



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

August 29, 2013

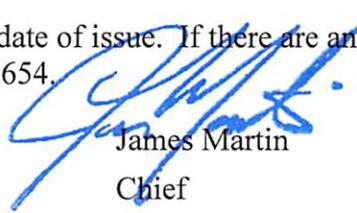
WELL WORK PLUGGING PERMIT

Plugging

This permit, API Well Number: 47-3901940, issued to EQT PRODUCTION COMPANY, 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.

Upon completion of the plugging well work, the above named operator will reclaim the site according to the provisions of WV Code 22-6-30. The above named operator will also file, as required in WV Code 22-6-23, an affidavit on form WR-38 by two experienced persons in the operator's employment and the Oil and Gas inspector that the work authorized under this permit was performed and a description given. Failure to abide by all statutory and regulatory provisions governing all duties and operations here under may result in suspensions or revocation of this permit and in addition may result in civil and/or criminal penalties being imposed upon the operator.

This permit will expire in two (2) years from date of issue. If there are any questions, please free to contact me at (304) 926-0499 ext. 1654.



James Martin
Chief

Operator's Well No: (A-5-1401) WV 127421
Farm Name: GOFF, PAUL
API Well Number: 47-3901940
Permit Type: Plugging
Date Issued: 08/29/2013

Promoting a healthy environment.

3901940 P

Form WW-4 (B)
Permit Copy
(Rev 2/01)

Date: August 15, 2013
Operator's Well
Well No. WV 127421 (Courtland A-5)
API Well No.: 47 039 - 01940

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

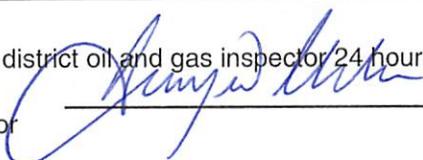
APPLICATION FOR A PERMIT TO PLUG AND ABANDON

- 4) Well Type: Oil Gas Liquid Injection Waste Disposal:
If Gas, Production X Or Underground storage Deep Shallow
- 5) Elevation: 852 Watershed: Davis Creek of the Great Kanawha River
Location: Loudon County: Kanawha Quadrangle: Charleston West 7.5'
District: _____
- 6) Well Operator EQT Production Company 7) Designated Agent: Rex C. Ray
Address: 120 Professional Place Address: 120 Professional Place
Bridgeport, WV 26330 Bridgeport, WV 26330
- 8) Oil & Gas Terry Urban 9) Plugging Contractor:
Name: P.O. Box 1207 Name: HydroCarbon Well Service
Address: Clendenin, WV 25045 Address: PO BOX 995
Buckhannon, WV 26201

10) Work Order: The work order for the manner of plugging this well is as follows:
See Attachment for details and procedures.

OFFICE USE ONLY

Notification must be given to the district oil and gas inspector 24 hours before permitted work can commence.

Work order approved by inspector 

Date 8.15.13

Received

AUG 20 2013

Office of Oil and Gas
WV Dept. of Environmental Protection

3901940P

PLUGGING PROGNOSIS

Courtland Land Co. #5 (127421)

Kanawha County, West Virginia
API # 47-039-01940
Chas.8 S.W. Quad

BY: Craig Duckworth
DATE: 2/18/13

ELEV 848.31'

CURRENT STATUS:

- 10 3/4" csg @ 529
- 8 5/8" csg @ 1407' pulled
- 5 1/2" csg @ 1692' (R/L Nipple at 1391') Packer @ 1590' cemented with 40 sks.
- 2" tbg @ 1661'

TD @ 1665'

Fresh Water @ 135' & 526' (see well record)

Salt Water @ 731'

Salt Sand @ 859' BOTTOM

Coal @ 18'-110'-290' - 433'

Gas shows @ 526' - 1590' - 1620' - 1630' Tops

PERFORATIONS 1596'-1602', 1612'-16', 1637'-38'

Oil Shows @ 526'

Stimulation: Fractured Big Injun (1590'-1630') Perforated 1612' to 1596'

1. Notify State Inspector, Terry Urban 304-549-5915, and 24 hrs prior to commencing operations.
2. TOOH w/ 2" tbg and check condition.
3. TIH w/ tbg @ 1630'; Set 140' C1A Cement Plug @ 1630' to 1490' (Big Injun & Perfs.)
4. TOOH w/ tbg @ 1490'; Gel hole @ 1490' to 1440'
5. TOOH w/ tbg and attempt to pull 5 1/2"; Freepoint 5 1/2", cut/shoot @ freepoint Set 100' C1A Cement Plug @ 1440' to 1340' (5 1/2" csg)
6. Set a 100' C1A Cement Plug 50' In/Out of cut. Perf all FW, Coal, Oil and Gas shows below 5 1/2" cut. Do not omit any plugs
7. TIH w/ tbg @ 1340'; Gel hole @ 1340' to 860'
8. TOOH w/ tbg @ 860'; Set 100' C1A Cement Plug @ 860' to 760' (Salt Sand)
9. TOOH w/ tbg @ 760'; gel hole @ 760' to 579'
10. TOOH w/ tbg @ 579'; Set 196' C1A Cement Plug @ 579' to 383' (Gas & Oil @ 526' & FW @ 526' & Coal 433')
11. TOOH w/ tbg @ 383'; gel hole @ 383' to 340'
12. TOOH w/ tbg @ 340'; Set ~~100'~~ C1A Cement Plug @ 340' to 0' (Coal 290', Coal 110' & 18' FW 135')
13. Top off as needed
14. Set Monument to WV-DEP Specifications
15. Reclaim Location & Road to WV-DEP Specifications

Received
 AUG 20 2013
 Office of Oil and Gas
 WV Dept. of Environmental Protection

Craig Duckworth
 8-19-13



STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION 12

Quadrangle Chas. 8 SW

Permit No. Kan-1940

WELL RECORD

Oil or Gas Well Gas

Company Cities Service Oil Company
Address P. O. Box 873, Charleston 23, W. Va.
Farm The Courtland Company Acres 5, 350
Location (waters) Kirby Hollow
Well No. 5 - GW-1401 Elev. 848. 31'
District Loudon County Kanawha
The surface of tract is owned in fee by Lucy Jones
Route #2, Box 315 Address Charleston, W. Va.
Mineral rights are owned by The Courtland Co.
205 Odd Fellows Bldg Address Charleston, W. Va.
Drilling commenced 5-4-63
Drilling completed 5-31-63
Date Shot not shot From _____ To _____
With _____
Open Flow /10ths Water in _____ Inch
/10ths Merc. in _____ Inch
Volume show Cu. Ft.
Rock Pressure _____ lbs. _____ hrs.
Oil _____ bbls., 1st 24 hrs.
WELL ACIDIZED not acidized

Casing and Tubing	Used in Drilling	Left in Well	Packers
Size			
16			Kind of Packer
13 3/8" 48'	33'	33'	<u>Anchor Packer</u>
10 3/4" 32'	529'	529'	Size of <u>5-1/2"</u>
8 1/2" 24'	1407'	pulled	
6 3/4"			Depth set <u>1, 590'</u>
5 3/16" 14'	1692'	1692'	
3			Perf. top _____
2 3/8" 4'	1661'	1661'	Perf. bottom _____
Liners Used <u>w/ cage set at</u>			Perf. top _____
	1, 643'		Perf. bottom _____

WELL FRACTURED see reverse side

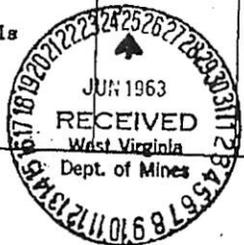
CASING CEMENTED _____ SIZE _____ No. Ft. _____ Date _____
See reverse side
COAL WAS ENCOUNTERED AT 18 FEET 24 INCHES
110 FEET 36 INCHES 290 FEET 48 INCHES
433 FEET 48 INCHES FEET _____ INCHES

RESULT AFTER TREATMENT 27/10 M. 2" = 800 MCF - Big Injun

ROCK PRESSURE AFTER TREATMENT 96 hours 430# Braden Head - 425# Tubing

Fresh Water 135' 526-39' Feet Salt Water 731' Feet

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth	Remarks
Soil			0	18			
Coal			18	20			
Sand			20	88			
Slate			88	110			
Coal			110	113			
Slate			113	130			
Broken Sand			130	215	F. water	135'	2-13" blr/hr.
Slate			215	226			
Sand			226	238			
Slate			238	290			
Coal			290	294			
Sand			294	320			
Slate			320	433			
Coal			433	437			
Slate			437	506			
Sand			506	545	F. water	526-39'	Exh.
Slate			545	560	Gas	526-39'	show
Broken Sand			560	859	Oil	526-39'	show
Slate			859	885	S. water	731'	hole full
Sand			885	1001			
Slate and Shells			1001	1070			
Sand			1070	1251			
Slate and Shells			1251	1348			
Pencil Cave			1348	1350			
Big Lime			1350	1590			
Big Injun			1590	1630	Gas	1590-95'	8/10 W. 1" = 50M
					Gas	1620-30'	inc. fm. 18 to 261
					Gas	1630-40'	inc. fm. 26 to 30M



(over)

Received

AUG 19 2013

Office of Oil and Gas Environmental Protection

Formation	Color	Hard or Soft	Top	From	Oil G. or Water	Depth Found	Remarks
Slate and Shells			1630	1661			
Total depth	-----			1661' DLM =			
Plugged back to	-----			1671' Schlumberger Meas.			
				1665'			
CASING RECORD							
5-12-63	Ran 10-3/4" casing with shoe at 518' DLM. Set in 20' of red mud.						
5-23-63	Ran 8-5/8" casing with shoe at 1388' DLM - Set in 20' of red mud - pulled						
6-3-63	Ran 5-1/2" casing with steel shoe at 1671' Schlumberger Measurement - Baker Float Insert 19'4" off bottom. Anchor packer at 1,590'. R/L Nipple 139'1"10". Ran centralizers on first full joint off bottom. Ran 1 centralizer second joint above packer - killed gas with 24 sacks Gel - 2 sacks GelFlake. Cemented with 40 sacks.						
Ran Logs: Formation Density, Temperature and Induction.							
Notched 5-1/2" casing at 1607' Schlumberger Measurement.							
FRACTURED THE BIG INJUN 6-18-63							
Show of gas before fracturing. Used 500 gallons MCA - 1,500 gallons regular acid - broke down at 3,200# - back to 1,600# - displaced acid with 36 bbls. water. Started sand 1/2#/gal at 1800# with 2 Allison's. Gradually increased to 2#/gallon. Started flush at 1,800# - finished at 2,000#. Average injection rate 22 bbls/minute. Average pressure 1,630#. Used 28,000# 20-40 sand, 90,000 standard cubic feet of Nitrogen, 460 bbls. water and 46 bbls. flush.							
6-T3-63 - Final open flow 27/10 M. 2" = 808 MCF - mist of fluid.							

Received

AUG 19 1963

Office of Oil and Gas
WV Dept. of Environmental Protection

Date June 19, 1963

APPROVED Cities Service Oil Co. Owner
By W. S. Moore, Division Sup't (Title)

Cities Service Company
P.O. Box 873 - Charleston, W.Va.

PERMIT NO: KAN-1940-FRAC.

Courtland "A" #5 Well (GW-1401)
Loudon District
Kanawha County, W. Va.

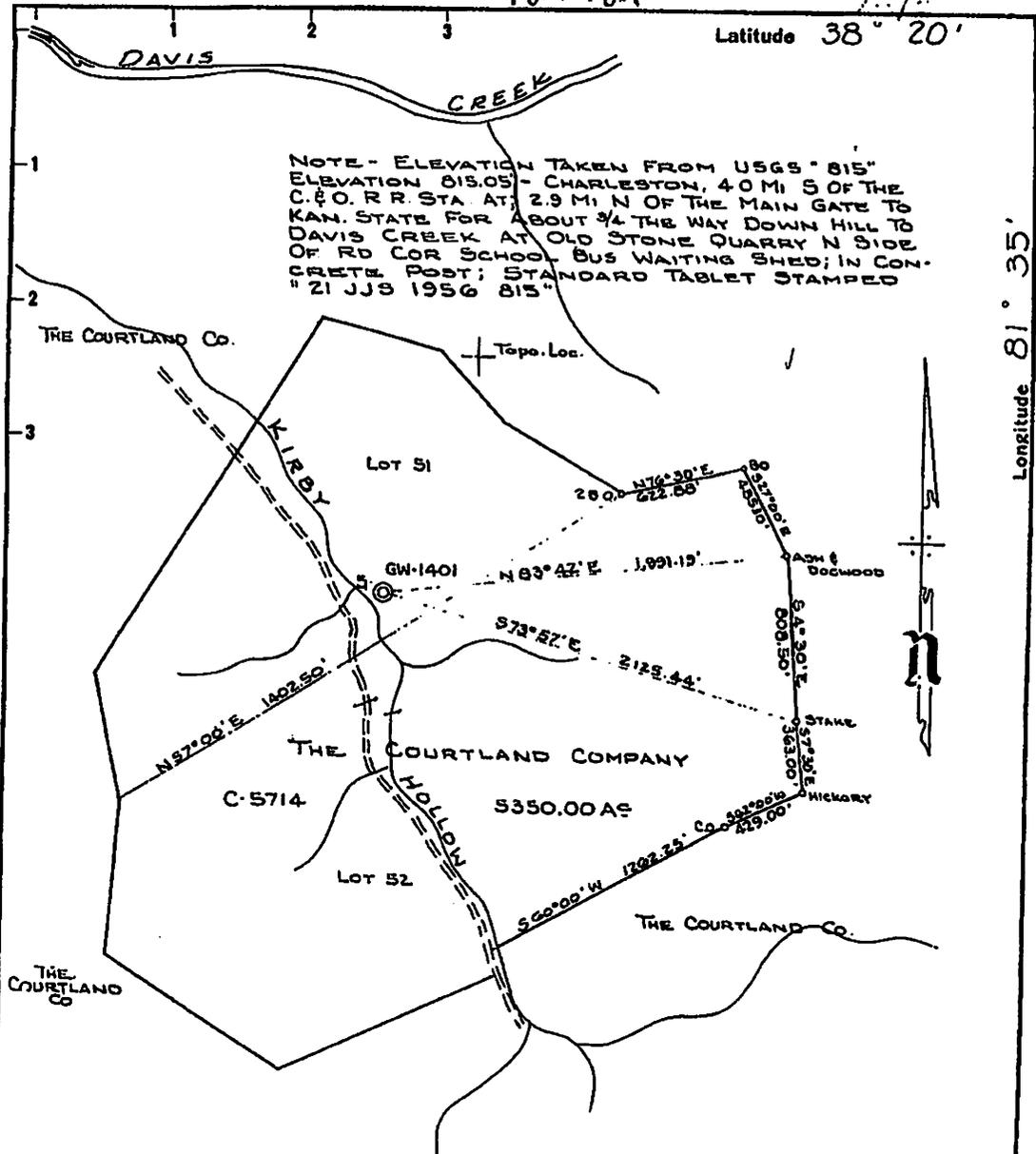
- November 16, 1976 - Perforated Big Injun Formation, 1 hole/ft. 1596-1602', 1612-16' and ~~1633-86'~~, Total 15 holes.
- November 18, 1976 - Set Baker Model A Tension Packer at 1585'. Prepared for Frac.
- November 22, 1976 - Pumped 250 gallons of 28% mud acid, 100# of Benzoid Acid Flakes (Diverting Agent) and 250 gallons of 28% mud acid into Big Injun. Foam fraced Big Injun with 30,000# 20-40 sand, foam quality 75% in 8400 gallons of water, 371,000 Ft.³ of N₂. After pumping 10,000# of sand, pumped 100# of Benzoid Flakes. Noted three pressure increase (2000 psi to 2450 psi). ISIP = 1900 psi. 5 min. SIP = 1100 psi. Shut in 1-1/2 hours. Installed 3/4" choke. Opened well. Blew light mist of water and foam. After 5 hours well blowing very light mist of fluid. Left well open 24 hours. ~~ISIP = 225, Blp.~~
- November 29, 1976 - Big Injun Production ~~70-40788~~

Received

AUG 19 2010

Office of Oil and Gas
WV Dept. of Environmental Protection

127421



NOTE - ELEVATION TAKEN FROM USGS "815" ELEVATION 815.05' - CHARLESTON, 4.0 MI S OF THE C.&O. R.R. STA. AT; 2.9 MI. N OF THE MAIN GATE TO KAN. STATE FOR ABOUT 3/4 THE WAY DOWN HILL TO DAVIS CREEK AT OLD STONE QUARRY N SIDE OF RD COR SCHOOL BUS WAITING SHED; IN CONCRETE POST; STANBOARD TABLET STAMPED "21 JJS 1956 815"

THE ACCURACY OF THIS SURVEY IS WITHIN THE LIMITS PRESCRIBED BY THE OIL AND GAS DIVISION OF THE DEPARTMENT OF MINES. I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS MAP IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY PARAGRAPH G OF THE RULES AND REGULATIONS OF THE OIL AND GAS SECTION OF THE MINING LAWS OF WEST VIRGINIA.

FRAC- 9/22/76
New Location
Drill Deeper
Abandonment

Company CITIES SERVICE OIL COMPANY
Address BOX 872 CHARLESTON, W. VA.
Farm THE COURTLAND COMPANY
Tract 51 Acres 5350 Lease No. C-5714
Well (Farm) No. 5 Serial No. GW-1401
Elevation (Spirit Level) 848.31'
Quadrangle CHARLESTON 8 5253 W409
County KANAWHA District LOUDON
Engineer _____
Engineer's Registration No. 2113
File No. _____ Drawing No. W:2-63
Date 5 MAR 63 Scale 1" = 660'

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION
CHARLESTON

WELL LOCATION MAP
FILE NO. KAN-1940-FRAC

+ Denotes location of well on United States Topographic Maps, scale 1 to 62500 latitude and longitude lines being represented by border lines as shown.
- Denotes one inch spaces on border line of original tracing.

47-039

Received
AUG 19 1976
Office of Oil and Gas
WV Dept. of Environmental Protection

1) Date: August 15, 2013
2) Operator's Well Number
WV 127421 (Courtland A-5)
3) API Well No.: 47 039 - 01940 P
State County Permit

Check # 16365
\$ 400.00
(4 permits)

**STATE OF WEST VIRGINIA - BUREAU OF ENVIRONMENT
DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL & GAS
NOTICE AND APPLICATION TO PLUG AND ABANDON WELL**

4) Surface Owner(s) to be served:
(a) Name Paul E. Goff ✓
Address 80 Corsicana Drive
Charleston, WV 25314

(b) Name _____
Address _____

(c) Name _____
Address _____

6) Inspector Terry Urban ✓
Address P.O. Box 1207
Clendenin, WV 25045
Telephone 304-549-5915

5) (a) Coal Operator:
Name None
Address _____

(b) Coal Owner(s) with Declaration ✓
Name The Courtland Company
114 Monongalia St.
Address Charleston, WV 25302-2312

Name _____
Address _____

(c) Coal Lessee with Declaration
Name None
Address _____

Name _____
Address _____

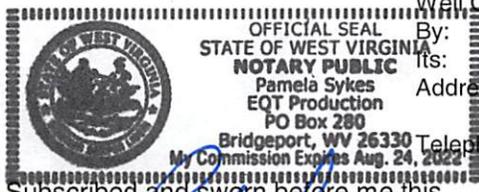
TO THE PERSONS NAMED ABOVE: You should have received this Form and the following documents:

- (1) The application to Plug and Abandon a Well on Form WW-4B, which sets out the parties involved in the work and describes the well its and the plugging work order; and
- (2) The plat (surveyor's map) showing the well location on Form WW-6.

The reason you received these documents is that you have rights regarding the application which are summarized in the instructions on the reverses side. However, you are not required to take any action at all.

Take notice that under Chapter 22-6 of the West Virginia Code, the undersigned well operator proposes to file or has filed this Notice and Application and accompanying documents for a permit to plug and abandon a well with the Chief of the Office of Oil and Gas, West Virginia Division of Environmental Protection, with respect to the well at the location described on the attached Application and depicted on the attached Form WW-6. Copies of this Notice, the Application, and the plat have been mailed by registered or certified mail or delivered by hand to the person(s) named above (or by publication in certain circumstances) on or before the day of mailing or delivery to the Chief.

Well Operator: EQT Production Company
By: Victoria J. Roark ✓
Its: Permitting Supervisor
Address: PO Box 280
Bridgeport, WV 26330
Telephone: (304) 848-0076
Subscribed and sworn before me this 15 day of Aug, 2013
My Commission Expires: 8-24-22 Notary Public



received
AUG 19 2013
Office of Oil and Gas
WV Dept. of Environmental Protection

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL & GAS
CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM
GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE

Operator Name: EQT PRODUCTION COMPANY OP ID: _____
Watershed: Davis Creek of the Great Kanawha River Quadrangle: Charleston West 7.5'
Elevation: 852 County: Kanawha District: Loudon

Description of anticipated Pit Waste: Formation Fluids

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes___ No X
Will synthetic liner be used in the pit? Yes Is so, what ml.? 30 ml

Proposed Disposal Method for Treated Pit Wastes:

- Land Application
- Underground Injection - UIC Permit Number _____
- Reuse (at API Number) _____
- Offsite Disposal Permit #. _____
- Other: Explain _____

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. _____
If oil based, what type? Synthetic, petroleum, etc. _____

Additives to be used? _____

Will closed loop system be used? _____

Drill Cuttings disposal method? Leave in pit, landfill, remove offsite, etc. _____
If left in pit and plan to solidify what medium will be used? Cement, Lime, sawdust _____
Landfill or offsite name/permit number? _____

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Division of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any terms 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.

Received
AUG 20 2013

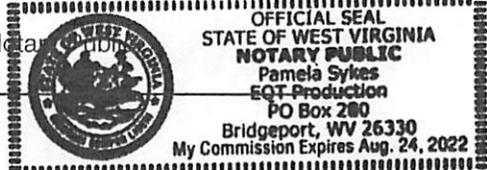
Company Official Signature *Victoria Roark*

Company Official (Typed or Printed) Victoria Roark

Company Official Title Permitting Supervisor-WV

Subscribed and sworn before me this 15 day of Aug, 2013

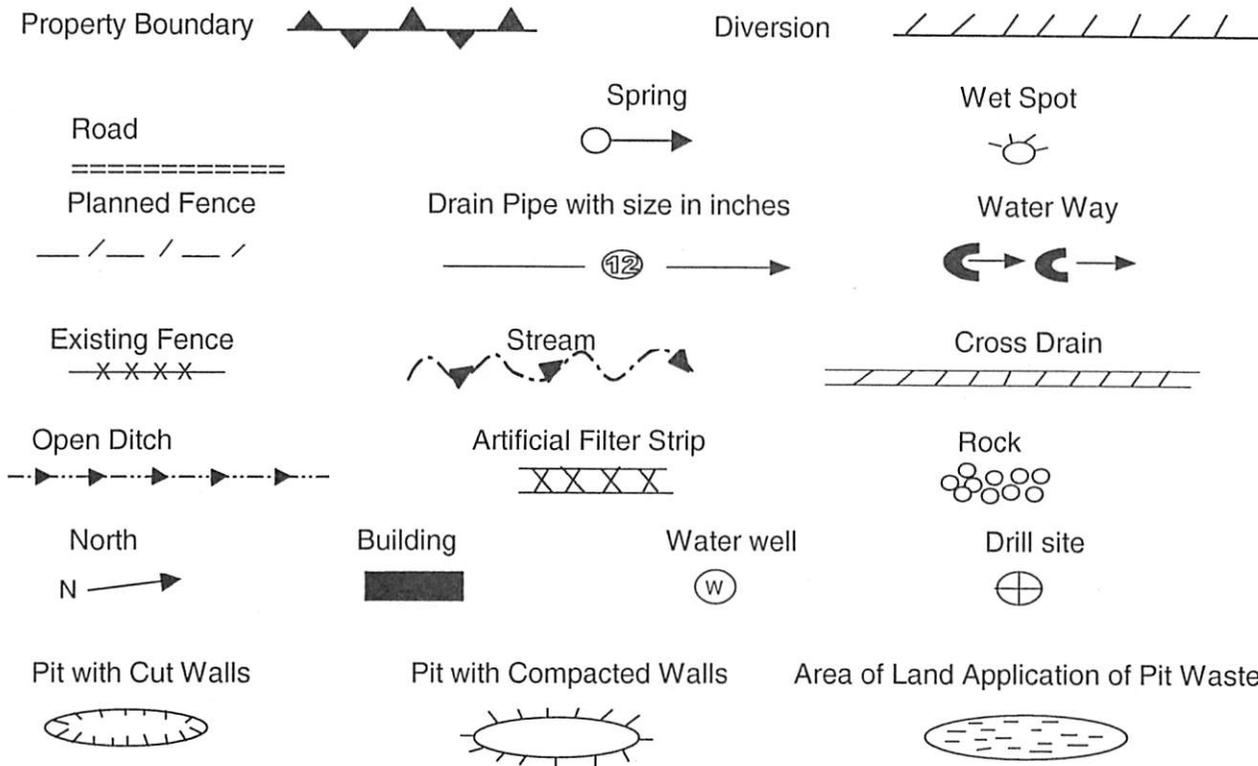
Pamela Sykes
My Commission Expires 8-24-20



Office of Oil and Gas
WV Dept. of Environmental Protection
2013

OPERATOR'S WELL NO.:
WV 127421 (Courtland A-5)

LEGEND



Proposed Revegetation Treatment: Acres Disturbed: 1± Prevegetation pH 5.8

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer (10-20-20) or equivalent 1/3 ton lbs/acre (500 lbs minimum)

Mulch 2 Tons/acre or hydroseed.

SEED MIXTURES

Area I		Area II	
Seed Type	lbs/acre	Seed Type	lbs/acre
KY-31	40	Orchard Grass	15
Alsike Clover	5	Alsike Clover	5
Annual Rye	15		

ATTACH:

Drawing(s) of road, location, pit and proposed area for land application.
Photocopies section of involved 7.5' topographic sheet.

Plan approved by: *[Signature]*

Comments: _____

Title: *Inspector/District* Date: 8/19/13

Field Reviewed? Yes No

Received

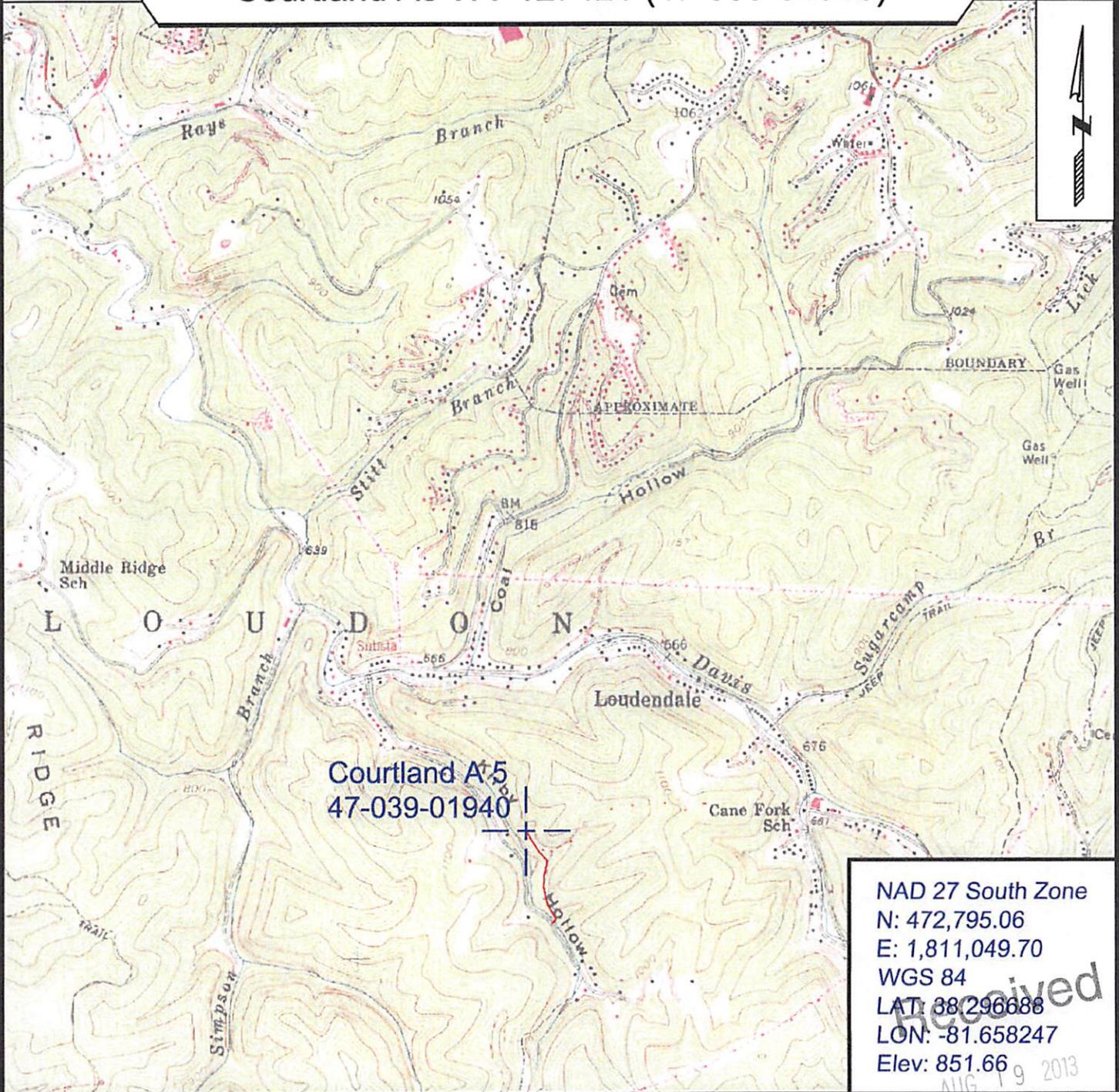
AUG 20 2013

Office of Oil and Gas
WV Dept. of Environmental Protection

Topo Quad: Charleston West 7.5' Scale: 1" = 2000'
 County: Kanawha Date: May 28, 2012
 District: Loudon Project No: 52-14-00-07

Courtland A5 WV 127421 (47-039-01940)

Topo



Courtland A5
47-039-01940

NAD 27 South Zone
 N: 472,795.06
 E: 1,811,049.70
 WGS 84
 LAT: 38.296688
 LON: -81.658247
 Elev: 851.66

Received
 AUG 19 2013



SURVEYING AND MAPPING SERVICES PERFORMED BY:
ALLEGHENY SURVEYS, INC.

1-800-482-8606
 P.O. BOX 438
 BIRCH RIVER, WV 26610
 PH: (304) 649-8606
 FAX: (304) 649-8608

PREPARED FOR:

EQT Production Company

P.O. Box 280
 Bridgeport, WV 26330

Dept. of Oil and Gas
 Dept. of Environmental Protection

WW-7
8-30-06



West Virginia Department of Environmental Protection
Office of Oil and Gas
WELL LOCATION FORM: GPS

API: 47-039-01940 WELL NO.: WV 127421 (Courtland A-5)

FARM NAME: Courtland

RESPONSIBLE PARTY NAME: EQT Production Company

COUNTY: Kanawha DISTRICT: Loudon

QUADRANGLE: Charleston West 7.5'

SURFACE OWNER: Paul Goff

ROYALTY OWNER: The Courtland Company, et al

UTM GPS NORTHING: 4238939

UTM GPS EASTING: 442441 GPS ELEVATION: 259 m (852 ft)

The Responsible Party named above has chosen to submit GPS coordinates in lieu of preparing a new well location plat for a plugging permit or assigned API number on the above well. The Office of Oil and Gas will not accept GPS coordinates that do not meet the following requirements:

1. Datum: NAD 1983, Zone: 17 North, Coordinate Units: meters, Altitude: height above mean sea level (MSL) – meters.
2. Accuracy to Datum – 3.05 meters
3. Data Collection Method:

Survey grade GPS : Post Processed Differential
Real-Time Differential

Mapping Grade GPS X: Post Processed Differential X
Real-Time Differential

4. Letter size copy of the topography map showing the well location.

I the undersigned, hereby certify this data 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 Office of Oil and Gas.

Ben A. Seyler
Signature

P.S. 2092
Title

7-5-13
Date

Received

AUG 19 2013