

Regarding Sunoco's response of 2/16/18 specific to the Yellow Breeches Creek Reevaluation (S2-0250) Attachment 3, Fracture Trace Analysis Review (by Skelly and Loy)

### **Sunoco response**

We have reviewed the 1937 aerial photo mentioned above. While a few depressions and soil tonal variations indicative of variable soil moisture are apparent, we do not see any "clearly visible" linear features suggesting the presence of high-angle bedrock fracturing (i.e., fracture traces) crossing the HOD bore path or surrounding area. There were also no published fracture trace features that we could reference for this HOD site.

We noted that the reviewer did not independently identify any fracture traces on the referenced photo, despite the reviewer's finding that the depressions and areas of wet soils may show fracture trace locations.

We do not see any additional definitive fracture traces crossing the HOD site and our HOD re-evaluation report conclusions remain unchanged.

As stated in my initial correspondence regarding the fracture traces: incomplete survey of HDD fracture trace due to cattle in field. Should do complete survey for fracture trace before permit approval... My position was and still is that Sunoco and their consultants are being less than thorough in doing the necessary studies in advance of any physical disturbance to ensure that any HDD in the area will not impact nearby groundwater supplies or the Yellow Breeches Creek.

Sunoco's response via Mr. Douglas Hess of Skelly and Loy did not address the need nor intent to do a complete survey despite the original admission to an incomplete initial survey due to cattle in the field. Instead, and true to form, the issue was skirted and the onus put upon me as if I was the one responsible for doing their job. Mr Douglas also stated the following in his correspondence;

"There were also no published fracture trace features that we could reference for this HDD site."

Mr. Douglas's remark is totally untrue. There is a published report that was produced by the Commonwealth of Pennsylvania's Bureau of Topographic and Geologic Survey documenting, among other things, the occurrences of fracture traces in the greater Harrisburg area. This report includes the one that will be encountered by the proposed HDD just west of the Yellow Breeches Creek in Cumberland County. Had they done the necessary research they would have found this report "Environmental Geology report 4, 1976: Environmental Geology of the Greater Harrisburg Metropolitan Area" The online version, courtesy of PA DCNR, includes seven different PDFs of maps showing various aspects of the geology of the region. Due to the large size of each map (>21MB) I've have attached a png of the enlarged area of map from that report, EG\_004\_plate\_7.pdf , that pertains to fracture traces. I've highlighted the specific fracture trace in yellow.

Relative to these two comments by Mr. Douglas:

"We noted that the reviewer did not independently identify any fracture traces on the referenced photo, despite the reviewer's finding that the depressions and areas of wet soils may show fracture trace locations."

I have also attached an enlargement of the area in question from the original 1937 aerial photo and highlighted the location of the specific fracture trace and proposed HDD.

and this one;

"We do not see any additional definitive fracture traces crossing the HOD site and our HOD re-evaluation report conclusions remain unchanged."

The fracture trace may not be overtly obvious but it does appear on the aerial image. Therefore, I stand by my original statement that they need to complete their on-site survey to document the extent of the fracture trace. Once that is completed they should then modify their proposed HDD to ensure that the integrity of nearby wells and the Yellow Breeches creek remain uncompromised.

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