

**DEP Permit # E65-973  
 DEP Permit HDD Reference # PA-WM1-0111.0000-RD  
 DEP HDD # S1B-0260  
 Township – Penn  
 County - Westmoreland  
 HDD Site Name – Gombach Road Crossing**

**1<sup>st</sup> Public Comment Period**

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**1. Comment**

Pursuant to the Corrected Stipulated Order entered on EHB Docket No. 2017-009-L on August 10, 2017 (“Order”), and on behalf of Clean Air Council, Mountain Watershed Association, Inc., and the Delaware Riverkeeper Network (“Appellants”), please accept these comments on Sunoco Pipeline L.P.’s (“Sunoco”) re-evaluation report (“Report”) for the horizontal directional drilling (“HDD”) indicated by drawing number HDD PA-WM1-0111.0000-RD (the “Site”).

**The Department’s Review**

Pennsylvanians rely on the Department of Environmental Protection to protect them from dangerous activities that threaten their air, water, land, and health. The Department has recognized that the construction of Mariner East 2 has done damage to the public already. The purpose of Sunoco’s re-evaluations of certain HDD sites is to do a better job avoiding harm to the public and the environment in its HDD construction. The Department’s role is to review and assess Sunoco’s Report before deciding what action to take on it.

It is the Department's duty to review and assess the Report with the goal of protecting the public and the environment placed first and foremost. Looking at the individual circumstances at the site in question is key. Critically important is accounting for input from those who live nearby, who have a deeper connection with—and greater knowledge about—the land than the foreign company building the pipelines through it.

A meaningful, objective and substantive review and assessment by the Department will ensure that new or further HDD operations at the re-evaluated sites will cause minimal, if any, harm to the public and the environment. Anything less than a full, careful, and objective review would endanger the public and the environment. Pennsylvanians place their trust in the Department to do a thorough, science-based assessment, taking into account these and other comments, and approving Sunoco's recommendation only if it would protect the public and the environment from any further harm.

### **Comments on HDD PA-WM1-0111.0000-RD**

#### **1. Subsidence is a significant and inadequately explored concern.**

##### ***The finding of “no risk” is not substantiated in the Report.***

The Report asserts that although the Site has been heavily undermined, subsidence presents “no risk” of problems for the pipeline. Specifically, the Report states: “Since this HDD is now abandoned and replaced with an open cut/FlexBor construction plan, which will place the new pipeline at depths shallower than an HDD, there is no risk of subsidence effects related to the replacement construction plan.” Report at 4. This statement is not true.

It is unclear precisely how the depths of the FlexBor alignment compare to those of the abandoned HDD alignment because the illustrative depth measurements in Figure 1 (original profile) as compared to Figures 2 and 3 (revised profiles) do not line up. However, it is clear that the depths are comparable and little changed. Thus, it is not true that these depths will be “shallower than an HDD.”

Furthermore, though the depths of the FlexBor alignment are indeed relatively shallow depths for a drilled installation, subsidence can be a problem for any depth of pipeline above an abandoned mine, including trench-laid pipe. Considering the damage that regularly occurs to aboveground structures from underground mine subsidence it seems clear that harms do not discriminate. There should be additional analysis of the stress on open trench pipeline portions and recommendations given to reinforce the pipeline that will be laid using this technique.

***The Mine Subsidence Report includes inadequate analysis and modeling improperly based on “best-case” assumptions.***

The “no risk” statement in the Report is not supported by Attachment 2, the Mine Subsidence Report and Pipeline Risk Analysis.

The Subsidence Potential Review explains that sinkhole subsidence occurs primarily in locations where the overburden is 100 feet or less, and trough subsidence generally where the overburden is 100 feet or more. Here, the profile would have less than 100 feet of distance above the mine roof in a large portion of the middle of the profile (around 80 feet), and up to 170 feet only at one exist. Subsidence Potential Review at “Findings.” Though the Subsidence Potential Review discusses the HDD profile, as noted above, the FlexBor is at roughly the same depth. Nonetheless, the potential for the formation of sinkholes, as opposed to subsidence more generally, was not specifically discussed anywhere in the Report.

Also, despite the understanding of the depth of the mine below the profile, Sunoco modeled the height above mining at 150 feet, which is not an average let alone a worst-case scenario. Subsidence Potential Review at “Findings.” Rather, it is close to a best-case scenario. This makes a very large difference in subsidence impacts. Moreover, the majority of the more dangerous “Category 3” subsidence is located in this area of roughly 80-foot distance between the mine and the profile. See Figure 2, Subsidence Potential Review.

Sunoco’s conclusion that the pipe strain is within acceptable parameters was based on this “best-case scenario” model. This is inappropriate.

In Attachment 2 there is a letter signed by Dean Shours attesting that Tetra Tech, “[has] confirmed that if the predicted subsidence does in fact occur in the future, the resulting stresses within the pipeline will still be in compliance with ASMEB31.4.”

This letter is followed by an analysis of the digital modeling done to determine possible pipeline stresses, called the Dr. Heasley Subsidence Report. This modeling analysis makes no mention of the standards set forth in ASME B31.4, contains no finding of “no risk,” and no mention of where the modeling outcomes fall in relation to the standards of ASME B31.4.

It also appears that the pipeline engineer is conducting the analysis without full knowledge of how the pipeline is to be constructed. In the only statement that seems to make a recommendation of sorts in the Dr. Heasley Subsidence Report, at page 5, the author writes:

The level of strain that the pipeline may experience is both a function of the ground movement and also a function of how tightly the pipeline is coupled to the ground movement. If the pipe is tight within the horizontal borehole due to the drilling mud confining the pipe or collapse of the

borehole, then it may be assumed that the pipe will experience the full ground strain as shown in Figure 9. If the pipeline is simply lying in the open horizontal borehole and can easily slide, then areas of tension or compression in the ground can be reasonably canceled by sliding of the pipe between adjacent areas of the opposite strain.

It is difficult to imagine how predictive modeling was done successfully if the author does not know, for instance, how much room the pipeline would be given to slide. Furthermore, if the author is making a specific recommendation for how the pipeline should be laid within the horizontal borehole, this should be clearly reflected in the newly revised plan.

***Abandoned mine maps are not, by themselves, sufficient to verify existing mine structure.***

It is well known that it is difficult to discover exact information about older abandoned mines. Many of the mines were constructed in an era with little to no regulation and spotty record-keeping practices. This is why supplemental methods, such as annual coal production data for the mine, are often used to understand the size of an abandoned mine. The inadequacy of mapping abandoned mines has been acknowledged by the Department as a problem that leads to dangerous results.

In 2002, it was discovered that the deadly disaster at the Que Creek Mine in Somerset County was the result of a permittee's having inadequately mapped the adjacent abandoned mine barriers. This prompted the Department to issue new policy that enumerates the ways in which abandoned mines can be mapped. Although this guidance is directed towards mining permittees, it should be taken into consideration for all underground projects that can result in dangerous outcomes due to inadequately locating abandoned mines.

The guidance, titled "Validating Abandoned Underground Mine Maps and Establishing Barrier Pillars" sets forth at pages 4-5 the following instructions for adequately identifying mine barriers:

The applicant should summarize in narrative form all of the information relied upon to accurately ascertain the full extent and location of adjacent abandoned mine workings, and the steps taken to obtain that information. The narrative will demonstrate, to the Department's satisfaction, that the location and extent of adjacent abandoned mine workings has been accurately determined based upon the information obtained by the permittee. The permittee's burden of demonstration will not be met if, for example, there is irreconcilable conflicting information about the location and extent of the abandoned mine workings, or where there are significant data gaps in the information used to confirm the location and extent of the abandoned workings. The narrative should address the following types of information:

- Identification of all data sources used to verify and validate mine maps;
- listing of all mine map repositories searched during the research process;
- procedures used to orient and locate nearby abandoned mine workings with respect to the proposed mine;
- description of and results of field reconnaissance used to delineate mine workings;
- identification of all maps found in the search and relied upon to map abandoned mine working, including ID or catalog numbers, archive location, scale, and condition;
- site-specific information from local residents including names and addresses of persons providing information;
- local gas well or water well drill logs that may indicate the presence or absence of mine voids;
- underground mine inspection records;
- **annual coal production report data, including mine opening date and last coal extraction;**
- permit information cross-checks with the Bureau of Mining and Reclamation;
- mechanical, geologic, or geophysical testing used to verify the mine workings, such as vertical or horizontal drilling or geophysical surveying, an operational history of each adjacent abandoned mine including all ownership changes, dates of operation, dates when the mine was idle, date of mine closure, mine name changes, coal company name changes, and all permit identification numbers including an explanation showing that the map corresponds to the data found in the history;
- an explanation of how mine pool elevation data for each abandoned mine was determined;
- a discussion of how and why any disparities between sources of information were reconciled.

(Emphasis added).

In its Subsidence Potential Review, Tetra Tech does not give nearly such an in-depth narrative but does state that maps were reviewed and “georeferenced by PA DEP” but it is not clear what that entails.

The author says that although “the mine maps are generally a reliable indication of the extent of what was mined” there are still “a couple potential areas of uncertainty – primarily at expected retreat mined areas where we are not certain if all of the coal was removed.” That uncertainty may significantly impact the analysis. If not all the coal was removed from certain areas and therefore future subsidence is expected, the analysis is not conservative enough.

The Subsidence Potential Review also says that “Tetra Tech employed 3D seismic technology to gain a better understanding of the strata fracturing and anomalies at mine level. The subsidence model was run to reflect this information.” But the public is not privy to the 3D seismic data that was gathered, nor the analysis for arriving at such an interpretation.

In order to understand whether the subsidence risk has been accurately assessed, Sunoco must submit additional data and explanation of its findings.

### ***Subsidence Complaints***

The Report at page 3 states:

DEP’s eMapPA web site (<http://www.depgis.state.pa.us/emappa/>) was used to search for any mine subsidence complaints adjacent to the HDD location. This search revealed a single home owner complaint located approximately 0.5 miles southwest of the southern entry/exit point. A field visit to this home was performed by the DEP Cambria Office which revealed some hairline cracks in the house foundation; however, a determination was made by DEP to exclude the possibility of mine subsidence.

It is unclear on what the basis of the possibility of mine subsidence was excluded. However, this inventory is incomplete. Looking more broadly at the area on the eMapPA system, mine subsidence complaints are common. And specifically, about a half mile east of the alignment the eMapPA system reveals another form of complaint, an Abandoned Mine Land inquiry, this one from just April of 2018. Given that this entire area is underlain by the same Pittsburgh Coal and mining of that seam was extensive in the area, it should not be surprising that subsidence complaints or inquiries pock the area. See Attachment C to GES Report.

### ***Overall***

The newly revised proposal is a marked improvement over the earlier HDD plan. However, considering that subsidence is predicted to occur here and, considering the

gravity of harm that would occur if the pipeline were to stress or fracture, much more analysis should be done before the Department approves of this construction.

If the analysis demonstrates an unacceptable level of strain on the pipeline, Sunoco should follow Tetra Tech's recommendation in its Subsidence Potential Review that it "grout[] the underlying abandoned coal mine if the pipeline stresses exceed appropriate pipeline design standards."

## **2. The profile diagrams are unclear, inconsistent, and perhaps preliminary.**

There are two new profile diagrams attached to the Report as Attachment 3, along with the Original HDD Profile. It is unclear what the relationship between the two new profiles is. The first of two (Figure 2) says "FOR PERMITTING PURPOSES ONLY." It is unclear whether this is Sunoco's proposal to the Department or whether Sunoco intends to move ahead with plans that deviate from these designs. This plan is dated February 12, 2018, and there may be newer or final plans available.

Figure 3 has inconsistent dimensions for the southern bore pit. The profile view indicates it is 119 feet long, whereas the plan view indicates it is 99 feet long. It is unclear which is correct.

## **Conclusion**

For these reasons, there remain significant issues related to subsidence and finality of plans that are not adequately explored or resolved. Approval at this time would be premature and risky.

Thank you for considering these comments. Please keep us apprised of your next steps on this HDD Site. (1-5)

Letter – [Clean Air Council – 6-5-18 – Gombach Road Crossing](#)