



---

west virginia department of environmental protection

---

Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304  
(304) 926-0450  
fax: (304) 926-0452

Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Monday, June 25, 2018

WELL WORK PLUGGING PERMIT  
Vertical Plugging

THE CHEMOURS COMPANY FC, LLC  
8480 DUPONT RD.  
PO BOX 1217  
WASHINGTON, WV 26181

Re: Permit approval for 3  
47-107-00593-00-00

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.

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. Please be advised that form WR-38, Affidavit of Plugging and Filling Well, 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

A blue ink signature of James A. Martin, written in a cursive style.

Operator's Well Number: 3  
Farm Name: WASHINGTON WORKS  
U.S. WELL NUMBER: 47-107-00593-00-00  
Vertical Plugging  
Date Issued: 6/25/2018

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 under the terms of that agreement.

WW-4B  
Rev. 2/01

1) Date 6/7, 2018  
2) Operator's  
Well No. Waste Well #2  
3) API Well No. 47-107 - 00593

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 X / Waste disposal X /  
(If "Gas, Production \_\_\_ or Underground storage \_\_\_) Deep \_\_\_ / Shallow \_\_\_
- 5) Location: Elevation 622 feet Watershed Ohio River  
District Lubeck County Wood Quadrangle Little Hocking
- 6) Well Operator The Chemours Company FC, LLC 7) Designated Agent Alison A. Crane  
Address 8480 DuPont Road Address 8480 DuPont Road  
Washington, WV 26181 Washington, WV 26181
- 8) Oil and Gas Inspector to be notified 9) Plugging Contractor  
Name Mr. Joseph Taylor Name Unidentified  
Address 1478 Claylick Road Address \_\_\_\_\_  
Ripley, WV 25271

- 10) Work Order: The work order for the manner of plugging this well is as follows:  
**See attached proposed plugging schematic and plugging procedure.**  
**Attachment A**

RECEIVED  
Office of Oil and Gas

JUN 12 2018

WV Department of  
Environmental Protection

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

Work order approved by inspector



Date

6-7-18



## Chemours Washington Works Well No. 2 Workover Procedure for Re-Entry, Remediation, and Closure

### GENERAL INFORMATION

Well Name: Well No. 2 (Permit No. WOO593)

Operator: Chemours Company

Location: Parkersburg, WV

All depths are referenced to the original rig kelly bushing, which is 635 ft above mean sea level and 15 feet above ground level.

**Background:** Well No. 2 was drilled in 1970 and used for disposal of facility wastewaters by the former owner, E.I. du Pont de Nemours & Co., Inc. Conductor casings (16 and 20-inch diameter) were set to 85 feet (ft). Surface casing (11-3/4") was set at 1,968 ft, and the borehole was then drilled to a total depth of 4,105 ft. The 8-5/8" casing was set at 4,050 ft and cemented in place using a 2-stage cementing process. The second stage was poorly cemented due to lost circulation during cementing. Several cement squeezes were used to effect an annular seal around the casing in critical areas along the borehole. In May 1973, a 6-5/8" liner was set in the 8-5/8" casing from surface to 3,615 ft. The liner was cemented in two stages using Epsal™ epoxy cement on the first stage (2,672 ft to 3,615 ft) and Latex and Pozmix cements on the 2<sup>nd</sup> stage (surface to 2,672 ft). The well was used for injection of facility wastewater until it was plugged in November 1980.

**Current Status:** The 6-5/8" liner was filled with 20/40 gravel from 3,100 ft to total depth; An Epsal™ epoxy cement plug was placed from 2,116 ft to 3,100 ft, and a Class A cement plug was placed from 2,116 ft to surface to seal the wellbore.

### Procedure

1. Move in well servicing unit and rig up equipment on location.
  - Verify that no pressure exists inside 6-5/8" liner bore and 6-5/8" x 8-5/8" annulus (note: both are filled with cement and should be devoid of pressure).
2. Excavate around 8-5/8" casing to determine presence and severity of gas at wellbore.
3. Gain access to 8-5/8" x 11-3/4" annulus and determine if gas leak is emanating from within this annulus or from outside of 11-3/4" casing.

RECEIVED  
Office of Oil and Gas

JUN 12 2018

WV Department of  
Environmental Protection

- If the gas is emanating from 8-5/8" x 11-3/4" annulus, proceed with workover operations as planned. Ensure proper gas monitoring and gas abatement equipment is utilized to detect and prevent hazardous working conditions.
  - If the gas is emanating from outside of 11-3/4" casing, suspend workover operations and develop a plan to address this anomalous condition.
4. Cut and remove 6-5/8" and 8-5/8" wellheads and weld on rental wellhead to 8-5/8" casing.
    - Take proper precautions to prevent or abate an explosive atmosphere prior to any hot work.
  5. Nipple up 11" annular blowout preventer (BOP) to wellhead and test. Complete rig-up of well servicing unit.
  6. Drill out cement inside 6-5/8" casing to below setting depth of 11-3/4" casing shoe (1,968 ft) to approximately 2,116 ft (top of epoxy plug).
  7. Pressure-test 6-5/8" casing to 1,500 psi against cement plug below for 30 minutes to demonstrate pressure integrity.
    - Note: a successful pressure test will affirm that the 6-5/8" casing and the cement plug have pressure integrity.
  8. Displace wellbore with nitrogen and monitor for gas flow from wellbore.
    - Note: if gas flow is confirmed, proceed with Step 18 of workover procedure.
    - Note: if gas flow is not present, it will eliminate the bore of the 6-5/8" casing as being the source of the gas leak.
  9. If gas flow is not present, conduct section milling of 6-5/8" and 8-5/8" casings at approximately 2,040 to 2,080 feet (note: actual depth to be determined based on location of casing collars).
  10. Displace wellbore with nitrogen and monitor for flow from wellbore.
    - Note: if gas flow is present, it will confirm that either the 6-5/8" x 8-5/8" annulus is the source of the gas leak or the 8-5/8" casing x 10-5/8" borehole annulus is the source of the gas leak. Proceed with Step 18 of workover procedure.
    - If gas flow is not present, it indicates that the source of gas at surface is emanating from above 2,040 ft through a breach in the 8-5/8" x 11-3/4" annulus.
  11. Set balanced Class A cement plug in milled interval from 2,116 ft (or top of existing cement plug) to 1,900 ft. Apply squeeze pressure to plug to seal all voids.
    - Note: The balanced cement plug is designed to seal the wellbore from below and up inside the shoe of the surface casing.
  12. Load and pressure-test cement plug to 1,500 psi.

May 3, 2018

13. Perforate 8-5/8" casing at 1,895 feet and set balanced Class A cement plug from 1,900 ft (or top of existing plug) to 900 feet. Squeeze cement into perforations if possible.
14. Load and pressure-test cement plug to 1,500 psi.
15. Perforate 8-5/8" casing at 500 feet and set balanced Class A cement plug from 900 ft (or top of existing plug) to 300 feet and squeeze cement into perforations if possible.
16. Load and pressure-test cement plug to 1,500 psi.
17. Set final Class A cement plug from 300 feet to surface. Proceed with Step 30 of workover procedure.

IF GAS IS OBSERVED IN STEP 8 OR STEP 10, CONTINUE WITH PROCEDURE FROM THIS POINT

18. Drill remaining cement in 6-5/8" casing to 3,100 feet. Circulate out sand from bore of 6-5/8" casing down to plug back total depth (PBSD) at 3,806 ft.
19. Set Class A cement plug from PBSD to 3440 ft (+/-).
20. Section Mill 30 ft (+/-) of 6-5/8" and 8-5/8" casing from 3,400 to 3,430 ft.
  - Note: this will gain access to the un-cemented annular space behind the 8-5/8" casing
21. Set balanced epoxy cement plug from 3440 ft (or top of previous plug) to 2900 ft. Apply squeeze pressure to plug to seal all voids.
  - Note: The balanced cement plug is designed to seal the 8-5/8" casing x 10-5/8" borehole annulus and inside the 6-5/8" liner. This will prevent any chance of formerly injected wastewater from migrating vertically into an unauthorized zone.
22. Load-test cement plug to 5,000 pounds.
23. Set balanced Class A cement plug from 2,900 ft (or top of existing plug) to 1,900 ft. Apply squeeze pressure to plug to seal all voids.
  - Note: The balanced cement plug is designed to seal the wellbore from below and up inside the shoe of the surface casing.
24. Load and pressure-test cement plug to 1,500 psi.
25. Perforate 8-5/8" casing at 1,895 feet and set balanced cement plug from 1,900 ft (or top of existing plug) to 900 feet. Squeeze Class A cement into perforations if possible.
26. Load and pressure-test cement plug to 1,500 psi.
27. Perforate 8-5/8" casing at 500 feet and set balanced Class A cement plug from 900 ft (or top of existing plug) to 300 feet and squeeze cement into perforations if possible.

RECEIVED  
Office of Oil and Gas

JUN 12 2018

WV Department of  
Environmental Protection

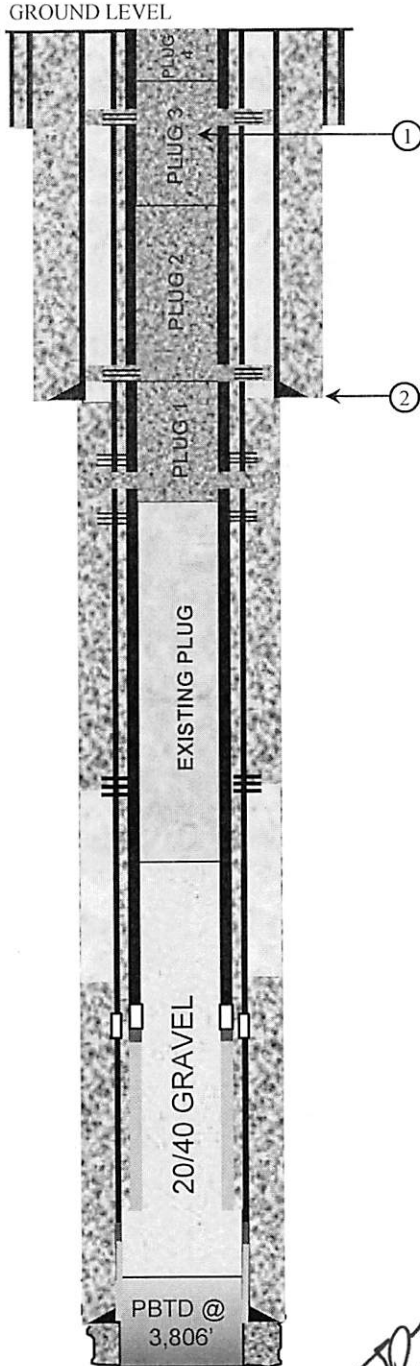
28. Load and pressure-test cement plug to 1,500 psi.
29. Set final Class A cement plug from 300 feet to surface.
30. Rig down workover rig; Demob rig and ancillary equipment from site.
31. Remove rental wellhead and cut all casings approximately 3 feet below grade.  
Weld a steel plate across top of casing stub. Erect a permanent marker denoting well location.



Chemours Company, FC, LLC  
 Washington Works Plant Well No. 2  
 Plugging Schematic

Status: Proposed – Case I

GL = 620' MSL  
 All depths GL



Description: Case I assumes gas is not detected emanating from below 2,116 feet.

**PLUGGING DETAIL**

**Existing Plug**

- Epsal Epoxy plug set in 6-5/8" casing from 2,116 to 3,100 ft.

**1. Plug No. 1**

- 6-5/8" and 8-5/8" casings section-milled from 2,040 to 2,080 ft;
- Class A cement plug from 2,116 ft to 1,900 ft, with cement squeezed into casing annuli.

**2. Plug No. 2**

- Casing perforated at 1,895 ft;
- Class A cement plug from 1,900 ft to 900 ft, with cement squeezed through perforations at 1,895 ft.

**3. Plug No. 3**

- Casing perforated at 500 ft;
- Class A cement plug from 900 ft to 500 ft, with cement squeezed through perforations at 500 ft.

**4. Plug No. 4**

- Class A cement plug from 300 ft to surface.

RECEIVED  
 Office of Oil and Gas

JUN 12 2018

WV Department of  
 Environmental Protection



8860 Fallbrook Drive, Houston, TX 77064  
 Tel: (346) 314-4347 Fax: (832) 478-5172

Drawn by: KD    Date: 05/03/18    Drawing not to scale

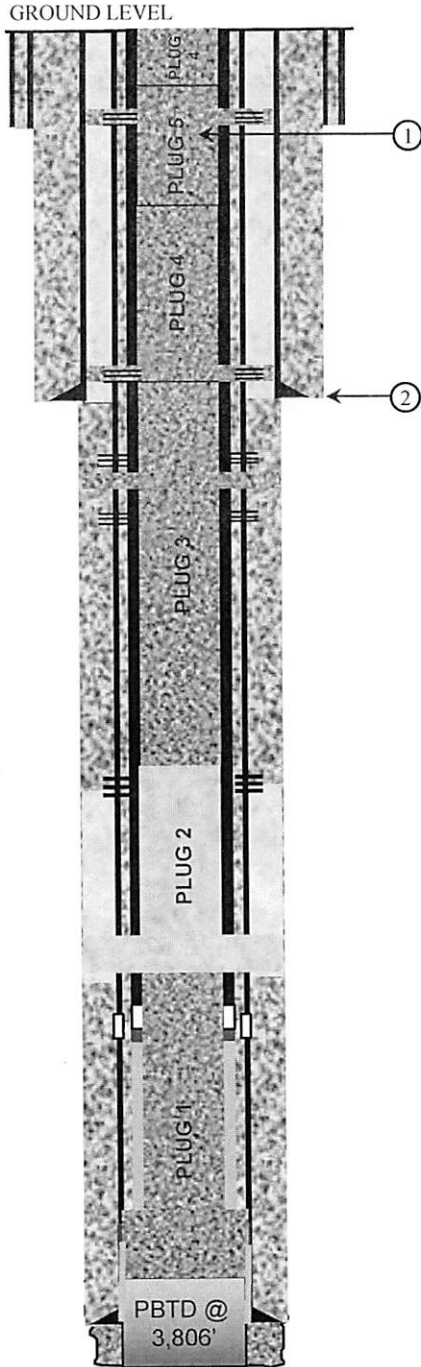




Chemours Company, FC, LLC  
 Washington Works Plant Well No. 2  
 Plugging Schematic

Status: Proposed – Case II

GL = 620' MSL  
 All depths GL



Description: Case II assumes gas is detected emanating from below 2,116 feet.

**PLUGGING DETAIL**

1. **Plug No. 1**
  - Class A cement plug from 3,806 ft to 3,440 ft.
2. **Plug No. 2**
  - 6-5/8" and 8-5/8" casings section-milled from 3,400 to 3,430 ft;
  - Epoxy plug from 3,440 ft to 2,900 ft with cement squeezed into casing annuli from 3,400 to 3,430 ft;
3. **Plug No. 3**
  - 6-5/8" and 8-5/8" casings section-milled from 2,040 to 2,080 ft;
  - Class A cement plug from 2,900 ft to 1,900 ft with cement squeezed into casing annuli from 2,040 to 2,080 ft.
4. **Plug No. 4**
  - Casing perforated at 1,895 ft;
  - Class A cement plug from 1,900 ft to 900 ft, with cement squeezed through perforations at 1,895 ft.
5. **Plug No. 5**
  - Class A cement plug from 900 ft to 300 ft, with cement squeezed through perforations at 500 ft.
6. **Plug No. 6**
  - Class A cement plug from 300 ft to surface.

RECEIVED  
 Office of Oil and Gas

JUN 12 2018

WV Department of  
 Environmental Protection



8860 Fallbrook Drive, Houston, TX 77064  
 Tel: (346) 314-4347 Fax: (832) 478-5172

Drawn by: KD    Date: 05/03/18    Drawing not to scale

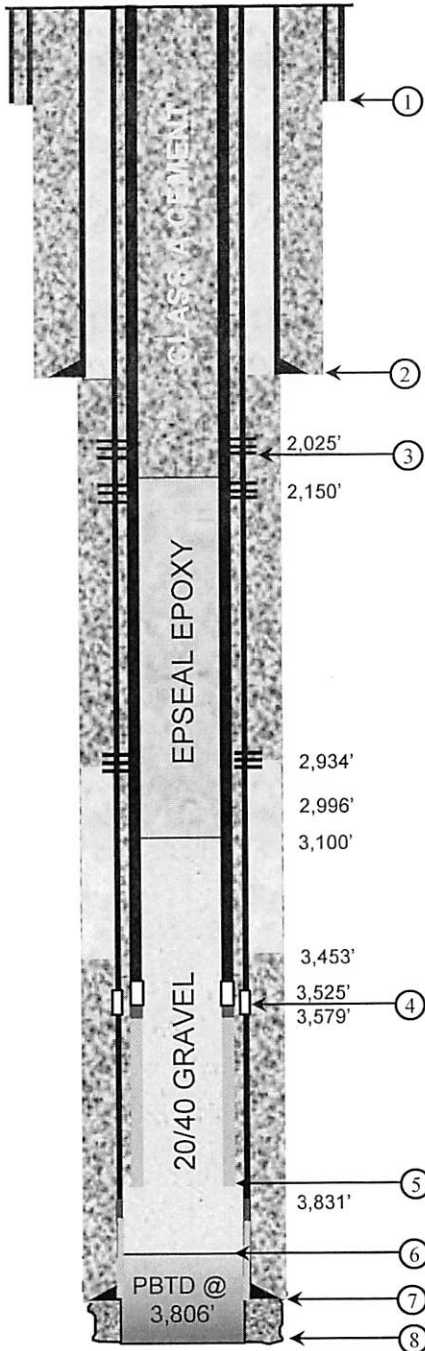


Chemours Company, FC, LLC  
Washington Works Plant Well No. 2  
Well Schematic

Status: Current Completion

GL = 620' MSL  
All depths GL.

GROUND LEVEL



COMPLETION DETAIL

1. **20" and 16" Conductor Pipe:**
  - 20" Surface to 85 ft; Driven;
  - 16" Surface to 85 ft; Cemented to surface.
2. **11-3/4" Surface Casing:** Surface to 1,968' ; Set in 14-3/4" hole; Cemented to surface with good returns.
  - 47 lb/ft Grade H-40
3. **8-5/8" Squeeze Perforations:**
  - 2,025' on 2/1/1971;
  - 2,150' on 10/27/1970;
  - 2,934' on 10/25/1970.
4. **10' Notch for Injection:** 3,525' on 6-5/8" casing and 3,559' on 8-5/8" casing.
5. **6-5/8" Injection Liner:** Surface to 3,814 ft; Cemented to surface (November 1973).
  - 20 lb/ft: Surface to 3,525 ft;
  - Hastelloy C-276: 3,525 ft to 3,579 ft (18 ft long);
  - FRP: 3,579 ft to 3,814 ft.
6. **Plug Back Depth :** 3,806 ft
7. **8-5/8" Intermediate Casing:** Surface to 4,074 ft; Set in 10-5/8" hole; Cemented to surface. Poorly cemented due to lost circulation during second stage cementing.
  - 32 lb/ft Grade K-55: Surface to 3,831 ft;
  - Hastelloy C-276: 3,831 ft to 3,843 ft (12 ft long);
  - FRP: 3,843 ft to 4,074 ft.
8. **Total Depth:** 4,105 ft

RECEIVED  
Office of Oil and Gas

JUN 12 2018

WV Department of  
Environmental Protection

**GEOSTOCK SANDIA**  
ENTREPOSE

8860 Fallbrook Drive, Houston, TX 77064  
Tel: (346) 314-4347 Fax: (832) 478-5172

Drawn by: LM | Date: 05/01/18 | Drawing not to scale

RECEIVED  
NOV 19 1980

FORM OG-8

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

OIL & GAS DIVISION  
DEPT. OF MINES

AFFIDAVIT OF PLUGGING AND FILLING WELL

AFFIDAVIT SHOULD BE MADE IN TRIPPLICATE, ONE COPY MAILED TO THE DEPARTMENT, ONE COPY TO BE RETAINED BY THE WELL OPERATOR AND THE THIRD COPY (AND EXTRA COPIES IF REQUIRED) SHOULD BE MAILED TO EACH COAL OPERATOR AT THEIR RESPECTIVE ADDRESSES.

None  
COAL OPERATOR OR OWNER

E. I. du Pont de Nemours & Co., Inc.  
NAME OF WELL OPERATOR

ADDRESS

P. O. Box 1217, Parkersburg, WV 26101  
COMPLETE ADDRESS

COAL OPERATOR OR OWNER

November 14, 1980  
WELL AND LOCATION

ADDRESS

Lubeck District

Fee (E. I. du Pont de Nemours & Co., Inc.)  
LEASE OR PROPERTY OWNER

Wood County

ADDRESS

Well No. 3 (WOO-593)

Washington Works Farm

STATE INSPECTOR SUPERVISING PLUGGING K. Paul Goodnight

AFFIDAVIT

STATE OF WEST VIRGINIA,  
County of Wood } ss:

R. F. Whiteside and D. P. Arbasak  
being first duly sworn according to law depose and say that they are experienced in the work of plugging and filling oil and gas wells and were employed by E. I. du Pont de Nemours & Co., Inc. well operator, and participated in the work of plugging and filling the above well, that said work was commenced on the 13th day of November, 1980, and that the well was plugged and filled in the following manner:

SAND OR ZONE RECORD	FILLING MATERIAL	PLUGS USED		CASING	
		SIZE & KIND		CSG PULLED	CSG LEFT IN
FORMATION					
0-2996	6-5/8" 20# K-55 Steel casing left in place.				
2996 - 3507	6-5/8" x 0.38" wall Fibercast casing left in place.				
3507 - 3525	6-5/8" Hastelloy-C casing left in place.				
0-2116	Class A Cement				
2116 - 3115	Epsal Slurry (Halliburton)				
3115 - TD	Sand Plug (20-40 Frac Sand)				
COAL SEAMS		DESCRIPTION OF MONUMENT			
(NAME) None		DRH Special 7" x 4-1/2" Type 3-H			
(NAME)		Tubing head with 3" x 6" stainless			
(NAME)		steel marker plate stamped			
(NAME)		47-107-0593.			

and that the work of plugging and filling said well was completed on the 14th day of November, 1980.

And further deponents saith not.

Sworn to and subscribed before me this 14 day of November, 1980

My commission expires:  
June 13, 1989

*(Signature)*  
Notary Public  
Permit No. 47-107-0593

RECEIVED  
Office of Oil and Gas

JUN 12 2018

WV Department of  
Environmental Protection

Form OG-10

39-30  
7-54



RECEIVED  
JAN 21 1971

STATE OF WEST VIRGINIA  
DEPARTMENT OF MINES  
OIL AND GAS WELLS DIVISION 14

Rotary   
Spudder   
Cable Tools   
Storage  c. hole

Quadrangle Parkersburg

Permit No. Woo - 593

WELL RECORD

Oil or Gas Well Disposal  
(KIND)

Company E.I. duPont deNemours and Co.  
Address P.O. Box 1217, Parkersburg, W.Va.  
Farm Washington Works Acres 400  
Location (waters) Ohio River  
Well No. 3 Elev. 620'  
District Lubeck County Wood  
The surface of tract is owned in fee by \_\_\_\_\_  
Address \_\_\_\_\_  
Mineral rights are owned by DuPont  
Address \_\_\_\_\_  
Drilling commenced 8-20-70  
Drilling completed 10-22-70  
Date Shot \_\_\_\_\_ From \_\_\_\_\_ To \_\_\_\_\_  
With \_\_\_\_\_

Casing and Tubing	Used in Drilling	Left in Well	Packers
Size			
16	84'	84'	Kind of Packer _____
13			
10 11 3/4	1994'	1994'	Size of _____
8 5/8	4085'	4085'	Depth set _____
6 3/4			
5 3/16			
4 1/2			
3			Perf. top <u>4018'</u>
2			Perf. bottom <u>4082'</u>
Liners Used			Perf. top _____
			Perf. bottom _____

Open Flow 10ths Water in \_\_\_\_\_ Inch  
10ths Merc. in \_\_\_\_\_ Inch  
Volume \_\_\_\_\_ Cu. Ft.  
Rock Pressure \_\_\_\_\_ lbs. \_\_\_\_\_ hrp.  
Oil \_\_\_\_\_ bbls. 1st 24 hrs.  
WELL ACIDIZED (DETAILS) 10-30-70; 250 BBLs 3%  
Acid at 1000#; 550 BBLs 15% @ 1000#  
WELL FRACTURED (DETAILS) \_\_\_\_\_

Attach copy of cementing record.  
CASING CEMENTED \_\_\_\_\_ SIZE \_\_\_\_\_ No. \_\_\_\_\_ Date \_\_\_\_\_  
Amount of cement used (bags) See below  
Name of Service Co. Halliburton  
COAL WAS ENCOUNTERED AT \_\_\_\_\_ FEET \_\_\_\_\_ INCHES  
\_\_\_\_\_ FEET \_\_\_\_\_ INCHES \_\_\_\_\_ FEET \_\_\_\_\_ INCHES  
\_\_\_\_\_ FEET \_\_\_\_\_ INCHES \_\_\_\_\_ FEET \_\_\_\_\_ INCHES

RESULT AFTER TREATMENT (initial open flow or bbls.) \_\_\_\_\_  
ROCK PRESSURE AFTER TREATMENT \_\_\_\_\_ HOURS  
Fresh Water 30' Feet \_\_\_\_\_ Salt Water 1350' Feet \_\_\_\_\_  
Producing Sand \_\_\_\_\_ Depth \_\_\_\_\_

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth	Remarks
River sand and gravel			0	67	Water	30'	Fresh
Sand	gray		67	110			
Shale and sand			110	180			
Sand	gray		180	224			
Shale	dark		224	298			
Sand	gray		298	350			
Shale and sand			350	555			
Sand	gray		555	580			
Shalc and sand, red & gray			580	678			
Sand	light		678	762			
Shale	gray & dark		762	844			
Sand	white		844	878			
Shale	gray & dark		878	958			
Sand	white		958	1033			
Shale, sand & lime shells			1033	1335			
Sand	white		1335	1444	Water	1350'	Salt
Shale	gray, sandy		1444	1605			
Sand	white		1605	1618			
Shale	gray		1618	1794			
Shale	black		1794	1812			
Berea sand			1812	1815			
Shale	dark		1815	2082			
Shale	gray, sandy		2082	2098			
Shale	gray, dark		2098	2390			
Shale	dark		2390	2610			
Shale	gray, sandy		2610	2840			
Shale	black		2840	3000			
Shale	gray, sandy		3000	3180			

(over)

RECEIVED  
Office of Oil and Gas

JUN 1 2 2018

WV Department of  
Environmental Protection

Formation	Color	Hard or Soft	Top <i>14</i>	Bottom	Oil, Gas or Water	Depth Found	Remarks
Shale	dark		3180	3230			
Shale	gray,	sandy	3230	3360			
Shale	black		3360	3490			
Shale	gray,	sandy	3490	3780			
Shale	dark &	black	3780	3895			
Shale	black		3895	4016			
Corniferous Lime			4016	4105			
Total Depth				4105			
<b>CEMENTING RECORD</b> - All cementing by Halliburton							
8-22-70	16" @ 84'		with 150 sacks common cement with 3% CaCl <sub>2</sub>				
9-6-70	11 3/4" @ 1994'		with 796 sacks Pozmix circulated to surface				
9-17-70	Cemented in 12 drill collars with 1255 gallons resin cement						
10-9-70	Eastman Oil Well Survey Co. side tracked hole at 3427 feet						
10-23-70	8 5/8" at 4085' with 230' Fibercast on bottom of K-75 casing. Cemented with 1166 gallons resin cement to the DV tool and 1000 sacks of Pozmix with 18% salt from DV tool to surface with no return to surface.						
10-25-70	Shot at 2934 feet and squeezed with 450 sacks Pozmix and 450 sacks of common with no return to surface.						
10-27-70	Shot at 2160 feet and squeezed with 500 sacks common cement to ground surface.						

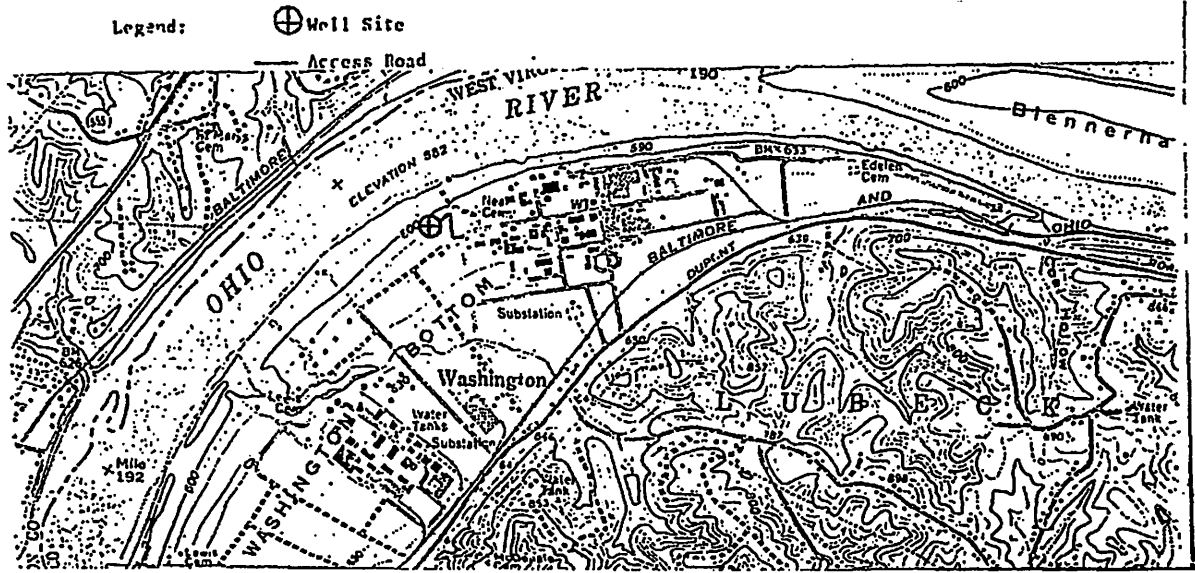
Date January 19, 19 71

APPROVED Seth A. Savage/DuPont, Owner

By Power Superintendent  
(Title)

Formation	Color	Hard or Soft	Top of	Bottom	Oil, Gas or Water	Depth Found	Remarks
Shale	dark		3180	3230			
Shale	gray,	sandy	3230	3360			
Shale	black		3360	3490			
Shale	gray,	sandy	3490	3780			
Shale	dark &	black	3780	3895			
Shale	black		3895	4016			
Corniferous Lime			4016	4105			
Total Depth				4105			
<b>CEMENTING RECORD</b> - All cementing by Halliburton							
8-22-70	16" @ 84'		with 150 sacks common cement with 3% CaCl <sub>2</sub>				
9-6-70	11 3/4" @ 1994'		with 796 sacks Pozmix circulated to surface				
9-17-70	Cemented in 12 drill collars with 1255 gallons resin cement						
10-9-70	Eastman Oil Well Survey Co. side tracked hole at 3427 feet						
10-23-70	8 5/8" at 4085' with 230' Fibercast on bottom of K-75 casing. Cemented with 1166 gallons resin cement to the DV tool and 1000 sacks of Pozmix with 18% salt from DV tool to surface with no return to surface.						
10-25-70	Shot at 2934 feet and squeezed with 450 sacks Pozmix and 450 sacks of common with no return to surface.						
10-27-70	Shot at 2160 feet and squeezed with 500 sacks common cement to ground surface.						

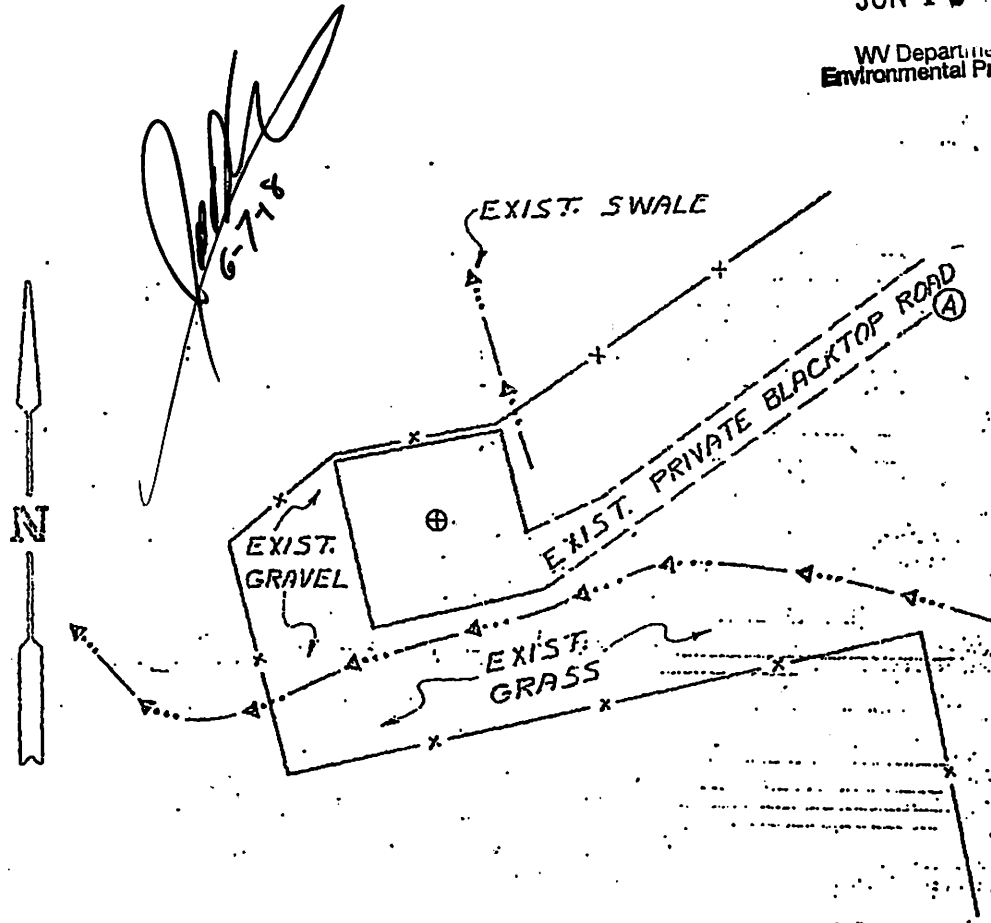
Date January 19, 19 71APPROVED Seth A. Savage/DuPont, OwnerBy Power Superintendent  
(Title)



RECEIVED  
Office of

JUN 12 1983

WV Department of  
Environmental Protection



WW-9  
(5/16)

API Number 47 - 107 - 00593  
Operator's Well No. Waste Well #2

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

Operator Name The Chemours Company FC, LLC OP Code \_\_\_\_\_  
Watershed (HUC 10) Middle Ohio South Quadrangle \_\_\_\_\_ Little Hocking \_\_\_\_\_

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: All fluids will be circulated through the well to the rig's fluid tank. Solids will be removed and placed in roll-off boxes for landfill disposal.

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 \_\_\_\_\_)
- Reuse (at API Number \_\_\_\_\_)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain \_\_\_\_\_)

REC  
Office of  
**JUN 12 2013**  
WV Department of  
Environmental Protection

Will closed loop system be used? If so, describe: \_\_\_\_\_

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Inhibited freshwater

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

Additives to be used in drilling medium? Viscosifiers will be added to aid in cutting removal.

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Off-site Landfill

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

-Landfill or offsite name/permit number? Waste Management Northwestern Landfill/SWF-1025-96

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 *Robert J. Fehrenbacher*  
Company Official (Typed Name) Robert J. Fehrenbacher  
Company Official Title Plant Manager

Subscribed and sworn before me this 7<sup>th</sup> day of June  
*Mary Jo Pedersen*  
My commission expires 3/3/20





Proposed Revegetation Treatment: Acres Disturbed \_\_\_\_\_ Prevegetation pH \_\_\_\_\_

Lime \_\_\_\_\_ Tons/acre or to correct to pH \_\_\_\_\_

Fertilizer type \_\_\_\_\_

Fertilizer amount \_\_\_\_\_ lbs/acre

Mulch \_\_\_\_\_ Tons/acre

RECEIVED  
Office of Oil and Gas

JUN 12 2013

WV Department of  
Environmental Protection

Seed Mixtures

Temporary

Permanent

Seed Type                      lbs/acre

Seed Type                      lbs/acre

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/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.

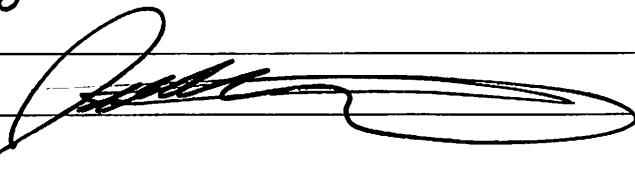
Photocopied section of involved 7.5' topographic sheet.

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

Comments: This plan is to re-plug an existing well, 47-107-00593. The pad is gravel and degraded asphalt. We plan to place gravel back on the pad when the work is complete.

See attached location drawing, topographic section and aerial photograph.

*If any grass area is disturbed it must be reseeded,*



Title: OOG Inspector

Date: 6-7-18

Field Reviewed? (  ) Yes

(  ) No

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

Operator Name: The Chemours Cpmpany FC, LLCWatershed (HUC 10): Middle Ohio SouthQuad: Little HockingFarm Name: Chemours Washington Works

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

Fluids will be circulated in the rig's fluid tank and stored in frac tanks or tankers for disposal. The primary potential for groundwater contamination would be from loss of fluid containment. Other possibilities include hydraulic fluid or oil leaks from equipment.

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

Secondary containment will be utilized where possible. In addition, spill containment materials including absorbents, booms, pads and pigs will be readily available. The Washington Works site also has a fully equipped HAZMAT Team available for quick response to spills and leaks. The site also maintains and has the capability to deploy boom in the Ohio River if a large spill were to occur. In addition, we have contract vacuum truck available for support operations.

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

The closest water body is the Ohio River which is approximately 550 feet from the well location.

The closest Well Head Protection Area is on the Washington Works site, PWSID WV9954007 which is approximately 6,050 from 40-107-00593. The closest downstream Well Head Protection Area is the Lubeck Public Water system.

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

The site has a groundwater protection program and a groundwater protection plan including a source inventory. The site, a large manufacturing facility, has a number of Level 1 Aboveground Storage Tanks, sumps, a wastewater treatment plant, pumps, raw material and waste drum storage areas. There are no active injection, oil or gas wells on the plant site.

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

RECEIVED  
Office of Oil and Gas

JUN 12 2018

WV Department of  
Environmental Protection

Groundwater quality is not monitored on a routine basis. However during the RCRA Facility Investigation, a number of new wells were drilled and sampled. The results were reported to EPA Region III in June 1999. In addition, sampling data from 2011 was reported to EPA Region III in September 2011.

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

No waste materials are intentionally applied to the ground, or to asphalt or concrete surfaces located within the Washington Works site for any reason. This section should serve as clarification that wastes are not used for de-icing. Wastes are not used to fill depressions or excavated areas within the site.

Furthermore, every effort is made to prevent spills of all waste materials even when they are considered to be inert, and have very low potential for groundwater contamination. This practice is consistent with the high housekeeping standards employed at Washington Works.

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.


Training at the Washington Works is accomplished using an online system called TLM. The training consists of a presentation module followed by a test. Modules are assigned to appropriate personnel by site coordinators and management systems are in place to ensure that assigned modules are completed and that training records are maintained. For Groundwater Protection, the TLM training module is reviewed every two years then assigned to the appropriate personnel who could have an impact on the site groundwater resources.

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

Washington Works conducts quarterly inspections of groundwater protection systems using processes that vary between the different operating areas of the facility.

In general, each area uses a standard quarterly inspection form that identifies the area and sub-area inspected, lists the date of the inspection, provides a listing of the protection systems such as dikes and sumps, and has a comments field to indicate whether the system is in good condition or whether repairs are needed. Many of these forms also use maps to show the location of the systems.

In general, the inspection forms are issued each quarter by an administrative assistant located in the operating area and then are collected by that person. In some areas, the records are collected and retained by the area environmental coordinator. The records are retained for a period of three years.

Signature: 

Date: 6/7/2018

RECEIVED  
Office of Oil and Gas

JUN 12 2018

WV Department of  
Environmental Protection

WW-4A  
Revised 6-07

1) Date: 6/7/2018  
2) Operator's Well Number  
Waste Well #2 \_\_\_\_\_  
3) API Well No.: 47 - 107 - 00593

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

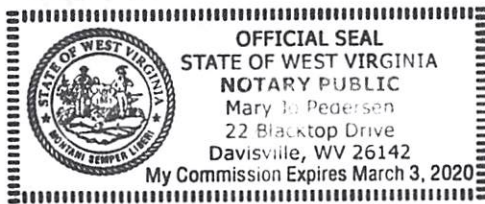
4) Surface Owner(s) to be served:	5) (a) Coal Operator
(a) Name <u>The Chemours Company FC, LLC</u>	Name <u>None</u>
Address <u>8480 DuPont Road</u>	Address _____
<u>Washington WV, 26181</u>	_____
(b) Name _____	(b) Coal Owner(s) with Declaration
Address _____	Name <u>The Chemours Company FC, LLC</u>
_____	Address <u>8480 DuPont Road</u>
(c) Name _____	<u>Washington, WV 26181</u>
Address _____	Name _____
_____	Address _____
6) Inspector <u>Mr. Joseph Taylor</u>	(c) Coal Lessee with Declaration
Address <u>1478 Claylick Road</u>	Name <u>None</u>
<u>Ripley, WV 25271</u>	Address _____
Telephone <u>304-380-7469</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.



Well Operator	<u>The Chemours Company FC, LLC</u>
By:	<u>Robert J. Fehrenbacher</u>
Its:	<u>Plant Manager</u>
Address	<u>8480 DuPont Road</u>
	<u>Washington, WV 26181</u>
Telephone	<u>(304) 863-4305</u>

RECEIVED  
Office of Oil and Gas

JUN 12 2018

Subscribed and sworn before me this 7th day of June, 2018  
Mary Jo Pedersen Notary Public  
 My Commission Expires 3/3/20

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 [depprivacyoffier@wv.gov](mailto:depprivacyoffier@wv.gov).

**SURFACE OWNER WAIVER**

Operator's Well Number 47-107-000593

**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,

_____	Date _____	Name <u>The Chemours Company FC, LLC</u>
Signature		By <u>Robert J. Fehrenbacher</u>
		Its <u>Plant Manager</u>
		Signature <u></u>
		Date <u>6/7/2018</u>
		Date <u>June 7, 2018</u>
		Date _____

WW-4B

API No. 47-107-00593  
 Farm Name Washington Works  
 Well No. Waste Well #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 than 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 X / 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: 6/7/2018

  
 By: Robert J. Fehrenbacher  
 Its Plant Manager  
The Chemours Company FC, LLC

RECEIVED  
Office of Oil and Gas

JUN 12 2018

WV Department of  
Environmental Protection

# Well #2

Entrance road and well location.

47-107-00593 P

Ohio River

RECEIVED  
Office of Ohio

JUN 12 2010

WW Department  
Environmental Protection

Waste Well #2

Earth

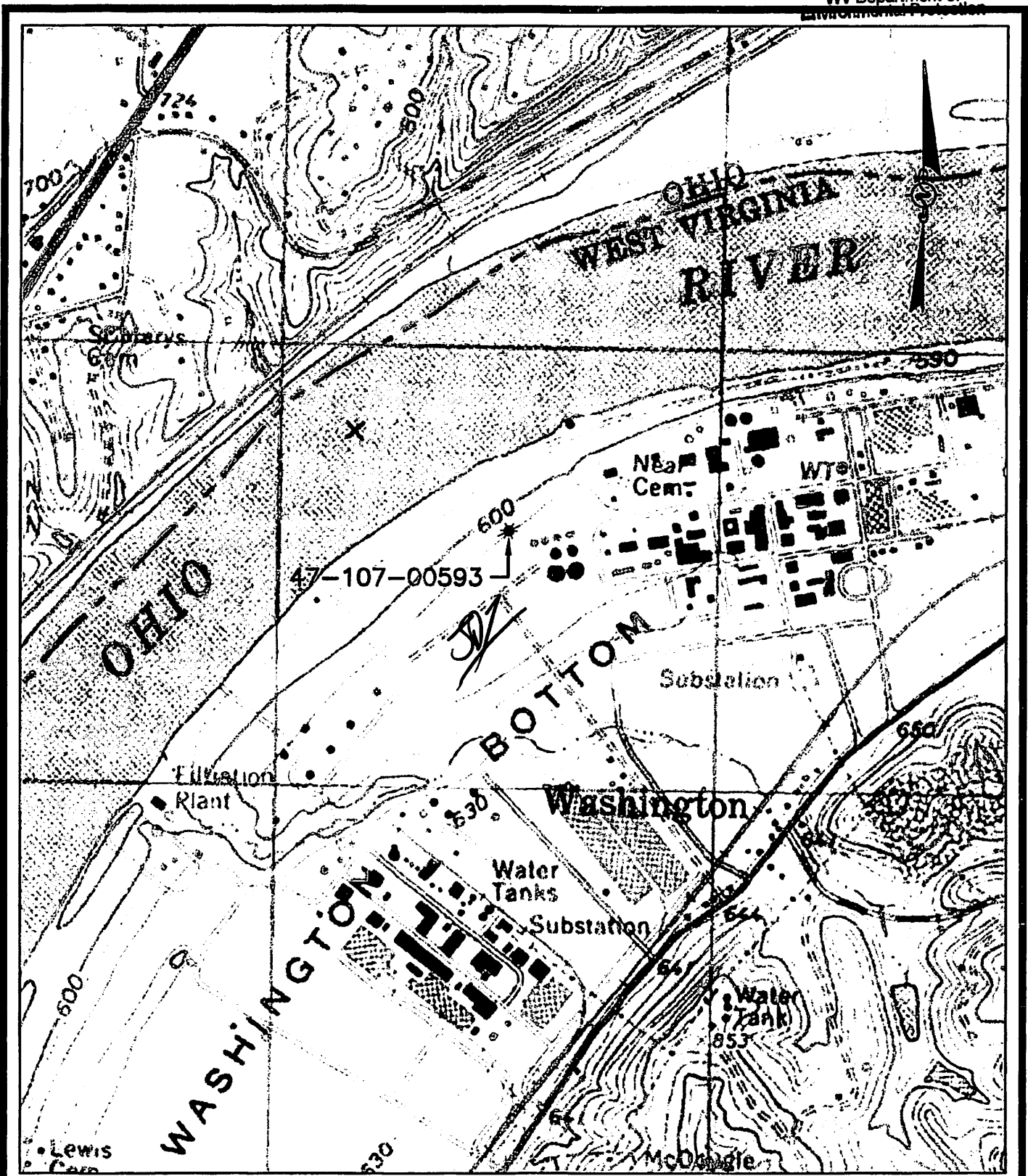
Leg

200 ft



JUN 12 2018

WV Department of  
Environmental Protection



**POTESTA**

**POTESTA & ASSOCIATES, INC.**  
ENGINEERS AND ENVIRONMENTAL CONSULTANTS

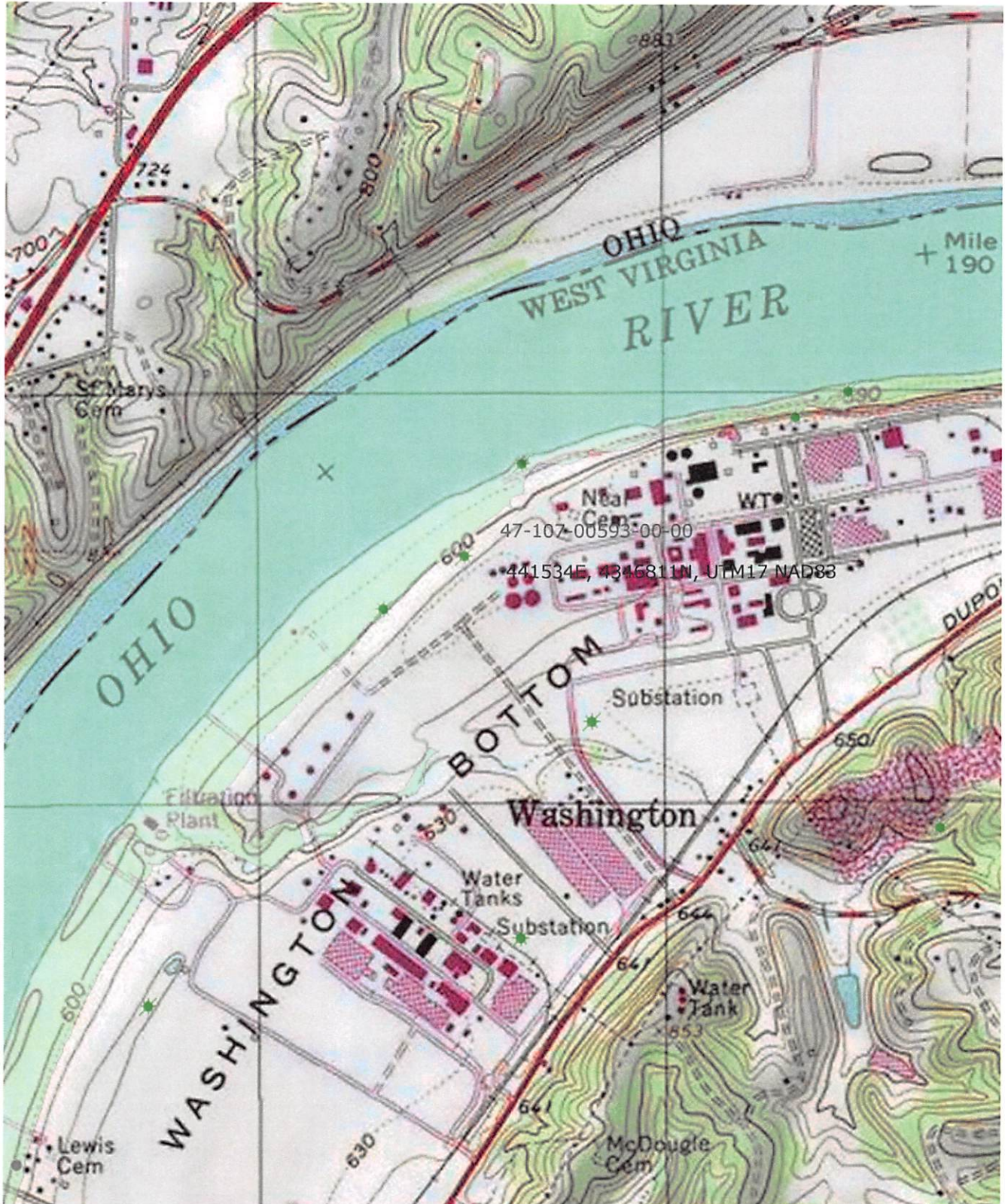
7012 MacCorkle Avenue SE, Charleston, WV 25304  
TEL: (304) 342-1400 FAX: (304) 343-9031  
E-Mail Address: potesta@potesta.com

Project THE CHEMOURS COMPANY FC, LLC  
WASHINGTON WORKS  
API #47-107-00593  
LITTLE HOCKING QUADRANGLE  
WOOD COUNTY, WEST VIRGINIA

Scale 1" = 1000'  
Date MAY 3, 2018

Dwg. No. **FIGURE 1**





WW-7  
8-30-06



West Virginia Department of Environmental Protection  
Office of Oil and Gas

**WELL LOCATION FORM: GPS**

API: 47-107-00593 WELL NO.: 2

FARM NAME: Washington Works

RESPONSIBLE PARTY NAME: Victor M. Dawson, P.S

COUNTY: Wood DISTRICT: Lubeck

QUADRANGLE: Little Hocking

SURFACE OWNER: The Chemours Company FC, LLC

ROYALTY OWNER: The Chemours Company FC, LLC

UTM GPS NORTHING: 4,346,810.609m

UTM GPS EASTING: 441,533.947m GPS ELEVATION: 189.794m

RECEIVED  
Office of Oil and Gas  
JUN 12 2018  
WV Department of  
Environmental Protection

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 \_\_\_\_\_ : Post Processed Differential \_\_\_\_\_  
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.

Victor M. Dawson Professional Surveyor #956 May 3, 2018  
Signature Title Date

RECEIVED  
Office of Oil and Gas  
JUN 12 2018  
WV Department of  
Environmental Protection