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**west virginia** department of environmental protection

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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

June 23, 2014

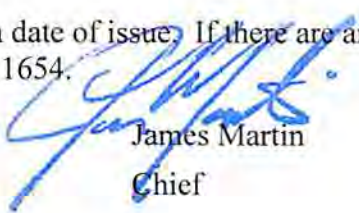
**WELL WORK PLUGGING PERMIT**

**Plugging**

This permit, API Well Number: 47-5300506, issued to APPALACHIAN POWER CO DBA AEP, 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: AEP 2  
Farm Name: APPALACHIAN POWER COMPAN  
**API Well Number: 47-5300506**  
**Permit Type: Plugging**  
Date Issued: 06/23/2014

**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

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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.

WW-4B  
Rev. 2/01

1) Date \_\_\_\_\_, 2013  
2) Operator's  
Well No. AEP-2  
3) API Well No. 47-053 - 00506

STATE OF WEST VIRGINIA  
DEPARTMENT 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 \_\_\_\_ or Underground storage \_\_\_\_) Deep  / Shallow \_\_\_\_

5) Location: Elevation 587.12 Watershed Ohio River  
District Graham County Mason Quadrangle New Haven

6) Well Operator Appalachian Power Company dba 7) Designated Agent Richard D. Thompson  
Address American Electric Power Address Rt 62, PO Box 419  
1 Riverside Plaza, Columbus, OH 43215 New Haven, WV 25625-0419

8) Oil and Gas Inspector to be notified 9) Plugging Contractor  
Name James Stevens Name Battelle Memorial Institute  
Address HC 62, Box 1C Address 505 King Avenue  
Kenna, WV 25248 Columbus, OH 43201

10) Work Order: The work order for the manner of plugging this well is as follows:  
**See Plugging Summary AEP-2**

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

*OK*  
*JMM*

Work order approved by inspector \_\_\_\_\_ Date \_\_\_\_\_

### **Plugging Summary – AEP-2**

Prior to plugging the AEP-2 well, all equipment such as tubing, packer, gauges and well tree will be removed from the well.

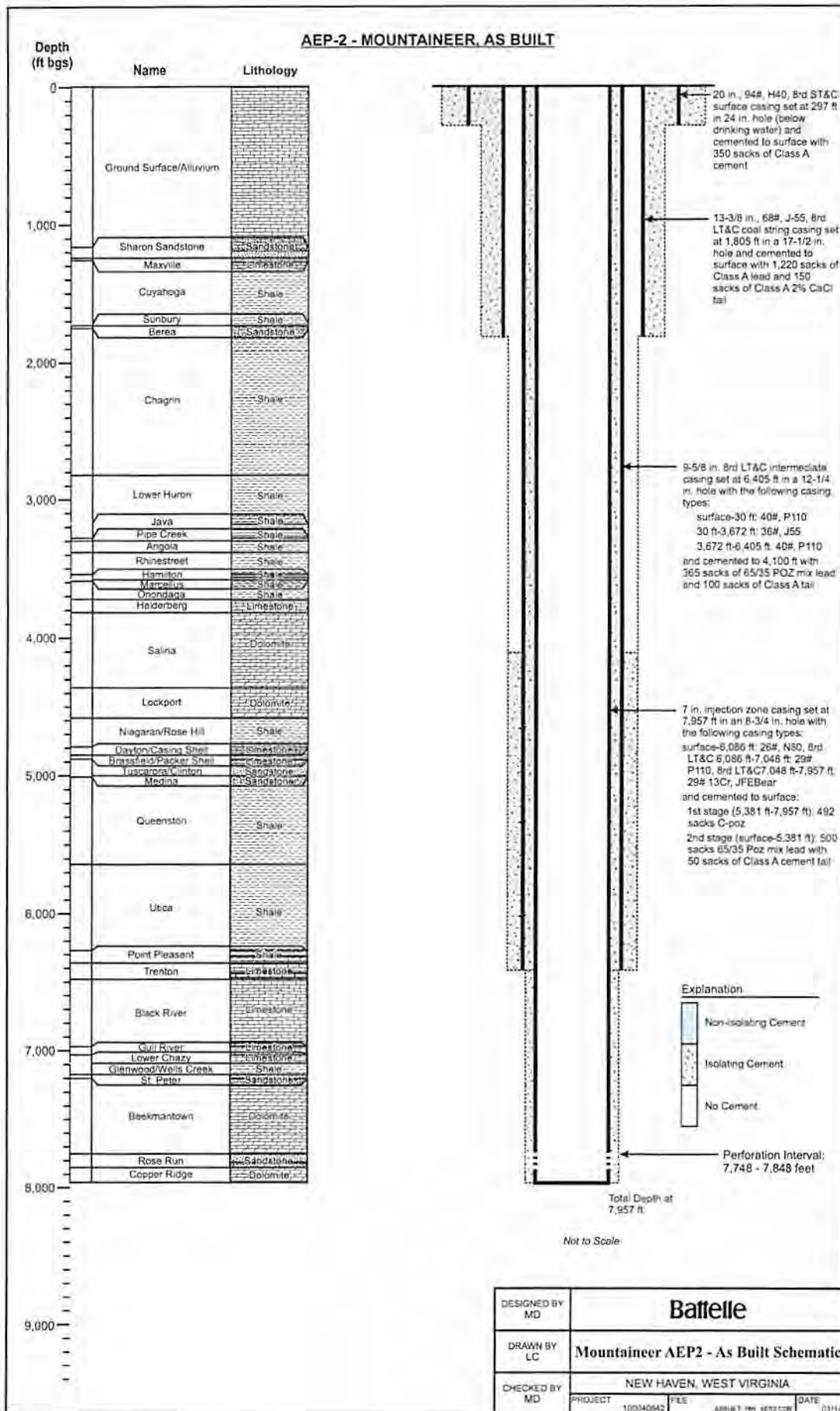
A cement retainer will be set in the 7" casing approximately 50 ft. above the top perforation; the retainer will be set +/- 7,700 ft. The perforations (7,748 to 7,848 ft.) will be squeezed off by pumping 50/50 Pozmix cement through a tubing work string which will be stabbed into the cement retainer. When the squeeze job is complete, the tubing will be pulled out of the cement retainer and the retainer will be closed so that cement cannot come back up hole. A 400 ft. 50/50 Pozmix cement plug will be spotted on top of the retainer from approximately 7,300 ft. to 7,700 ft. The 50/50 Pozmix cement blend will be used on these two plugs due to its CO<sub>2</sub> corrosion-resistance qualities. A gel spacer will be placed from 6,505 ft. to 7,300 ft. and a cement plug will be spotted at the bottom of 9-5/8" deep intermediate casing string.

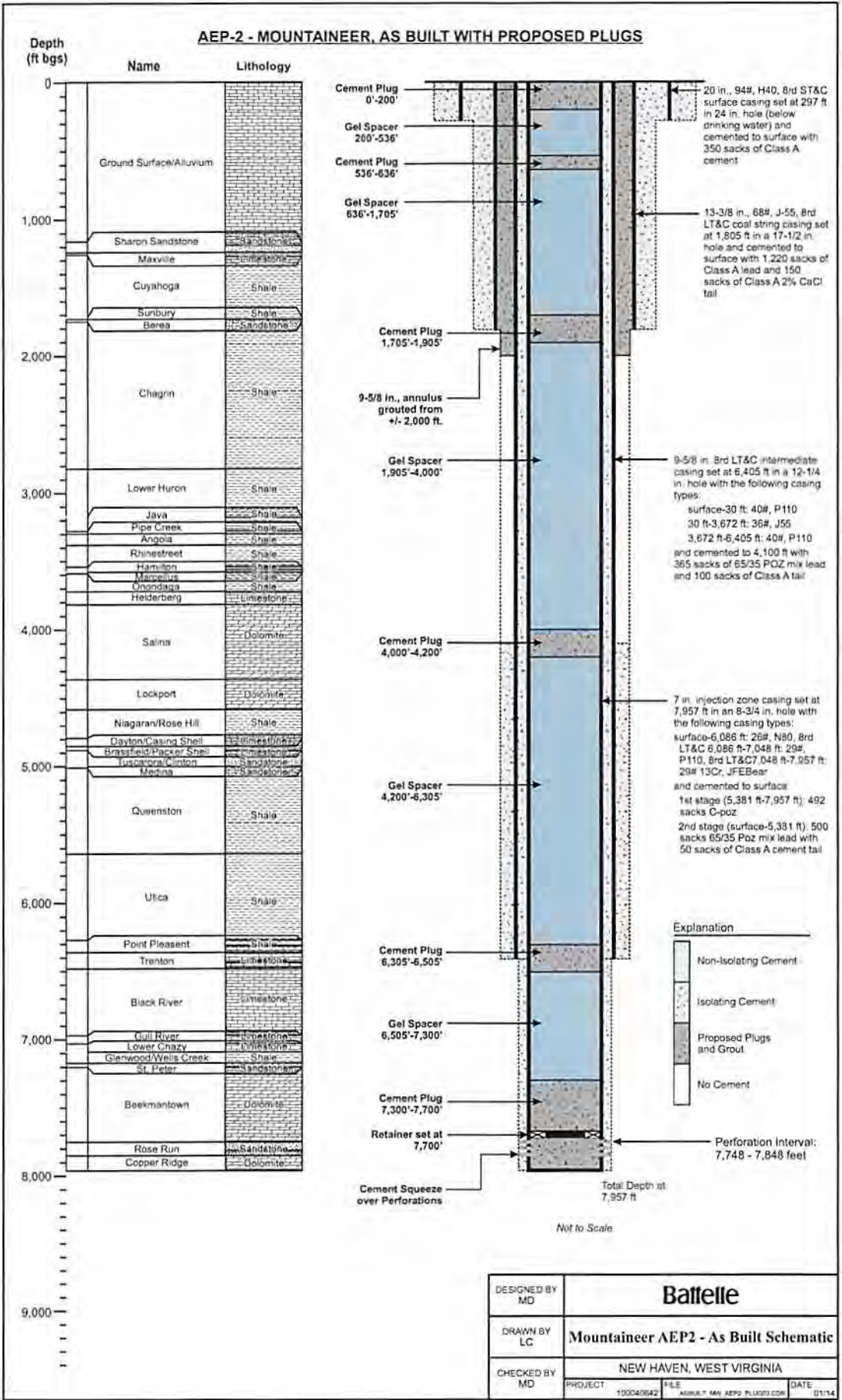
Once the retainer has been set, the perforations have been squeezed off, the 400 ft. cement plug has been placed on top of the retainer, and the plug at the bottom of the 9-5/8" casing has been set, the 7" production casing will be considered dead and the 9-5/8" casing annulus will be grouted or bullhead squeezed. If grouting is used, a grouting string (1" or 1.5" tubing) will be run down the 9-5/8" casing annulus to a depth of +/- 2,000 ft. Once the grouting string is in place, gel will be pumped down the string until approximately 50 Bbl of gel has been pumped or until circulation to surface has been established, whichever comes first. The 9-5/8" casing annulus will then be grouted by pumping a volume of cement (28 sacks per 100 ft. of depth) calculated to fill the annulus from the bottom of the grouting string back to the surface. Grout cement composition will be designed for purpose with a dispersant additive as needed for friction reduction. An additive for gas migration prevention may also be used as recommended by the cementing contractor. The cement blend used will satisfy the minimum requirements of the WVDEP for setting time and compressive strengths.

Once the 9-5/8" casing has been grouted or squeezed, four additional Class A cement plugs will be spotted inside the 4-1/2" casing: one at the top of cement on the 9-5/8" intermediate casing string; one at the casing seat on the 13-3/8" coal string; one at the interface between the fresh water and brine water reservoirs; and one at the surface of the well. Gel spacers will be placed between the cement plugs.



Zone of Interest Description	Depth Interval, ft	Plugging Material		[C]asing / [H]ole Size	Additives	
		Type	Quantity		Type	Grade
AEP-2						
Set Cement Retainer	7700	N/A	N/A	[C] 7", 29.0 #/ft. 13 Cr	N/A	N/A
Squeeze Perforations (Perforation Depths)	7700- 7848 (7748- 7848)	50/50 Pozmix	29 sacks	[C] 7", 29.0 #/ft. 13 Cr	Bentonite Gel	2%
Cement Retainer Plug	7300 - 7700	50/50 Pozmix	70 sacks	[C] 7", 29.0 #/ft. 13 Cr	Bentonite Gel	2%
Gel Spacer	6505 - 7300	Bentonite Gel	30 Bbl	[C] 7", 29.0 #/ft. 13 Cr, [C] 7", 29.0 #/ft.	Bentonite Gel	6%
9-5/8" Casing Seat Plug	6305 – 6505	Class A	36 sacks	C] 7", 29.0 #/ft.	N/A	N/A
Gel Spacer	4200 – 6305	Bentonite Gel	80 Bbl	[C] 7", 29.0 #/ft., [C] 7", 26.0 #/ft.	Bentonite Gel	6%
9-5/8" TOC Plug	4000 – 4200	Class A	37 sacks	[C] 7", 26.0 #/ft.	N/A	N/A
Gel Spacer	1905 – 4000	Bentonite Gel	80 Bbl	[C] 7", 26.0 #/ft.	N/A	N/A
Coal String Casing Seat Plug	1705 - 1905	Class A	37 sacks	[C] 7", 26.0 #/ft.	N/A	N/A
Gel Spacer	636 - 1705	Bentonite Gel	41 Bbl	[C] 7", 26.0 #/ft.	Bentonite Gel	6%
FW/SW Interface Plug	536 – 636	Class A	20 sacks	[C] 7", 26.0 #/ft.	CaCl	3%
Gel Spacer	200 – 536	Bentonite Gel	13 Bbl	[C] 7", 26.0 #/ft.	Bentonite Gel	6%
Surface Plug	0 – 200	Class A	37 sacks	[C] 7", 26.0 #/ft.	CaCl	3%







## AEP-2

The AEP-2 (Figure 4) Injection well is completed in the Rose Run formation. The well was used as a CO<sub>2</sub> injection well from October 2009 to May 2011. An as-built well diagram is provided in Appendix A of this document for reference. Pressure readings and gas samples were successfully taken from one access point on the wellhead, one access point was inaccessible. The descriptions of the activities during the gas sample and pressure collection event for each access point are provided in detail in the following sections.



Figure 4: AEP-2 Wellhead and Christmas Tree, above grade components

### AEP-2 7" to 9-5/8" Annulus

Two AEP-2 7" to 9-5/8" annulus gas samples were collected using the sampling apparatus. The AEP-2 7" to 9-5/8" annulus did not indicate the presence of CO<sub>2</sub>. The annulus has is below grade and has not been regularly monitored. Table 5 below provides information on the gas sample collection.



# Battelle

The Business of Innovation

**Table 5: AEP-2 7" to 9-5/8" annulus Sample Collection Field Records**

Well/Sampling Point	Accessible to Sample?	Sample Date/Time	Sample IDs	Starting Pressure	Ending Pressure
AEP-2	(Yes/No)	(MM/DD/YY - hh:mm)	(2 Per Location)	(PSI)	(PSI)
7" to 9-5/8" Annulus	Yes	2/26/14 - 16:02	1066 / 1262	(1) 100 / (2) 50	(1) 50 / (2) 25

During sample collection, the pressure bled down from 100 PSI to 25 PSI. After collection of the two samples, the annulus was bled down to 0 PSI, bleed down and pressure build-up data collected between 2/26/14 and 3/3/14 are presented in Table 6.

**Table 6: AEP-2 7" to 9-5/8" annulus Pressure Monitoring Field Records**

Well/Sampling Point	Initial Pressure	Start Time Bleed Down	End Time Bleed Down	Total Bleed Down Time	Pressure Build-up	Pressure Build-up
AEP-2	(PSI)	MM/DD/YY hh:mm:ss	MM/DD/YY hh:mm:ss	hh:mm:ss	(PSI - MM/DD/YY)	(PSI - MM/DD/YY)
7" to 9-5/8" Annulus	25	2/26/14 16:03:00	2/26/14 16:04:00	0:01:00	0 PSI - 2/28/14 (24 hours later)	0 PSI - 3/3/14 (100 hours later)

### AEP-2 9-5/8" to 13-3/8" Annulus

The AEP-2 9-5/8" to 13-3/8" annulus does not have a valve installed in between the bull plug and the wellhead/annulus. Because there is no valve, the pressure cannot be isolated to install either a pressure gauge or the sampling apparatus. No pressure data or gas samples were collected from this annulus and it was not bled down.

W

5300506 P

53-00506

Form: WW - 2B

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

1) Well Operator Appalachian Power Co. Operator ID Mason Graham New Haven  
County District Quadrangle

2) Operator's Well Number: AEP 2 3) Elevation: 585.8 ft +/-

4) Well Type: (a) Oil \_\_\_\_\_ or Gas \_\_\_\_\_ **Other: Test Well—Class V**  
 (b) If Gas: Production \_\_\_\_\_ / Underground Storage \_\_\_\_\_  
 Deep \_\_\_\_\_ / Shallow \_\_\_\_\_

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 Office of Oil & Gas  
 JUL 16 2008

5) Proposed Target Formation(s): Rose Run Sandstone/Copper Ridge Dolomite

6) Proposed Total Depth: 8,400 Feet  
 7) Approximate fresh water strata depths: 250 ft  
 8) Approximate salt water depths: > 250 ft

WV Department of  
 Environmental Protection

9) Approximate coal seam depths: ~417, 468, 554, 602, 743, 782, 812, 862, 943, 983, 1073 ft  
 10) Does land contain coal seams tributary to active mine? Yes

11) Describe proposed well work Install CO<sub>2</sub> injection well to test geologic storage of CO<sub>2</sub> in deep saline formations.

12) **CASING AND TUBING PROGRAM**

TYPE	SPECIFICATIONS			FOOTAGE INTERVALS		CEMENT
	Size	Grade	Weight per ft	For Drilling	Left in Well	Fill -up (Cu. Ft.)
Conductor (optional)						
Fresh Water	20"	H40	94	280'	280'	280'-surface, 269 cf
Coal	13-3/8"	J55	61	1,800'	1,800'	1,800-surface, 1,250 cf
Intermediate	9-5/8"	N80, HCN 80	36, 40	6,400'	6,400'	6,400-4,000', 752 cf
Production	7"	N80, N80, 13Cr	26, 29, 29	8,400'	8,400'	8,400'- 4,000, 661 cf
Tubing	4-1/2"			To be installed at a later date		

Packers: Kind Retrievable, coated  
 Sizes 7"  
 Depths Set Above/between Rose Run and/or Copper Ridge

\$ 900.  
 3000 877 88





WR-35  
Rev (5-01)

DATE: 6/23/09  
API #: 47-530049 506 ✓

State of West Virginia  
Department of Environmental Protection  
Office of Oil and Gas

Well Operator's Report of Well Work

Farm name: Appalachian Power Co. Operator Well No.: AEP-2

LOCATION: Elevation: 585.8 ft. Quadrangle: New Haven

District: Graham County: Mason  
Latitude: 68,689 Feet South of 39 Deg. 00 Min. 00 Sec.  
Longitude 6,123 Feet West of 81 Deg. 55 Min. 00 Sec.

Company: Appalachian Power Co. DBA AEP

	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
Address: <u>U.S.Rt. 33, Mountaineer Plant New Haven, WV 25265-0419</u>	<u>20"</u>	<u>280'</u>	<u>280'</u>	<u>295 cf</u>
	<u>13-3/8"</u>	<u>1805'</u>	<u>1805'</u>	<u>1250 cf</u>
Agent: <u>Richard D. Thompson</u>	<u>9-5/8"</u>	<u>6405'</u>	<u>6405'</u>	<u>752 cf</u>
Inspector: <u>Jamie Stevens</u>	<u>7"</u>	<u>7957'</u>	<u>7957'</u>	<u>661 cf</u>
Date Permit Issued: <u>06/24/2008</u>	<u>3-1/2"</u>	<u>7,735'</u>	<u>7,735'</u>	<u>--</u>
Date Well Work Commenced: <u>09/08/2008</u>				
Date Well Work Completed: <u>06/20/2009</u>				
Verbal Plugging: <u>n/a</u>				
Date Permission granted on:				
Rotary <u>X</u> Cable Rig: <u>UDI 51</u>				
Total Depth (feet): <u>7959'</u>				
Fresh Water Depth (ft.): <u>250'</u>				
Salt Water Depth (ft.): <u>1232'</u>				
Is coal being mined in area (N/Y)? <u>Yes</u>				
Coal Depths (ft.): <u>417'-1073' layered</u>				

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JUL 22 2009  
WV Department of  
Environmental Protection

Formation of interest: Rose Run Pay zone depth (ft): 7,748'  
Gas: Initial open flow: 0 MCF/d Oil: Initial open flow: 0 Bbl/d  
Final open flow: 0 MCF/d Final open flow: 0 Bbl/d  
Time of open flow between initial and final tests: 0 Hours  
Static rock Pressure \_\_\_\_\_ psig (surface pressure) after \_\_\_\_\_ Hours

Formation of interest: Copper Ridge Pay zone depth (ft): 7,853'  
Gas: Initial open flow: 0 MCF/d Oil: Initial open flow: 0 Bbl/d  
Final open flow: 0 MCF/d Final open flow: 0 Bbl/d  
Time of open flow between initial and final tests: 0 Hours  
Static rock Pressure \_\_\_\_\_ psig (surface pressure) after \_\_\_\_\_ Hours

NOTE: ON BACK OF THIS FORM PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

Signed: Richard D. Thompson  
By: Richard D. Thompson  
Date: 7/9/09

## Perforated Intervals

Interval	Formation	Depth
1	Rose Run Sandstone	7748-7769
2	Rose Run Sandstone	7795-7810
3	Rose Run Sandstone	7814-7848
Shot Density = 4 shots per foot 400 gallons 15% HCl spotted prior to perforating, swabbed back 4,500 gallons 15% HCl with 100 perf balls, swabbed back		

## AEP Mountaineer Plant, AEP-2 Well Log Summary

Lithology or Formation	Depth
Ground Surface/Alluvium/ Undiff. Pennsylvania Bedrock	0-1,156 *
Sharon Sandstone	1,156
Maxville Limestone	1,244
Cuyahoga Shale	1,260
Sunbury (Coffee) shale	1,722
Berea sandstone	1,732
Chagrin shale	1,753
Lower Huron shale	2,817
Java shale	3,178
Pipe Creek shale	3,278
Angola shale	3,294
Rhinestreet shale	3,381
Hamilton shale	3,542
Marcellus shale	3,584
Onondaga limestone	3,594
Helderberg limestone	3,722
Salina dolomite	3,814
Lockport dolomite	4,358
Niagaran/Rose Hill shale	4,580
Dayton/Casing Shell limestone	4,788
Brassfield/Packer Shell limestone	4,850
Tuscarora/Clinton sandstone	4,883
Medina sandstone	5,022
Queenston shale	5,026
Utica Shale	5,640
Point Pleasant Shale	6,270
Trenton limestone	6,358
Black River limestone	6,480
Gull River limestone	6,970
Lower Chazy limestone	7,028
Glenwood/Wells Creek shale	7,086
St. Peter sandstone	7,166
Beekmantown dolomite	7,194
Rose Run sandstone	7,748
Copper Ridge dolomite	7,853

\* Coal found from 417' - 1,073'

WW-4A  
Revised 6-07

1) Date: \_\_\_\_\_

2) Operator's Well Number \_\_\_\_\_

AEP-2 \_\_\_\_\_

3) API Well No.: 47 - 530 - 0506

**STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF APPLICATION TO PLUG AND ABANDON A WELL**

<b>4) Surface Owner(s) to be served:</b>	<b>5) (a) Coal Operator:</b>
(a) Name <u>Appalachian Power Company dba American Electric Power</u>	Name <u>No coal interests with declaration</u>
Address <u>Electric Power</u>	Address _____
<u>c/o American Electric Power Land Management</u>	_____
(b) Name <u>1 Riverside Plaza - 16th Floor</u>	<b>(b) Coal Owner(s) with Declaration</b>
Address <u>Columbus, OH 43215</u>	Name <u>No coal interests with declaration</u>
_____	Address _____
(c) Name _____	Name _____
Address _____	Address _____
_____	_____
<b>6) Inspector</b> <u>James Stevens</u>	<b>(c) Coal Lessee with Declaration</b>
Address <u>HC 82, Box 1C</u>	Name <u>No coal interests with declaration</u>
<u>Kenna, WV 25248</u>	Address _____
Telephone <u>304-206-7775</u>	_____

**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 Department 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.



**LYNNE KAY BROUSSARD** Well Operator  
**NOTARY PUBLIC** By: \_\_\_\_\_  
 STATE OF OHIO Its: \_\_\_\_\_  
 Comm. Expires Address \_\_\_\_\_  
 January 05, 2014  
 Recorded in Telephone \_\_\_\_\_  
 Franklin County

Appalachian Power Company dba American Electric Power  
 Dean A. Berry Dean A. Berry  
 Manager, Real Estate Asset Manager  
 1 Riverside Plaza - 16th Floor  
 Columbus, OH 43215  
 614-716-8830

RECEIVED  
 Office of Oil and Gas  
 JAN 19 2014

Subscribed and sworn before me this 4th day of NOVEMBER, 2013  
Lynne Kay Broussard Notary Public  
 My Commission Expires 1-5-2014

WV Department of Environmental Protection

**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](mailto:depprivacyofficer@wv.gov).



**SURFACE OWNER WAIVER**

Operator's Well  
Number

AEP-2

**INSTRUCTIONS TO SURFACE OWNERS NAMED ON PAGE WW4-A**

The well operator named on page WW-4A is applying for a permit from the State to plug and abandon a well. (Note: If the surface tract is owned by more than three persons, then these materials were served on you because your name appeared on the Sheriff's tax ticket on the land or because you actually occupy the surface tract. In either case, you may be the only owner who will actually receive these materials.) See Chapter 22 of the West Virginia Code. Well work permits are valid for 24 months. If you do not own any interest in the surface tract, please forward these materials to the true owner immediately if you know who it is. Also, please notify the well operator and the Office of Oil and Gas.

**NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.  
WHERE TO FILE COMMENTS AND OBTAIN ADDITIONAL INFORMATION:**

Chief, Office of Oil and Gas  
Department of Environmental Protection  
601 57<sup>th</sup> St. SE  
Charleston, WV 25304  
(304) 926-0450

Time Limits and methods for filing comments. The law requires these materials to be served on or before the date the operator files his Application. You have FIVE (5) DAYS after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Comments must be in writing. Your comments must include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

The Chief has the power to deny or condition a well work permit based on comments on the following grounds:

- 1) The proposed well work will constitute a hazard to the safety of persons.
- 2) The soil erosion and sediment control plan is not adequate or effective;
- 3) Damage would occur to publicly owned lands or resources;
- 4) The proposed well work fails to protect fresh water sources or supplies;
- 5) The applicant has committed a substantial violation of a previous permit or a substantial violation of one or more of the rules promulgated under Chapter 22, and has failed to abate or seek review of the violation..."

If you want a copy of the permit as it is issued or a copy of the order denying the permit, you should request a copy from the Chief.

**VOLUNTARY STATEMENT OF NO OBJECTION**

I hereby state that I have read the instructions to surface owners and that I have received copies of a Notice and Application For A Permit To Plug And Abandon on Forms WW-4A and WW-4B, and a survey plat.

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials.

FOR EXECUTION BY A NATURAL PERSON  
ETC.

FOR EXECUTION BY A CORPORATION,

<hr/>	Date	<hr/>	Name	Appalachian Power Company dba American Electric Power
Signature			By	Dean A Berry
			Its	Manager, Real Estate Asset
			Signature	<i>Dean A Berry</i>
			Date	11/04/2008

WW-4B

API No. 47-530-0506  
Farm Name AEP Mountaineer Plant  
Well No. AEP-2

**INSTRUCTIONS TO COAL OPERATORS  
OWNERS AND LESSEE**

The well operator named on the obverse side of WW-4 (B) is about to abandon the well described in the enclosed materials and will commence the work of plugging and abandoning said well on the date the inspector is notified. Which date shall not be less then five days after the day on which this notice and application so mailed is received, or in due course should be received by the Department of Environmental Protection Office of Oil & Gas.


This notice and application is given to you in order that your respective representatives may be present at the plugging and filling of said well. You are further notified that whether you are represented or not the operator will proceed to plug and fill said well in the manner required by Section 24, Article 6, Chapter 22 of the Code and given in detail on obverse side of this application.

NOTE: If you wish this well to be plugged according to 22-6-24(d) then as per Regulation 35CSR4-13.9 you must complete and return to this office on form OB-16 "Request by Coal Operator, Owner, or Lessee for plugging" prior to the issuance of this plugging permit.

**WAIVER**

The undersigned coal operator \_\_\_\_\_ / owner  / lessee \_\_\_\_\_ / of the coal under this well location has examined this proposed plugging work order. The undersigned has no objection to the work proposed to be done at this location, provided, the well operator has complied with all applicable requirements of the West Virginia Code and the governing regulations.

Date: 11/04/2013

Appalachian Power Company dba American Electric Power  
By: Dean A. Berry   
Its Manager, Real Estate Asset Manager

WW-9  
Rev. 5/08

Page 1 of 1  
API Number 47 - 530 - 0506  
Operator's Well No. AEP-2

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

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

Operator Name Appalachian Power Company dba American Electric Power OP Code \_\_\_\_\_

Watershed Ohio River Quadrangle New Haven

Elevation 586.12' County 530(Mason) District Graham

Description of anticipated Pit Waste: Well brine and freshwater/cement excess

Will a synthetic liner be used in the pit? NA - tanks will be used.

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection ( UIC Permit Number \_\_\_\_\_ )
- Reuse (at API Number \_\_\_\_\_ )
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain Qualified third-party hauling and disposal)

Proposed Work For Which Pit Will Be Used:

- Drilling
- Workover
- Other (Explain \_\_\_\_\_)
- Swabbing
- Plugging

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 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 *Dean A. Berry*

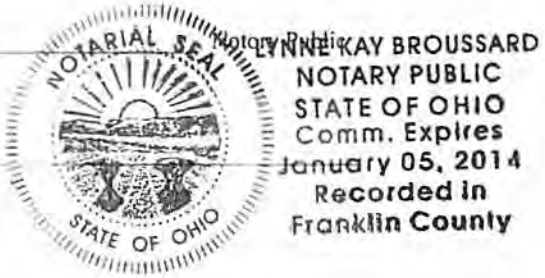
Company Official (Typed Name) Dean A. Berry

Company Official Title Manager, Real Estate Asset Management, AEP authorized signer

Subscribed and sworn before me this 4th day of November, 2013

*Lynne Kay Broussard*

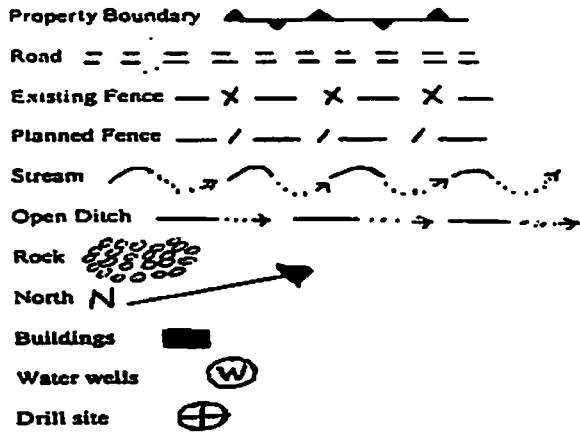
My commission expires 1-5-2014



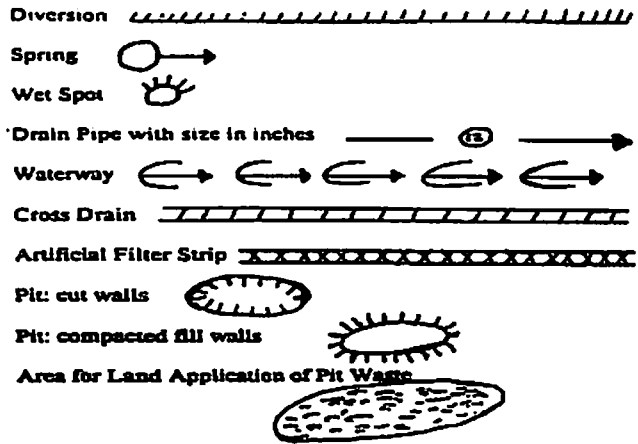


Form WW-9

Operator's Well No. AEP-2



LEGEND



Proposed Revegetation Treatment: Acres Disturbed none Prevegetation pH 7-8

Lime NA Tons/acre or to correct to pH NA

Fertilizer (10-20-20 or equivalent) NA lbs/acre (500 lbs minimum)

Mulch NA Tons/acre

Seed Mixtures

Area I		Area II	
Seed Type	lbs/acre	Seed Type	lbs/acre
<u>NA - work site is a gravel lot.</u>			

Attach:  
Drawing(s) of road, location, pit and proposed area for land application.

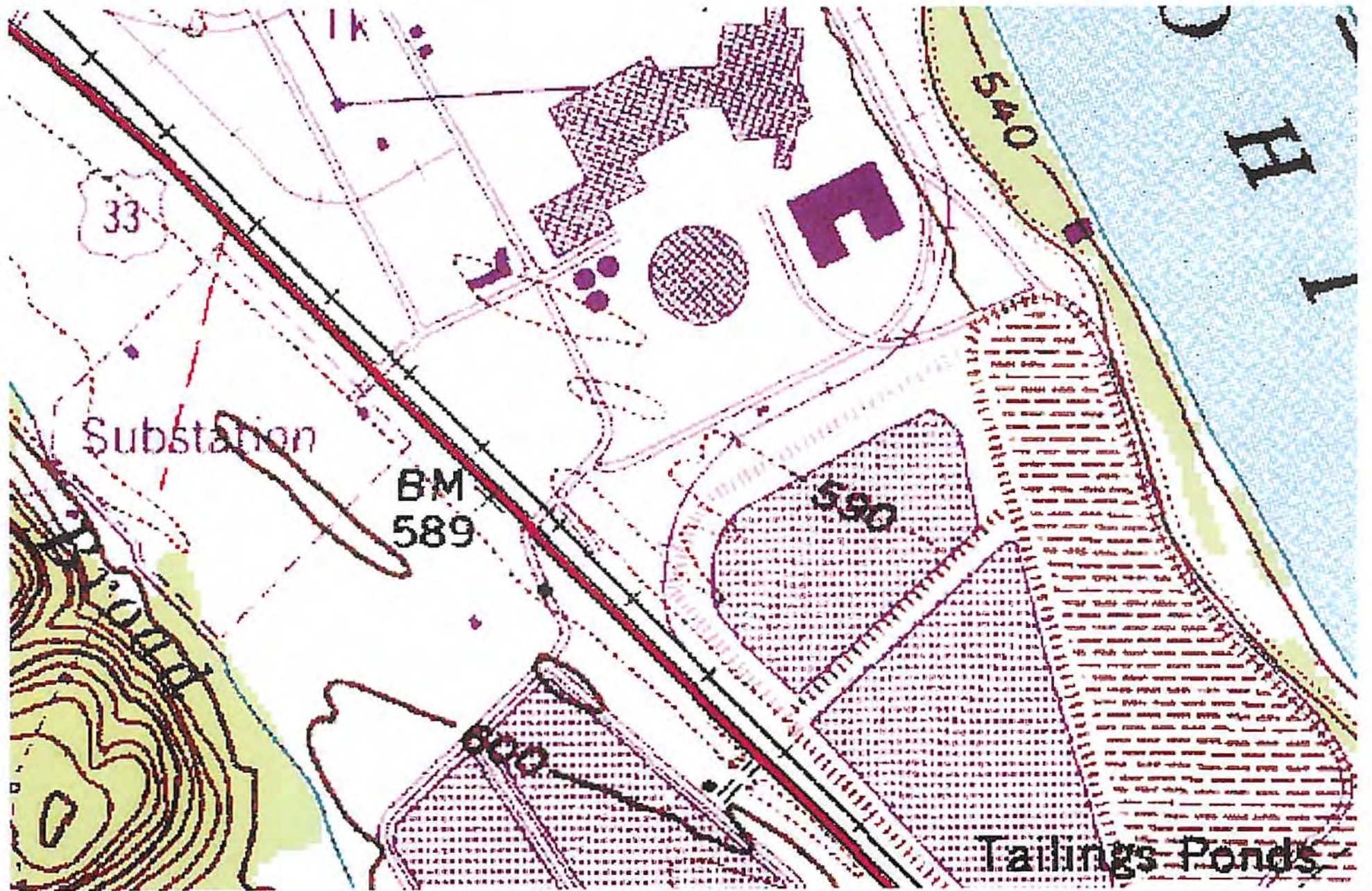
Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: \_\_\_\_\_

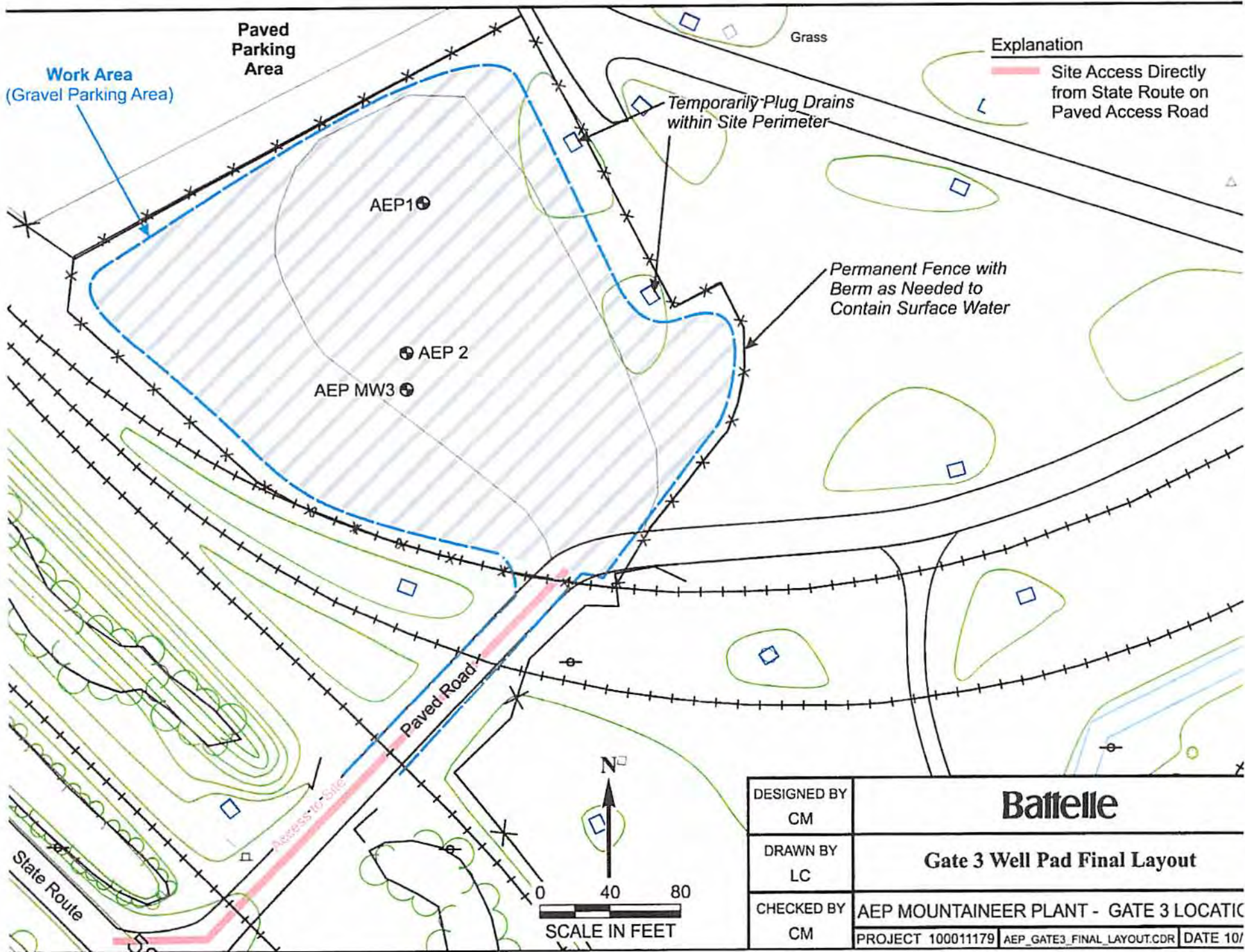
Comments: \_\_\_\_\_

Title: \_\_\_\_\_ Date: \_\_\_\_\_

Field Reviewed? ( ) Yes ( ) No







S 3005069





5300506P

LATITUDE N 38°00'00" 6094'

**AEP 2**  
 DATUM: NAD 27  
 NORTH 720891  
 EAST 1733293  
 ELEVATION 587.12'

900 N MONUMENT  
 ELEVATION 588.10'  
 NORTH 722283.205  
 EAST 173397.019

EXISTING WATER WELL  
 BOTTOM OF WELL  
 TOP OF WELL  
 ELEVATION 587.12'  
 47-53-0423

PROPERTY LINE FOLLOWS BANK OF OHIO RIVER

PAR. 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220

REFERENCES

PAR.	OWNER	D.B.	PG.	PAR.	OWNER	D.B.	PG.
146	APP. POWER CO.	237	263	185	APP. POWER CO.	237	263
173	APP. POWER CO.	237	263	187	APP. POWER CO.	237	263
175	APP. POWER CO.	237	263	189	APP. POWER CO.	237	263
176	APP. POWER CO.	237	263	200	APP. POWER CO.	237	263
177	APP. POWER CO.	234	217	201	OHIO POWER CO.	294	274
178	APP. POWER CO.	237	263	205	OHIO POWER CO.	183	438
179	APP. POWER CO.	237	263	209	APP. POWER CO.	263	463
179.1	APP. POWER CO.	237	263	210	APP. POWER CO.	237	263
180	APP. POWER CO.	237	263				

Point Surveying Mapping  
 PO BOX 28  
 MILLWOOD, WV 25282  
 (304) 273-2915 Phone  
 (304) 273-2916 Fax  
 Professional Land, Etc.  
 Construction Industrial Surveying

1"=200'  
 (5/8" IRON REBAR W/ CAP)

NORTH

8745'  
 LONGITUDE W 81°55'00"

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

FILE No. \_\_\_\_\_  
 SCALE 1" = 500'  
 MINIMUM DEGREE OF ACCURACY 1:2500  
 PROVEN SOURCE OF ELEVATION NOTED ON PLAT  
 DATE 05-21-2008  
 DRAWN BY J. SMISHER

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) *D. Bratker*  
 R.P.E. \_\_\_\_\_ R.P.S. \_\_\_\_\_

DELBERT F. BRATKER  
 LICENSED  
 No. 887  
 STATE OF  
 WEST VIRGINIA  
 PROFESSIONAL SURVEYOR

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

DATE OPERATOR'S WELL No. 20  
 API WELL No. AEP 2  
 47 053-00506P  
 STATE COUNTY PERMIT

WELL TYPE: OIL  GAS  INJECTION  WASTE  DISPOSAL  IF "GAS" PRODUCTION  STORAGE  DEEP  SHALLOW  OTHER  X

LOCATION: ELEVATION 587.12 WATER SHED MIDDLE OHIO  
 DISTRICT GRAHAM COUNTY MASON  
 QUADRANGLE NEW HAVEN

SURFACE OWNER APPALACHIAN POWER CO. ACREAGE 2460  
 OIL & GAS ROYALTY OWNER APPALACHIAN POWER CO. LEASE ACREAGE N/A  
 LEASE No. N/A

PROPOSED WORK: DRILL  X 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 ROSE RUN-COPPER RIDGE ESTIMATED DEPTH 8400 FT  
 WELL OPERATOR APPALACHIAN POWER CO. DESIGNATED AGENT RICHARD D. THOMPSON  
 ADDRESS US RT. 33 MOUNTAINEER PLANT ADDRESS US RT. 33 MOUNTAINEER PLANT  
 NEW HAVEN, WV 25265-0419 NEW HAVEN, WV 25285-0419

AEP-2  
 UTM 17  
 NAD 83  
 TOP HOLE  
 4314528.3 N  
 4187441 E  
 BOTTOM HOLE  
 4314519.8 N  
 418729.4 E

FORM IV-B (8-78)