

2014 Field Observations of Tennessee Gas Pipeline, Northeast Upgrade Project By Nicole Zenes, Delaware Riverkeeper Network

Preliminary Findings and Excerpt for FERC To Consider in Review of Atlantic Sunrise Pipeline

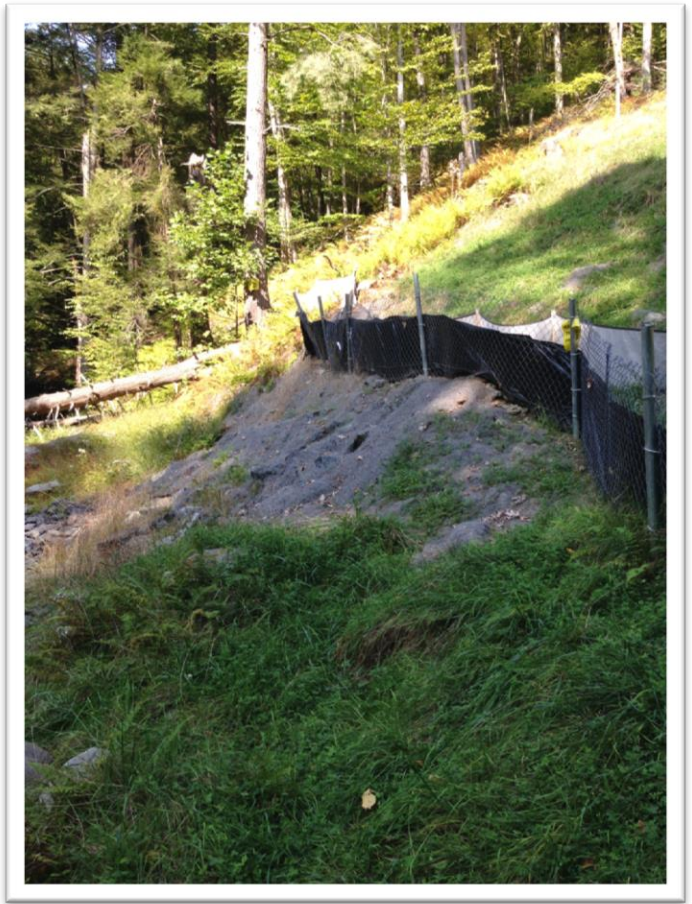
Overview of Study

The fall and summer of 2014 I conducted field work and research under the guidance of Delaware Riverkeeper Network and Princeton University on the effects of clear cutting to build an intrastate natural gas pipeline. I specifically was interested in studying nutrient leaching and loading in streams in Pennsylvania and New Jersey. I conducted 34 field visits at 22 streams that were cut across by the Tennessee Gas Pipeline Northeast Upgrade Project (TGP NEUP). This particular pipeline began tree cutting in mid-February 2013 and construction followed in the spring and summer of 2013. TGP NEUP had constructed and installed the new pipeline and was running natural gas through the new line as of November 2013. Lagging remediation practices and repeated maintenance activities occurred through 2014.

I collected water samples at each pipeline crossing location, recorded stream flow and temperature data, and recorded visual observations. My data and the water samples I collected are still being analyzed at the Princeton University laboratory but I share preliminary observations below for the purposes of the Atlantic Sunrise EIS review in the hope that FERC examines the full and repeated environmental impacts that could very well occur along this proposed 178 mile pipeline route that is mostly a greenfield project, if approved.

Impacts to Special Protection Streams Along Denuded Steep Slopes

Of the sampled, the section of pipeline that was constructed over Cummins Hill and across Cummins Creek saw the most impact from erosion. The steep slopes that were cleared of mature trees still showed little sign of herbaceous growth on 7/11, 7/14, and 8/14, 2014 during field visits. The slope breakers on the ROW surrounding Cummins Creek were eroding along the perimeter. The water running down the slope breakers pushed the runoff to the side of the ROW creating gullies and stormwater runoff off the ROW and down into the stream. As a result of this erosion and increased stormwater runoff, sediment was observed in riffle habitat of Cummins Creek, which likely impaired aquatic life by smothering the habitat of these animals. This stormwater runoff and lack of regrowth indicates permanent soil compaction on the ROW. Similar locations along temporary work spaces and additional temporary work spaces also had sparse regrowth and soil compaction. The pipeline cut steep mature forested slopes, which has major implications for pollution to the receiving streams at the bottom of such steep slopes. FERC needs to address and evaluate these severe impacts that occur on steep slopes and the resultant pollution that can impact the adjacent streams downslope. Wind throw and damage to adjacent mature trees off the ROW was also observed during these field visits.



Sparse herbaceous growth, soil compaction, evidence of runoff and gullies, and sediment escaping the silt fences and traveling into adjacent Cummins Creek, an Exceptional Value Stream in Pike County, PA.

The steep slopes adjacent locally named Evergreen Stream (UNT to the Delaware River) were also bare during July and August field visits. There was erosion that could be clearly seen along the sides of the ROW here as well. There were uprooted trees from wind throw or erosion or both impacted off the ROW.



Conditions of steep slope adjacent Evergreen Stream, July and August 2014.

Repeated Pipeline Activity Impacts Over Several Seasons Cause Persistent Harm

Continued construction, maintenance, and remediation work at New Road in Montague NJ and other locations resulted in muddy runoff into streams and sediment pollution discharging into nearby streams repeatedly. During the summer of 2014, construction bridges were reinstalled off of New Road resulting in a muddied pit and sediment runoff into the two nearby tributaries of Shimer Brook. The bridges were reinstalled for tree planting resulting in additional and repeated impacts. Below is the link to pictures taken by Joe Zenes on October 29th, 2014, almost year after the pipeline had begun carrying gas.

<https://picasaweb.google.com/lh/sredir?uname=105703332397473503863&target=ALBUM&id=6076465536169873505&authkey=Gv1sRqCln6nOGO1rvHYg&feat=email>

Its important to note that these maintenance activities often are added to an existing permit and as far as we can tell the public is not given an opportunity to comment nor are they adverstised in the PA Bulletin.



Lagging tree planting and remediation practices lead to repeated harm over several seasons. This picture was taken Summer of 2014 – almost a year after the new pipeline had been constructed and demonstrates repeated harm due to pipeline timelines and lagging efforts to restore the ROW shortly after its completion in November 2013.

Dewatering and Changes in Hydrology

Streams S002 and S003 at High Point State Park were completely dry by July 23rd whereas on July 9th there was water present. Although rain was sparse in the summer, the streams crossed by the pipeline appeared to have extra impacts. This is most likely due to the slope breakers diverting the natural path of the runoff and the severe soil compaction that limited infiltration. The slope breakers diverted water into the woods where it eroded along the edge of the pipeline. I also documented low streams levels in S004 and S005 at High Point State Park. Herbaceous regrowth in this section was patchy and sparse leaving bare soil. The soil had been compacted to the point where the ground was solid dirt and that vegetation could not colonize. On August 2nd, 2014, I recorded that two streams on the pipeline section from Evergreen to Cummins Creek went dry both of which had been previously flowing. Also August 7th, 2014 observations included a stream drying up off of New Road as well, seen in the picture below.



Dry stream off of New Road along pipeline ROW.

Temperature Impacts

The temperature data collected over the summer was variable. Not all of the streams appeared to have significant changes in the upstream and downstream ROW temperatures that were collected. However, in the streams that had a slower flow rate there was consistently a noticeable difference with warmer temperatures downstream of the ROW. This difference was present even in the mornings, not long after the sunrise. On August 27th, 2014 I collected samples in the afternoon at the Dimmick Creek and East Branch of the Dimmick Creek. There was a 10 degree Fahrenheit difference at the East Branch and 4 degree difference at Dimmick Creek. This indicates that there is a larger effect throughout the day, due to increased sun exposure from the open pipeline ROW cut where trees were removed. Wetlands within the ROW that were monitored for temperature also yielded much hotter temperatures than wetlands not in the ROW.

Nutrient Analysis

My nutrient analysis at this point is incomplete, I have collected approximately 250 samples from July 1st, 2014 to December 26th, 2014 to date. However, I have looked at the data enough to see that there is a difference in some of the streams in terms of their above and below levels of phosphates, nitrates, and sulfates. The differences were found in some streams, which may be correlated to the types of trees that were removed by the pipeline. Some of the streams had very high levels of nitrates in general which could be cause for concern, although I am unsure if they are related to the pipeline construction and more analysis is needed. The Evergreen Stream was the stream where we documented the most dramatic change in nitrate levels. Above the ROW the average nitrate levels were .0638ppm while below the ROW there were average levels of 0.3315ppm. The three tributaries to the Evergreen Stream that were uncut by the pipeline and located upstream of the pipeline ROW had substantially lower nitrate levels than the Evergreen stream cut by the pipeline.

One area in particular that had water chemistry results that stood out was behind Mountain Road. S111F and S111A both showed sulfate levels that were an order of magnitude greater than those present in the majority of the other streams. This may be a result of the blasting that was done in this area during pipeline construction. Literature has shown that blasting of rock that contains sulfates can cause their release into water sources. I would need to confirm the type of rock present in this area before making any conclusions. These samples were taken on July 2nd, 2014.

Below are links to albums showing before and after impacts of the blasting through the stream and pipeline construction behind Mountain Road where overwhelmed BMPs led to sediment leaving the ROW. Sediment-laden water proceeded to flow down the slope and into a stormdrain into a nearby stream. Photos were taken on June 11 and June 22, 2013.

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<https://picasaweb.google.com/lh/sredir?uname=105703332397473503863&target=ALBUM&id=5892704912210291553&authkey=Gv1sRgCL6v5luw9ty4nqE&feat=email>

The albums below include photos on various dates for the two streams that were observed to have high sulfate levels.

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https://picasaweb.google.com/lh/sredir?uname=105703332397473503863&target=ALBUM&id=5966906652401281905&authkey=Gv1sRgCMzc85n8_saJEA&feat=email

Thermal Heat Impacts from Buried Pipeline & Maintenance Process

Various observers have noted melted snow over the buried pipelines even on very cold days. See the picture below taken west off of Rt 590 at the Lackawaxen River crossing 2-18-15 after a -12 degree day. The snow melt is over the new 30" pipeline which I suspect that the 24" line is now dependent from the 30" line. TGP now comes in and works on the older 24" line as maintenance projects which requires minimal approval usually under an existing PADEP permit and only gets reported the following May as I was told by David Hanobic FERC project manager NEUP.



Winter snow melt over 30 inch buried pipeline, February 18, 2015. Photo by J. Zenes



Maintenance work conducted by TGP on the old 24 inch line in the Fall, 2014. Photo by J. Zenes