



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

Jim Justice , Governor
Austin Caperton , Cabinet Secretary
www.dep.wv.gov

Thursday, July 20, 2017
WELL WORK PERMIT
Vertical / Re-Work

COLUMBIA GAS TRANSMISSION, LLC
P. O. BOX 1273

CHARLESTON, WV 253251273

Re: Permit approval for GLADY #7451
47-075-00007-00-00

This well work permit 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 any additional specific 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 of 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.

Per 35 CSR 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- 0450.

James A. Martin
Chief

Operator's Well Number: GLADY #7451
Farm Name: U.S. Department of the Interior
U.S. WELL NUMBER: 47-075-00007-00-00
Vertical / Re-Work
Date Issued: 7/20/2017

Promoting a healthy environment.

07/21/2017

PERMIT CONDITIONS

West Virginia Code §22-6-11 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 §22-6-20, 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. Pursuant to 35 CSR 4-19.1.a, at the request of the surface owner all water wells or springs within 1000 feet of the proposed well that are actually utilized for human consumption, domestic animals or other general use shall be sampled and analyzed.
3. Pursuant to 35 CSR 4-19.1.c, if the operator is unable to sample and analyze any water well or spring with one thousand (1,000) feet of the permitted well location, the Office of Oil and Gas requires the operator to sample, at a minimum, one water well or spring located between one thousand (1,000) feet and two thousand (2,000) feet of the permitted well location.
4. All pits must be lined with a minimum of 20 mil thickness synthetic liner.
5. In the event of an accident or explosion causing loss of life or serious personal injury in or about the well or while working on the well, the well operator or its contractor shall give notice, stating the particulars of the accident or explosion, to the oil and gas inspector and the Chief within twenty-four (24) hours.
6. During the surface casing and cementing process, in the event cement does not return to the surface, or any other casing string that is permitted to circulate cement to the surface and does not return to the surface, the oil and gas inspector shall be notified within twenty-four (24) hours.
7. Well work activities shall not constitute a hazard to the safety of persons.
8. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced, drilling ceased, completion of any other permitted well work and completion of the well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov within 30 days of commencement of drilling.

WW - 2B
(Rev. 8/10)

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

1) Well Operator: Columbia Gas Transmission, LLC 307032 Pocahontas Green Bank Sinks of Gandy
Operator ID County District Quadrangle

2) Operator's Well Number: Glady 7451 3) Elevation: 3398 ft

4) Well Type: (a) Oil _____ or Gas X _____

(b) If Gas: Production _____ / Underground Storage X _____

Deep X _____ / Shallow _____


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5) Proposed Target Formation(s): Chert / Oriskany Proposed Target Depth: 5550 / 5712 ft

6) Proposed Total Depth: 6286 (existing) Feet Formation at Proposed Total Depth: Helderberg

7) Approximate fresh water strata depths: 71 ft (per driller in 1957)

8) Approximate salt water depths: none reported by driller in 1957

9) Approximate coal seam depths: none reported by driller in 1957

10) Approximate void depths, (coal, Karst, other): none reported by driller in 1957

11) Does land contain coal seams tributary to active mine? no

12) Describe proposed well work and fracturing methods in detail (attach additional sheets if needed)

Clean well to TD with coil tubing using +/- 300 bbls fresh water. Perform acid stimulation using approximately 8000 gals HCl acid and 200 bbls fresh water.

* Casing listed below are existing. No plans to remove, alter, or install new casing/tubing.

13) **CASING AND TUBING PROGRAM**

TYPE	SPECIFICATIONS			FOOTAGE	INTERVALS	CEMENT
	Size	Grade	Weight per ft			
Conductor	13.375	H-40	48	47	47	not reported
Fresh Water	10.75		40.5	877	877	250 sx
Coal						
Intermediate						
Production	7.0	J-55/N-80	23.0	6286	6286	950 sx
Tubing						
Liners						

Packers: Kind: _____

Sizes: _____

Depths Set _____

07/21/2017

Record



GLADY 7451

4707500007

DM

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION

Quadrangle Spruce Knob 3 N. W.

Permit No. POCA-7

WELL RECORD

Oil or Gas Well Gas
(KIND)

Company Columbian Carbon Company, Operator
Address Box 873, Charleston 23, W. Va.
Farm United States of America Acres 1542
Location (waters) East Fork of Gladly Fork
Well No. H-1 GW-1265 Elev. 3394.29' G
District Green Bank County Pocahontas
The surface of tract is owned in fee by Director, Bureau of Land Management
Interior Building Address Washington 25, D.C.
Mineral rights are owned by Same
Address _____

Casing and Tubing	Used in Drilling	Left in Well	Packers
Size			Kind of Packer _____
16			Baker Full Bore Pkr.
13 3/8" 48#	47'4"	47'4"	Size of <u>3 1/2"</u>
10 3/4" 40.5#	877'9"	877'9"	Depth set <u>5407' dlm.</u>
8 1/2"			
8 1/2" 23#	6286'6"	6286'6"	
5 3/16"			
3 1/2" 9.3#	5474'11"	5474'11"	Perf. top _____
2"			Perf. bottom _____
Liners Used			Perf. top _____
			Perf. bottom _____

Drilling commenced 8-3-57
Drilling completed 10-25-57
Date Shot not shot From _____ To _____
With _____
Open Flow /10ths Water in _____ Inch
/10ths Merc. in _____ Inch
Volume _____ Cu. Ft.
Rock Pressure _____ lbs. _____ hrs.
Oil _____ bbls., 1st 24 hrs.
WELL ACIDIZED not acidized

CASING CEMENTED _____ SIZE _____ No. Ft. _____ Date _____
See reverse side.
COAL WAS ENCOUNTERED AT none FEET _____ INCHES
FEET _____ INCHES FEET _____ INCHES
FEET _____ INCHES FEET _____ INCHES

WELL FRACTURED See reverse side.

RESULT AFTER TREATMENT 25,480,000 cubic feet

ROCK PRESSURE AFTER TREATMENT 1985# in 5 days

Fresh Water 71' Feet _____ Salt Water _____ Feet _____

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth	Remarks
Shale			0	40			
Lime			40	50			
Slate			50	64			
Lime			64	135	Fresh water	71'	
Gritty Lime			135	425			
Lime			425	714			
Sand			714	861			
Lime			861	928	869' dlm - 870' slm		
Slate & Lime			928	962			
Sand			962	975			
Lime			975	1240			
Lime & Shale			1240	1395			
Lime			1395	1635			
Shale & Lime			1635	2156			
Shale			2156	2300			
Lime			2300	2420			
Lime & Shale			2420	2605			
Shale			2605	2760	Gas	2730-60'	Show
Lime & Shale			2760	3170			
Shale			3170	3760			
Lime and Shale			3760	3878			
Shale			3878	3920			
Lime			3920	4080			
Lime & Shale			4080	4400			
Shale			4400	4750			
Lime & Shale			4750	4835			
Shale			4835	5070			
Dark Shale			5070	5310			
Shale			5310	5310			



(over)

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7451

7M

7-11-1927-7

Formation	Color	Hard or Soft	Top $\frac{1}{8}$	Bottom	Oil, Gas or Water	Depth Found	Remarks
The following is from sample determination:							
Onondaga			5510	5550			
Chert			5550	5625			
Shale & Chert			5625	5712			
Oriskany			5712	5915			
Sand and Limestone			5915	6250			
Total depth	-----			6250'	Rotary Measurement		
				6254'	Schlumberger Measurement		
Cable tools	0 - 1023						
Rotary tools	1023 - 6250						Rotary Measurement
							6254' Schlumberger Measurement
<u>CASING RECORD</u>							
9-10-57	- Ran 877'9" of 10 3/4" 40.5 Casing at 870' slm with shoe. Perforated pipe 858-862 with 8 shots per foot. Cemented with 250 sacks. Pumped plug to 828'. Circulation and returns.						
10-26-57	- Ran 6286'6" of 7" 23# casing with shoe at 6250' Rotary Measurement. Cemented with 247 sacks of cement. Ran 5 centralizers and perforated.						6254' Schlumberger Measurement
<u>FRACTURING RECORD</u>							
Perforated 7"	from 6176-6210 - 2 shots per foot. 6038-6066 - 2 shots per foot 5770-5836 - 4 shots per foot 5720-5746 - 4 shots per foot 5838-5870 - 4 shots per foot						
11-26-57	- Set packer at 5407'. Pumped in 1500 gallons mud acid. Displaced mud acid in 5 stages. 1st-1000#, 2nd-1100#, 3rd-1200#, 4th-1600#, 5th-1400#. Maximum pressure 2900#. Injection rate 22 barrels per minute. Used 8000 gallons gelled kerosene and 8200# sand. Started perforation balls when 3000 gallons in. Used 200 perforation balls. Pumping time 12 minutes. Injection rate 16 barrels per minute. Flushed with 90 barrels kerosene. Maximum pressure 2900# - final pressure 2800#.						
	Final open flow 25,480,000 cubic feet. 5 day pressure 1985#.						

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07/21/2017

Date December 20, 19 57

APPROVED Columbia Gas Transmission Company, Owner

By O. W. Van Datten, Vice President
(Title)

STVDA J421

4707500007

WW-2A
(Rev. 6-14)

1.) Date: 6/23/17
2.) Operator's Well Number Gladv 7451
State County Permit
3.) API Well No.: 47- Pocahontas - 00007

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

4) Surface Owner(s) to be served: (a) Name US Dept of Interior (US Forests) Address 626 East Wisconsin Ave Suite Milwaukee, WI 53202-4617 (b) Name Address (c) Name Address
5) (a) Coal Operator Name Address (b) Coal Owner(s) with Declaration Name Address (c) Coal Lessee with Declaration Name Address
6) Inspector Danny Mullins Address 220 Jack Acres Rd Buckhannon, WV 26201 Telephone 304-932-6844

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TO THE PERSONS NAMED ABOVE TAKE NOTICE THAT:

Included is the lease or leases or other continuing contract or contracts by which I hold the right to extract oil and gas
OR
x Included is the information required by Chapter 22, Article 6, Section 8(d) of the Code of West Virginia (see page 2)

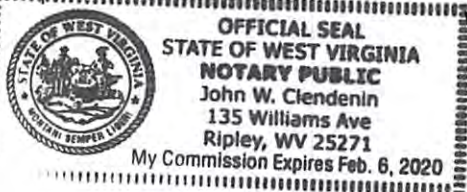
I certify that as required under Chapter 22-6 of the West Virginia Code I have served copies of this notice and application, a location plat, and accompanying documents pages 1 through ___ on the above named parties by:

- Personal Service (Affidavit attached)
- Certified Mail (Postmarked postal receipt attached)
- X Publication (Notice of Publication attached) via approved BLM Sundry Notice

I have read and understand Chapter 22-6 and 35 CSR 4, and I agree to the terms and conditions of any permit issued under this application.

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, 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 and imprisonment.



Well Operator: Columbia Gas Transmission, LLC
By: James E. Amos Senior Engineer
Address: 48 Columbia Gas Rd Sandville, WV 25275
Telephone: 304-373-2412
Email: james_amos@transcanada.com

Subscribed and sworn before me this 23 day of June, 2017
John W. Clendenin Notary Public

My Commission Expires 2-6-2020

Oil and Gas Privacy Notice

The Office of Oil and Gas processes your personal information, such as name, address and phone number, as a part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov

07/21/2017

4707500007

Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

5. Lease Serial No. WVBLMA022923
6. If Indian, Allottee or Tribe Name
7. If Unit or CA/Agreement, Name and/or No. WVES39982
8. Well Name and No. 7451
9. API Well No. 47-075-00007-00-S1
10. Field and Pool or Exploratory Area GLADY
11. County or Parish, State POCAHONTAS COUNTY, WV

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well <input type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input checked="" type="checkbox"/> Other: INJECTION	
2. Name of Operator COLUMBIA GAS TRANSMISSION LLC Contact: JAMES E AMOS E-Mail: jamos@nisource.com	
3a. Address 1700 MACCORKLE AVE SE CHARLESTON, WV 25325-1273	3b. Phone No. (include area code) Ph: 304-373-2412 Fx: 304-373-2438
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Tract US-52 38.714250 N Lat, 79.744280 W Lon	

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input checked="" type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Hydraulic Fracturing	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplate horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

Estimated start date: 9/15/17
Estimated completion date: 10/15/17

Scope of Work
Obtain CBL. Perform coiled tubing cleanout and acid treatment. Place well back in service.

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14. I hereby certify that the foregoing is true and correct. Electronic Submission #379663 verified by the BLM Well Information System For COLUMBIA GAS TRANSMISSION LLC, sent to the Milwaukee Committed to AFMSS for processing by TREY MITCHELL on 06/27/2017 (17TAM0099SE)	
Name (Printed/Typed) JAMES E AMOS	Title SENIOR ENGINEER
Signature (Electronic Submission)	Date 06/23/2017

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By <u>TREY MITCHELL</u>	Title <u>PETROLEUM ENGINEER</u>	Date <u>06/28/2017</u>
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.		Office Milwaukee

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

07/21/2017

WW-2B1
(5-12)

Well No. Glady 7451

West Virginia Department of Environmental Protection
Office of Oil and Gas

NOTICE TO SURFACE OWNERS

The well operator named below is preparing to file for a permit from the state to drill a new well. Before a well work permit can be filed with the Chief of the Office of Oil and Gas, the well operator is required to have given notice of the right to request water well or spring analytical testing. This notice shall be given to the owners or occupants of land which have a water well or spring being utilized for human consumption, domestic animals, or other general use and which is located within 1000 feet of the proposed well site.

With this form, the operator is giving you notice of your right to request analytical testing. The operator is required to sample and analyze the water wells or springs of all owners or occupants who request it. Therefore, if you wish to have your water well or spring tested, contact the operator named below.

All sampling shall be completed prior to drilling. Within thirty (30) days of the receipt of such sample analyses the operator shall submit the results to the Chief of the Office of Oil and Gas and to the owners or occupants who may have requested them.

Be advised, you have the right to sample and analyze any water supply at your own expense.

Listed below is the laboratory chosen by operator to perform analysis, and contactor chosen to collect sample.

Certified Laboratory Name _____
Sampling Contractor _____

Well Operator Not applicable - existing underground natural gas storage well.

Address _____

Telephone _____

FOR OPERATOR'S USE ONLY: Below, or on an attached page, list those persons which were given this notice. Place an asterisk beside the one(s) that contacted you and requested sampling and analyses. If there were no requests made, indicate by underling which one you have selected to sample and analyze. If there are no water wells or springs within 1000 feet of the proposed site, the Chief may require the operator to test wells up to 2000 feet from the proposed site.

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**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6, Section 8(d)
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:

Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
US Dept of Interior	Columbia Gas Transmission, LLC	Storage Lease 1090700-000	not recorded

SEE ATTACHED AGREEMENT

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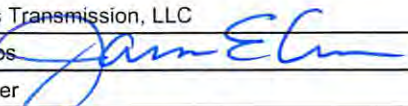
**Acknowledgement of Possible Permitting/Approval
In Addition to the Office of Oil and Gas**

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:
By:Its:

Columbia Gas Transmission, LLC
 James E. Amos 
 Senior Engineer

**AMENDMENT TO AGREEMENT FOR AMENDMENT OF LEASES OF OIL
AND GAS LANDS AND FOR AUTHORIZATION OF SUB-SURFACE STORAGE OF
GAS UNDER THE ACT OF FEBRUARY 25, 1920 (41 STAT. 437) AS AMENDED AND
SUPPLEMENTED BY THE ACT OF AUGUST 7, 1947 (61 STAT. 913).**

This agreement entered into this 12th day of April, 2012, with an effective date of August 1, 2011, by and between the United States of America through the Field Manager, Northeastern States Field Office, the authorized officer of the Bureau of Land Management, hereinafter called The United States, and Columbia Gas Transmission, LLC, hereinafter called Columbia, with an address at 1700 MacCorkle Avenue, Charleston, West Virginia, 25314.

WITNESSETH

WHEREAS, the United States and Atlantic Seaboard Corporation, a predecessor to Columbia, entered into an "Agreement For Amendment of Leases of Oil and Gas Lands And For Authorization of Sub Surface Storage of Gas Under The Act Of February 25, 1920, (41 Stat. 437) As Amended, As Supplemented By The Act of August 7, 1947, (61 Stat. 913) dated March 8, 1963, whereby the United States leased to Columbia's predecessor certain gas storage areas located in Randolph and Pocahontas Counties, West Virginia, hereinafter called the 1963 Agreement; and

WHEREAS, Section D of the 1963 Agreement requires that the fees to be paid to the United States pursuant to such agreement shall be renegotiated twenty years from the effective date of such agreement, and every twenty years thereafter; and

WHEREAS, by amendment dated March 4, 1987, the fees to be charged pursuant to the 1963 Amendment where amended for the period ending July 31, 2004; and

WHEREAS, The United States and Columbia entered into an agreement attached hereto as Exhibit A, wherein the United States and Columbia mutually agreed to amend the 1963 Agreement as provided herein in order to determine the method by which acreage rental, injection and withdrawal fees would be calculated for the period from August 1, 2004, and including July 31, 2005, in order to permit the United States to complete its review and comment period relating to changes to applicable regulations before entering into an amendment governing fees for the next twenty-year period; and

WHEREAS, by an agreement dated July 1, 2005, the United States and Columbia extended the Agreement attached hereto as Exhibit A for a period of one year in order to permit the United States to complete its review and comment period relating to changes to applicable regulations before entering into an amendment governing fees for the next twenty year period; and

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WHEREAS, by an agreement entered into June 13, 2006, the United States and Columbia extended the Agreement, attached hereto as Exhibit B, for a period of five years from August 1, 2006 to July 31, 2011; and

WHEREAS, the United States has completed its review and comment period relating to changes to applicable regulations governing annual acreage rental, injection and withdrawal fees for Federal gas storage agreements, and has published a table of fees in Instruction Memorandum (IM) 2009-190, attached hereto as Exhibit C which are to be called for as part of the negotiation process for all gas storage agreements entered into, or renegotiated, by the United States after July 31, 2009; said IM 2009-190 was scheduled to expire September 30, 2010, but its expiration date was extended; and

WHEREAS, the United States is required to advocate the annual acreage rental, injection and withdrawal fees listed for the 1st Quarter in 2014 in IM 2009-190 when negotiating the annual acreage rental, injection and withdrawal fees for the first five years of the next twenty year period for the 1963 Agreement; and

WHEREAS, the acreage rental, injection and withdrawal fees listed for the 1st Quarter in 2014 in IM 2009-190 call for an annual acreage rental fee of \$1.741 per acre, an injection fee of \$0.0044 per MCF and a withdrawal fee of \$0.0174 per MCF.

WHEREAS, the United States has not been provided the fees that it is required to advocate for the final fifteen years of the next twenty year period for the 1963 Agreement, but Columbia and the United States anticipate that fair and equitable fees will be determined by the Washington Office Headquarters of the Bureau of Land Management in a timely manner; and

WHEREFORE, the United States and Columbia do hereby agree as follows:

1. The second paragraph agreed upon by the United States and Columbia in the agreement entered into on June 16, 2004, attached hereto as Exhibit A is replaced in its entirety by the following paragraph:

The annual acreage rental to be paid by Columbia to the United States for the period from August 1, 2011 through July 31, 2016, shall be \$1.741 per acre multiplied by 46,938.40 acres for a total of \$81,719.75. Such annual acreage rental shall be paid on or before August 1st of each year during this five year time period. Columbia has paid \$48,815.94 (as check Number 598475 dated August 1, 2011, and Columbia shall pay the remaining balance of \$32,903.81 within sixty (60) days from the execution of this agreement by the United States. Acreage, injection, and withdrawal fees will be adjusted in accordance with IM 2009-190 at the end of each five year period based upon the projected fees established in the schedule of fees to reflect existing market values for the use and rental of Federal GSA storage space.

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2. The third paragraph agreed upon by the United States and Columbia in the agreement entered into on June 16, 2004 attached hereto as Exhibit A is replaced in its entirety by the following paragraph:

The annual injection and withdrawal fees for the period from August 1, 2011 through July 31, 2016, shall be \$0.0044 per MCF and \$0.0174 per MCF, respectively. Acreage, injection, and withdrawal fees will be adjusted in accordance with IM 2009-190 at the end of each five year period based on the projected fees established in the schedule of fees to reflect existing market values for the use and rental of Federal GSA storage space. These fees shall be calculated based upon a Total Acreage area of 57,360 acres and a Federal acreage area leased from the United States of 46,938.40 acres. Utilizing these acreage figures, the ratio to be applied for the purposes of injection and withdrawal fees shall be 81.83%, representing a ratio, the numerator of which is the Federal Acreage and the denominator of which is the Total Acreage.

3. The fifth paragraph agreed upon by the United States and Columbia in the agreement entered into on June 16, 2004, attached hereto as Exhibit A is replaced in its entirety by the following paragraph:

The United States and Columbia acknowledge and agree that this amendment to the 1963 Agreement shall be applicable only during the period of August 1, 2011 through July 31, 2031, and shall have no precedential value for any other acceptable amendment to the 1963 Agreement relating to the fees to be paid by Columbia to the United States for periods subsequent to July 31, 2031, or in the alternative, to execute a new agreement to supersede the 1963 Agreement.

4. Whereas Section D: Storage Fees, first paragraph of the original 1963 agreement required payments to be due annually on August 31st of each year, in order to provide adequate time to acquire the annual volumes and to correctly calculate the volumetric fees that are due to the United States each year, the first paragraph is amended as follows:

“Columbia shall pay the United States the injection and withdrawal volumetric fees on or before October 30th of each year before any late fees or penalties will be assessed for that period’s payments.”

5. Except as modified herein, the terms of the 1963 Agreement and any amendments previously adopted to such agreement, shall remain in full force and effect.
6. The United States and Columbia represents that the Person executing this amendment on their behalf is duly authorized and has obtained all necessary and appropriate approvals to enter into this amendment.

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COLUMBIA GAS TRANSMISSION, LLC

By: *Sheree L. Parks Downey*
Sheree L. Parks Downey
Its: Director, Assets Management

Date: 8.3.17

The United States of America

By: *Mark Storzer*
Mark Storzer
Its: Field Manager, Northeastern States Field Office

Date: 4/12/17

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JUN 21 2004

AMENDMENT TO AGREEMENT FOR AMENDMENT OF LEASES OF OIL AND GAS LANDS AND FOR AUTHORIZATION OF SUB-SURFACE STORAGE OF GAS UNDER THE ACT OF FEBRUARY 25, 1920 (41 STAT. 437) AS AMENDED AS SUPPLEMENTED BY THE ACT OF AUGUST 7, 1947 (61 STAT. 913)

OFFICE OF LAND MANAGEMENT MILWAUKEE FIELD OFFICE

This agreement entered into this 16th day of JUNE, 2004, with an effective date of August 1, 2004, by and between the United States of America (through the authorized officer of the Bureau of Land Management), hereinafter called the ("United States"), and Columbia Gas Transmission Corporation ("Columbia"), with an address at 1700 MacCorkle Avenue, Charleston, West Virginia 25314.

WITNESSETH,

WHEREAS, the United States of America and Atlantic Seaboard Corporation, (a predecessor to Columbia), entered into an "Agreement For Amendment Of Leases Of Oil And Gas Lands And For Authorization Of Sub Surface Storage Of Gas Under The Act Of February 25, 1920 (41 Stat. 437) As Amended, As Supplemented By The Act Of August 7, 1947 (61 Stat. 913)" dated March 8, 1963, whereby the United States leased to Columbia's predecessor certain gas storage areas located in Randolph and Pocahontas Counties, West Virginia ("1963 Agreement"); and,

WHEREAS, Section D of the 1963 Agreement requires that the fees to be paid to the United States pursuant to such agreement shall be renegotiated twenty years from the effective date of such agreement, and every twenty years thereafter; and,

WHEREAS, by amendment dated March 4, 1987, the fees to be charged pursuant to the 1963 Agreement were amended for the period ending July 31, 2004; and,

WHEREAS, the parties have engaged in negotiation of the fees to be charged for the twenty-year period beginning August 1, 2004 and, in the course of such negotiations, the United States has informed Columbia that it is currently evaluating and revising applicable authority relating to the lease of federal properties for gas storage purposes, and that such review will not be concluded prior to the expiration of the current twenty-year payment term on July 31, 2004; and,

WHEREAS, the parties mutually desire to amend the 1963 Agreement as provided herein in order to determine the method by which acreage rental, injection and withdrawal fees will be calculated for the period from August 1, 2004, through and including July 31, 2005, in order to the permit the United States to complete its review and comment period relating to changes to applicable authority before entering into an amendment governing fees for the next twenty-year period;

WHEREFORE, the Parties do hereby agree as follows:

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1. The parties acknowledge and agree that the total acreage to be leased by the United States to Columbia total 46,938.40 acres ("Federal Acreage"). The Parties further agree that, for purposes of calculating the injection and withdrawal fees to be paid by Columbia to the United States, the total acreage (including both federally owned and non-federally owned acres) within the Gladly Storage field is 57,360 acres ("Total Acreage").
2. The acreage rental to be paid by Columbia to the United States for the period from August 1, 2004, through July 31, 2005, shall be \$1.04 per acre multiplied by 46,938.40 acres for a total of \$48,815.94. Such acreage rental shall be paid on or before August 1, 2004.
3. The injection and withdrawal fee calculations for the period from August 1, 2004, through July 31, 2005, shall be calculated based upon a Total Acreage area of 57,360 acres and a Federal Acreage leased from the United States of 46,938.40 acres. Utilizing these acreage figures, the ratio to be applied for the purposes of injection and withdrawal fees shall be 81.83%, representing a ratio, the numerator of which is the Federal Acreage and the denominator of which is the Total Acreage.
4. Except as modified herein, the terms of the 1963 Agreement and any amendments previously adopted to such agreement, shall remain in full force and effect.
5. The Parties acknowledge and agree that this amendment to the 1963 Agreement shall be applicable only during the period of August 1, 2004, through July 31, 2005, and shall have no precedential value for any other time period. The parties shall cooperate in good faith to reach a mutually acceptable amendment to the 1963 Agreement relating to the fees to be paid by Columbia to the United States for periods subsequent to July 31, 2005, or, in the alternative, to execute a new agreement to supercede the 1963 Agreement.
6. Each Party represents that the person executing this amendment on such parties' behalf is duly authorized and has obtained all necessary and appropriate approvals to enter into this amendment.

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In witness hereof the parties have executed this amendment by affixing their respective authorized signatures below.

Columbia Gas Transmission Corporation

By: *Stanley B. [Signature]*

Its: *Mgr. Field Services*

Date: *6-16-04*

Witness: *Gwendolyn R. [Signature]*

United States of America

By: *[Signature]*

Acting Field Manager
Bureau of Land Management
Its: *Eastern States, Milwaukee Field Office*

Date: *6/9/04*

Witness: *Timothy F. [Signature]*

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AMENDMENT TO AGREEMENT FOR AMENDMENT OF LEASES OF OIL
AND GAS LANDS AND FOR AUTHORIZATION OF SUB-SURFACE STORAGE
OF GAS UNDER THE ACT OF FEBRUARY 25, 1920 (41 STAT.437) AS
AMENDED AS SUPPLEMENTED BY THE ACT OF AUGUST 7, 1947 (61
STAT.913)

This agreement entered into this 13th day of June, 2006, with an effective date of August 1, 2006, by and between the United States of America through the Field Manager, Milwaukee Field Office, the authorized officer of the Bureau of Land Management, hereinafter called the ("United States"), and Columbia Gas Transmission Corporation ("Columbia"), with an address at 1700 MacCorkle Avenue, Charleston, West Virginia 25314.

WITNESSETH,

WHEREAS, the United States and Atlantic Seaboard Corporation, (a predecessor to Columbia), entered into an "Agreement For Amendment of Leases Of Oil And Gas Lands And For Authorization Of Sub Surface Storage Of Gas Under The Act Of February 25, 1920 (41 Stat. 437) As Amended, As Supplemented By The Act Of August 7, 1947 (61 Stat. 913)" dated March 8, 1963, whereby the United States leased to Columbia's predecessor certain gas storage areas located in Randolph and Pocahontas Counties, West Virginia ("1963 Agreement"); and,

WHEREAS, the parties entered into an agreement attached hereto as Exhibit A, wherein the parties mutually agreed to amend the 1963 Agreement as provided herein in order to determine the method by which acreage rental, injection and withdrawal fees would be calculated for the period from August 1, 2004, through and including July 31, 2005, in order to permit the United States to complete its review and comment period relating to changes to applicable regulations before entering into an amendment governing fees for the next twenty-year period; and,

WHEREAS, by an agreement dated July 1, 2005, the parties extended the agreement attached hereto as Exhibit A for a period of one year in order to permit the United States to complete its review and comment period relating to changes to applicable regulations before entering into an amendment governing fees for the next twenty-year period; and,

WHEREAS, the parties desire to further extend the agreement attached hereto as Exhibit A for a period of five years,

WHEREFORE, the Parties do hereby agree as follows:

1. The Agreement attached hereto as Exhibit A is extended for a period of five years from August 1, 2006 through July 31, 2011.

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- 2. Except as modified herein, including Exhibit A attached hereto, the terms of the 1963 Agreement and any amendments previously adopted to such agreement, shall remain in full force and effect.
- 3. Each Party represents that the person executing this amendment on such parties' behalf is duly authorized and has obtained all necessary and appropriate approvals to enter into this amendment.

In witness hereof the parties have executed this amendment by affixing their respective authorized signatures below.

Columbia Gas Transmission Corporation

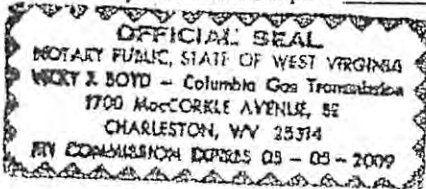
By: [Signature]
Sheree L. Parks Downey
Its: Manager Operations

STATE OF WEST VIRGINIA
COUNTY OF KANAWHA

I, Vickie J. Boyd, A Notary Public of said county, do certify that Sheree Parks Downey, who signed the writing above as Manager, Operations of Columbia Gas Transmission Corporation, has this day in my said county before me acknowledged the said writing to be the act and deed of said corporation.

Given under my hand this 10th day of May, 2006.

My commission expires 5-5-09



[Signature]
Notary Public

United States of America

By: [Signature]
Aaron G. Horton

Its: Field Manager, Milwaukee Field Office

STATE OF WISCONSIN
COUNTY OF MILWAUKEE

I, S. Schmidt, A Notary Public of said county, do certify that Aaron G. Horton who signed the writing above as Field Manager, Milwaukee Field Office, has this day in my said county before me acknowledged the said writing to be the act and deed of said corporation.

Given under my hand this 13th day of June, 2006.

My commission expires 8/2/09

[Signature]

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EXHIBIT A

AMENDMENT TO AGREEMENT FOR AMENDMENT OF LEASES OF OIL AND GAS LANDS AND FOR AUTHORIZATION OF SUB-SURFACE STORAGE OF GAS UNDER THE ACT OF FEBRUARY 25, 1920 (41 STAT. 437) AS AMENDED AS SUPPLEMENTED BY THE ACT OF AUGUST 7, 1947 (61 STAT. 913)

This agreement entered into this 16th day of JUNE, 2004, with an effective date of August 1, 2004, by and between the United States of America (through the authorized officer of the Bureau of Land Management), hereinafter called the ("United States"), and Columbia Gas Transmission Corporation ("Columbia"), with an address at 1700 MacCorkle Avenue, Charleston, West Virginia 25314.

WITNESSETH,

WHEREAS, the United States of America and Atlantic Seaboard Corporation, (a predecessor to Columbia), entered into an "Agreement For Amendment Of Leases Of Oil And Gas Lands And For Authorization Of Sub Surface Storage Of Gas Under The Act Of February 25, 1920 (41 Stat. 437) As Amended, As Supplemented By The Act Of August 7, 1947 (61 Stat. 913)" dated March 8, 1963, whereby the United States leased to Columbia's predecessor certain gas storage areas located in Randolph and Pocahontas Counties, West Virginia ("1963 Agreement"); and,

WHEREAS, Section D of the 1963 Agreement requires that the fees to be paid to the United States pursuant to such agreement shall be renegotiated twenty years from the effective date of such agreement, and every twenty years thereafter; and,

WHEREAS, by amendment dated March 4, 1987, the fees to be charged pursuant to the 1963 Agreement were amended for the period ending July 31, 2004; and,

WHEREAS, the parties have engaged in negotiation of the fees to be charged for the twenty-year period beginning August 1, 2004 and, in the course of such negotiations, the United States has informed Columbia that it is currently evaluating and revising applicable authority relating to the lease of federal properties for gas storage purposes, and that such review will not be concluded prior to the expiration of the current twenty-year payment term on July 31, 2004; and,

WHEREAS, the parties mutually desire to amend the 1963 Agreement as provided herein in order to determine the method by which acreage rental, injection and withdrawal fees will be calculated for the period from August 1, 2004, through and including July 31, 2005, in order to the permit the United States to complete its review and comment period relating to changes to applicable authority before entering into an amendment governing fees for the next twenty-year period;

WHEREFORE, the Parties do hereby agree as follows:

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FROM COLUMBIA GAS LEGAL 904 957 9206 (1781) 5.29.04 14:46/87.14:46/NO.4860228035 P 2

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240
<http://www.blm.gov>

4707500007

July 31, 2009

In Reply Refer To:
3160 (310) I

EMS TRANSMISSION 08/06/2009
Instruction Memorandum No. 2009-190
Expires: 09/30/2010

Exhibit C
To
The August 1, 2011 Amendment
For the Gladly Gas Storage Agreement
Between the United States and Columbia Gas Transmission, LLC
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To: State Directors

From: Assistant Director, Minerals and Realty Management
WV Department of Environmental Protection

Subject: Guidance for Establishing New and Renegotiated Underground Gas Storage Agreements

Program Area: Oil and Gas.

Purpose: This Instruction Memorandum (IM) establishes a standard minimum fee schedule for the injection, storage, and withdrawal of gas under new and renegotiated Federal Underground Gas Storage Agreements (GSA) established on or after the effective date of this IM.

Policy/Action: Effective immediately, all newly negotiated or renegotiated agreements for the underground storage of natural gas involving Federal lands will be based on the attached fee schedule (Attachment 1). This schedule updates the standard fee schedule that has been in effect for agreements entered into or renegotiated between September 22, 1992, and today. All new GSAs are to be approved with the provisions for revising terms and for periodic updates to the fee schedule. Fee schedules are to be updated at least every 5 years, but may be more frequent if circumstances warrant.

The Authorized Officer of the Bureau of Land Management (BLM) field office (FO) approving the GSA should negotiate storage fees on a case-by-case basis and higher fees may be warranted for some reservoir storage areas.

In order to avoid the administrative burden of having BLM FOs and GSA operators adjust and pay different storage fees annually, the fees will be set at midpoint of the first five-year period in which the GSA is in effect. For example: a new or renegotiated GSA that is effective during the Second Quarter 2009, with a 5-year term, shall have average

annual storage fees of \$1.657 per net mineral acre, or fraction thereof, of the total storage area, and \$0.0041 per thousand cubic feet (MCF) of gas withdrawn from the storage area, and \$0.0166 per MCF of gas withdrawn from the storage area, corresponding to the Fourth Quarter 2011, the mid-point of the 5-year term (fees from Attachment 1, Fourth Quarter 2011). These fees will be paid annually until the end of the Fourth Quarter June 2014, the end of the GSAs 5-year term. GSAs with terms longer than 5 years shall have provisions written into the contracts that the fee schedule will be adjusted at the end of the fifth year set to the mid-point of the next 5 year interval, based on the fees established in the schedule. The Fluid Minerals Division (WO-310) will provide BLM field offices with an updated schedule of fees annually, at the beginning of each fiscal year.

A summary of the status of all current gas storage agreements administered by the BLM is also attached (Attachment 2). This summary was provided by BLM field offices and the Minerals Management Service (MMS) which represents the latest information available. Each state office must review this information and provide updates or corrections to both WO-310 and to the MMS within 30 days, either as of the effective date of this IM or after a new GSA is approved or an existing GSA is renegotiated. The state offices must also ensure that personnel are fully aware of their duties and responsibilities in administering gas storage contracts as detailed in BLM Manual 3160-11, *Underground Storage of Natural Gas*.

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Timeframe: This IM is effective immediately.

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Budget Impact: No budget impact is anticipated.

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Background: Current BLM guidance (Manual 3160-11) provides a minimum fee schedule for negotiated GSAs involving Federal lands. However, this guidance addresses only those new or renegotiated contracts that became effective prior to December 31, 1991. GSAs that were adopted between December 31, 1991, and September 15, 1992, were established using the January 1, 1987, fee schedule. IM 92-244, dated September 15, 1992, established an interim fee schedule for new and renegotiated gas storage agreements of a minimum of \$1.08 per net Federal mineral acre or fraction thereof within the gas storage area and injection fee of \$0.0027 per Mcf of gas, and a withdrawal fee of \$0.0108 per Mcf of gas. Although the BLM had relied on staff in the MMS with expertise in the marketing and storage of natural gas to recommend revising storage fees as needed, such staff is no longer available. During 2002, the MMS and BLM jointly funded Dynegey, an independent contractor, to conduct a study of the gas storage industry to determine whether changes to our gas storage fee schedule were warranted. Dynegey concluded that the value of Federal gas storage reservoirs had increased since the last fee schedule was adopted and that the BLM should revise its fee schedule to reflect current storage values.

The BLM management, staff economists, and field offices conducted a comparative analysis of three indices, including the Consumer Price Index (CPI), the Producer Price

Index (PPI), Gross Domestic Product-Implicit Price Deflator (GDP-IPD) to establish a new fee schedule. We decided to use the GDP-IPD, Series ID, published by the U.S. Bureau of Economic Analysis, because its index values are a close approximation of the average of CPI and the PPI indices. The BLM also uses the GDP-IPD Index to make annual adjustments to cost recovery fees charged to customers for document processing associated with pre-lease and post-lease administration. This index uses at least 10 years of GDP-IPD statistical data prior to the then-existing contract term and applied to the gas storage fee schedule then in effect.

Manual/Handbook Sections Affected: This guidance will be incorporated into the BLM Manual 3160-11, *Underground Storage of Natural Gas*, Section .12 A1 and 2 when next updated.

Coordination: Coordination was done with the MMS and the Bureau of Indian Affairs, in accordance with the current BLM/MMS/BIA Memorandum of Understanding and the Office of the Solicitor in writing this IM.

Contact: If you have any questions concerning the content of this IM, please contact me at 202-208-4201, or your staff may contact Donnie Shaw, Senior Reservoir Management Specialist, Fluid Minerals Division, at 202-452-0382.

Signed by:
Timothy R. Spisak
Acting, Assistant Director
Minerals and Realty Management

Authenticated by:
Robert M. Williams
Division of IRM Governance, WO-560

2 Attachments

- 1 - Federal Underground Gas Storage Agreement (GSA) Fee Schedule (Based on GDP-IPD) Index Regression Trend for Outyears (2009-2018) (3 pp)
- 2 - List of Federal Gas Storage Agreement in Effect as of June 2009 (1 p)

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FEDERAL UNDERGROUND GAS STORAGE FEE SCHEDULE ISSUED JUNE 2009
 USING GDP-IPD INDEX/REGRESSION TREND ANALYSIS FOR OUTYEARS

Date	Quarter	IPD Index Numbers	% Increase	STORAGE FEE (\$ PER ACRE)	INJECTION FEE (\$ PER MCF)	WITHDRAWL FEE (\$ PER MCF)
1992	1	85.72	0	1.080	0.0027	0.0108
1992	2	86.19	1.0055	1.086	0.0027	0.0109
1992	3	86.58	1.0045	1.091	0.0027	0.0109
1992	4	87.03	1.0052	1.096	0.0027	0.0110
1993	1	87.71	1.0078	1.105	0.0028	0.0111
1993	2	88.19	1.0055	1.111	0.0028	0.0111
1993	3	88.57	1.0043	1.116	0.0028	0.0112
1993	4	89.04	1.0053	1.122	0.0028	0.0112
1994	1	89.58	1.0061	1.129	0.0028	0.0113
1994	2	89.95	1.0042	1.133	0.0028	0.0113
1994	3	90.53	1.0064	1.141	0.0029	0.0114
1994	4	90.95	1.0047	1.146	0.0029	0.0115
1995	1	91.53	1.0064	1.153	0.0029	0.0115
1995	2	91.86	1.0036	1.157	0.0029	0.0116
1995	3	92.29	1.0047	1.163	0.0029	0.0116
1995	4	92.73	1.0048	1.168	0.0029	0.0117
1996	1	93.33	1.0064	1.176	0.0029	0.0118
1996	2	93.66	1.0035	1.180	0.0030	0.0118
1996	3	93.95	1.0031	1.184	0.0030	0.0118
1996	4	94.45	1.0053	1.190	0.0030	0.0119
1997	1	95.05	1.0064	1.198	0.0030	0.0120
1997	2	95.21	1.0016	1.200	0.0030	0.0120
1997	3	95.53	1.0034	1.204	0.0030	0.0120
1997	4	95.85	1.0033	1.208	0.0030	0.0121
1998	1	96.09	1.0025	1.211	0.0030	0.0121
1998	2	96.25	1.0017	1.213	0.0030	0.0121
1998	3	96.60	1.0036	1.217	0.0030	0.0122
1998	4	96.93	1.0035	1.221	0.0031	0.0122
1999	1	97.33	1.0041	1.226	0.0031	0.0123
1999	2	97.67	1.0036	1.231	0.0031	0.0123
1999	3	98.01	1.0035	1.235	0.0031	0.0123
1999	4	98.43	1.0043	1.240	0.0031	0.0124
2000	1	99.32	1.0090	1.251	0.0031	0.0125
2000	2	99.75	1.0043	1.257	0.0031	0.0126
2000	3	100.26	1.0052	1.263	0.0032	0.0126
2000	4	100.67	1.0041	1.268	0.0032	0.0127
2001	1	101.48	1.0081	1.279	0.0032	0.0128
2001	2	102.25	1.0076	1.288	0.0032	0.0129
2001	3	102.68	1.0041	1.294	0.0032	0.0129
2001	4	103.19	1.0050	1.300	0.0033	0.0130
2002	1	103.57	1.0037	1.305	0.0033	0.0130
2002	2	103.94	1.0036	1.310	0.0033	0.0131
2002	3	104.33	1.0038	1.314	0.0033	0.0131
2002	4	104.91	1.0055	1.322	0.0033	0.0132
2003	1	105.72	1.0078	1.332	0.0033	0.0133
2003	2	106.06	1.0032	1.336	0.0033	0.0134

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Attachment 1-1

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FEDERAL UNDERGROUND GAS STORAGE FEE SCHEDULE ISSUED JUNE 2009
USING GDP-IPD INDEX/REGRESSION TREND ANALYSIS FOR OUTYEARS

Date	Quarter	IPD Index Numbers	% Increase	STORAGE FEE (\$ PER ACRE)	INJECTION FEE (\$ PER MCF)	WITHDRAWL FEE (\$ PER MCF)
2003	3	106.61	1.0052	1.343	0.0034	0.0134
2003	4	107.19	1.0054	1.350	0.0034	0.0135
2004	1	108.18	1.0092	1.363	0.0034	0.0136
2004	2	109.18	1.0093	1.376	0.0034	0.0138
2004	3	109.79	1.0056	1.383	0.0035	0.0138
2004	4	110.67	1.0080	1.394	0.0035	0.0139
2005	1	111.77	1.0099	1.408	0.0035	0.0141
2005	2	112.35	1.0052	1.415	0.0035	0.0142
2005	3	113.47	1.0100	1.430	0.0036	0.0143
2005	4	114.53	1.0093	1.443	0.0036	0.0144
2006	1	115.53	1.0088	1.456	0.0036	0.0146
2006	2	116.32	1.0068	1.465	0.0037	0.0147
2006	3	117.11	1.0068	1.475	0.0037	0.0148
2006	4	117.73	1.0053	1.483	0.0037	0.0148
2007	1	118.96	1.0104	1.499	0.0037	0.0150
2007	2	119.55	1.0050	1.506	0.0038	0.0151
2007	3	120.00	1.0038	1.512	0.0038	0.0151
2007	4	120.74	1.0062	1.521	0.0038	0.0152
2008	1	121.51	1.0063	1.531	0.0038	0.0153
2008	2	121.89	1.0031	1.536	0.0038	0.0154
2008	3	123.06	1.0096	1.550	0.0039	0.0155
2008	4	123.24	1.0015	1.553	0.0039	0.0155
2009	1	124.11	1.0071	1.564	0.0039	0.0156
2009	2	124.28	1.0013	1.566	0.0039	0.0157
2009*	3	125.00	1.0058	1.575	0.0039	0.0157
2009*	4	125.72	1.0058	1.584	0.0040	0.0158
2010*	1	126.45	1.0058	1.593	0.0040	0.0159
2010*	2	127.17	1.0057	1.602	0.0040	0.0160
2010*	3	127.90	1.0057	1.611	0.0040	0.0161
2010*	4	128.63	1.0057	1.621	0.0041	0.0162
2011*	1	129.36	1.0057	1.630	0.0041	0.0163
2011*	2	130.09	1.0057	1.639	0.0041	0.0164
2011*	3	130.82	1.0056	1.648	0.0041	0.0165
2011*	4	131.55	1.0056	1.657	0.0041	0.0166
2012*	1	132.29	1.0056	1.667	0.0042	0.0167
2012*	2	133.03	1.0056	1.676	0.0042	0.0168
2012*	3	133.76	1.0055	1.685	0.0042	0.0169
2012*	4	134.50	1.0055	1.695	0.0042	0.0169
2013*	1	135.24	1.0055	1.704	0.0043	0.0170
2013*	2	135.98	1.0055	1.713	0.0043	0.0171
2013*	3	136.73	1.0055	1.723	0.0043	0.0172
2013*	4	137.47	1.0054	1.732	0.0043	0.0173
2014*	1	138.21	1.0054	1.741	0.0044	0.0174
2014*	2	138.96	1.0054	1.751	0.0044	0.0175
2014*	3	139.71	1.0054	1.760	0.0044	0.0176
2014*	4	140.45	1.0054	1.770	0.0044	0.0177

*Fee projected from data through June 2009

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Attachment 1-2

JUL 18 2017

WV Department of Environmental Protection 07/21/2017

4707500007

FEDERAL UNDERGROUND GAS STORAGE FEE SCHEDULE ISSUED JUNE 2009
 USING GDP-IPD INDEX/REGRESSION TREND ANALYSIS FOR OUTYEARS

Date	Quarter	IPD Index Numbers	% Increase	STORAGE FEE (\$ PER ACRE)	INJECTION FEE (\$ PER MCF)	WITHDRAWL FEE (\$ PER MCF)
2015*	1	141.20	1.0053	1.779	0.0044	0.0178
2015*	2	141.95	1.0053	1.788	0.0045	0.0179
2015*	3	142.70	1.0053	1.798	0.0045	0.0180
2015*	4	143.46	1.0053	1.807	0.0045	0.0181
2016*	1	144.21	1.0052	1.817	0.0045	0.0182
2016*	2	144.96	1.0052	1.826	0.0046	0.0183
2016*	3	145.72	1.0052	1.836	0.0046	0.0184
2016*	4	146.47	1.0052	1.845	0.0046	0.0185
2017*	1	147.23	1.0052	1.855	0.0046	0.0185
2017*	2	147.98	1.0051	1.864	0.0047	0.0186
2017*	3	148.74	1.0051	1.874	0.0047	0.0187
2017*	4	149.50	1.0051	1.884	0.0047	0.0188
2018*	1	149.63	1.0009	1.885	0.0047	0.0189
2018*	2	149.73	1.0007	1.886	0.0047	0.0189
2018*	3	149.80	1.0005	1.887	0.0047	0.0189
2018*	4	149.85	1.0003	1.888	0.0047	0.0189

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*Fee projected from data through June 2009

UNDERGROUND GAS STORAGE AGREEMENTS IN EFFECT, JUNE 2009

JUL 18 2017

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470750007

Storage Field Name	State	Operator	Inception Date	Renegotiation Date	Total Surface Area	Fed Surface Area	Acreage Fee \$/Ac	Injection Fee\$/mcf	Withdrawal Fee \$/mcf
Accident	MD	Texas Eastern Transmission	5/5/1964	5/1/2004	33968.05	1934.66	\$1.04	\$0.0026	\$0.0104
Aliso Canyon	CA	Southern Calif Gas	6/1/1973	6/1/2003	1970.15	391.2	YEARLY \$204,000	N/A	N/A
Artemas A	PA	Columbia Gas	6/19/1972	6/19/2012	9586.63	1299	\$1.04	\$0.0027	\$0.0108
Artemas B	PA	Columbia Gas	9/21/1972	9/21/2012	8667.75	461.25	\$1.04	\$0.0027	\$0.0108
Asbury Creek	CO	PSCO of COLO	6/1/1965	6/1/2005	1846	1846	\$1.08	\$0.0000	\$0.0116
Baker	MT	Williston Basin Int. PL	12/1/1974	12/1/2004	90388.24	26992.46	\$1.52	\$0.0038	\$0.0152
Big Springs (2)	NE	Black Hills E&P	1/1/1988	1/1/2008	44672	240	\$1.60	\$0.0040	\$0.0160
Bistineau	LA	Koch Gateway PL	5/1/1966	5/1/2006	12043	320.06	\$1.08	\$0.0026	\$0.0104
Boehm	KS	CIG	12/1/1973	Yearly	9765.12	1240.94	\$1.08	\$0.0043	\$0.0171
Bunker Hill	WY	SourceGas Distribution	7/1/1972	7/1/2006	2288.1	2288.1	\$1.60	\$0.0040	\$0.0160
Chalk Creek	UT	Questar PL	1/1/1961	None	1112.82	630.38	\$1.08	\$0.0040	\$0.0100
Clay Basin	UT	Questar PL	6/1/1976	6/1/2006	4680	3780	\$1.08	\$0.0027	\$0.0108
Clear Creek	WY	Questar PL	11/1/1997	11/1/2007	1296.26	445.54	\$1.08	\$0.0028	\$0.0112
Clinton Township	OH	Columbia Gas	9/2/1954	None	20912	29	\$1.08	\$0.0041	\$0.0108
Cobb	MT	Montana Power	7/1/1960	None	8920	280	\$1.08	\$0.0041	\$0.0108
Dry Creek	MT	Montana Power	9/1/1966	1/1/2003	2801.14	1208.42	\$1.08	\$0.0041	\$0.0160
East Mahoney Dome	WY	SourceGas Distribution	10/1/1971	10/1/2001	3193.69	2713.69	\$1.08	\$0.0040	\$0.0160
Flank	CO	CIG	7/1/1985	6/30/2005	12325.35	320	\$1.08	\$0.0071	\$0.0108
Fruita	CO	PSCO of COLO	10/1/1970	10/1/2010	557.91	557.91	\$1.08	\$0.0027	\$0.0108
Glady	WV	Columbia Gas	8/1/1964	8/1/2004	57360	46,938.40	\$1.08	\$0.0026	\$0.0104
Goodwell and Norwich	MI	Mid Michigan Gas & Storage	1/1/1967	1/1/2007	8160	1580	\$1.04	\$0.0026	\$0.0108
Grama Ridge	NM	Llano	11/1/1995	11/1/2005	3211.92	1280	\$1.08	\$0.0027	\$0.0108
Huntsman - West Engelland	NE	Kinder Morgan Inter StateGas	11/1/1990	11/1/2000	9120	1599.34	\$1.08	\$0.0027	\$0.0160
Kirk	WY	SourceGas Distribution	4/1/1972	4/1/2002	557.81	557.81	\$1.60	\$0.0027	\$0.0160
Leroy	WY	Questar PL	10/1/1972	10/1/2002	5753.14	2975.42	\$1.08	\$0.0027	\$0.0160
Muldraugh	KY	Louisville Gas & Elec.	1/1/1988	1/1/2013	4131.17	491.67	\$1.08	\$0.0027	\$0.0108
Oil Springs	WY	SourceGas Distribution	2/19/1952	7/1/2006	660	440	\$1.60	\$0.0040	\$0.0160
Swanson River No. 1	AK	Unocal Alaska	6/1/2001	6/1/2006	520	520	\$2.00	\$0.080	\$0.0270
Swanson River No. 3	AK	Unocal Alaska	10/01/2005	09/30/2010	380	380	\$2.00	\$0.080	\$0.0270
Washington Ranch	NM	El Paso NG	6/1/1981	Yearly	11838.25	8952.76	\$1.08	\$0.0028	\$0.0108
Winterfield	MI	Michigan Gas Storage CO	1/1/1948	None	45559	246.94	\$1.08	\$0.0027	\$0.0108
Wolf Creek	CO	KN Production	7/1/1977	Yearly	9524.07	9524.07	\$1.08	\$0.0435	\$0.0108

WW-9
(5/16)

API Number 47 - 075 - 00007 **4707500007**
Operator's Well No. Glady 7451

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS
FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

DM

Operator Name Columbia Gas Transmission, LLC OP Code 307032

Watershed (HUC 10) Snorting Lick Run of the West Fork Greenbrier River Quadrangle Sinks of Gandy

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 (if selected provide a completed form WW-9-GPP)
- Underground Injection (UIC Permit Number 34-009-23821, 34-009-23823, 34-009-23824, 34-119-28776)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

Will closed loop system be used? If so, describe: yes - steel piping connecting wellhead and tank(s)

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. N/A - no drilling planned

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

Additives to be used in drilling medium? No drilling planned; surfactant, HCl acid, iron control (for clean-out and stimulation)

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. N/A - no drilling planned

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

-Landfill or offsite name/permit number? if needed: Rumpke Beech Hollow Landfill - Wellston, OH

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

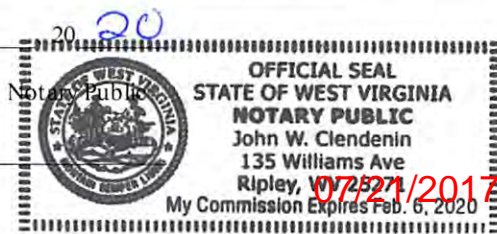
I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on April 1, 2016, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations 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]
Company Official (Typed Name) James E. Amos
Company Official Title Senior Well Services Engineer

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JUL 10 2017
WV Department of
Environmental Protection

Subscribed and sworn before me this 23 day of JUN
[Signature]
My commission expires 2-6-2020



Proposed Revegetation Treatment: Acres Disturbed < 0.5 Prevegetation pH 6

Lime pellets @ 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-10

Fertilizer amount 500 lbs/acre

Mulch weed free straw @ 2 Tons/acre

*** Note that fertilizer, lime, mulch, seed mix, and application rates determined by US Forestry Service.**

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Winter Wheat (6/15 - 11/15)	40	Durana Clover (pre-inoculated)	2
Spring Wheat (2/15 - 6/15)	40	Mammoth Red Clover (pre-inoculated)	5
Alfalfa (pre-inoculated)	10	Chicory	3

* total seeding will be @ 60 lb/acre

Attach:

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, provide water volume, include dimensions (L, W, D) of the pit, and dimensions (L, W), and area in acres, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: _____

Comments: _____

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Title: Dan Miller OOG Inspector

Date: 6-26-17

Field Reviewed? () Yes (/) No

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

DM

Operator Name: Columbia Gas Transmission, LLC
Watershed (HUC 10): Snorting Lick Run of the West Fork Greenbrier River Quad: Sinks of Gandy
Farm Name: US Dept of Interior (managed by BLM and US Forest Service)

- 1. List the procedures used for the treatment and discharge of fluids. Include a list of all operations that could contaminate the groundwater.

No fertilizer will be stored on site. Small quantities of fuel, oil, and lubrications will be stored on site, but located within secondary containment.
Spills from construction equipment and well treatment fluids is the only source of contaminate to groundwater.

- 2. Describe procedures and equipment used to protect groundwater quality from the list of potential contaminant sources above.

All construction and well servicing equipment will be monitored and inspected daily for leaks. Fluid pumping well service equipment will have secondary containment under all leak paths. Spill kits will be on site.

- 3. List the closest water body, distance to closest water body, and distance from closest Well Head Protection Area to the discharge area.

Snorting Lick Run is approximately 330 ft to the SW.
The closest Well Head Protection Area is 1 mile (PWSID WV9942049 - USFS Middle Mountain Cabins-HP).

- 4. Summarize all activities at your facility that are already regulated for groundwater protection.

N/A

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- 5. Discuss any existing groundwater quality data for your facility or an adjacent property.

N/A

6. Provide a statement that no waste material will be used for deicing or fill material on the property.

No waste material will be used for deicing or fill material on the property.

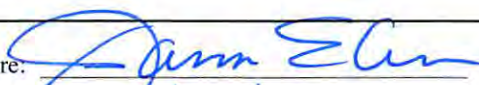
7. Describe the groundwater protection instruction and training to be provided to the employees. Job procedures shall provide direction on how to prevent groundwater contamination.

During routine tailgate meetings groundwater protection will be a topic of discussion.

8. Provide provisions and frequency for inspections of all GPP elements and equipment.

No fertilizer will be stored on site. Small quantities of fuel, oil, and lubrications will be stored on site, but located within secondary containment. Construction and well servicing equipment will be monitored and inspected daily for leaks or spill.

Signature: _____



Date: _____

6/23/17

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07/21/2017



STATE OF WEST VIRGINIA
DEPARTMENT OF HEALTH AND HUMAN RESOURCES
BUREAU FOR PUBLIC HEALTH
OFFICE OF ENVIRONMENTAL HEALTH SERVICES

Earl Ray Tomblin
Governor

Karen L. Bowling
Cabinet Secretary

January 05, 2017

William Timmermeyer
CESSWI
Natural Resource Permitting Principal
TransCanada | Columbia Pipeline Group
1700 MacCorkle Ave., SE
Charleston, WV 25314

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JUN 26 2017

WV Department of
Environmental Protection

Re: SWAP Information Request -

Dear Mr. Timmermeyer:

In response to the informational request dated January 4, 2017 concerning the closest Protection Areas to the indicated **seven (7) wells**, we have found the following:

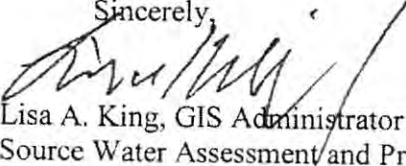
ID	Well Name	Distance	PWSID	System Name
1	Coco A well 7106	within the ZPC	WV3302016	WVAWC KANAWHA VALLEY DIST
2	Glady well 7464/Glady well 7465/Glady well 7467/Glady well 12371 GLADY WELL 7451	1 mile from WHPA	WV9942049	USFS MIDDLE MOUNTAIN CABINS - HP
		6.2 from ZCC	WV3304202	TOWN OF BEVERLY
		7.0 miles from ZPC	WV3304202	TOWN OF BEVERLY
3	Ripley well 7294	3.8 miles from ZPC	WV3301811	CITY OF RIPLEY
		5 miles from ZCC	WV3301811	CITY OF RIPLEY
		5 miles from WHPA	WV3301810	RAVENSWOOD MUNICIPAL WATER
4	Rockport well 7240	0.7 miles from ZPC	WV3305402	CLAYWOOD PARK PSD

We are now putting up all of our active protection areas for download at this location, https://www.wvdhhr.org/oehs/eed/swap/GISTA_Downloads.asp.

We do not have information regarding private drinking wells in the area. I suggest you contact the county health department for this information.

I hope the information provided helps you with the completion of your project. If you have any questions, please do not hesitate to contact me at (304) 356-4309.

Sincerely,


Lisa A. King, GIS Administrator
Source Water Assessment and Protection

CC: William J. Toomey

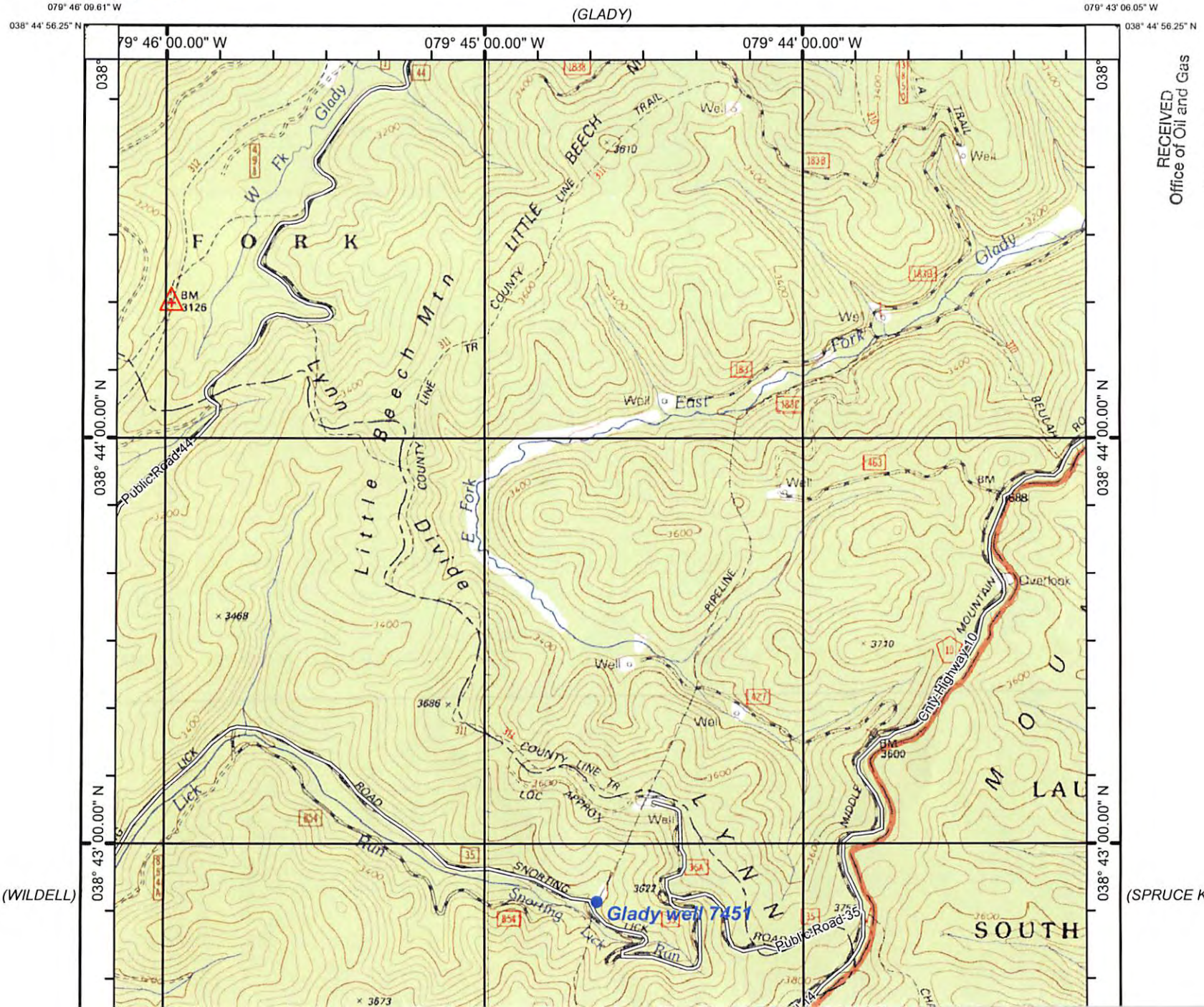
470750007

(BEVERLY EAST)



SINKS OF GANDY QUADRANGLE
WEST VIRGINIA
TOPOGRAPHIC SERIES

(WHITMER)



079° 46' 00.00" W
038° 44' 56.25" N

(GLADY)

079° 43' 06.05" W
038° 44' 56.25" N

079° 46' 00.00" W

079° 45' 00.00" W

079° 44' 00.00" W

038° 44' 00.00" N

038° 44' 00.00" N

038° 44' 00.00" N

038° 44' 00.00" N

038° 43' 00.00" N

038° 43' 00.00" N

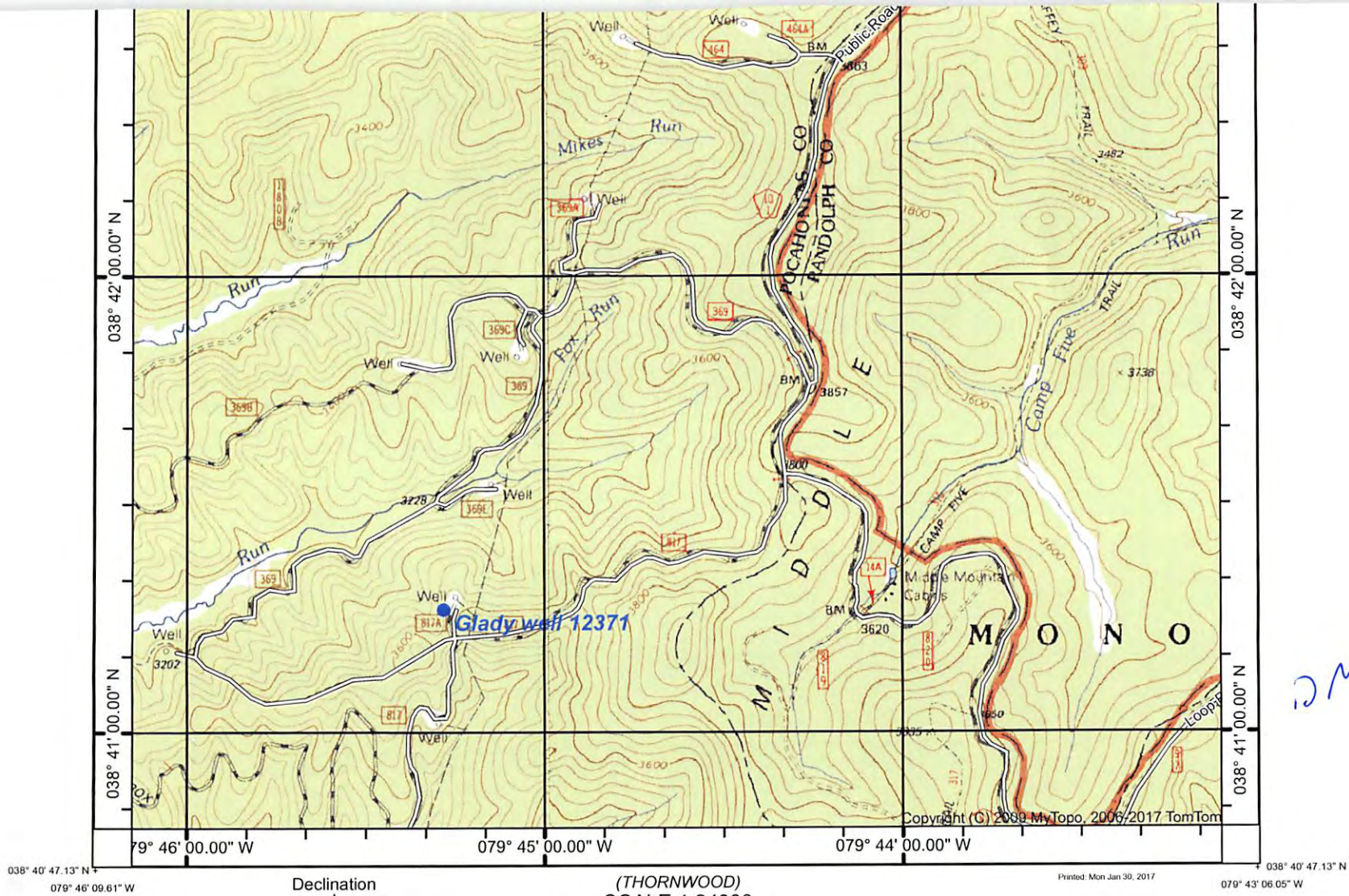
(WILDELL)

(SPRUCE KNOB)

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DM

(DURBIN)

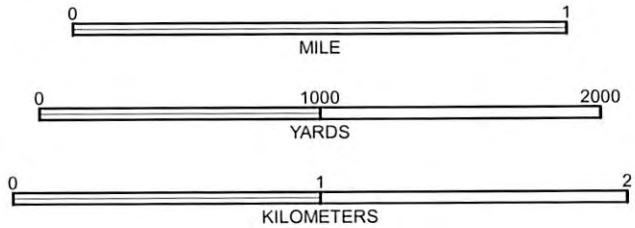
(SNOWY MT)

Produced by MyTopo Terrain Navigator
Topography based on USGS 1:24,000 Maps
North American 1983 Datum (NAD83)
Lambert Conformal Conic Projection

To place on the predicted North American 1927 move the
projection lines 13M N and 19M E



(THORNWOOD)
SCALE 1:24000



CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM 1929

SINKS OF GANDY, WV
1998

WV DEP Reclamation Plan - Access Road

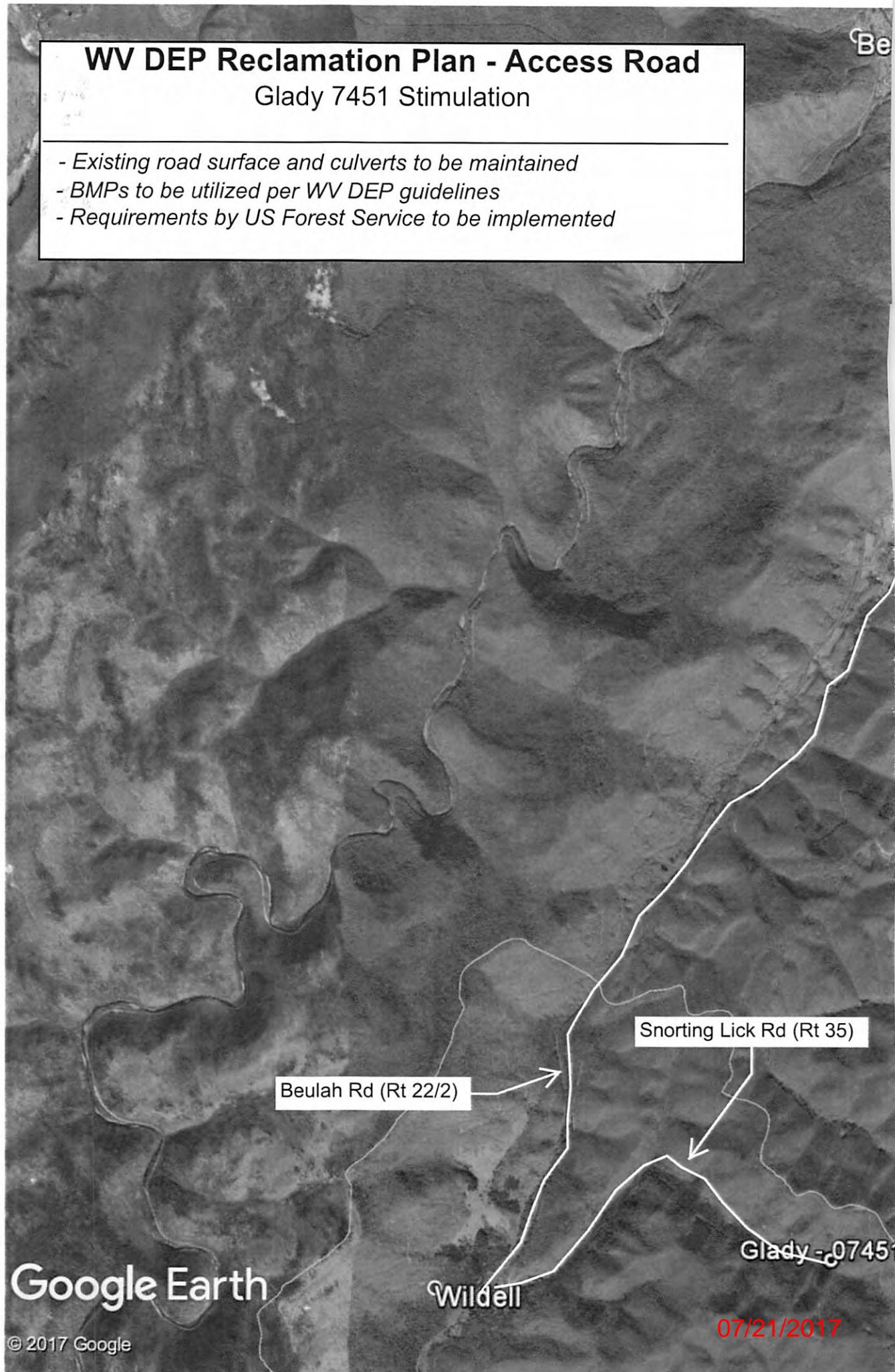
Glady 7451 Stimulation

- Existing road surface and culverts to be maintained
- BMPs to be utilized per WV DEP guidelines
- Requirements by US Forest Service to be implemented

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Google Earth

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Wildell

Glady - 07451

07/21/2017

mis

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Glady

Beulah Rd (Rt 22/2)

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Driving Directions

From Elkins, WV, travel east on US 33
Approx 13 mi turn right on Glady Rd (Rt 27)
Approx 15 miles turn left on Bemis Rd (Rt 22)
Approx 0.2 miles turn right on Beulah Rd (Rt 22/2)
Approx 7.5 miles turn left on Snorting Lick Run (35)
Approx 2.3 miles to well

DM



3 mi

07/21/2017

WV DEP Reclamation Plan - Well Site

Glady 7451 Stimulation

- Existing road surface and culverts to be maintained
- BMPs to be utilized per WV DEP guidelines
- Requirements by US Forest Service to be implemented

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Snorting Lick Road

35

silt fence

260 ft

Existing road surface, drains, ditches, and culverts to be maintained during duration of project. Roads to be restored to pre-existing condition upon completion of scope of work.

Google Earth

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exist
acce
road

JUL 18 2017

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Limits of Disturbance

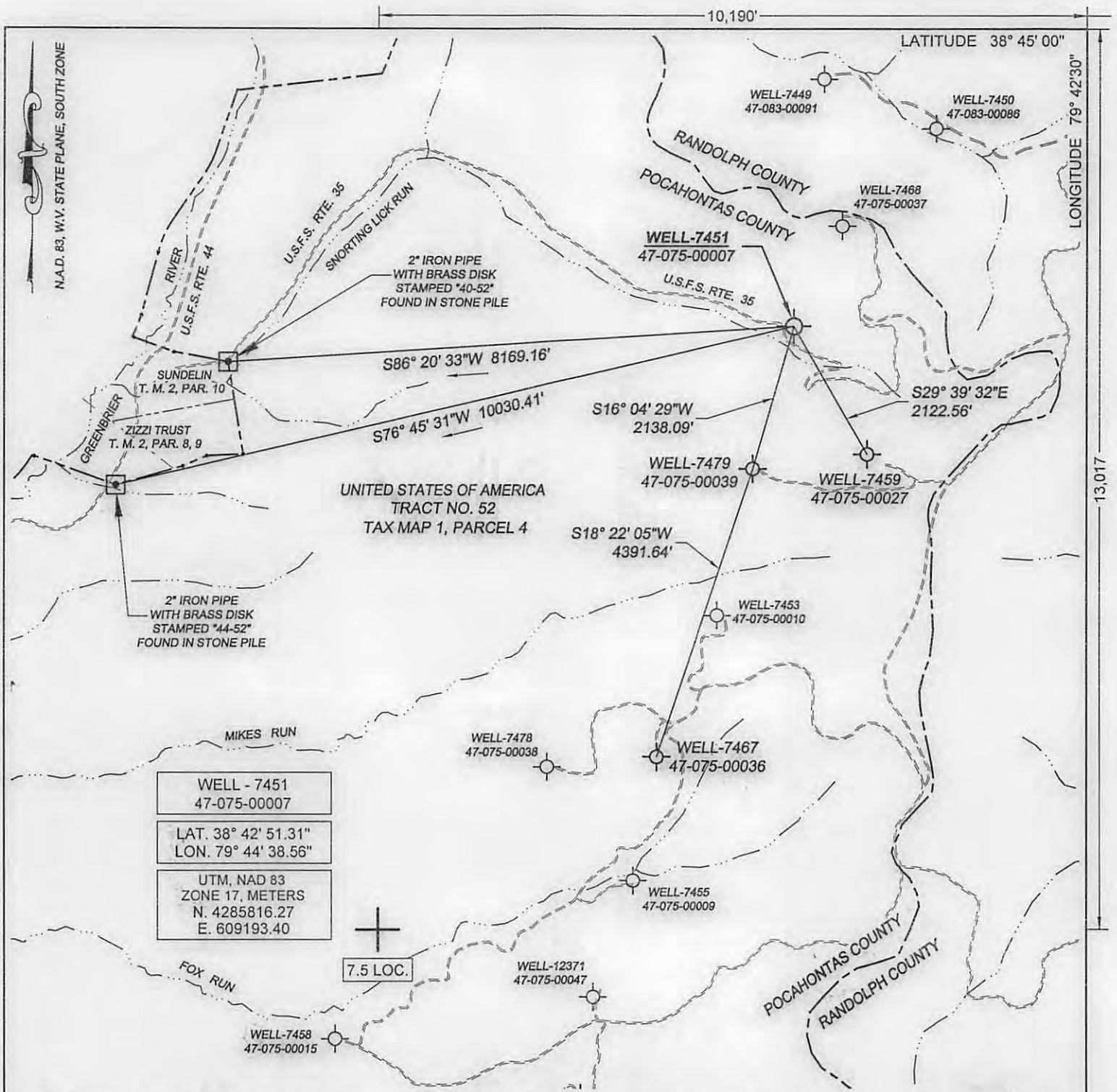
- to be confined to pre-disturbed perimeter
- minor grading and crushed limestone to be applied for equipment stability and minimize erosion
- well site to be restored to as near original contour as feasible

ng
ss



100 ft

07/21/2017



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

FILE No 1701-2345-001-010
 DRAWING No. GLADY-7451
 SCALE 1"=2000'
 MINIMUM DEGREE OF ACCURACY 1:200
 PROVEN SOURCE OF ELEVATION TRIMBLE R8-3
 GPS UNIT

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.

(SIGNED) _____
ROBERT F. THAW PS #965



STATE OF WEST VIRGINIA
 DIVISION OF ENVIRONMENTAL PROTECTION
 OFFICE OF OIL AND GAS
 NITRO, WV

DATE MAY 26 2017
 OPERATOR'S WELL No. 7451
 API WELL No. 47 075 - 00007

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF "GAS") PRODUCTION STORAGE DEEP SHALLOW

LOCATION: ELEVATION 3397.5' WATER SHED SNORTING LICK RUN OF THE WEST FORK GREENBRIER RIVER
 DISTRICT GREENBANK COUNTY POCAHONTAS
 QUADRANGLE SINKS OF GANDY

SURFACE OWNER UNITED STATE DEPARTMENT OF THE INTERIOR ACREAGE 6595
 OIL & GAS ROYALTY OWNER U. S. DEPT. OF THE INTERIOR LEASE ACREAGE 1852
 LEASE No. 90700

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____

PLUG AND ABANDON CLEAN OUT AND REPLUG

TARGET FORMATION CHERT / ORISKANY ESTIMATED DEPTH CHERT (5500 FT) / ORISKANY (5712)
 WELL OPERATOR COLUMBIA GAS TRANSMISSION, LLC DESIGNATED AGENT PAUL AMICK
 ADDRESS PO BOX 1273, CHARLESTON, WV ADDRESS P.O. BOX 1273, CHARLESTON WV
25325-1273 25325-1273

07/21/2017

FORM IV-6 (8-78)