

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

July 24, 2013

WELL WORK PERMIT

Rework/Horizontal 6A Well

This permit, API Well Number: 47-9703790, issued to CNX GAS COMPANY LLC , 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: ALT8AHS

Farm Name: WOODY, D. J., ET AL

API Well Number: 47-9703790

Permit Type: Rework/Horizontal 6A Well

Date Issued: 07/24/2013

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. <u>Failure to adhere to the specified permit</u> 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.
- 6. 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.
- 7. 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.

STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS W.VA. CODE §22-6A - WELL WORK PERMIT APPLICATION

			ob	20
1) Well Operator: CNX Gas Company LLC	494458046	Upshur	Washington	Alton
	Operator ID	County	District	Quadrangle
2) Operator's Well Number: ALT8AHS Drill Deepe	r - API# 47-097-3790	Well Pad Nai	ne: ALT8HS	
2 El	Tri .			
3 Elevation, current ground: 2460'	Elevation, proposed	post-constru	ction:	2460'
4) Well Type: (a) Gas Oil Oil				
Other	- D			
(b) If Gas: Shallow	Deep _		-	
Horizontal				
5) Existing Pad? Yes or No: Yes				
6) Proposed Target Formation(s), Depth(s), An	— ticinated Thicknesses a	nd Associated	Dreccure(c)	
Target - Marcellus, Depth - 7490, Thickness - 95', Pressure - 2500#	ticipated Titleknesses at	iu Associated	r ressure(s).	
7) Proposed Total Vertical Depth: 7490'				
8) Formation at Total Vertical Depth: Marcel	lus			
9) Proposed Total Measured Depth: 11890'				
10) Approximate Fresh Water Strata Depths:	None Reported			
11) Method to Determine Fresh Water Depth:	Offset Well (API# 47-097-01	608)		
10) (' , 0),	nticipated	-		
13) Approximate Coal Seam Depths: 105',				
14) Approximate Depth to Possible Void (coal		None Anticipa	ted	
15) Does land contain coal seams tributary or a			icu	
	mulate new horizontal Marcellus we	and the second	to a TMD of 11800'	Well to be drilled to a
TVD of 7490', formation at TVD - Marcellus. If an unexpected void is		COLUMN TO COLUMN	The State of the State of the State of	
approved Class A type cement.				30.70.00.00
170 5 11 6 . 1 / 21 1 2 . 1 1 1	1 . 21			
 Describe fracturing/stimulating methods in The stimulation will be multiple stages divided over the lateral length o 		at upon onginooring s	lonian Stielauster from	studes technique will be
utilized on each stage using sand, water, and chemicals.	i the well. Stage spacing is dependen	it upon engineering t	lesign. Slickwater frac	cturing technique will be
control of the second s				
4			Sec. 20	
10) T . 1			CAR	
18) Total area to be disturbed, including roads,	stockpile area, pits, etc,	(acres):	10 Acres	
19) Area to be disturbed for well pad only, less	access road (norms)	10.0	8190	
17) Alea to be disturbed for well pad only, less	access road (acres).	10 Acres	04	- 12
			V60	W. C.
			k.,	-31-

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"	N	L.S.	81.3#	40'	40'	CTS w/ 130sks Class A type cement
Fresh Water	13 3/8	Ν	J-55	54.5#	657'	657'	CTS w/ 430sks Class A Type Cement
Coal	9 5/8	N	J-55	36#	2044'	2044'	CTS w/ 640sks Class A Type Cement
Intermediate	7"	N	N-80	23#	5528'	5528'	CTS w/ 700sks Class A Type Cement
Production	4 1/2	N	P-110	11.6#	11890'	11890'	2200 cu. ft. w/ 50/50 POZ Lead & Class A Tall
Tubing	2 3/8	N	J-55	4.7#	7250'	7250'	
Liners							1

Bill Hattill 3/26/13

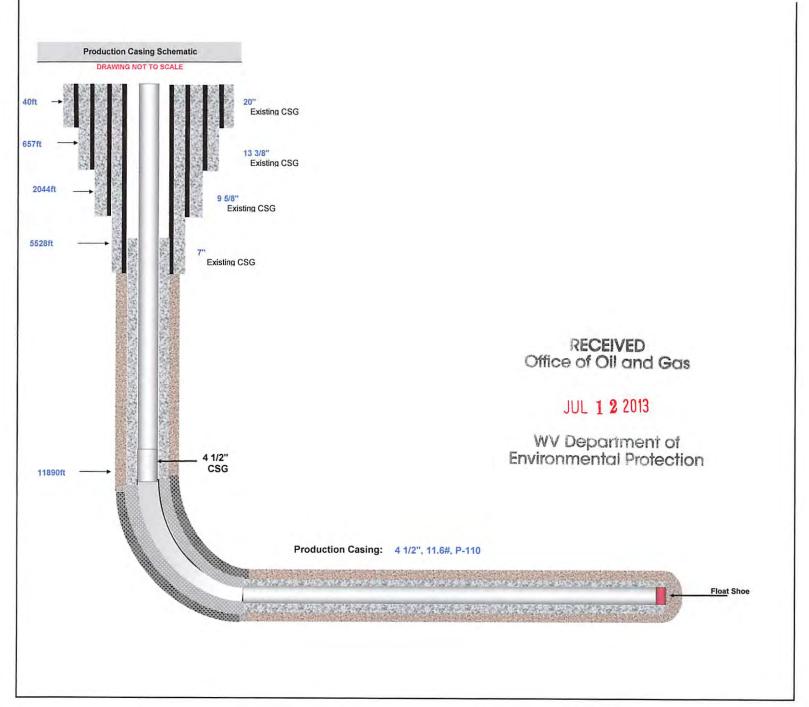
TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield
Conductor	20"	26"	0.438	2110	Class A Type	1.18
Fresh Water	13 3/8"	17 1/2"	0.380	2730	Class A Type	1.39
Coal	9 5/8"	12 3/8"	0.352	3520	Class A Type	1.18
Intermediate	7"	8 3/4"	0.317	6340	Class A Type	1.18
Production	4 1/2"	6 1/2"	0.250	10690	Class A Type	1.26
Tubing	2 3/8"	6 1/2"	0.190	7700		
Liners						

PACKERS

Kind:	None	The state of the s
Sizes:	None	ON 6000
Depths Set:	None	B. Salar



ALT-8A-HS Casing Schematic



Describe centralizer placement for each casing string.	Conductor - No centralizers used. Fresh Water 8
Coal - Bow spring centralizers on first joint then every fourth joint	to 100 feet from surface. Intermediate - Bow spring
centralizers one on the first two joints and every forth joint until in	nside surface casing. Production - Rigid bow spring
centralizer on first joint then every 2 casing joints (free floating) to	hrough the lateral and the curve.
(Note: cementing the 5 1/2" casing completely in open hole later	ral and curve.)
) Describe all cement additives associated with each cement	turns
Fresh Water/Coal - 2% CaCl2. Intermediate - 2% CaCl2. Product	tion - 2.6% Cement extender, 0.7% Fluid loss additive
1) by High Lamporative Detarder 1) 7% Eriction Deducer	
0.5% High Temperature Retarder, 0.2% Friction Reducer	
0.5% Fight emperature Retarder, 0.2% Friction Reducer	
0.5% Fight remperature Retarder, 0.2% Friction Reducer	
0.5% Fight remperature Retarder, 0.2% Priction Reducer	
	tor - The hole is drilled w/ air and casing ran in air.
Proposed borehole conditioning procedures. Conduct	e no other conditioning procedures. Fresh Water/Coat -
Proposed borehole conditioning procedures. Conduct Apart from insuring the hole is clean via air circulation at TD, there are	e no other conditioning procedures. Fresh Water/Coat - on bottom, the casing shoe will be cleared with fresh
Proposed borehole conditioning procedures. Conduct Apart from insuring the hole is clean via air circulation at TD, there are The hole is drilled w/ air and casing is ran in air. Once casing is	e no other conditioning procedures. Fresh Water/Coat - on bottom, the casing shoe will be cleared with fresh ed w/ air and casing is ran in air. Once casing is on
Proposed borehole conditioning procedures. Conduct Apart from insuring the hole is clean via air circulation at TD, there are The hole is drilled w/ air and casing is ran in air. Once casing is water and gel prior to cementing. Intermediate - The hole is drille	e no other conditioning procedures. Fresh Water/Coat - on bottom, the casing shoe will be cleared with fresh ed w/ air and casing is ran in air. Once casing is on ior to cementing. (Note: Drilling soap may be utilized
Proposed borehole conditioning procedures. Apart from insuring the hole is clean via air circulation at TD, there are The hole is drilled w/ air and casing is ran in air. Once casing is water and gel prior to cementing. Intermediate - The hole is drille bottom, the casing shoe will be cleared with fresh water and gel pr	e no other conditioning procedures. Fresh Water/Coat - on bottom, the casing shoe will be cleared with fresh ed w/ air and casing is ran in air. Once casing is on ior to cementing. (Note: Drilling soap may be utilized e exception of the conductor). Production - The hole

*Note: Attach additional sheets as needed.

AND DA MIN TOTHER WAS TOTHER THAN

Cement Additives

- Conductor 2% CaCl2
- Freshwater/Coal 2% CaCl2
- Intermediate 2% CaCl2
- Production
 - o 2.6% Cement extender
 - o 0.7% Fluid Loss Additive
 - o 0.5% High Temperature Retarder
 - o 0.2% Friction Reducer



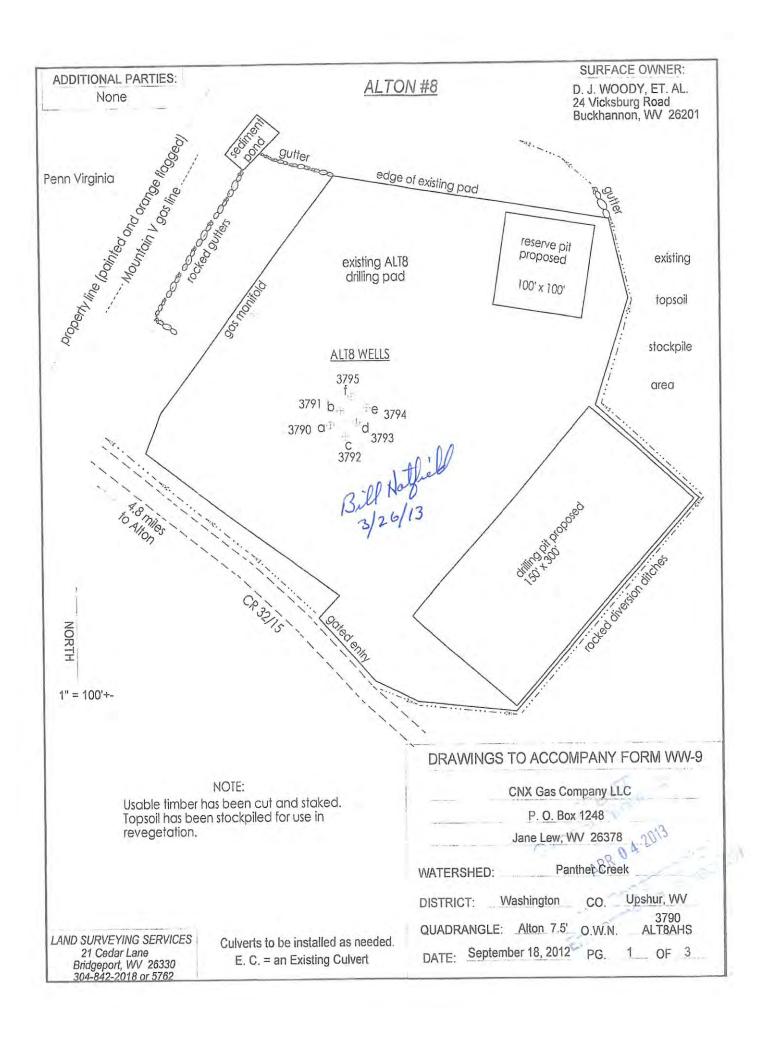
API No. 47 - 097 - 03790
Operator's Well No. ALTBAHS - Drill Deeper Permit

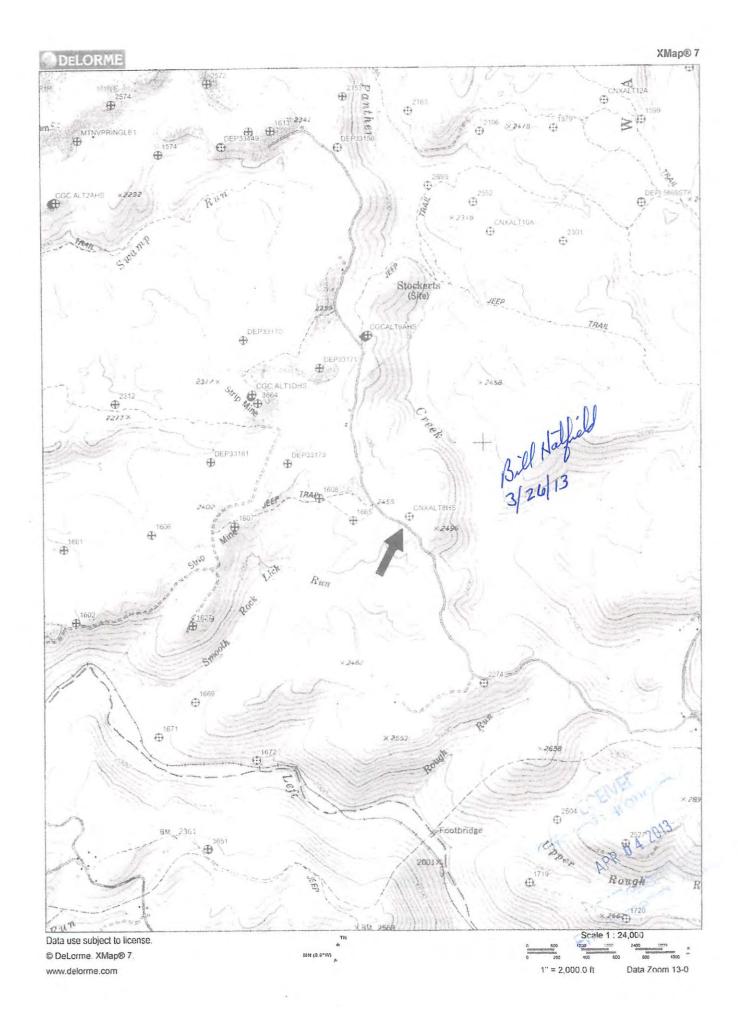
STATE OF WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

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

Operator 1	Name_CNX Gas Company L	LC .	OP Code 49445	8046
Watershed	Panther Creek	Qu	adrangle Alton	
Elevation	2,459.5'	County_Upshur	District_Washi	ngton
Description	on of anticipated Pit Wast	Water & fluids associated with drilling	g and completion of new gas wells	
Do you an	nticipate using more than	5,000 bbls of water to complete the	e proposed well work? Yes _	X No
Will a syn	thetic liner be used in the	pit? If so, w	hat mil.? 60 mil	
Proposed 1	Disposal Method For Tre Land Ap	plication	5 500	
	Reuse (a	ound Injection (UIC Permit Number API Number	oer	
	Off Site	Disposal (Supply form WW-9 for Explain Recycle on other wells on sam		
	Other (E	xprain	e pad or adjacent pads	
-1	If oil based, what type? S	well? Air, freshwater, oil based, ynthetic, petroleum, etc. N/A olymers and Weighting Agents	etc. Air and water based mud	
	d loop system be used?			
		lidify what medium will be used? ermit number? Meadowfill, S & S Lan		
on August provisions or regulati I application the inform	t 1, 2005, by the Office of s of the permit are enforced ion can lead to enforcement certify under penalty of an form and all attachment thation, I believe that the	and agree to the terms and condit f Oil and Gas of the West Virginia able by law. Violations of any ter action. I law that I have personally exan s thereto and that, based on my in information is true, accurate, and ing the possibility of fine or impris	Department of Environmental m or condition of the general parties and am familiar with the prize of those individuals immula complete. I am aware that	Protection. I understand that bermit and/or other applicable late information submitted on the ediately responsible for obtain
	Official Signature		Suada In	Icl
Company	Official (Typed Name) _	eremy Jones		
Company	Official Title Designated A	gent General Manager WV Gas Operati	ons	.0
				APR 0 4 2013
Subscribed	d and sworn before me thi	s_18th day of Mac	ch , 20 13	Yk.,
	elly a.	Eddy 2018	No mark	NOTARY PUBLIC OFFICIAL SEAL STATE OF WEST VIRGINIA KELLY A. EDDY RT 2 BOX 225A
My comm	ission expires	tember 18,2018		JANE LEW, WV 26378 Y COMMISSION EXPIRES SEPT. 18, 2018

Comments:				APROL
				V 7 501
Plan Approved by: 3	Il Nathald			, r - v - v
Photocopied section of invol	ved 7.5 topographic shee	it.		
Attach: Drawing(s) of road, location			1.	
Ladino Clover	10		Ladino Clover	10
Birdsfoot Trefoil	15		Birdsfoot Trefoil	15
Orchard Grass	25		Orchard Grass	25
Ar Seed Type	rea I Ibs/acre		A: Seed Type	rea II 1bs/acre
MulchHay or	Straw 2	Tons/acre Seed Mix	tures	
Fertilizer (10-20-20		0 lbs/acre (5	500 lbs minimum)	
	Test Tons/acre or to corr	ect to pH		
Proposed Revegetation Treat	tment: Acres Disturbed	10.08	Prevegetation p	H 6.5
Drill Sites	(w) (m)		Area for Land Application of Pit Waste	
Buildings Water Wells			Pit: Compacted Fill Walls	morphone
North	↑ N		Pit: Cut Walls	ELLING THE STATE OF THE STATE O
Rock	్పల్గిల్లోం		Cross Drain ZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZ	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Open Ditch	>>	<i>></i>	Waterway	\Leftrightarrow
Planned Fence Stream		-/- >-^-	Drain Pipe w/ size in inches ————————————————————————————————————	12
Existing Fence	——×——×—	_x_	VVet Spot	O
			Spring	WHI.





west virginia department of environmental protection



Water Management Plan: Primary Water Sources



WMP-01212

API/ID Number:

047-097-03790

Operator:

Consol Energy - WV

ALT8AHS

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 JUN 0 6 2013

Source Summary

WMP-01212

API Number:

047-097-03790

Operator:

Consol Energy - WV

ALT8AHS

Stream/River

Buckhannon River @ Consol Energy Withdrawal Site Source

Owner:

Consol Energy

Start Date

End Date

Total Volume (gal)

Max. daily purchase (gal)

Intake Latitude: Intake Longitude:

5/1/2013

5/1/2014

4,258,800

38.803115

-80.206603

☐ Regulated Stream?

Ref. Gauge ID:

3052120

Buckhannon River at Alton WV

Max. Pump rate (gpm):

1,470

Min. Gauge Reading (cfs):

33.78

Min. Passby (cfs)

30.15

DEP Comments:

Source Detail

WMP-01212

API/ID Number:

County:

047-097-03790

Operator:

Consol Energy - WV

ALT8AHS

Source ID: 17796 Source Name Buckhannon River @ Consol Energy Withdrawal Site

Source Latitude: 38.803115

Consol Energy

Source Longitude: -80.206603

HUC-8 Code:

5020001

Drainage Area (sq. mi.):

93.62

Upshur

Anticipated withdrawal start date:

5/1/2013

Endangered Species?

☐ Mussel Stream?

Opsilui

Anticipated withdrawal end date:

5/1/2014

✓ Trout Stream?

- IVIUSSCI S

Total Volume from Source (gal):

4,258,800

rout Stream?

☐ Tier 3?

Max. Pump rate (gpm):

1,470

☐ Regulated Stream?☐ Proximate PSD?

Max. Simultaneous Trucks:

Max. Truck pump rate (gpm)

ks: 0

✓ Gauged Stream?

3052120

Buckhannon River at Alton WV

Drainage Area (sq. mi.)

Reference Gaug

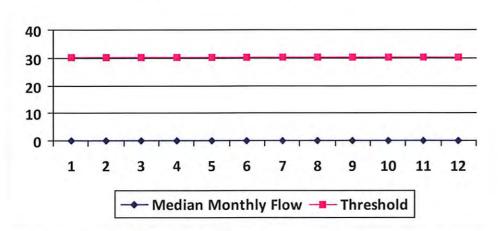
94.70

Gauge Threshold (cfs):

30.5

Month	Median monthly flow (cfs)	Threshold (+ pump	<u>Available</u> water (cfs)
1	0.00	33.43	1.0
2	0.00	33.43	
3	0.00	33.43	4
4	0.00	33.43	-
5	0.00	33.43	
6	0.00	33.43	2
7	0.00	33.43	. Cg
8	0.00	33.43	4.
9	0.00	33.43	
10	0.00	33.43	1.2
11	0.00	33.43	
12	0.00	33.43	,

Water Availability Profile



Water Availability Assessment of Location

Base Threshold (cfs):	30.15
Upstream Demand (cfs):	0.00
Downstream Demand (cfs):	0.00
Pump rate (cfs):	3.28
Headwater Safety (cfs):	0.00
Ungauged Stream Safety (cfs):	0.00
Min. Gauge Reading (cfs):	33.78
Passby at Location (cfs):	30.15

[&]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.

west virginia department of environmental protection



Water Management Plan: Secondary Water Sources



WMP-01212

API/ID Number:

047-097-03790

Operator:

Consol Energy - WV

ALT8AHS

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: 17797 Source Name A

Alton 1 Freshwater Impoundment

Source start date:

5/1/2013

Source end date:

5/1/2014

Source Lat:

38.794961

Source Long: -80.184542

County

Upshur

Max. Daily Purchase (gal)

Total Volume from Source (gal):

4,258,800

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-194

WMP-01212 API/ID Number 047-097-03790 Operator: Consol Energy - WV

ALT8AHS

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: 17798 Source Name Alton 2 Freshwater Impoundment Source start date: 5/1/2013

Source end date: 5/1/2014

Source Lat: 38.806146 Source Long: -80.195108 County Upshur

Max. Daily Purchase (gal)

Total Volume from Source (gal): 4,258,800

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-195

Recycled Frac Water

Source ID: 17799 Source Name Various Source start date: 5/1/2013

Source end date: 5/1/2014

Source Lat: Source Long: County

Max. Daily Purchase (gal)

Total Volume from Source (gal): 4,258,800

DEP Comments:

