

# Water chemistry determination of tributaries within the South Fork of Ten Mile watershed

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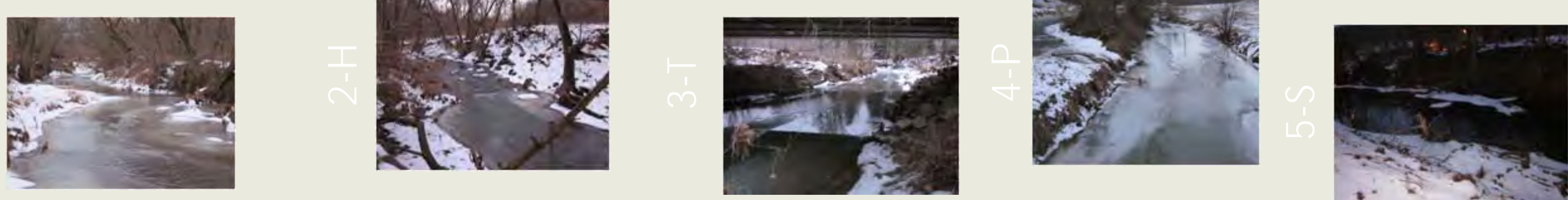
## Introduction

This project was undertaken to establish a baseline of the water quality within the South Fork of Ten Mile watershed. Water samples collected from five tributaries over a two month period were analyzed for a variety of water quality markers. The results were compared to typical stream values. When issues were discovered, further investigation of the stream occurred to determine where the contamination originated.

## Methods

At each sample site, the conductivity, temperature, and pH were measured on-site. A water sample was then collected for laboratory analysis of chloride, ammonium, calcium, nitrate using Vernier Ion Selective Electrodes. Dissolved oxygen and turbidity were also measured. Atomic Absorption Spectroscopy was used to determine the concentration of Iron, Magnesium, Sodium, and Manganese.

## Sample Sites



1-M Courtney Run, 2-H Hargus Creek, 3-T Ten mile Creek, 4-P Pursley Run, 5-S Smith Creek

## Location



Greene County is located in Southwestern Pennsylvania. It Borders Washington(north) and Fayette(east) counties of Pennsylvania and Monongalia(south), Wetzelsouthwest) and Marshall(west)Counties of West Virginia

Greene County, located in Southwestern Pennsylvania, is a major area impacted by the Marcellus Shale drilling industry. Previously, this area has been subjected serious water quality issues; therefore preserving the natural water quality is vital for the future. A project was undertaken to establish a baseline of the water quality within the South Fork of Ten Mile watershed. Water samples collected from five tributaries over a two month period were analyzed for a variety of water quality markers including pH, conductivity, dissolved oxygen, chloride, nitrate, calcium, ammonium and turbidity. Metals such as iron, sodium, and manganese were analyzed using Atomic Absorption. These results were compared to typical stream values. When issues were discovered, further investigation of the stream and area were examined to determine where the contamination originated. These problems were reported to the Pennsylvania Department of Environmental Protection with hopes that corrective actions would be taken.

## Results



## Discussion/Conclusions

With the exception of Smith Creek, the streams all fell within an acceptable range for most water quality markers tested. Pursley Run had a higher than EPA accepted pH but it stayed regular throughout sampling. Minimal to no flow on both August 30 and September 14 caused an increase in almost all test factors except for Smith Creek (it always had flowing water). It became apparent that Smith Creek was having contamination issues, so to determine the possible source of contamination two additional sites were chosen to be tested upstream from the original site. The first site was a run off stream from the coal mine along SR 218; the second was approximately ¼ of a mile upstream from the first site. After testing all parameters, it became evident that the primary source of contamination came from the mine run off. TDS levels were significantly lower for the first two samplings on Smith Creek; most likely cause by the lack of discharge from the mine. DEP-PA was informed about this problem and conducted a study as well and determined that the mine was the source of contamination. They are taking actions to see that this problem is corrected.

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