-si fleat contar	Lead-Type 1 126	1 26	California Chior dei Super Flaks	8400
					;	:			1 every 4th # to surface	Tast -Type 1	1 19	Tat -Type 1 1 19 Cu dum chlorda, Super Flake	မမ
Production	6.751 0 5/ 7 816	מע א	12,000	0 / 120,00	CYP-110	17	0 304	10040	certivitizera will be not every 3rd justi from use of cemoni to landing posisi	1:si-50/50 POZ:Typn 1	122	Sodum chloriar, bentonito, Super Flake, Aw-Out, R-1, AG- 350	סטנק
Tubeng													
Linem													





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Memo to File

1/2/13

Re: Boggess Unit A Location Coal

On Wednesday January 2, 2013 I called Kenny Ashton with the WVGES and asked about potential coal seams and mining operations under our planned Boggess Unit A location. I provided him with the following NAD 83 coordinates: 39.376147, -80.385799.

Later that day Mr. Ashton called back and said that the Pittsburgh coal at this location had been stripped. He also said that we are in no danger of hitting the nearby O & R mine because our surface location is at the same elevation of the mine.

Tim Sands

IT I

**Regulatory Compliance Technician** 

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JUL 1 5 2013

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XTO Energy Inc. • 4du Industrial trail Road. • P.O. Box 1008. • fane Lew, WV 26378. • (304) 884-6000. • Fax: (304) 884-6809.

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API Number	47 -		2
One	rator's	Well No.	Boggess A North Unit 6H

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

#### FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name XTO Energy Inc.	OP Code 494487940
Watershed (HUC 10)_Tenmile Creek	Quadrangle Wallace
Elevation 1183' County Harrison	District_ Eagle
Do you anticipate using more than 5,000 bbls of water to complete the Will a pit be used? Yes No If so, please describe anticipated pit waste:	he proposed well work? Yes No
Will a synthetic liner be used in the pit? Yes No	If so, what ml.?
Proposed Disposal Method For Treated Pit Wastes:	SDev
Reuse (at API Number Off Site Disposal (Supply form WW-9 for Other (Explain	
Will closed loop system be used? If so, describe: Depending on brand, system we	ould entail 2 centrifuges & another cutting drying method: grinder, drying shakers or verti-g mud.
Drilling medium anticipated for this well (vertical and horizontal)?	Air, freshwater, oil based, etc. Air/water to 7100', then switch to synthetic
-If oil based, what type? Synthetic, petroleum, etc.Synthetic	
Additives to be used in drilling medium? See additional page	
Drill cuttings disposal method? Leave in pit, landfill, removed offsit	te, etc. Landfill
-If left in pit and plan to solidify what medium will be used	? (cement, lime, sawdust) NA
-Landfill or offsite name/permit number?Meadowbrook Lan	dfill - #SWF 1032
on August 1, 2005, by the Office of Oil and Gas of the West Virginia provisions of the permit are enforceable by law. Violations of any law or regulation can lead to enforcement action.	mined and am familiar with the information submitted on this my inquiry of those individuals immediately responsible for accurate, and complete. I am aware that there are significant
Company Official (Typed Name) Gary Beall	
Company Official Title Production Superintendent	
Subscribed and sworn before me this 2 8 th day of Se	ptenber, 20/1 Notary Public
Link As	Notary Public
My commission expires $\frac{12/22/18}{}$	02/13/2015 RECEIVED
OFFICIAL SEAL	Office of Oil and Gas
NOTARY PUBLIC State of West Virginia	3
TIMOTHY SANDS  XTO Energy Inc. PO Box 1008  Jane Lew, WV 26378	OCT 0 6 2014
Jane Lew, WV 26378 My Commission Expires December 22, 2018	WV Department of

Form WW-9 Operator's Well No. XTO Energy Inc. Proposed Revegetation Treatment: Acres Disturbed 6.78 +/- (already re-vegetated) Prevegetation pH Tons/acre or to correct to pH \_ Fertilizer amount 678 - 1000 lbs/acre Mulch 3 Tons/acre Seed Mixtures Temporary Permanent Seed Type lbs/acre Seed Type lbs/acre 50 Timothy Tall Fescue 40 Birdsfoot Trefoil 10 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: \ \ \ \ Owardt Comments: Pre-seed/mulch all disturbed areas as soon as reasonably possible par regulation. Upgrade Ets as needed per WU DEPETS Manual.

Title: Oild Gas Inspector Date: 9/30/2014

Field Reviewed? (X) Yes (\_\_\_) No

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## **XTO Drilling Additives**

		Approximate Amount
Product Name	CAS#	on Location (lbs)
Bentone 910	14808-60-7	2500
Cedar Fiber	n/a	5000
CyberDrill	93762-80-2	20000
Calcium Chloride	10043-52-4	20000
	111-40-0	
	26952-14-7	
CyberCoat	62442-97-7	3000
CyberMul	70321-73-2	3000
CyberPlus	71-36-3	3000
Lime	1305-62-0	15000
New Carb	1317-65-3	3000
Walnut Shells	n/a	2500
	7727-43-7	
	1332-58-7	
	14808-60-7	
New Bar	471-34-1	200000
OptiThin	68442-97-7	8000
	12174-11-7	
	14808-60-7	
Oil Dry	01309-48-4	600
	9016-45-9	
	68131-71-5	
	1310-73-2	
	27176-87-0	
	1300-72-7	
OptiClean	7758-29-4	1800
OptiG	12002-43-6	5000
SynDril 470	64741-86-2	81000

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XTO Energy Inc. Well Site Safety Plan

Boggess A Pad 1103 Reeses Run Road Lumberport, WV 26386

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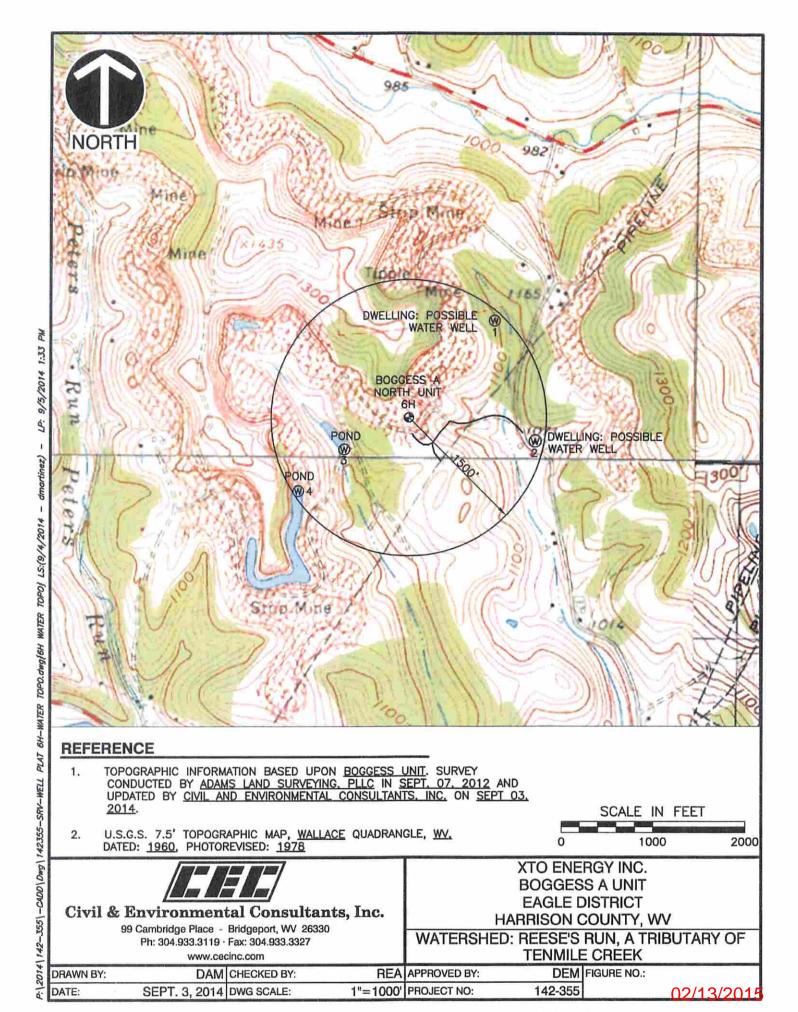
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Changes to Collision Awidance



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#### Boggess A Unit

#### Possible water wells or sources:

Ethan D. and Brandy L. Galicic;
 Melisha A. Harbert,
 Richard B. Jones
 Richard B. Jones
 Candle Light Dr., Clarksburg, WV 26301
 Richard B. Jones
 Candle Light Dr., Clarksburg, WV 26301

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