



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

Earl Ray Tomblin , Governor
Randy C. Huffman , Cabinet Secretary
www.dep.wv.gov

Friday, September 23, 2016
WELL WORK PERMIT
Vertical / Plugging

EQT PRODUCTION COMPANY
120 PROFESSIONAL PLACE
BUILDING II
BRIDGEPORT, WV 26330

Re: Permit approval for 1-B-46
47-001-00789-00-00

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: 1-B-46
Farm Name: MURPHY, WILLIAM T.
U.S. WELL NUMBER: 47-001-00789-00-00
Vertical / Plugging
Date Issued: 9/23/2016

Promoting a healthy environment.

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. All pits must be lined with a minimum of 20 mil thickness synthetic liner.
2. 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.
3. Well work activities shall not constitute a hazard to the safety of persons.
4. This well is under a consent order and must be plugged within two years of the date of issuance of this permit.

106789P
20672
400.00

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

Date: August 4, 2016
Operator's Well
Well No. 151781 (William Murphy #1 B-46)
API Well No.: 47 001 - 00789

**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 X Liquid Injection _____ Waste Disposal: _____
If Gas, Production X Or Underground storage _____ Deep _____ Shallow X

5) Elevation: 1550 ft. Watershed: Rock Camp
Location: Pleasant County: Barbour Quadrangle: Nestorville
District: _____

3) Well Operator EQT Production Company
120 Professional Place
Address: Bridgeport, WV 26330

7) Designated Agent: Rex C. Ray
Address: 120 Professional Place
Bridgeport, WV 26330

3) Oil & Gas Kenneth Greynolds
Name: 613 Broad Run Road
Address: Jane Lew, WV 26378

9) Plugging Contractor:
Name: HydroCarbon Well Service
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

Kenneth Greynolds

Date 8-31-16

PLUGGING PROGNOSIS

Murphy, E. B-46 (151781)
Barbour Co. WV
District, Pleasant
API # 47- 001- 00789

BY: Craig Duckworth
DATE: 7/18/16

CURRENT STATUS:

8 5/8" csg @ 793' (185 sks)
4 1/2" csg @ 4096' (350sks)

Elevation @ 1542''

TD: 4157'

Fresh Water @ 45' Coal @ 195'-200', 250'-255', 315'-320', 420'-425', 760'-765'
Saltwater @ 1590'
Gas shows @ Benson 3700'-3704', Riley 3037'-3041', Riley 3037'-3041'

1. Notify State Inspector, **Kenneth Greynolds @ (304) 206-6613**, 48 hrs. Prior to commencing operations.
2. Check TD w/wireline
3. TIH w/tbg to 4096 or actable TD', set 500' C1A cement plug from 4096' to 3596'.
(Gas shows @ Benson 3700'-3704' WOC 4 HRS ≥ TAG PLUG, ADD CEMENT IF NEEDED.
4. ~~TOOH w/tbg to 3596', gel hole 3596' to 3100'~~
TOOH w/tbg to 4 1/2" ≈ 2400' g out perforate all fresh
5. TOOH w/tbg to 3596', gel hole 3596' to 3100'
6. TOOH w/tbg to 3100' set 200' C1A cement plug from 3100' to 2900', (Gas Show @ Riley 3037'-3041', Riley 3037'-3041').
7. TOOH w/tbg to 2900' gel hole 2900' to 2200'
8. TOOH w/tbg, Free point 4 1/2" csg, cut csg @ free point, TOOH w/csg.
9. Set 100' C1A cement plug 50' in/out of casing cut, perforate all freshwater, saltwater, coal, oil and gas shows below cut. Do not omit any plugs
10. TIH w/tbg to 2200' set 200' C1A cement plug 2200' to 2000'. (4 1/2" csg cut).
11. TOOH w/tbg to 2000' gel hole 2000' to 1542'
12. TOOH w/tbg to 1542' set 200' C1A cement plug from 1542' to 1342', (Elev. @ 1542')
13. TOOH w/tbg to 1342' gel hole 1342' to 850'
14. TIH w/tbg to 850' set 250' C1A cement plug from 850' to 600' (8 5/8" csg 793' & Coal @760'-765')
15. TOOH w/tbg to 600' gel hole from 600' to *450'*

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- 16. TOOH w/tbg to ^{450'}425', set ^{450'}425' C1A cement plug ^{450'}425' to 0'. (Coal Shows @ 195'-200', 250'-255', 315'-320', 420'-425')
- 17. Erect monument with API#
- 18. Reclaim location and road to WV-DEP specifications.

JN/ma

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100789A

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES

Oil and Gas Division

WELL RECORD

Quadrangle Nestorville (7.5)

Permit No. BAR 789

Rotary Oil _____
Cable _____ Gas
Recycling _____ Comb. _____
Water Flood _____ Storage _____
Disposal _____ (Kind)

J & J Enterprises
Company (Berry Energy Consultants)
Address 309 Prof. Bldg., Clarksburg,
Farm Everett Murphy Acres 92
Location (waters) Rock Camp Run
Well No. B-46 Elev. 1542
District Pleasant County Barbour
The surface of tract is owned in fee by L. S. Murphy
Heirs
Address Route 2, Moatsville, W. Va.
Mineral rights are owned by Evertt Murphy
Address Rt. 2, Moatsville, W. Va.
Drilling Commenced 11/20/76
Drilling Completed 11/29/76
Initial open flow Show cu. ft. _____ bbls.
Final production 417,000 cu. ft. per day _____ bbls.
Well open 10 hrs. before test 1305 RP.
Well treatment details: 7 days

Casing and Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft. (Sks.)
Size 20-16			
Cond. 13-10"			
9 5/8			
8 5/8	793	793	185 sks (c79)
7			
5 1/2			
4 1/2	4096	4096	350 sks
3			
2			
Liners Used			

Water Frac Benson	Water Frac Riley	Water Frac Balltown
29,000 20/40	33,000 20/40 Sand	32,000# 20/40 Sand
500 Gal Acid	500 Gal Acid	500 Gal Acid
750 Bbl. T. Fluid	795 Bbl. T. Fluid	780 Bbl. T. Fluid

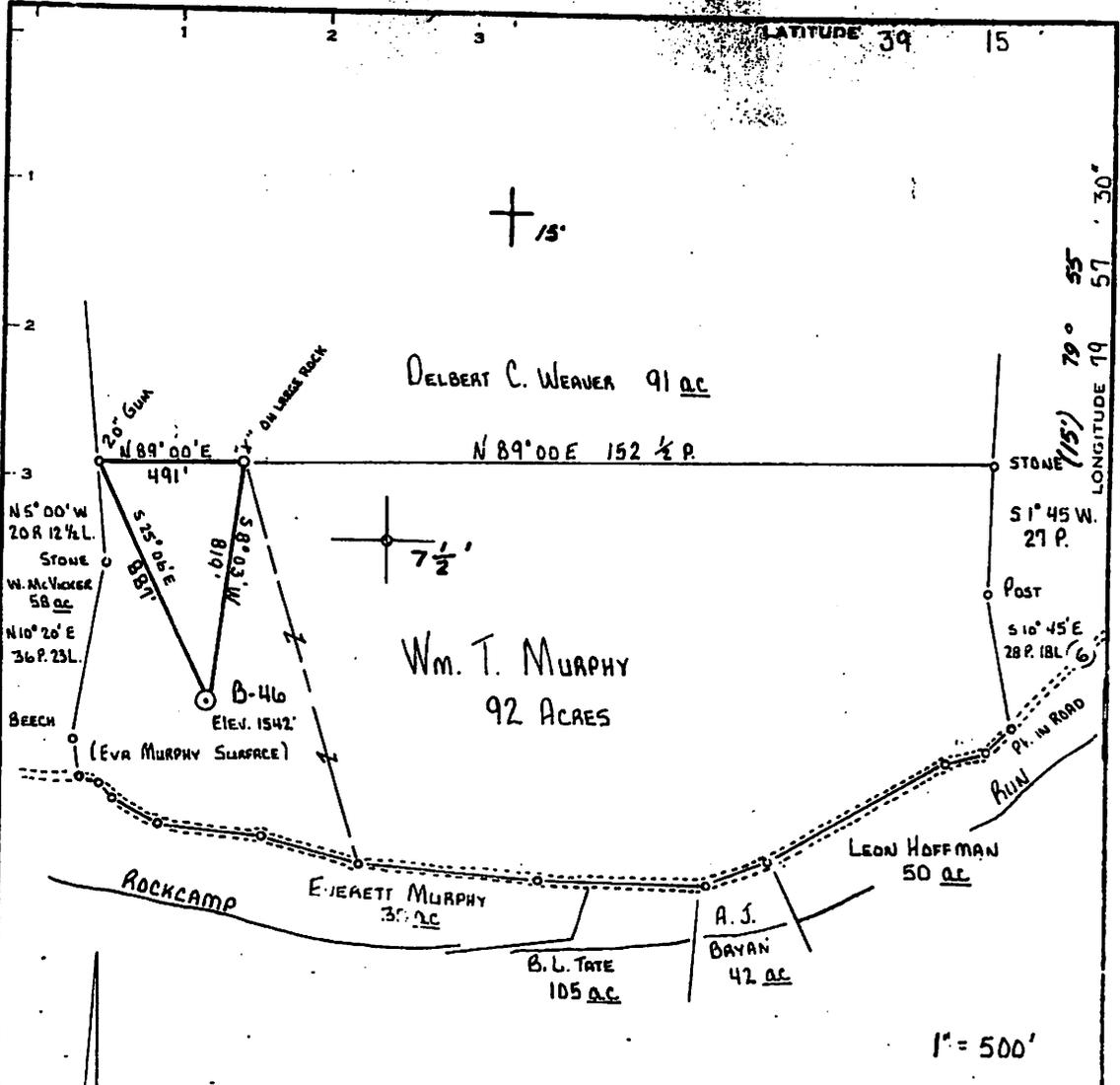
Coal was encountered at 195-200; 250-255; 315-320; 420-425; 760-765 Feet
Fresh water 45 Feet Salt Water 1590 Feet
Producing Sand Benson, Riley, Balltown Depth See Below

Formation	Color	Hard or Soft	Top Feet	Bottom Feet	Oil, Gas or Water	* Remarks
Clay, Shale, Sand			0	195		
Coal			195	200		* Log Tops
Shale, Sand			200	250		
Coal			250	255		
Sand, Shale			255	315		Big Lime 1127-1194
Coal			315	320		Big Injun 1194-1332
Sand, Shale			320	420		
Coal			420	425		Fifty Foot 1498-1622
Sand Shale			425	760		Fifth 2121-2192
Coal			760	765		Balltown 2942-3042
Sand, Sand-Shale- R. R.			765	1150		Gas 2952-57 3037-3041
Big Lime			1150	1290		
Big Injun			1290	1350		Riley 3698-3848
Sand, Sand Shale, Shale, RR			1350	3985		Gas 3700-3704
Benson			3985	4025		
Sand-Shale			4025	4157		Benson 3973-4003

(over)

* Indicates Electric Log tops in the remarks section.

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L. J. MURPHY HEIRS - SURFACE

Minimum Error of Closure ONE PART IN 200.
 Source of Elevation C.G.S.C. WELL 11489 ELEV. = 1754'

"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 6 of the rules and regulations of the oil and gas section of the mining laws of West Virginia."

- New Location
- Drill Deeper
- Abandonment

Company ST. LOUIS ENTERPRISES, INC.
DEARY ENERGY CONSULTANTS & MANAGERS, INC.
 PROFESSIONAL BUILDING, SUITE 309
 CHARLESTON, WEST VIRGINIA 25301

Address _____
 Farm Wm. T. MURPHY
 Tract _____ Acres 92 Lease No. 72904
 Well (Farm) No. 1 Serial No. B-46
 Elevation (Spirit Level) 1542'
 Quadrangle NESTARVILLE 1.5
 County BARBOUR District PLEASANT
 Engineer David L. Kiehl
 Engineer's Registration No. 530 L.L.S.
 File No. B-721 Drawing No. _____
 Date 8-12-76 Scale 1" = 500'

Office Receiver
 AUG 19 2016

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

WELL LOCATION MAP
 FILE NO. **BAR-789**

Denotes location of well on United States Topographic Maps scale 1 to 62,500, latitude and longitude lines being represented by border lines as shown.

Denotes one inch spaces on border line of original tracing.

47-001

100789A

WW-4-A
Revised 6/07

1) Date: August 4, 2016
2) Operator's Well Number
151781 (William Murphy #1 B-46)
3) API Well No.: 47 001 - 00789
State County Permit

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 Pamela Lindberg
Address 2739 Eastwood Drive
Wooster, OH 44691
(b) Name Thomas M. Fast
Address 2739 Eastwood Drive
Wooster, OH 44691
(c) Name Robert L. Fast
Address 2739 Eastwood Drive
Wooster, OH 44691
6) Inspector Kenneth Greynolds
Address 613 Broad Run Road
Jane Lew, WV 26378
Telephone (304) 206-6613

5) (a) Coal Operator:
Name None
Address _____
(b) Coal Owner(s) with Declaration
Name Arch Coal / Ark Land Company
c/o Vaughn R. Miller
Address Ark Land Northern Appalachia
100 Tygart Drive
Name _____
Address _____
(c) Coal Lessee with Declaration
Name None
Address _____

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

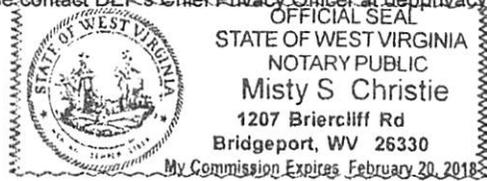
- (1) The application to Plug and Abandon a Well on Form WW-4B, which sets out the parties involved in the work and describes the well its and the plugging work order; and
 - (2) The plat (surveyor's map) showing the well location on Form WW-6.
- The reason you received these documents is that you have 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 8th day of August, 2016
Misty S. Christie Notary Public
My Commission Expires: 2/20/19

The Office of Oil & Gas processes your personal information, such as name, address and phone number, as 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.



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

Operator Name: EQT PRODUCTION COMPANY OP CODE: _____

Watershed (HUC 10): Rock Camp Quadrangle: Nestorville
Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes__ NoX

Will a pit be used? Yes X No__
If so, please describe anticipated pit waste: _____
Will a synthetic liner be used in the pit? Yes X No__ Is so, what ml.? 20 10 ml

Proposed Disposal Method for Treated Pit Wastes:
____ Land Application (if selected provide a completed form WW-9-GPP)
____ Underground Injection (UIC Permit Number _____)
X Reuse (at API Number -- Various _____)
X Off Site Disposal Permit (Supply form WW-9 for disposal location. See attachment)
____ Other: (Explain _____)

Will closed loop system be used ? If so, describe: _____
Drilling medium anticipated for this well? (vertical and horizontal)? Air, freshwater, oil based, etc. _____
If oil based, what type? Synthetic, petroleum, etc. _____
Additives to be used in drilling medium? _____
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? _____

Permittee shall provide written notice to the Office of the 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 Division 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

Company Official Signature *Vicki Roark*

Company Official (Typed Name) Vicki Roark

Company Official Title Permitting Supervisor - WV

Subscribed and sworn before me this 8th day of August 2016

Misty S. Christie Notary Public

My Commission Expires _____
OFFICIAL SEAL
STATE OF WEST VIRGINIA
NOTARY PUBLIC
Misty S. Christie
1207 Briercliff Rd
Bridgeport, WV 26330
My Commission Expires February 20, 2018

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100789P

EQT Production Water plan
Offsite disposals

Waste Management - Meadowfill Landfill

Rt. 2, Box 68 Dawson Drive
Bridgeport, WV 26330
304-326-6027
Permit #SWF-1032-98
Approval #100785WV

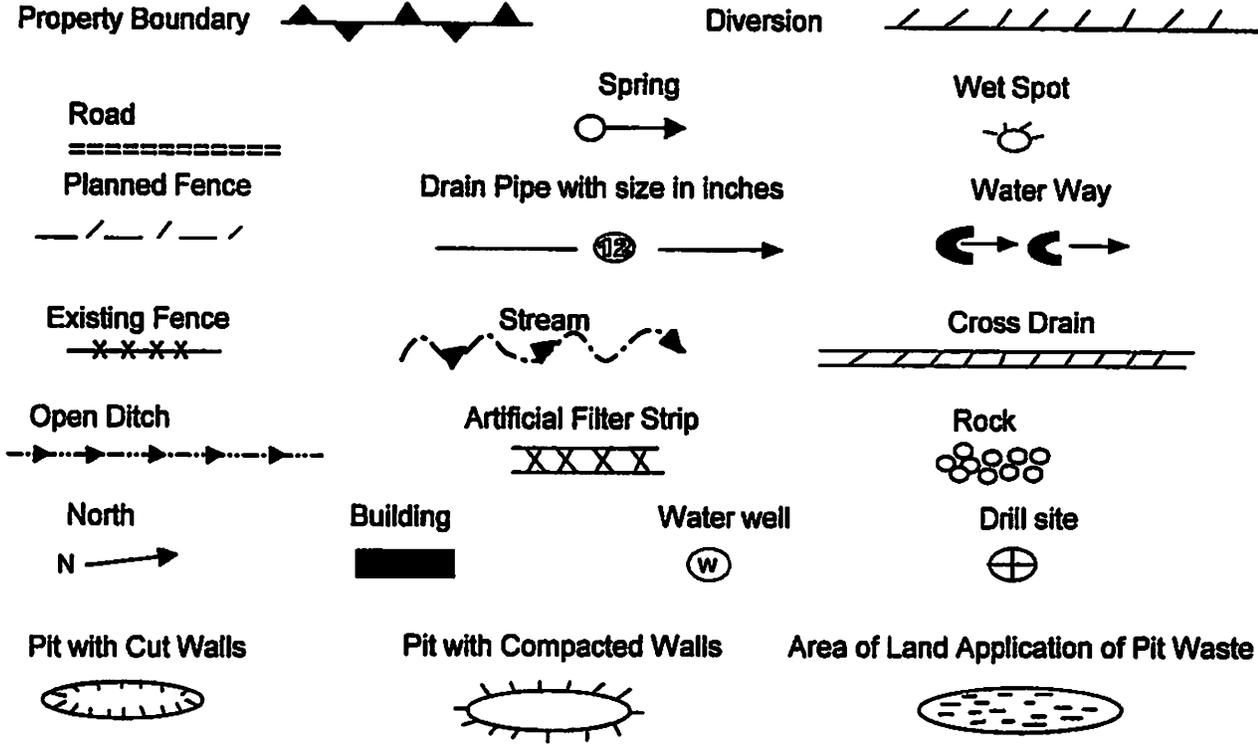
Waste Management - Northwestern Landfill

512 E. Dry Road
Parkersburg, WV 26104
304-428-0602
Permit #SWF-1025 WV-0109400
Approval #100833WV

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OPERATOR'S WELL NO.:
151781 (William Murphy #1 B-46)

LEGEND



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

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
Red Fescue	40	Red Fescue	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]

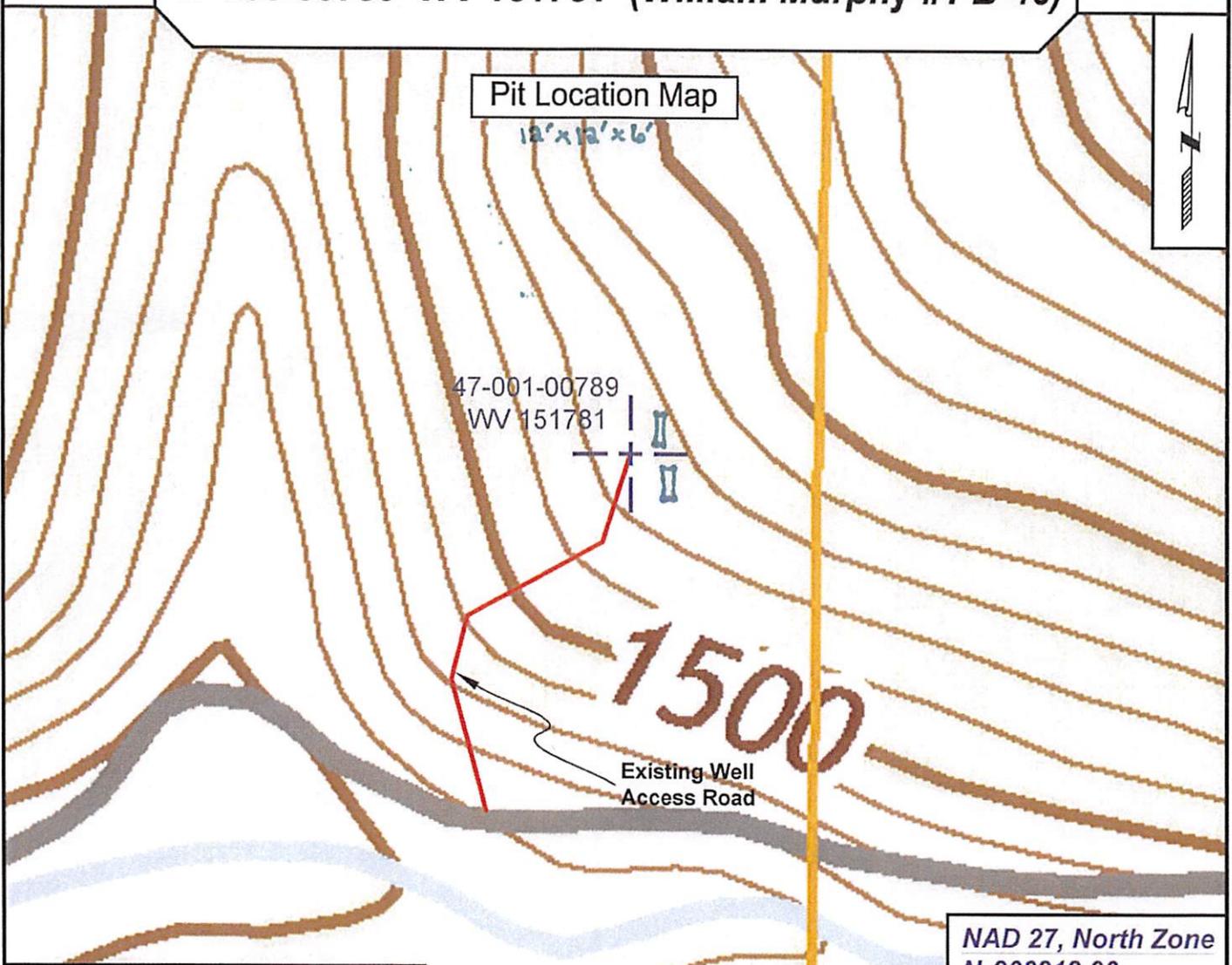
Comments: RECLAIM, RESOED AND MULCH AREA

Title: AIRBORNE INSPECTOR Date: 8-31-16
Field Reviewed? Yes No

100789A

Topo Quad: Nestorville 7.5'	Scale: 1" = 200'
County: Barbour	Date: August 12, 2016
District: Pleasant	Project No: 163-10-00-16

47-001-00789 WV 151781 (William Murphy #1 B-46)



LEGEND

- PIT-CUT WALLS
- PIT-COMPACTED WALLS
- AREA OF LAND APPLICATION OF PIT WASTE

NAD 27, North Zone
 N:266218.06
 E:1860318.87

WGS 84
 LAT:39.229970
 LONG:-79.992885
 ELEV:1549.87



SURVEYING AND MAPPING SERVICES PERFORMED BY:
ALLEGHENY SURVEYS, INC.
 1-800-482-8606
 237 Birch River Road
 Birch River, WV 26610
 PH: (304) 649-8606
 FAX: (304) 649-8608

PREPARED FOR:
EQT Production Company
 P.O. Box 280
 Bridgeport, WV 26330

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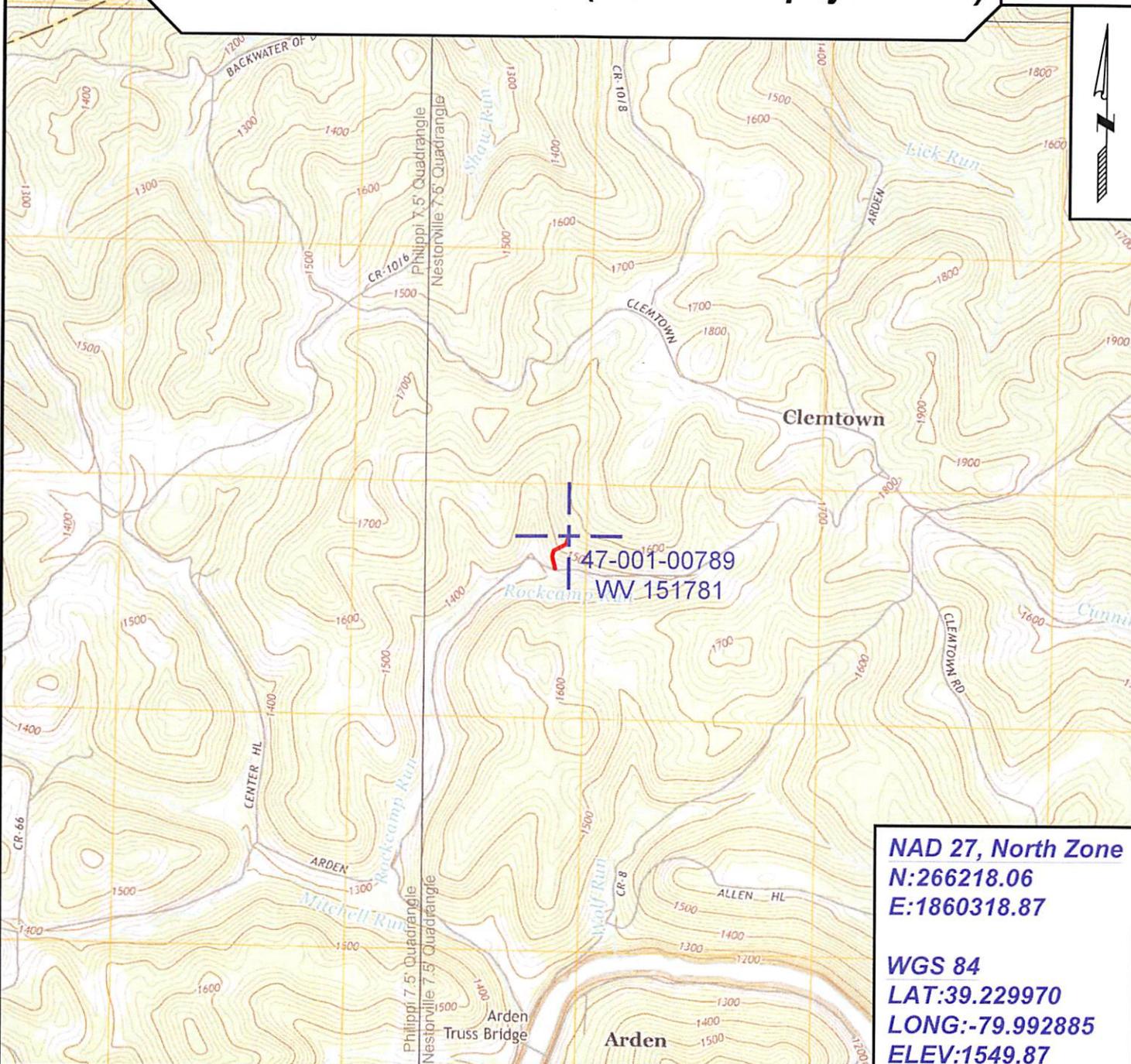
Topo Quad: Nestorville 7.5' Scale: 1" = 2000'

County: Barbour Date: July 25, 2016

District: Pleasant Project No: 163-10-00-16

47-001-00789 WV 151781 (William Murphy #1 B-46)

Topo



NAD 27, North Zone
N:266218.06
E:1860318.87

WGS 84
LAT:39.229970
LONG:-79.992885
ELEV:1549.87



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 P.O. Box 280
 Bridgeport, WV 26330

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WW-7
8-30-06



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

API: 47-001-00789 WELL NO.: WV 151781 (William Murphy #1 B-46)

FARM NAME: William T. Murphy

RESPONSIBLE PARTY NAME: EQT Production Company

COUNTY: Barbour DISTRICT: Pleasant

QUADRANGLE: Nestorville 7.5'

SURFACE OWNER: Pamela J. Linberg, Thomas M. Fast and Robert L. Fast, et al.

ROYALTY OWNER: Wilma Jean Garner, et al.

UTM GPS NORTHING: 4342780

UTM GPS EASTING: 586926 GPS ELEVATION: 472 m (1550 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.

Ray Olson
 Signature

PS# 2180
 Title

7/28/16
 Date

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POTENTIAL WATER SAMPLE DATA SHEET

CLIENT: EQT PRODUCTION COMPANY
 LEASE NAME AND WELL No. William Murphy #1 B-46 - WV 151781 - API No. 47-001-00789

POTENTIAL SAMPLE LOCATIONS

Site: 1 Spacing: 686 +/- Owner: Pamela Lindberg, et al.
 Address: 2739 Eastwood Dr., Wooster, OH 44691 Phone No. _____
 Comments: _____

Site: 2 Spacing: 505 +/- Owner: Pamela Lindberg, et al.
 Address: 2739 Eastwood Dr., Wooster, OH 44691 Phone No. _____
 Comments: _____

BIRCH RIVER OFFICE

237 Birch River Road
 Birch River, WV 26610
 phone: 304-649-8606
 fax: 304-649-8608

BRIDGEPORT OFFICE

172 Thompson Drive
 Bridgeport, WV 26330
 phone: 304-848-5035
 fax: 304-848-5037

ALUM CREEK OFFICE

P.O. Box 108 • 1413 Childress Rd
 Alum Creek, WV 25003
 phone: 304-756-2949
 fax: 304-756-2948

MARTINSBURG OFFICE

25 Lights Addition Drive
 Martinsburg, WV 25404
 phone: 304-901-2162
 fax: 304-901-2182

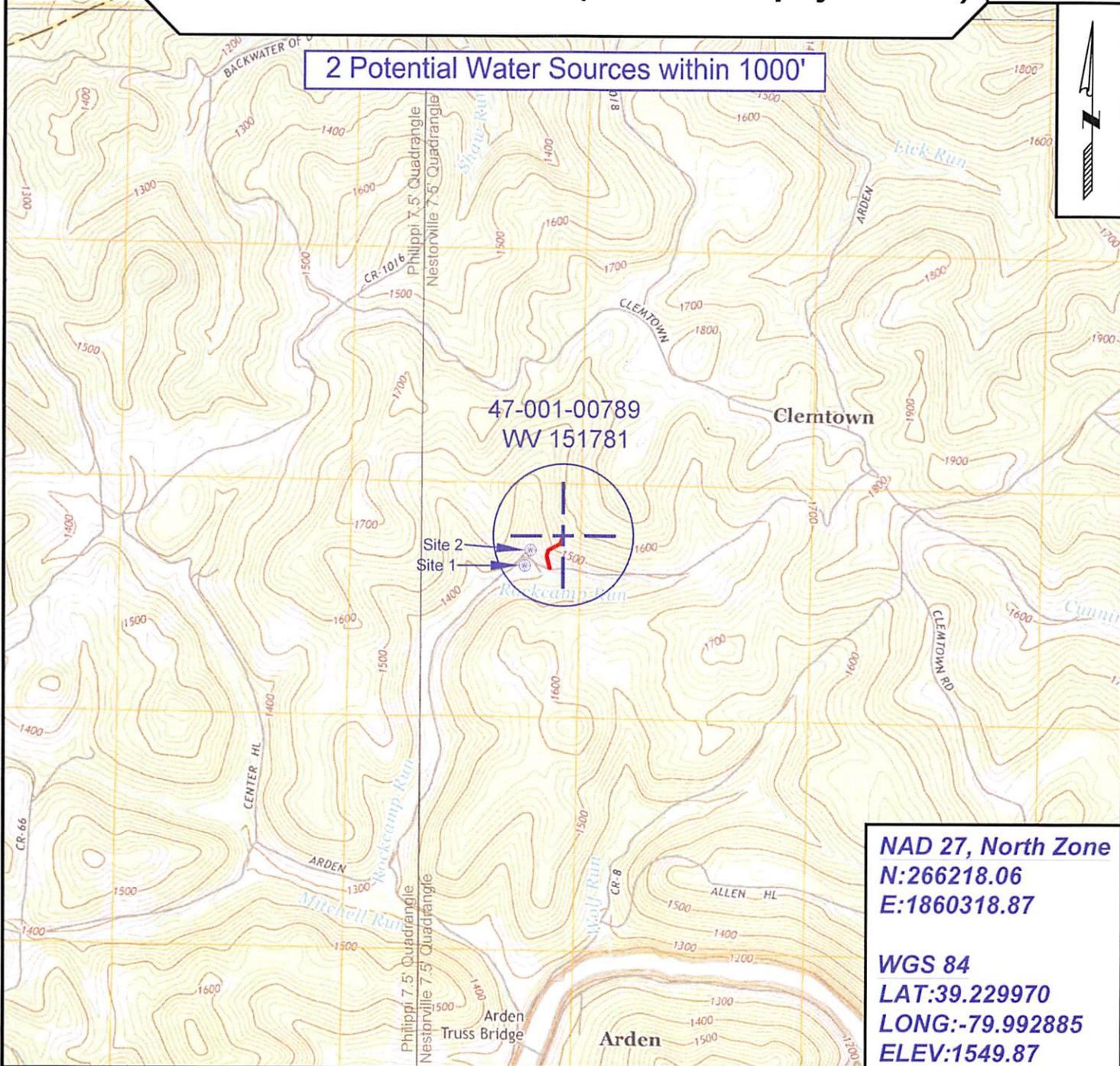
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Topo Quad: Nestorville 7.5'	Scale: 1" = 2000'
County: Barbour	Date: July 25, 2016
District: Pleasant	Project No: 163-10-00-16

Water

47-001-00789 WV 151781 (William Murphy #1 B-46)

2 Potential Water Sources within 1000'



NAD 27, North Zone
N:266218.06
E:1860318.87

WGS 84
LAT:39.229970
LONG:-79.992885
ELEV:1549.87



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