

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

PERMIT MODIFICATION APPROVAL

June 14, 2013

XTO ENERGY, INC. 810 HOUSTON STREET FORT WORTH, TX 76102

Re: Permit Modification Approval for API Number 3305728 , Well #: BOGGESS UNIT A 2H MODIFIED INTERMEDIATE CASING

Oil and Gas Operator:

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.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

Gene Smith

Regulatory/Compliance Manager

Office of Oil and Gas



WV DEP Office of Oil & Gas Attn: Gene Smith 601 57th Street Charleston, WV 25304

June 7, 2013

RE: 47-033-05728 (Issued) Casing Plan Modification

Dear Mr. Smith:

Enclosed is a revised WW-6B for our Boggess Unit A 2H well, API 47-033-05728. The only item changed is the intermediate casing from 3600' to 2700'. Thanks for your attention to this matter.

Sincerely,

Tim Sands

Regulatory Compliance Technician

XTO Energy, Inc.

PO Box 1008

Jane Lew, WV 26378

Tim Sands@xtoenergy.com

304-884-6036

Received

JUN 1 0 2013

Office of Oil and Gas WV Dept. of Environmental Protection WW - 6B (3/13)

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

1) Well Operator: XTO	D Energy, Inc.	494487940	Harrison	Eagle	Wallace
, <u>-</u>	3 ,	Operator ID	County	District	Quadrangle
2) Operator's Well Number	: Boggess Unit A 2H	v	Vell Pad Nam		
3 Elevation, current ground	1183'	Elevation, proposed p	post-construct	ion:	1183'
4) Well Type: (a) Gas	Oil	Underground	d Storage	····	
Other	01 11				
(b) If Gas:	Shallow Horizontal	Всер			Madification
5) Existing Pad? Yes or No:		<u></u>			< pw
_					616113
 Proposed Target Formation Target Formation: Marcellus, Dept 				Pressure(s):	
7) Proposed Total Vertical D	Depth: 7,100'				
8) Formation at Total Vertice	al Depth: Marcellus				
9) Proposed Total Measured	Depth: 12,300'				
10) Approximate Fresh Wate	er Strata Depths:	114', 125'			
11) Method to Determine Fro	esh Water Depth:	Offsetting Reports			
12) Approximate Saltwater I	Depths: 1012				
13) Approximate Coal Seam	Depths: Pittsburgh	Coal was strip mined at th	ls location		
14) Approximate Depth to Po	• • • • • • • • • • • • • • • • • • • •	·		ated - Pittsburgh	Coal was strip mined
15) Does proposed well locat adjacent to an active mine	tion contain coal seams	directly overlying or	r No		
16) Describe proposed well v	_	ntal Marcellus well, utilizing sy	nthetic mud and a	dosed loop system	m for both drilling and
completion. Install new casing with	centralizers.				
17) Describe fracturing/stimu	-				
1 Acid Stage - Typically 1500 gallens of 7.5% hydrox					
tangoted 90 bpm rate. The sand size may vary from 100 and 1,190 gale emissocio 30 3 Filish Stago - Stobwyter water			osh sands and 2,200 gals FR	133, 1,500 gats Bioplex 3	101 end 1,500 gals Bioptox 301
18) Total area to be disturbed	, including roads, stock	spile area, pits. etc. (a	icres):	6.78 +/-	
19) Area to be disturbed for w			5.26 +/-	JUN 10	2013
			WV Dept	Office of Oil an	Page 1 of 3 d Gas ental Protection

WW - 6B (3/13)

20)

CASING AND TUBING PROGRAM

TYPE	Size	New or Used	Grade	Weight per 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#	400'	400'	400 cuft - C.T.S.
Coal						100	100 0011 - 0.1.0.
Intermediate	9 5/8"	New	J-55	36#	(2700)	2700'	Lead 800'/Tail 800' - C.T.S.
Production	5 1/2"	New	CYP-110	17#	12300'	12300'	2400 cuft
Tubing							
Liners							

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

Kind:
Sizes:

Depths Set:

PACKERS

Received

JUN 1 0 2013

Office of Oil and Gas
WV Dept. 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

May 03, 2013

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-3305728, 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 UNIT A 2H

Farm Name: XTO ENERGY INC.

API Well Number: 47-3305728

Permit Type: Horizontal 6A Well

Date Issued: 05/03/2013

Promoting a healthy environment.



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. 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.
- 2. 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% (unless soil test results show a greater range of moisture content is appropriate and 95% compaction can still be achieved) 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.
- 3. 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.
- 4. 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.
- 5. 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.

21) D	escribe centralizer placement for each casing string.
Co	nductor: none
Fre	esh Water: 1"-6" above float shoe, 1 at float collar, & 1 at every 4th joint to surface
Int	ermediate: 1"-6" above float shoe, 1 at float collar, & 1 at every 4th joint to surface
Pro	oduction: 1 at every 3rd joint from top of cement to landing point
ח (כנ	escribe all cement additives associated with each cement type.
•	onductor - Type 1 - no additives
	esh Water - Tail - Type 1 - 2% Calcium Chloride, Super Flake
	ermediate - Lead - Type 1 - 2% Calcium Chloride, Super Flake
	Tail - Type 1 - 2% Calcium Chloride, Super Flake
Pr	oduction - Tail 50/50 POZ - Type 1 - Sodium Chloride, Bentonite, Super Flake, Air-Out, R-1, AG-350
_	
23) P	roposed borehole conditioning procedures.
Se	e attached sheet
_	
-	

*Note: Attach additional sheets as needed.

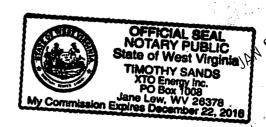
ya^N 22 2013 06/14/2013

API No. 47 - 33 - 05728 Operator's Well No. Boggess Unit A 2H

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

CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE

Operator Name_XTO Energy, Inc.		OP Code 494487940	
Watershed Reeses Run - A tributary of Lit	tle Tenmile Creek Qua	drangle Wallace	
Elevation 1183'	County_Harrison	District Eagle	
Description of anticipated Pit Waste:	None- closed loop system - drilling fluids, form	nation cuttings, fluid & flowback to be stored in tanks & l	boxes until disposal.
Do you anticipate using more than 5,0	000 bbls of water to complete the	proposed well work? Yes X	4o
Will a synthetic liner be used in the p	it? No Pit - Closed Loop System. If so, w	nat mil.? None	
Reuse (at Off Site D	ication nd Injection (UIC Permit Numb API Number isposal (Supply form WW-9 for o)
-If oil based, what type? Sy Additives to be used? See additional p. Will closed loop system be used? Yes Drill cuttings disposal method? Leave -If left in pit and plan to soli	nthetic, petroleum, etc. Synthetic page s re in pit, landfill, removed offsite, dify what medium will be used?	etc. Cond/Surf/intrm on air/water, prod. on air to 7100' etc. Landfill Cement, lime, None - Closed Loop System -#SWF 1032, S&S Landfill - #SWF 4902	
on August 1, 2005, by the Office of provisions of the permit are enforces or regulation can lead to enforcement I certify under penalty of application form and all attachments	Oil and Gas of the West Virginia ble by law. Violations of any tent action. law that I have personally example thereto and that, based on my incomposition is true, accurate, and many the possibility of fine or imprising the possibili	ons of the GENERAL WATER POLL Department of Environmental Protection or condition of the general permit and anined and am familiar with the information of those individuals immediately a complete. I am aware that there are comment.	on. I understand that the d/or other applicable law nation submitted on this responsible for obtaining
Subscribed and sworn before me this My commission expires	17 day of Decu.	, 20 12 Notary Public	

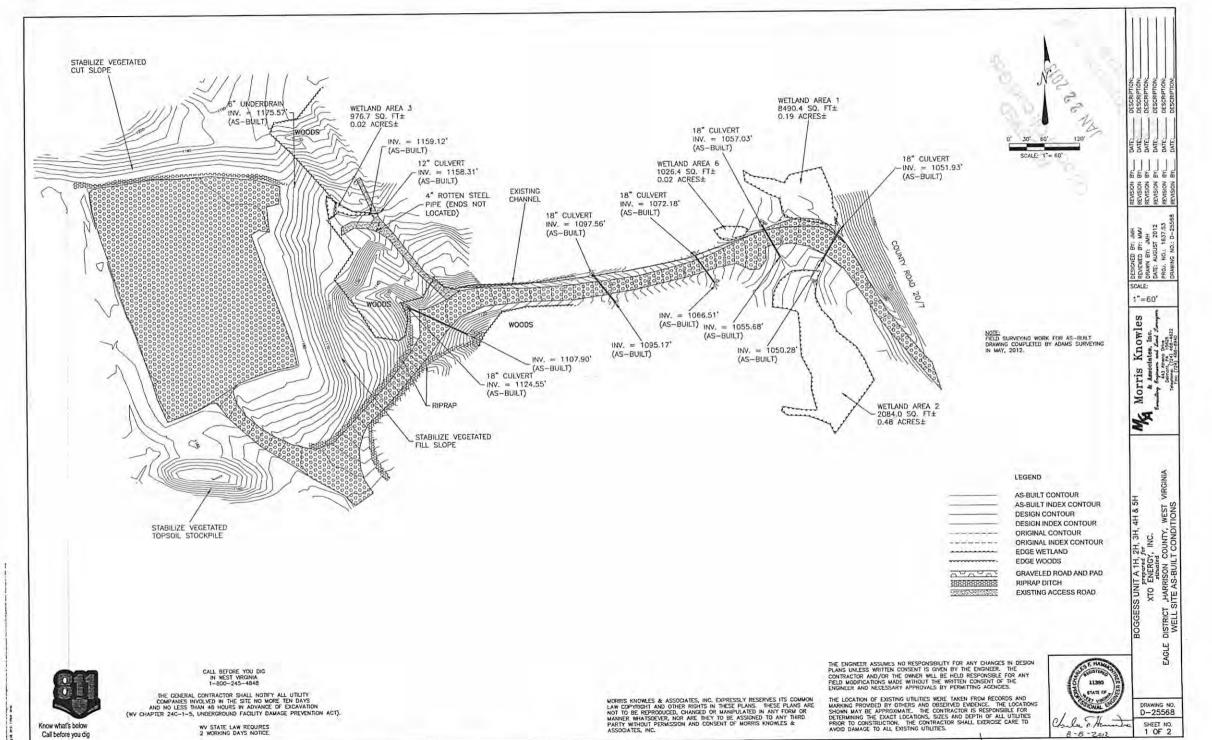


າ ໃ^{ດໃຈ} 06/14/2013

	Property Boundar	у 📤 🔻		Diversion 444	
	Road		===	Spring	○
	Existing Fence	—	·×	Wet Spot	~
	Planned Fence	//	-/	Drain Pipe w/ size in inches	
	Stream	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<u>~</u>		
	Open Ditch	>>		Waterway	
	Rock	<u> రా</u> ద్దర్గార్లు			
		† N		Artificial Filter Strip XXXXXX	***************************************
	North	N		Pit: Cut Walls	
	Buildings			Pit: Compacted Fill Walls	murtung
	Water Wells Drill Sites	(w) (+		Area for Land Application of Pit Waste	
Proposed	Revegetation Tre	eatment: Acres Disturbed 6.7	'8+/-	Prevegetatio	n pH
1	Lime 2-6	Tons/acre or to correct	t to pH		
			-		
]	Fertilizer (10-20-2	20 or equivalent) 678 - 1000	Ibs/acre	e (500 lbs minimum)	
1	Mulch 3		Tons/acre		
			Seed M	fixtures	
		Area I			Area II
;	Seed Type	lbs/acre		Seed Type	lbs/acre
Timothy		50		Tall Fescue	40
				Birdsfoot Trefoil	10
	•••			BildSloot Heloii	
		on,pit and proposed area for la	ınd applica	tion.	
Photocop	pied section of inv	volved 7.5' topographic sheet.			
		9/1/			
Plan Ann	proved by:				
Commen	ıts:				
	1/ ~	e i			
Title:	01/4/6/15	Inspector		Date:	· · · · · · · · · · · · · · · · · · ·
Field De	viewed?	(V) Yes (_)	No	

Disposal Facilities			
Name	API		
Hattie L Flower (SWIW #4) 1	3416728462		
David R. Hill Inc.	3405924067		
ROJ Disposal Well, Gallia County, OH	3405320968		
Warren Disposal Well	3412124037		
Travis Well	3412123995		
Everett Mason W-1590 SWIS (Ritchie Hunter)	4708509721		
Helen Hall F 1-19 Disposal Well	3416729577		
M.E. Elder	4708505151		
Camp Creek Disposal	4705500319		
AOP (BW4 Well, Eureka, WV)	4707302523		

JAN 22 206/14/2013



TAN 14JAN 13



Water Management Plan: Primary Water Sources



WMP-01047

API/ID Number:

047-033-05728

Operator:

XTO Energy

Boggess Unit A 2H

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 mutiple wells and well sites. In these cases, the thresholds set by the Water Management Plan are to be interepreted 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 MAR 2 1 2013

Source Summary

WMP-01047 API Number: 047-033-05728 Operator: **XTO Energy** Boggess Unit A 2H

Stream/River

West Fork River (Location B) Source

Owner:

Nick & Merelyn Deemus

Start Date

End Date

Total Volume (gal) Max. daily purchase (gal)

Intake Latitude: Intake Longitude:

6/1/2013

39.451231

-80.269158

6/1/2014

100,000

3061000

WEST FORK RIVER AT ENTERPRISE, WV

Max. Pump rate (gpm):

1,792

▼ Regulated Stream? Stonewall Jackson Dam Ref. Gauge ID:

Min. Gauge Reading (cfs):

151.91

Min. Passby (cfs)

146.25

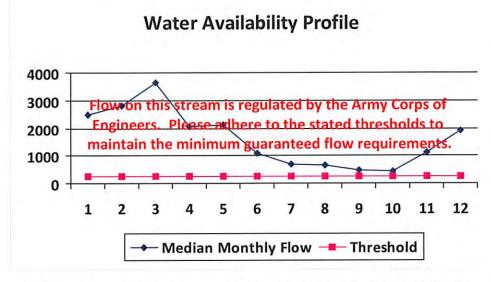
DEP Comments:

APPROVED MAR 2 1 2013

Source Detail



Month	Median monthly flow (cfs)	Threshold (+ pump	<u>Available</u> water (cfs)
1	2,497.56	-	12
. 2	2,812.00		
3	3,621.98		-
4	2,071.45	-	10
5	2,126.25	-	191
6	1,065.40	-	114.1
7	690.28	1.4	-
8	659.10	-	4
9	458.60		
10	449.63	-	
11	1,128.29	-	+
12	1,926.34	-	+



Base Threshold (cfs): Upstream Demand (cfs):	1.67
Downstream Demand (cfs):	0.00
Pump rate (cfs):	3.99
Headwater Safety (cfs):	0.00
Ungauged Stream Safety (cfs):	0.00
Min. Gauge Reading (cfs):	
Passby at Location (cfs):	

[&]quot;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.



Water Management Plan: **Secondary Water Sources**



WMP-01047

API/ID Number

047-033-05728

Operator:

XTO Energy

Boggess Unit A 2H

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: 13295 Source Name

Harbert East Impoundment

Source start date:

6/1/2013

Source end date:

6/1/2014

Total Volume from Source (gal):

4,500,000

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.

Max. Daily Purchase (gal)

Reference: WMP-248

APPROVED MAR 2 1 2013

Boggess Unit A 2H

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.

Source ID: 13296 Source Name

McClelland Impoundment

Source start date: Source end date: 6/1/2013

Max. Daily Purchase (gal)

Total Volume from Source (gal):

6/1/2014 800,000

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-120

Source ID: 13297 Source Name

Martin Impoundment

Source start date:

6/1/2013

Source end date:

6/1/2014

Max. Daily Purchase (gal)

Total Volume from Source (gal):

100,000

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-805

WMP-01047 API/ID Number 047-033-05728 Operator: XTO Energy

Boggess Unit A 2H

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.

Other

Source ID: 13294 Source Name Jones Pond

Source start date:

Source end date:

6/1/2013

Max. Daily Purchase (gal)

Total Volume from Source (gal):

6/1/2014

DEP Comments:

Recycled Frac Water

Source ID: 13298 Source Name

Source start date:

6/1/2013

Max. Daily Purchase (gal)

Various

Source end date:

6/1/2014

Total Volume from Source (gal):

100,000

DEP Comments:

the to Hall

