

MEMO

TO: Tom Donohue, P.G. TD 5/8/24
Subsurface Permits Environmental Program Manager
Southwest District Office

FROM: Lane Sympson, P.G. LES 04/12/2024
Licensed Professional Geologist
Northwest District Office

THROUGH: Susan Price, P.G. SGP 5/8/24
Professional Geologist Manager
Northwest District Office

DATE: April 12, 2024

RE: Geologic Review of UIC Disposal
PA Well Development, LLC
David A. Weaver #1, API 065-27128
Young Township, Jefferson County, PA

INTRODUCTION

This technical review summarizes the Department of Environmental Protection (DEP) internal geologic assessment of the well permit application submitted by PA Well Development, LLC for their proposed David A. Weaver #1 (Weaver #1) waste disposal injection well located in Young Township, Jefferson County, pursuant to 25 Pa. Code § 91.51(b)(3).

Conclusions of this report are based on a review of all documents submitted by PA Well Development, LLC within their well permit application (API 065-27128), published maps and reports from the Department of Conservation and Natural Resources (DCNR) and others, and my expertise as a state-licensed professional geologist.

GEOLOGIC SETTING

The proposed well site lies within the Pittsburgh Low Plateau section of the Appalachian Plateaus province, west of the Allegheny structural front, which connotes nearly horizontal strata relative to the strata east of the front. The Pittsburgh Low Plateau section is characterized by a smooth to irregular, undulating surface; narrow, relatively shallow valleys; strip mines and reclaimed land. The surface bedrock consists of Pennsylvanian age rocks, specifically of the Glenshaw Formation, which consists of repeated sequences of sandstone, siltstone, shale, claystone (including redbeds), limestone, and coal. It contains four major marine zones that are, from lowest to highest, the Brush Creek, Pine Creek, Woods Run, and Ames. The coal beds in the Glenshaw Formation are

sporadically mined. The formation increases in thickness from about 280 feet in the southwest to about 410 feet in the northeast (Geyer and Wilshusen 82; McElroy, 2000).

The Weaver #1 is approximately 1.6 miles northwest of the mapped Punxsutawney syncline axis, and approximately 4.7 miles southeast of the Greendale anticline axis. There are no locally mapped faults, however two inferred faults exist, each approximately 2 miles to the northwest and southeast respectively. The Home-Gallitzen lineament is located approximately 14 miles to the southwest.

The Oriskany Sandstone formation is the target stratum for the injection well. The Oriskany Sandstone is Devonian in age and has been correlated to the Ridgeley Sandstone (Abel and Heyman, 81). The lithology ranges from calcareous, fine-grained sandstone to non-calcareous conglomerate, but is predominantly white to light-gray, medium-grained, silica-cemented, quartzose sandstone. (Shultz, 99).

WATER AND GROUNDWATER RESOURCES

The proposed Weaver #1 well is approximately 900' northwest of an unnamed tributary to Sawmill Run, and approximately 1250' east of another unnamed tributary to Sawmill Run. Sawmill Run is 1350' southwest of the proposed well location and is classified with a designated use of Cold Water Fishes (CWF) and listed as 'Impaired' for the assessed use of Aquatic Life.

PA Well Development, LLC surveyed property owners within 1.25 miles of the proposed well location to identify owners of private water supplies. Thirty water wells were identified within the 1.25 mile radius and three water wells were identified within the ¼ mile Area of Review (AOR). DEP records confirm the occurrence of these water supplies. However, the water well identified as #120625 in the PA Groundwater Information System (PaGWIS) is unknown to the current surface landowner and was not field located nor verified by the applicant, therefore failing to meet the definition of water supply per Pa Code 25, § 78.1.

PA Well Development, LLC identified the base of the lowermost underground source of drinking water (USDW) to be 570' below ground surface (bgs), which corresponds to the Conemaugh Group and the Allegheny Group in this location. According to PaGWIS, wells for domestic and commercial use in Young township have depths ranging from 38' to 400', but the median depth is 140'.

40 C.F.R. 147.1955 requires surface casing for the injection well to be installed at least 50' below the base of the lowermost USDW and cemented back to surface. The Environmental Protection Agency (EPA) permit authorization conditions specify the Weaver #1 surface casing be installed to approximately 650' bgs, which is at least 475' below the total depth of the deepest water well within the ¼ mile AOR. Additionally, intermediate casing will be installed to approximately 1200' bgs, providing further protection to groundwater.

The depth of the injection formation is expected to be approximately 7236'-7256' bgs, which provides at least 6666' of vertical separation, as well as several confining layers of shales and limestones, the lowermost being the Onondaga Limestone (thickness ~10', depth ~7130' bgs) and

the Huntersville Chert (thickness ~90', depth ~7140' bgs), between the injection formation and the deepest fresh groundwater.

MINING

Both surface and underground coal mining are historically common in Jefferson County. Several historical underground mines, specifically the Walston #1-#5 mines and the Adrian mines may be present within 1 mile of the proposed well site. The Lower Freeport and Middle Kittanning seams were known to be mined in this general area. One abandoned underground mine, the Walston #2, directly underlies the proposed well site. The abandoned Walston #2 mine, originally operated by Rochester & Pittsburgh Coal Co., extracted the Lower Freeport coal seam of the Allegheny Formation. In the vicinity of the proposed Weaver #1, elevations of the Lower Freeport were approximately 1180', or 260' bgs, according to the WPA Project No. 4483 Map. The drilling record for the R & P Coal Co. 4 WN1012, located approximately 400' north of the proposed Weaver #1, shows "poor return" from 180' bgs to 275' bgs, potentially an indication of the Walston #2 mine void. All other coal seams are absent, inferred, or less than 28" in thickness, rendering them non-workable in this location according to Mineral Resource Report 68.

Abandoned underground coal mines may provide pathways for groundwater flow, including from injection disposal wells. However, the depth of the top of the injection formation is 7236' bgs. The Walston #2 mine is situated approximately 260' bgs. Therefore, the mine and the injection zone are separated by approximately 6900' and several confining layers of limestone and shale, the lowermost being the Onondaga Limestone (thickness ~10', depth ~7130' bgs) and the Huntersville Chert (thickness ~90', depth ~7140' bgs).

Available historical maps of the Walston #2 mine show the possibility of intercepting a solid coal pillar during drilling of the Weaver #1. However, the appropriate contingencies to the casing and cementing plan are in place in the event a mine void is encountered.

In addition to the abandoned historical underground coal mine, one active permit exists for a Small Surface Industrial Mineral Mining Operation, non-coal (< 2,000 tons). This facility is approximately 600' north of the proposed well location and owned and operated by the surface landowner.

OIL & GAS

No active gas storage fields exist within 5 miles of the proposed Weaver #1 well. There are three gas wells within the ¼ mile AOR. The Rochester & Pittsburgh Coal Co 4 WN1012 (API 065-20399) was drilled to 7276' in 1965 and will be plugged prior to commencement of injection at the Weaver #1 as a condition of the EPA permit as well as the DEP permit. The R&P Mary E. Caldwell DS15 (API 065-21564) was drilled to 3708' in 1977, showing a separation of approximately 3528' between the total well depth and the proposed injection formation. The Rochester & Pittsburgh Coal Co 4 (API 065-20460) was drilled to 7310' in 1966 and subsequently plugged back to 3460' in 1973 to produce from shallower sands, resulting in a separation of approximately 3786' between the total well depth and the proposed injection formation. The separation of at least 3700' between the well depths within the ¼ mile AOR and the top of the

Oriskany Sandstone, as well as several shale and limestone confining layers, will prevent fluid migration.

PA Well Development LLC's application identified 8 wells penetrating the Oriskany Sandstone within 1 mile of the proposed Weaver #1 location. DEP records confirmed the presence of these 8 wells and identified 6 additional wells originally drilled to the Oriskany, and subsequently plugged back to produce from shallower formations in the 1970's. Available drilling records and partial plugging certificates confirm the wells were cemented and partially plugged in accordance with standard operating procedures.

CONSERVATION LAW

The Weaver #1 will be drilled as a Conservation well, to a depth greater than 4800', penetrating the Onondaga Formation, and in accordance with Pa Code 25, § 79.11(b). Pursuant to Section 4 of the Conservation Law, waste of oil and gas is prohibited. To mitigate the waste of oil and gas, PA Well Development, LLC provided well logs for all wells within a 1.25 mile radius of the Weaver #1 that originally produced from the Oriskany Sandstone. The well logs provide sufficient evidence of declining production from this formation and indicate a depleted reservoir. In addition to production decline curves, PA Well Development cites potential plans by Diversified Oil and Gas to plug the referenced wells as they are no longer economically viable.

The gas decline curves agree with the DEP production reports evaluated to classify the Oriskany Sandstone a depleted pool, unfit for the economic production of oil and gas resources.

SEISMIC EVENTS

A review of the well location was completed to determine the risk of induced seismicity from fluid injection into the Oriskany Sandstone. This location is deemed to have low risk for induced seismicity due to the following factors:

1. As demonstrated by the production decline curves, the Oriskany Sandstone is a depleted reservoir and, therefore, reservoir pressure is expected to be low.
2. The base of the Oriskany Sandstone is approximately 8400' above the Precambrian basement rock, with the Helderberg Limestone and Salina Group confining layers in between.
3. There are no known faults within the 1.25 mile buffer, nor other structural geologic features of concern.
4. According to Weingarten et al., high-rate injection wells (> 300,000 barrels per month) are much more likely to be associated with earthquakes than lower-rate wells (Science, 2015). The regulated monthly volume of injected fluid for the Weaver #1, 77,500 barrels (bbl) per month, is below the thresholds known to exacerbate the potential for induced seismicity.
5. No reported earthquakes were identified in Jefferson County. The closest reported earthquake, magnitude 2.3, was 45 miles away in Venango County in 2008. Jefferson County is not known to be a seismically active area.

6. The applicant agrees to ensure the fracture gradient is below recommended thresholds, dependent upon the Maximum Allowable Injection Pressure (MAIP). The exact threshold will be implemented once the well is drilled and completions testing is conducted.

CONCLUSIONS

The Weaver #1 will be drilled to the Oriskany Sandstone, which is approximately 8400' above the basement rock, and is not within 1 mile of any known or inferred faults. Seismic risk of injection into the Oriskany Sandstone is low. The Oriskany Sandstone is overlain by upper confining layers; the Onondaga Limestone (thickness ~10', depth ~7130' bgs) and the Huntersville Chert (thickness ~90', depth ~7140' bgs), and is separated from USDWs by approximately 6666'.

There are fourteen known gas wells producing or formerly producing from the Oriskany Sandstone within 1 mile of the Weaver #1. Six of these wells were partially plugged to produce from shallower sands, with documentation showing at least 3600' of vertical separation. The remaining eight wells are outside the ¼ mile AOR and have mechanical integrity. The risk of fluid migration to USDWs through existing gas wells is therefore low.

The deepest underground mining in the area is approximately 6900' above the Oriskany Sandstone and includes approximately 90' of Huntersville Chert. The risk of fluid migration to USDWs through underground mining is low.

Due to the low risk of fluid migration to USDWs and the low risk of induced seismicity, operation of the David A. Weaver #1 as a Class II injection disposal well is unlikely to be prejudicial to the public interest. However, to mitigate potential risks, the special conditions outlined in Appendices A and B below should be included in the permit and implemented by the operator. I hold these opinions with a reasonable degree of scientific certainty.

APPENDIX A

SEISMIC MONITORING & MITIGATION

An operator must employ local seismic monitoring or rely on the Pennsylvania State Seismic Network (PASEIS), as currently configured, to continuously monitor for induced tectonic seismic events during injection activities.

SPECIAL PERMIT CONDITIONS IF LOCAL SEISMIC MONITORING IS CHOSEN:

The permittee shall prepare and implement a Seismic Monitoring and Mitigation Plan. The Seismic Monitoring and Mitigation Plan shall be submitted to DEP at least 30 days prior to the anticipated start date of disposal activities in the well. This plan, or the plan as modified by DEP, shall be fully implemented at the time disposal activities begin and thereafter, and shall include the following components:

1. Installation of a seismometer that, at minimum, includes the following:
 - a. One 3-component velocity sensor (X, Y, & Z axes), high-frequency seismometer or a local network consisting of a minimum of four (4) high-frequency seismometers that have 3-component velocity sensors.

- b. For purposes of this Seismic Monitoring and Mitigation Plan a “seismic event” shall mean circumstances which reflect tectonic seismic activity above the thresholds and within the distances set forth in Paragraphs 11 or 12 below.
 - c. For purposes of this Seismic Monitoring and Mitigation Plan, and “Injection-Induced Seismic Event” shall mean circumstances which reflect seismic activity that may be directly attributable to the permitted injection activities. Raw seismic data gather by the seismometer(s) described in paragraph 1.a. above will be processed to calculate event location (epicenter/hypocenter) and magnitude. Events attributable to surface activities (such as, but not limited to, mining or blasting) or system noise will not be considered potential Injection-Induced Seismic Events.
 - d. If the one sensor option is chosen, and an Injection-Induced Seismic Event occurs at or above the thresholds specified in 11.c. and 11.d. below, the Operator will mobilize a local network consisting of a minimum of four (4) high-frequency seismometers that have 3-component velocity sensors within 48 hours of the event.
 - e. All seismometers shall be installed in accordance with the manufacturer’s instructions prior to operation of the disposal well.
2. A specification sheet and description of the seismometer installed at the disposal well site.
 3. The installation of a recorder that, at a minimum, continuously records 100 samples per second using a data logger with 24-bit digitizer and Global Positioning System (GPS) timing, in accordance with the manufacturer’s instructions prior to operation of the disposal well.
 4. A specification sheet and description of the seismic recorder installed at the disposal well site.
 5. A description of the protocol for operating and completing calibration of the seismometer and seismic recorder installed at the disposal well site demonstrating that it conforms with the standards employed by PASEIS and the manufacturer’s instruction.
 6. A description of the routine maintenance and service checks that will be implemented to monitor the operability or running condition of the seismometer and seismic recorder installed at the disposal well site. The description should detail how the checks satisfy the manufacturer’s instructions.
 7. Verification that tectonic seismic event data will be captured at the disposal well site electronically and in a manner that is suitable for tectonic seismic event recordation and analysis.
 8. Verification that seismic data will be provided to the Incorporated Research Institutions for Seismology (IRIS) Network in real time and that the continuous, real-time data conforms to the data format required by IRIS for archiving under PASEIS’ network code (PE) and open distribution. If data transmission is interrupted, notification will be provided to the Department verbally within 24 hours and in writing within 7 days.

9. A description of measures that will be taken to install the seismometer in a manner that will minimize interference from background sources and allow for optimal Seismic Event identification and location (epicenter and hypocenter). This shall include a plan view map of proposed seismometer location(s).
10. Contact information for the responsible person in charge of conducting seismic monitoring activities at the disposal well site.
11. If the one sensor option is chosen, a tectonic seismic event contingency plan that includes monitoring, reporting, and mitigation provisions consistent with the following:
 - a. Immediate electronic notification to DEP and the Department of Conservation and Natural Resources (DCNR) Bureau of Topographic and Geologic Survey (BTGS) of detection of any measurable event within six (6) miles, measured radially, from the disposal well.
 - b. Notification within 10 minutes via email to DEP and with 1 hour via telephone to DEP's statewide toll-free phone number in the event seismic activity referenced in a. above will include filtering/processing of raw seismic data to identify and remove non-tectonic events (e.g. mine blasts or system noise).
 - c. Should an Injection-Induced Seismic Event occur (i.e. not a surface-related event or system noise), the Operator will reduce the well's operating injection rates. Reduction of the disposal well's operating injection rates in use at the time of the Injection-Induced Seismic Event by 50% within 48 hours of the occurrence of three (3) or more consecutive Injection-Induced Seismic Events greater than 1.0 and less than 2.0 on the Richter Scale over a seven (7) day period occurring within three (3) miles, measured radially, from the disposal well. The seven (7) day period is defined as starting with the occurrence of any Injection-Induced Seismic Event of magnitude 1.0 or greater. Reduced operating injection rates shall be maintained until the Department provides written notice addressing injection rates.
 - d. Termination of all injection activities within 48 hours of the occurrence of an Injection-Induced Seismic Event of magnitude 2.0 or greater within three (3) miles, measured radially, from the disposal well until receipt of a written notice from DEP addressing continued well usage and operating conditions. The assessment of continued usage will include, but not limited to, the following criteria:
 - i. Magnitude and frequency of events detected;
 - ii. Operational history prior to the event and operating conditions at the time of the event (rates, volumes, pressures);
 - iii. Any mitigation/intervention attempts made prior to termination of activities;
 - iv. Ability of permittee to identify another potential source for the event based on data processing and analysis of conditions;

12. If the local network option is chosen, a tectonic seismic event contingency plan that includes monitoring, reporting, and mitigation provisions consistent with the following:
- a. Immediate electronic notification to DEP and DCNR BTGS of detection of any measurable event, within three (3) miles measured radially from the disposal well.
 - b. Notification within 10 minutes via email to DEP and 1 hour via telephone to DEP's statewide toll-free number in the case of seismic activity referenced in a. above will include filtering/processing of raw seismic data to identify and remove non-tectonic events (e.g. mine blasts or system noise).
 - c. Should an Injection-Induced Seismic Event occur (i.e. not a surface related event or system noise), the Operator will reduce the well's operating injection rates. Reduction of the disposal well's operating injection rates in use at the time of the Injection-Induced Seismic Event by 50% within 48 hours of the occurrence of three (3) or more consecutive Injection-Induced Seismic Events greater than 1.0 and less than 2.0 on the Richter Scale over a seven (7) day period occurring within three (3) miles, measured radially, from the disposal well. The seven (7) day period is defined as starting with the occurrence of any Injection-Induced Seismic Event of magnitude 1.0 or greater. Reduced operating injection rates shall be maintained until DEP provides written notice addressing injection rates.
 - d. Termination of all injection activities within 48 hours of the occurrence of an Injection-Induced Seismic Event of magnitude 2.0 or greater within two (2) miles measured radially from the disposal well until receipt of a written notice from DEP addressing continued well usage and operating conditions. The assessment of continued usage will include, but not be limited to, the following criteria:
 - i. Magnitude and frequency of events detected;
 - ii. Operational history prior to the event and operating conditions at the time of the event (rates, volumes, pressures);
 - iii. Any mitigation/intervention attempts made prior to termination of activities;
 - iv. Ability of permittee to identify another potential source for the event based on data processing and analysis of conditions.
13. The permittee shall submit an updated Seismic Monitoring and Mitigation Plan as needed or as may be required by the Department. Updates may be necessary in cases where the risk profile associated with injection activities changes. A signed and certified statement by a qualified professional person responsible for preparing the Seismic Monitoring Plan that the plan is true and accurate and includes the components outlined above. The certification shall provide: "I, (insert name), hereby certify, under penalty of law as provided in 18 Pa. C. S. § 4904 (relating to unsworn falsification to authorities) that I prepared the Seismic Monitoring Plan for (insert facility name) and the information provided is true, accurate, and complete to the best of my knowledge and belief."

14. Upon commencement of disposal activities at the disposal well, the permittee shall record tectonic seismic event data electronically in an appropriate format for analysis (event location and magnitude) and maintain daily records of tectonic seismic event data electronically for review at the request of DEP. Tectonic seismic event records must be maintained for one (1) year.
15. The permittee shall maintain all calibration, maintenance, and repair records for the seismometer for at least five (5) years.
16. The permittee shall maintain all calibration maintenance, and repair records for the seismic recorder for at least five (5) years.
17. The permittee may submit a summary report and plan for modification or discontinuation of the seismic Monitoring Plan five (5) years after injection activities commence. DEP's review will be completed as soon as practicable after receipt of the summary report will be dependent on, but not limited to, the following criteria:
 - a. Magnitude and frequency of any events, during the monitoring period;
 - b. Operational history during the monitoring period (rates, volumes, pressures);
 - c. Planned operational conditions moving ahead (rates, volumes, pressures);
 - d. Demonstration through pressure fall-off that system is at equilibrium and behaving as a homogenous reservoir;
 - e. Need for any mitigation/intervention during the monitoring period.

SPECIAL PERMITTING CONDITIONS IS PASEIS OPTION IS CHOSEN:

18. A tectonic seismic event contingency plan that includes monitoring, reporting, and mitigation provisions consistent with the following:
 - a. Immediate electronic notification to DEP and DCNR BTGS of detection of any measurable event within 6 miles (9.6 km), measured radially, from the disposal well.
 - b. Notification with 10 minutes, via email, to DEP and within 1 hour via telephone to DEP's statewide toll-free phone number if the case of seismic activity referenced in a. above will include filtering/processing of raw seismic data to identify and remove non-tectonic events (e.g. mine blasts or system noise).
 - c. Termination of all injection activities within 48 hours of the occurrence of and Injection-Induced Seismic Event of magnitude 2.0 or greater within three miles (4.8 km) measured radially from the disposal well until receipt of a written notice from DEP addressing continued well usage and operating conditions. The assessment of continued usage will include, but not be limited to, the following criteria:
 - i. Magnitude and frequency of events detected;
 - ii. Operational history prior to the event and operating conditions at the time of the event (rates, volumes, pressures);

- iii. Any mitigation/intervention attempts made prior to termination of activities;
- iv. Ability of permittee to identify another potential source for the event based on data processing and analysis of conditions. This analysis could include, but not be limited to, installation of a local network to provide additional monitoring of the area around the injection well.

APPENDIX B

Injection operations are prohibited until the permittee plugs the R&P Coal 4 WN1012 (API 065-20399), provides a Certificate of Well Plugging on form 8000-FM-OOGM0006, and it is reviewed and not denied by DEP.

Well may penetrate open mine/void (Lower Freeport).

REFERENCES

Abel, Kathleen D., Heyman, Louis. The Oriskany Sandstone in the Subsurface of Pennsylvania. Harrisburg, PA: Pennsylvania Geological Survey, 4th ser., 1981. Mineral Resource Report 81.

Bekins, B. A., Ge, S., Godt, W., Rubenstein, J. L., Weingarten, M. (2015). High-rate injection is associated with the increase in U.S. mid-continent seismicity. *Science*, Vol. 348 (6241), 1336-1340.

Geyer, Alan R. and Wilshusen, J. Peter. Engineering Characteristics of the Rocks of Pennsylvania. Harrisburg, PA: Pennsylvania Geological Survey, 4th ser., 1972, Rev. 1982. Environmental Geology Report 1.

McElroy, Thomas A. Groundwater Resources of Somerset County, Pennsylvania. Harrisburg, PA: Pennsylvania Geological Survey, 4th ser., 2000. Open File Report 2002-02.

Pennsylvania Historic Underground Mine Map Inventory System. W.P.A. Project No. 4483.

Shultz, C. H., ed., 1999, The Geology of Pennsylvania: Pennsylvania Geological Survey, 4th ser., Special Publication 1, 888 p.

Date: March 27, 2024

TO: Sue Price *SGP 5/8/24*
Professional Geologist Manager
OOGM
Northwest District Office

THRU: Lane Sympson *LES 03/27/2024*
Licensed Professional Geologist
OOGM
Northwest District Office

FROM: Douglas Welsh
Oil & Gas Inspector
OOGM

DATE: March 25, 2024

RE: Weaver 1 Proposed Disposal Well

I have reviewed the casing and cementing plan for the PA Well Development Weaver NO. 1 well located in Young Township, Jefferson County.

The casing and cementing plan for this well must meet the general requirements of the Oil and Gas Act, the Conservation Law and Chapters 78 and 79 of the Rules and Regulations. The casing and cementing must also meet the EPA Permit Requirements.

Requirements include protection of fresh ground water, possible open underground coal mine, intermediate casing requirement for installing blowout prevention equipment and the cemented production casing requirement of Chapter 79 Regulations.

I reviewed all well records of nearby wells. Depth to water and presence of coal are so varied that they are of little use. The EPA requirements to protect Underground Sources of Drinking Water seems to be the best way to go in this case.

The plan includes the information required by §78.83(a)

The plan meets or exceeds the casing and cementing requirements of §78.81, §78.82, §78.73, §78.73(c) and §78.84 by setting the required amounts of casing and cementing them back to surface.

The plan meets the cement standards of §78.85(a). If the operator is not able to obtain Class A cement and must use Class L, Class L has been approved by the Department and the approval is posted on the Departments Web Site.

The plan meets the casing and cementing requirements of §78.72(a) by setting 1200' of intermediate casing and cementing it back to surface.

The plan meets the casing and cementing requirements of §79.12 by setting 7200' of production casing and cementing it to approximately 5180'.

Because of the presence of an abandoned underground coal mine the plan may need to be modified during drilling operations.

MEMO

TO: Thomas Donohue *TD* 5/8/24
Subsurface Environmental Program Manger
Oil & Gas Management

FROM: Brian Shank
Water Quality Specialist Supervisor
Northwest District Oil and Gas Operations

THROUGH: Susan Price *SGP* 5/8/24
Licensed Professional Geologist Supervisor
Northwest District Oil and Gas Operations

Lane Sympson *LES* 04/09/2024
Licensed Professional Geologist
Northwest District Oil and Gas Operations

DATE: April 5, 2024

RE: Review of E&S and C&D Plans for PA Well Development LLC
Weaver No. 1 Injection Well Project
Young Township, Jefferson County

E&S Plan

The submitted E&S plan is consistent with the requirements set forth in Chapter 102 & Chapter 78.53. There are no additional 102/105 permits discussed in this E&S plan. After walking the proposed site on March 27,2024, it appears that no additional permits will be needed. The information contained within the E&S Plan includes the necessary documentation. After the field inspection, it appears that adequate E&S controls have been proposed for the project site. If the proposed plan is implemented correctly, the potential for accelerated erosion and sedimentation issues will be minimized.

C&D Plan

The submitted Control & Disposal (C&D) Plan was reviewed and compared to the requirements listed in the Department’s “Guidelines for the Development and Implementation of Environmental Emergency Response Plans”. This review found that the submitted C&D Plan is organized according to Table 3 (Elements and Format of a PPC and SPR Plan) of the guidance document. The requirements of a C&D plan have been met, and no further revision of the plan is requested or required.

Commonwealth of Pennsylvania
Department of Environmental Protection
Bureau of Oil and Gas Management

COAL/NON-COAL DETERMINATION

ID No. 065-27128 Farm David A. Weaver No. #1 Approved as:
 Latitude: 40° 57' 55.38 " Coal Non-Coal
 Longitude: -78° 59' 23.12 " Geologist: L. Sympson
 Surface Elevation 1447' County Jefferson Date: 02/08/2024
 7.5 Topo Punxsutawney

COAL SEAMS (No mine-able bituminous coal >28")

Washington	<u>N/A</u>								
Waynesburg	<u>N/A</u>								
Sewickley	<u>N/A</u>								
Redstone	<u>N/A</u>								
Pittsburgh	<u>N/A</u>								
Upper Freeport	<input checked="" type="checkbox"/> <28"	<input type="checkbox"/> <100' OB	<input type="checkbox"/> Insuff A/E	<input type="checkbox"/> Insuff Qual.	<input type="checkbox"/> Inferred	<input type="checkbox"/> Absent/Eroded	<input type="checkbox"/> Mined Out		
Lower Freeport	<input type="checkbox"/> <28"	<input type="checkbox"/> <100' OB	<input type="checkbox"/> Insuff A/E	<input type="checkbox"/> Insuff Qual.	<input type="checkbox"/> Inferred	<input type="checkbox"/> Absent/Eroded	<input checked="" type="checkbox"/> Mined Out		
Upper Kittanning	<input type="checkbox"/> <28"	<input type="checkbox"/> <100' OB	<input type="checkbox"/> Insuff A/E	<input type="checkbox"/> Insuff Qual.	<input checked="" type="checkbox"/> Inferred	<input type="checkbox"/> Absent/Eroded	<input type="checkbox"/> Mined Out		
Middle Kittanning	<input type="checkbox"/> <28"	<input type="checkbox"/> <100' OB	<input type="checkbox"/> Insuff A/E	<input type="checkbox"/> Insuff Qual.	<input checked="" type="checkbox"/> Inferred	<input type="checkbox"/> Absent/Eroded	<input type="checkbox"/> Mined Out		
Lower Kittanning	<input type="checkbox"/> <28"	<input type="checkbox"/> <100' OB	<input type="checkbox"/> Insuff A/E	<input type="checkbox"/> Insuff Qual.	<input checked="" type="checkbox"/> Inferred	<input type="checkbox"/> Absent/Eroded	<input type="checkbox"/> Mined Out		
Clarion	<input type="checkbox"/> <28"	<input type="checkbox"/> <100' OB	<input type="checkbox"/> Insuff A/E	<input type="checkbox"/> Insuff Qual.	<input checked="" type="checkbox"/> Inferred	<input type="checkbox"/> Absent/Eroded	<input type="checkbox"/> Mined Out		
Brookville	<input type="checkbox"/> <28"	<input type="checkbox"/> <100' OB	<input type="checkbox"/> Insuff A/E	<input type="checkbox"/> Insuff Qual.	<input checked="" type="checkbox"/> Inferred	<input type="checkbox"/> Absent/Eroded	<input type="checkbox"/> Mined Out		
Mercer	<input type="checkbox"/> <28"	<input type="checkbox"/> <100' OB	<input type="checkbox"/> Insuff A/E	<input type="checkbox"/> Insuff Qual.	<input checked="" type="checkbox"/> Inferred	<input type="checkbox"/> Absent/Eroded	<input type="checkbox"/> Mined Out		
Other	<input type="checkbox"/> <28"	<input type="checkbox"/> <100' OB	<input type="checkbox"/> Insuff A/E	<input type="checkbox"/> Insuff Qual.	<input type="checkbox"/> Inferred	<input type="checkbox"/> Absent/Eroded	<input type="checkbox"/> Mined Out		

Comments: _____

References:

Policy O&G Permits 10/31/98 MR-68 M-92 M-90 A-74 a&b A-54
 A-64 A-55 A-65 M-6 Coal Non-C Det A/E 9/98: NWRO Study - 1/3/06 Quality MR, BK, CL
 R&P Coal Co. Walston No. 2 Mine Map - Local Sheet ID: RPHB_UMM_100_B07-A – Lower Freeport underground mine (prior to 1936)
 WPA Map No. 4483 – Local Sheet ID: WPA_Punxsutawney_Sht_1_LF

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF ENVIRONMENTAL RESOURCES
 DIVISION OF OIL AND GAS
 PITTSBURGH, PENNSYLVANIA 15222

Office Use Only

CCF

PARTIAL
CERTIFICATE OF PLUGGING WELL

TYPE OF WELL Gas

Rochester & Pittsburgh Coal Company

Coal Operator of Owner

Indiana, Pennsylvania 15701

Address

Coal Operator of Owner

Address

Coal Operator or Owner

Address

COMPLETE ABOVE SECTION
 IF APPLICABLE

T. W. Phillips Gas and Oil Company

Name of Well Operator

205 North Main Street

Butler, Pennsylvania 16001

Address

September 27, 19 73

Date

Young Township

Jefferson County

Grover A. Haag

Farm Fml'y. G. C. Haag

Well (Farm) No. 2 Serial No. _____

Division Representative Supervising

Coal Representative Observing

We, the undersigned representatives of the well operator certify that we participated in the plugging of the above well, and that the work was started July 26 1973, and that the well was plugged as follows:

Filling Material and Plugs	From	To	Casing and Tubing		
			size	Pulled	Left
Cement	7285'	7190'	16"	-0-	60'
Cement in 5½" Casing	7190'	6285'	12"	-0-	112'
Aquagel in 5½" Casing	6285'	4155'	8-5/8" O.D.	-0-	1112'
Cement	4155'	4055'	5½" O.D.	4155'	3035'
Aquagel	4055'	3497'	4½" O.D.	-0-	3497'
			Depth of Coal Seams, if Any		
			83' - 85'		
			Description of Monument		
			Well top on producing gas well		

and that the work of ^{partial} plugging and filling said well was completed of the 2nd day of August, 1973.

H. A. Smith
 Qualified Participants *H. A. Smith*

PERMIT NO. JEF-404

WM. J. BURNS, JR. M. G. Hudock

OIL & GAS INSPECTOR

335 N. BARNETT ST. W. PHILLIPS GAS AND OIL COMPANY

PROJECT NO. _____

BROOKVILLE, PA. Well Operator *W. J. Burns, Jr.*

President

One copy of this certificate to be mailed to each coal operator or owner, if any, and one to the Division, by registered mail, upon completion of plugging.

OCT 22 1973 *J.S.*

Oil At	WATER AT (Fresh or Salt Water)	Source of Data
None	None	Drillers Record

RECEIVED
SEP 11 1973

September 25, 19 73
 PHILLIPS GAS AND OIL COMPANY Operator
[Signature]
 Title President

ll

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF MINES AND MINERAL INDUSTRIES
 OIL AND GAS DIVISION
 STATE OFFICE BUILDING
 PITTSBURGH, PENNSYLVANIA 15222

Office Use Only
[Signature]
cc

PARTIAL
 CERTIFICATE OF PLUGGING WELL

Rochester & Pittsburgh Coal Company Coal Operator or Owner	T. W. Phillips Gas and Oil Company Name of Well Operator
Indiana, Pa. 15701 Address	205 N. Main St., Butler, Pa. 16001 Address
Coal Operator or Owner	August 28, 19 73 Date
Address	Young Township
Coal Operator or Owner	Jefferson County
Address	Farm Rochester & Pittsburgh Coal Company
COMPLETE ABOVE SECTION IF APPLICABLE	Well (Farm) No. 2 Serial No.

Division Representative Supervising

Coal Representative Observing

We, the undersigned representatives of the well operator certify that we participated in the plugging of the above well, and that the work was started June 13, 19 73, and that the well was plugged as follows:

Filling Material and Plug	From	To	Casings and Tubing		
			Size	Pulled	Left
Cement	7377'	7279'	5 1/2" O.D.	4200'	3079'
Cement in 5 1/2" O.D. Tubing	7279'	6000'			
Aquagel in 5 1/2" O.D. Tubing	6000'	4200'			
Cement	4200'	4100'			
Aquagel	4100'	3600'			
			Depth of Coal Seams, if Any 234'-243'		
			Description of Monument Well top of producing gas well		

and that the work of ^{partial} plugging and filling said well was completed on the 19th day of June, 19 73.

Qualified Participants *[Signature]*

Permit No. JEP-416

T. W. Phillips Gas and Oil Company
 Well Operator *[Signature]*
 President

One copy of this certificate to be mailed to each coal operator or owner, if any, and one to the Division, by registered mail, upon completion of plugging.

9-17-73

RECEIVED
SEP 11 11 AM '73

RECEIVED
SEP 12 10 21 AM '73

File

cc

T. W. PHILLIPS GAS AND OIL COMPANY

Butler, Pa. 16001

.....

WELL RECORD AND PARTIAL PLUGGING PROCEDURE
for
ROCHESTER & PITTSBURGH COAL COMPANY #2-420 A (now 140 A)
Young Township
Jefferson County
Permit No. JEF-416

Well Record

- 75 Ft. - 16" O.D. Casing (Liner) - 25 Sacks Cement in liner from 261 ft. to 286'
- 276 Ft. - 12 3/4 O.D. Casing - Cemented with 75 Sacks Cement
- 1,322 Ft. - 8 5/8" O.D. Casing - Cemented with 65 Sacks Cement and 12 Sacks Aquagel.
- 7,279 Ft. - 5 1/2" O.D. Casing - 30 Sacks Aquagel and Cemented with 150 Sacks Cement

Formation Data

- Coal (Mined out) - 234' to 243'
- Onondaga - 7260' to 7278'
- Chert - 7278' to 7355'
- Oriskany - 7355' to 7372'
- Total Depth - 7377'

Partial Plugging Procedure

1. Cement 7377' to 6877' and aquagel to 3650' or acquagel 7377' to Bridge plug @ 6877' then cement 6877' to 6827' then aquagel from 6827' to 3650'
2. Cut and remove available 5 1/2" casing.
3. Bridge hole 3650' to 3630'
4. Re-run 5 1/2" O.D. Casing to 3625'
5. Cement 3625' to 2550'
6. Fracture well and if not productive, properly plug and abandon same.

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF ENVIRONMENTAL RESOURCES
 DIVISION OF OIL AND GAS
 PITTSBURGH, PENNSYLVANIA 15222

Office Use Only

CC

Partial
 CERTIFICATE OF PLUGGING WELL

TYPE OF WELL _____

Rochester & Pittsburgh Coal Company
 Coal Operator of Owner

T. W. Phillips Gas and Oil Company
 Name of Well Operator

Indiana, Pennsylvania 15701
 Address

205 N. Main St., Butler, Pa. 16001
 Address

Coal Operator of Owner

December 18, 1973
 Date

Address

Young Township

Coal Operator or Owner

Jefferson County

Address

Rev. Melvin E. & Vivian Vance
 Farm 1ml'y. C. C. Campbell

COMPLETE ABOVE SECTION
 IF APPLICABLE

Well (Farm) No. 2 Serial No. _____

Division Representative Supervising

Coal Representative Observing

We, the undersigned representatives of the well operator certify that we participated in the plugging of the above well, and that the work was started October 26 1973, and that the well was plugged as follows:

Filling Material and Plugs	From	To	Casing and Tubing		
			size	Pulled	Left
Cement	7383'	7280'	14"	-0-	72'
Cement in 5 1/2" casing	7280'	6300'	11-3/4" O.D.	-0-	135'
Aquagel in 5 1/2" casing	6300'	4210'	8-5/8" O.D.	-0-	1260'
Cement	4210'	4100'	5 1/2" O. D.		3070'
Aquagel	4100'	3502'			
			Depth of Coal Seams, If Any		
			112' - 115'		
			Description of Monument		
			Well head on producing gas well		

and that the work of ^{partial} plugging and filling said well was completed of the 2nd day of November, 1973.

H. A. Smith
 Qualified Participants H. A. Smith
 M. G. Hudock M. G. Hudock
 T. W. Phillips Gas & Oil Co.
 Well Operator [Signature]
 President

PERMIT NO. JEF-421

PROJECT NO. _____

One copy of this certificate to be mailed to each coal operator or owner, if any, and one to the Division, by registered mail, upon completion of plugging.

12-31-73.

WELL RECORD AND PARTIAL PLUGGING PROCEDURE
For

Rev. Melvin E. and Vivian Vance #2-125 A
Fmly C. C. Campbell
Young Township
Jefferson County
PERMIT NO. JEF-421

WELL RECORD

7. Ft - 14" O.D. Casing (Liner)	12 sacks of cement in liner from 58' to 130'
135 Ft - 11 3/4" O.D. Casing	Cemented with 48 sacks cement.
1,260 Ft. - 8 5/8" O.D. Casing	Cemented with 190 sacks cement and 10 sacks aquagel
7,280 Ft - 5 1/2" O.D. Casing	Cemented with 150 sacks cement and 30 sacks aquagel

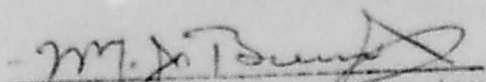
FORMATION DATA

Coal	-	112' to 115'
Onondaga	-	7263' to 7275'
Chert	-	7275' to 7357'
Oriskany	-	7357' to 7375'
Total Depth	-	7383'

PARTIAL PLUGGING PROCEDURE

1. Cement 7383' to 6883' and aquagel to 3575' or aquagel 7383' to Bridge plug at 6883', then cement 6883' to 6833', then aquagel from 6833' to 3575'
2. Cut and remove available 5 1/2" O. D. Casing
3. Bridge hole 3575' to 3555'
4. Run 4 1/2" O.D. Casing to 3550'
5. Cement 3550' to 2500'
6. Fracture well and if not productive, properly plug and abandon same.

Approved:


Wm. J. Be... Inspector
Oil & Gas Division
Mines & Mineral Industries

SEP 20 1973

File

P

COMMONWEALTH OF PENNSYLVANIA



DEPARTMENT OF ENVIRONMENTAL RESOURCES

June 28, 1973

T. W. Phillips Gas & Oil Company
205 North Main Street
Butler, Pennsylvania 16001

Re: PARTIAL PLUGGING PROCEDURE:

Well No. 3, Grover A. Haag,
(Fmly. G. C. Haag) Farm,
Young Township,
Jefferson County, Pennsylvania
Permit No. - JEF-436

Gentlemen:

Acknowledgment is made of the receipt of your Location Plat, Notice of Intention to Partially plug together with your Partial Plugging Procedure for the above referred well.

Ten days having elapsed and the coal owners and/or operators having filed no objection to your proposal, and our district Oil and Gas Inspector having approved the Proposed Partial Plugging Procedure, please be advised that your original permit number will remain in effect until you file intention to completely plug the well; a plugging file number will then be issued.

A Plugging Certificate should be filed with all persons designated under Section 205 of the Pennsylvania Gas Operations, Well-Drilling, Petroleum and Coal Mining Act of 1955, as amended by Act of 1968, approved July 31, 1968, describing the Partial Plugging operation.

In any future correspondence regarding this well, please refer to our drilling permit number.

Very truly yours,
Bruce E. Ziegler
Bruce E. Ziegler, Chief
Division of Oil & Gas

BEZ/ac

cc: William J. Burns, Jr.
Rochester & Pittsburgh Coal Co.
Conservation Section

✓

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
DIVISION OF OIL AND GAS
PITTSBURGH, PENNSYLVANIA 15222

Office Use Only

CC

PARTIAL
CERTIFICATE OF PLUGGING WELL

TYPE OF WELL _____

Rochester & Pittsburgh Coal Company
Coal Operator or Owner

T. W. Phillips Gas and Oil Company
Name of Well Operator

Indiana, Pennsylvania 15701
Address

205 N. Main St., Butler, Pa. 16001
Address

Coal Operator or Owner

September 13, 19 73
Date

Address

Young Township

Coal Operator or Owner

Jefferson County

Address

Grover A. Haag
Farm Fml'y. G. C. Haag

COMPLETE ABOVE SECTION
IF APPLICABLE

Well (Farm) No. 3 Serial No. _____

Division Representative Supervising

Coal Representative Observing

We, the undersigned representatives of the well operator certify that we participated in the plugging of the above well, and that the work was started July 11 1973, and that the well was plugged as follows:

Filling Material and Plug	From	To	Casing and Tubing		
			size	Pulled	Left
Cement	7422'	7316'	14"	-0-	64'
5 1/2" Tubing & Cement	7316'	6400'	11-3/4"	-0-	370'
5 1/2" Tubing & Aquagel	6400'	4200'	8-5/8"	-0-	1515'
Cement	4200'	4100'	5 1/2"	4200'	3116'
Aquagel	4100'	3594'			
			Depth of Coal Seams, if any		
			No Coal Shown on Record		
			Description of Monument		
			Well top on producing gas well.		

and that the work of/plugging and filling said well was completed of the 18th day of July, 1973.

H. A. Smith
Qualified Participants H. A. Smith
M. G. Hudock
T. W. PHILLIPS GAS AND OIL COMPANY
Well Operator [Signature] President

PERMIT NO. JEF-436

PROJECT NO. _____

One copy of this certificate to be mailed to each coal operator or owner, if any, and one to the Division, by registered mail, upon completion of plugging.

9. 30 - 73

COMMONWEALTH OF PENNSYLVANIA



DEPARTMENT OF ENVIRONMENTAL RESOURCES

October 1, 1973

T. W. Phillips Gas & Oil Company
205 N. Main Street
Butler, Pennsylvania 16001

Re: PARTIAL PLUGGING PROCEDURE:

Well No. 4, Rochester & Pittsburgh
Coal Company Farm, Young Township,
Jefferson County, Pennsylvania
Drilling Permit No. -JEF-460

Gentlemen:

Acknowledgment is made of the receipt of your letter dated September 19, 1973, Location Plat, Notice of Intention to Partially Plug together with your Partial Plugging Procedure for the above referred well.

Ten days having elapsed and the coal owners and/or operators having filed no objection to your proposal, and our district Oil and Gas Inspector having approved the Proposed Partial Plugging Procedure, please be advised that your original permit number will remain in effect until you file intention to completely plug the well; a plugging file number will then be issued.

A Plugging Certificate should be filed with all persons designated under Section 205 of the Pennsylvania Gas Operations, Well-Drilling, Petroleum and Coal Mining Act of 1955, as amended by Act 265 of 1968, approved July 31, 1968, describing the Partial Plugging operation.

In any future correspondence regarding this well, please refer to our drilling permit number.

Very truly yours,

Bruce E. Ziegler

Bruce E. Ziegler, Chief
Division of Oil & Gas

BEZ/ac

cc: William J. Burns, Jr.
Rochester & Pittsburgh Coal Co.
Conservation Section

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF ENVIRONMENTAL RESOURCES
 DIVISION OF OIL AND GAS
 PITTSBURGH, PENNSYLVANIA 15222

Office Use Only
 CC

TYPE OF WELL Gas

Partial
 CERTIFICATE OF PLUGGING WELL

Rochester & Pittsburgh Coal Company
 Coal Operator of Owner
Indiana, Pennsylvania
 Address

 Coal Operator of Owner

 Address

 Coal Operator or Owner

 Address

T. W. Phillips Gas and Oil Company
 Name of Well Operator
205 N. Main Street, Butler, Pa. 16001
 Address
December 31, 1973
 Date
Young Township
Jefferson County

Farm Rochester & Pittsburgh Coal Company
 Well (Farm) No. 4 Serial No. _____

COMPLETE ABOVE SECTION
 IF APPLICABLE

Division Representative Supervising

Coal Representative Observing

We, the undersigned representatives of the well operator certify that we participated in the plugging of the above well, and that the work was started Nov. 12 1973, and that the well was plugged as follows:

Filling Material and Plugs	From	To	Casing and Tubing		
			Size	Pulled	Left
Cement	7310'	7195'	14"	-0-	105'
Cement in 5 1/2" Casing	7195'	6300'	11-3/4" OD	-0-	250'
Aquagel in 5 1/2" Casing	6300'	4270'	8-5/8" OD	-0-	1291'
Cement	4270'	4170'	5 1/2" O.D.	4270'	2925'
Aquagel	4170'	3460'			
			Depth of Coal Seams, if Any		
			No Coal shown on record		
			Description of Monument		
			Well top on producing gas well.		

And that the work of ^{partial} plugging and filling said well was completed of the 16th day of November, 1973.

Qualified Participants H. A. Smith
M. G. Hudock
T. W. Phillips Gas and Oil Company
 Well Operator [Signature] President

PERMIT NO. JEF-460
 PROJECT NO. _____

One copy of this certificate to be mailed to each coal operator or owner, if any, and one to the Division, by registered mail, upon completion of plugging.

FEB 11 1974

COMMONWEALTH OF PENNSYLVANIA



DEPARTMENT OF ENVIRONMENTAL RESOURCES
DIVISION OF OIL AND GAS

August 27, 1973

T. W. Phillips Gas & Oil Company
205 North Main Street
Butler, Pennsylvania 16001

Re: PARTIAL PLUGGING PROCEDURE:

Well No. 4, Florence E. and Carl
Haines, Fmly. Antonio Lorenzo Farm,
Young Township, Jefferson County,
Pennsylvania
Permit No. - JEF-465

Gentlemen:

Acknowledgment is made of the receipt of your Location Plat, Notice of Intention to Partially Plug together with your Partial Plugging Procedure for the above referred well.

Ten days having elapsed and the coal owners and/or operators having filed no objection to your proposal, and our district Oil and Gas Inspector having approved the Proposal Partial Plugging Procedure, please be advised that your original permit number will remain in effect until you file intention to completely plug the well; a plugging file number will then be issued.

A Plugging Certificate should be filed with all persons designated under Section 205 of the Pennsylvania Gas Operations, Well-Drilling, Petroleum and Coal Mining Act of 1955, as amended by Act 265 of 1968, approved July 31, 1968, describing the Partial Plugging Operation.

In any future correspondence regarding this well, please refer to our drilling permit number.

Very truly yours,

Bruce E. Ziegler

Bruce E. Ziegler, Chief
Division of Oil and Gas

BEZ/bjk

cc: William J. Burns, Jr.
Rochester & Pittsburgh Coal Company
Conservation Section
Mine Inspector

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF ENVIRONMENTAL RESOURCES
 DIVISION OF OIL AND GAS
 PITTSBURGH, PENNSYLVANIA 15222

Office Use Only
 CC

PARTIAL
CERTIFICATE OF PLUGGING WELL

TYPE OF WELL Gas

Rochester & Pittsburgh Coal Company
 Coal Operator of Owner
Indiana, Pennsylvania 15701
 Address

T. W. Phillips Gas and Oil Company
 Name of Well Operator
205 North Main Street
Butler, Pennsylvania 16001
 Address

Coal Operator of Owner
 Address

March 19 , 19 74
 Date

Young Township
Jefferson County

Coal Operator or Owner
 Address

Farm Florence E. & Carl Haines
Fml'y. Antonio Lorenzo

COMPLETE ABOVE SECTION
 IF APPLICABLE

Well (Farm) No. 4 Serial No.

Division Representative Supervising

Coal Representative Observing

We, the undersigned representatives of the well operator certify that we participated in the plugging of the above well, and that the work was started August 28, 19 73 and that the well was plugged as follows:

Filling Material and Plugs	From	To	Casing and Tubing		
			size	Pulled	Left
Cement	7319'	7211'	14"		62'
Cement in 5½" tubing	7211'	6300'	11-3/4" O.D.		143'
Aquagel in 5½" tubing	6300'	4190'	8-5/8" O.D.		1309'
Cement	3900'	3800'	5½"	4190'	3021'
Aquagel in 5½" tubing	3800'	3541'			
			Depth of Coal Seams, If Any		
			104' - 109'		
			Description of Monument		
			Well top on producing gas well		

and that the work of partial plugging and milling said well was completed of the 4th day of September, 19 73.
 H. A. Smith

Qualified Participants H. A. Smith
M. G. Hudock

PERMIT NO. JEF-465 -

T. W. PHILLIPS GAS AND OIL COMPANY
 Well Operator B. J. [Signature]
 President

PROJECT NO.

One copy of this certificate to be mailed to each coal operator or owner, if any, and one to the Division, by registered mail, upon completion of plugging.

4-8-74. JB

File

T. W. PHILLIPS GAS AND OIL COMPANY

BUTLER, PA. 16001

.....

WELL RECORD AND PARTIAL PLUGGING PROCEDURE
for
ANTONIO LORENZO #4 - 148 Acres
Young Township
Jefferson County
Permit No. JEF-465

Well Record

- 61 Ft. - 14" O.D. Casing (Liner) - 12 sacks cement in liner from 73 ft. to 134 ft.
- 143 Ft. - 11 3/4" O.D. Casing - 50 Cement from 143 Ft to 70 Ft and 38 sacks of cement on basket at 70 Ft.
- 1,309 Ft. - 8 5/8" O.D. Casing - Cemented with 60 sacks cement and 12 sacks aquagel - circulated
- 7,211 Ft. - 5 1/2" O.D. Casing - Cemented with 150 sacks of cement and 30 sacks of aquagel circulated.

Formation Data

- Coal - 104' to 109'
- Onondaga - 7193' to 7207'
- Chert - 7207' to 7291'
- Oriskany - 7291' to 7307'
- Total Depth - 7319'

Approved:

Wm. J. Beatty
 Wm. J. Beatty, Director
 Oil & Gas
 Mines & Industries

AUG 16 1973

Partial Plugging Procedure

1. Cement 7319' to 6819' and aquagel to 3520' or aquagel 7319' to Bridge Plug at 6719' then cement 6719' to 6669' and aquagel 6669' to 3520'
2. Cut and remove available 5 1/2" O.D. Casing
3. Bridge Hole 3575' to 3555'
4. Run 4 1/2" Casing to 3550'
5. Cement from 3550' to 2450'
6. Fracture well and if not productive properly plug and abandon same.