



June 29, 2023

Sent via e-mail

Samantha Lutz
Pennsylvania Department of Environmental Protection
District Oil and Gas Operations
Southwest District Office
400 Waterfront Drive
Pittsburgh, PA 15222

RE: PennEnergy Resources, LLC
Southwest Pennsylvania Water Management Plan
for Unconventional Shale Gas Well Development
Economy Borough, Beaver County

Ms. Lutz:

The attached information is being re-submitted on behalf of:

PennEnergy Resources, LLC
Attn: Richard Watson

Please find attached a copy of the PennEnergy Resources, LLC Water Management Plan (WMP) Application for Unconventional Shale Gas Well Development in the Pennsylvania Department of Environmental Protection (PADEP) Southwest Region: Big Sewickley Creek. This copy of the complete revised application is being submitted in response to the comments following the review provided by the PADEP on June 14, 2023 via email. The comments, with responses in italics, are provided below. The responses below are also reflected in the application.

Comment 1:

Attachment A contains references to attachment F and J Section C for passby flow calculations. The correct references are Attachments E and I Section C. The application should be updated to be consistent. §105.13 (e)

Attachment A has been revised for consistency.

Comment 2:

Section J. of Attachment I: Withdrawal Impact Analysis states that “The staff gage at the withdrawal site will be referenced on an interim basis every time a withdrawal is desired to confirm the upstream flow rate and the availability of water for withdrawal.” This is not consistent with the abandonment of the staff gages as proposed in the Response to Comment cover letter. Penn Energy was given the opportunity to verify the accuracy of these gages, however, it did not do so. Rather, it pursued a different plan, to measure flows at the time of proposed withdraw. Therefore, the accuracy of the gages was not verified. In order to use gage data to monitor instream flows and passby rates, the gage data should be accurate. §105.13 (e); §78a.69 (b) (1); §78a.69 (e) (2)

Section J. of Attachment I has been revised to eliminate any discussion about using a staff gage to determine flow rate. Real-time flow measurements are proposed as discussed in the Water Source and Use Monitoring Plan.

Comment 3:

The frequency of confirmatory measurements needs to be justified. Provide a rationale for the stated weekly, daily, and eight-hour measurement intervals to ensure instream flows are being protected. The “flashy” nature of flows within Big Sewickley Creek should also be addressed in this justification.

The measurement frequency and justification of the frequency has been addressed in the “Passby and Pool Depth” section of the Water Source and use Monitoring Plan beginning on Page 6. The relevant text of the section is as follows:

The frequency of stream flow measurements is presented in the table below (discharge is shown in cfs, and in percent of ADF):

						Schedule A	Schedule B
30% Pass-By Intervals (CFS / % ADF)			50% Pass-By Intervals (CFS / % ADF)			Frequency of Measurement with Stream Rising	Frequency of Measurement with Stream Declining
Above 21.6 >100%			Above 21.6 >100%			Weekly	Daily
21.6	TO	10.8	21.6	TO	15.1	Daily	8 HR Intervals
100%		50%	100%		70%		
10.8	TO	9.7	15.1	TO	14.0	8 HR Intervals	4 HR Intervals
50%		45%	70		65%		
9.7	TO	8.8	14	TO	13.1	4 HR Intervals	4 HR Intervals
45%		40.6%	65%		60.6%		
8.8	TO	6.5	13.1	TO	10.8	4 HR Intervals	1 HR Intervals
40.6%		30%	60%		50%		

Table 1: Measurement Schedule

During withdrawals, a staff gage located approximately 25 feet upstream of the monumented cross-section will be referenced hourly for the sole purpose of determining whether the stream stage is rising, steady, or falling. The gage will not be used to determine stream discharge. The frequency of measurement will be dependent on whether the stage is rising, steady, or falling, and also on the last measured discharge. This measurement schedule was developed following analysis of 39 events during which the stream discharge rose and then fell back to ADF, and eventually fell to the respective pass-by (30% or 50% ADF). Average daily discharge data from the former USGS gage on Big Sewickley Creek (#03086100) from 1971 to 1977 was used in the analysis. The data showed that during that time, it took between one and seven days for the stream discharge to fall from the peak flow to the ADF. Following the stream discharge reaching ADF, as it continues to fall and approach the respective pass-by discharges the rate of decline decreases, but it can still fall from ADF to the 50% ADF pass-by in less than one day. The decline from ADF to the 30% pass-by is slightly slower, with the fastest observed decline occurring in 2 days. The discharge

data for each year, along with the discharge analysis is included as an attachment to this Water Source and Use Monitoring Plan.

Based on the above analysis, the measurement schedule presented above was developed. During times of observed stream stage falling (based on observation of the staff gage on site) discharge will be measured at a minimum of once per day (if stream discharge has previously been measured to be greater than ADF). Once stream discharge has been measured to be less than ADF, the frequency of measurements will increase as indicated in the table above. The measurements will be collected more frequently than the stream was observed to fall in the analysis of historical data from the creek, which will eliminate the risk of discharge falling below pass-by during a withdrawal.

Comment 4:

Within the Passby and Pool Depth narrative it states that “Flow measurement will be completed at the point of withdrawal or adjacent to point of withdrawal”. It is later stated under statement No. 1 that “the location of the measurement will be downstream of withdrawal point within straight reach and where flow is relatively uniform.”

The exact location of the monumented cross-section should be documented and color photographs of the location should be provided. The cross-section location should be placed in an area of the stream that exhibits the same stream morphology and velocity that are present at the withdrawal site. By a letter dated June 12, 2023, the PA Fish and Boat Commission recommended that the monumented cross-section be placed upstream of the withdrawal location. A copy of the June 12, 2023 letter is enclosed for your reference. §105.13 (e); §78a.69 (b) (1); §78a.69 (e) (2)

The stream morphology at the point of withdraw, the velocity, and the recommendation of the PA Fish and Boat Commission recommendations should be considered in locating the appropriate location of the monumented cross section.

The location of the monumented cross-section is documented within the Water Source and Use Monitoring Plan. A map illustrating the location of the cross-section is attached to the Plan, as well as oriented color photographs of the location. The location was selected following on-site consultation with the PA Fish and Boat Commission and represents the most appropriate location for a monumented cross-section in the vicinity of the withdrawal. Correspondence with the PA Fish and Boat Commission discussing the selection criteria and appropriateness of the location is also attached to the Plan. The “Passby and Pool Depth” section of the Water Source and Use Monitoring Plan was updated to include the following:

The PAFBC was consulted at the site of the proposed withdrawal to ensure that the monumented cross-section selected for ongoing measurements met as many of the above criteria as possible. Following consultation with PAFBC (attached to this Water Source and Use Monitoring Plan), a location was selected approximately 75 feet upstream from the proposed withdrawal point. The cross-section lies within a straight reach, and the stream lines are parallel to each other. The streambed is relatively uniform and free from boulders, aquatic growth, and other features that would impede flow. The flow is relatively uniform and is free of eddies, slack water, and excessive turbulence. The stream channel features at the location of the monumented cross-section are such that as flow increases, the above-mentioned qualities

are anticipated to remain constant. Velocities will be greater than 0.5 ft/sec and depths will be greater than 0.5 feet when flow is sufficient to create those conditions. Photographs and an illustration of the location of the monumented cross-section are attached to this Water Source and Use Monitoring Plan.

Comment 5:

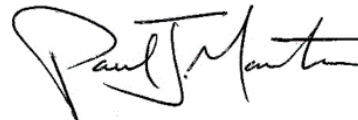
The maximum instantaneous withdrawal rate is stated as 2.3 cfs. Please ensure that the pumps are appropriately sized or controlled to ensure that this rate is not exceeded. Manufacturer specifications and a justification will need to be provided. §78a.69 (c) (1)

The Operations Plan was revised to include the following:

The manufacturer was consulted on pump and flow meter sizing. Godwin Pumps HL160M US pump will be started at half throttle, or 1000 RPM to prime the system and start withdrawal. The throttle will be increased slowly until reaching the ~1700 RPMs anticipated for a pumping rate of 1041 GPM, based on the manufacturer-supplied pumping curve (attached). Based on the pump curve, in this configuration the pump will be pumping at near-maximum efficiency (target pump efficiency ~60%; maximum pump efficiency 62%). The pumping rate will be verified by a 12" Magflux 7200 Electromagnetic Flow Meter (specifications attached). The pump throttle will be adjusted until desired rate is shown on the meter. The flow meter will be the primary resource for rate measurement and to ensure the maximum rate of 1041 GPM is not exceeded. The meter is also equipped with a totalizer and will be used to verify the total daily withdrawal volumes for record keeping.

Please feel free to contact me by email or phone at 814-724-4970 with any questions you may have.

Sincerely,
Moody and Associates, Inc.



Paul J. Martin, P.G.

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