

Mercer County Watersheds Act 167 Stormwater Management Plan

5.1.7. Little Shenango River Watershed

The following municipalities lie within the Little Shenango River watershed: A portion of Fairview Township, a portion of Greene Township, a portion of Greenville Borough, a portion of Hempfield Township, a portion of Lake Township, a portion of New Vernon Township, a portion of Otter Creek Township, a portion of Perry Township, a portion of Salem Township, a portion of Sandy Creek Township, and all of Sugar Grove Township.

Within the Little Shenango River watershed, the primary stormwater related concern was increased runoff, with secondary issues being undersized culverts, development in the floodplains, poor drainage, and ponding on roads. Other issues included stream flooding, and sediment buildup in streams. (Appendix C, Figure 13 & 14)

The Little Shenango River watershed is in the north central portion of the county. It drains an area of 69,240 acres (108.2 square miles), of which 47,309 acres (73.9 square miles) are within Mercer County. This watershed's drainage flows into the county from the north and drains into the Shenango River, which merges with the Beaver River to form the Mahoning River, part of the Ohio River watershed. In general, the Little Shenango River watershed is relatively flat in topography with some steep slopes along the river. The watershed consists of poorly drained to moderately drained soils with underlying bedrock that has moderate to low porosity and permeability, predisposing the area to runoff. High density urban land uses are dotted along Route 358 intermixed with small areas of low density urban land use (residential areas). Only a small portion of Greenville lies within the Little Shenango River watershed. Greenville is a moderately sized, high density, urban area. The portion of Greenville within the Little Shenango watershed lies on relatively flat topography; therefore, it does not have the same runoff issues that the western portion of the municipality has. The remainder of the Little Shenango River watershed consists of mainly forested area and farmland. A considerable amount of wetlands can be found in the northwest section of the watershed. These wetlands are important because they provide flood storage and help water to infiltrate into the groundwater rather than running off into and flooding nearby creeks. Following is a detailed description of the Little Shenango River watershed within Mercer County:

Soils – The River itself is surrounded by the Wayland, course variant-Papakating-Red Hook association. This association consists of very poorly drained to moderately drained soils, found on nearly level floodplains and underlain by alluvium. Immediately surrounding that association is the Chenango-Braceville-Halsey association. This association can be well drained to very poorly drained, and is found on gently sloping to moderately steep stream terraces and moraines. It can range from being well drained to very poorly drained. A small amount of the Canfield-Ravenna association is found in the northeast, on gently sloping to moderately steep uplands underlain by glacial till. The remainder of the watershed consists of the Ravenna-Frenchtown association, somewhat

poorly drained to poorly drained soils, found on nearly level to gently sloping uplands. (Appendix A, Figure 6.)

Geology – The Little Shenango River is underlain by 5,226 acres (8.2 square miles) of the Berea sandstone through Venango formation, undivided. This bedrock formation is composed of a shale conglomerate and has moderate to low porosity and moderate to low permeability. Approximately 12,371 acres (19.3 square miles) of the Cuyahoga formation can be found underlying the floodplains. This formation is comprised of sandstone and has low porosity and low permeability. Surrounding the Cuyahoga formation is approximately 14,686 acres (23.0 square miles) of the Shenango formation, composed of siltstone and having moderate to low porosity and moderate to low permeability. The east is composed of 14,672 acres (23.0 square miles) of the Pottsville formation. This formation is composed of shale, siltstone, claystone, limestone, and coal and has variable porosity and moderate to low permeability. (Appendix A, Figure 3.)

Slope – This watershed is very flat, having 0%-8% grade throughout the majority of the north. Along the river, the watershed becomes relatively hilly with some steeper slopes 16%-25% grade to the south. Directly around the river can be found some slopes that have >25% grade. (Appendix A, Figure 4.)

Land Use – Appendix A, Figure 7 contains a map of the primary land uses within Mercer County, overlain with the watershed boundaries. The following table presents coverage of the most dominant land uses within the watershed:

Land Use	Acres	Square Miles	Percent of Watershed
Farmland	19,314	30.2	
Forested	21,441	33.5	
Wetland	1,702	2.7	
Low Density Urban	1,058	1.7	
High Density Urban	888	1.4	
Water	124	0.2	

Stormwater Management Issues Identified as Significant by Each Municipality within the Little Shenango River Watershed

Borough of Greenville

- Funding to upgrade existing storm water system.
- Controls and standards for issues that affect the runoff, erosion.
- Erosion of outflow drainage at Penn Power sub station off North Mercer Street – Replace outflow pipe and stabilize outflow area.
- Stabilizing peak flow conditions.
- Decrease watershed pollution including dissolved and un-dissolved pollutants from increased runoff causing negative impacts to recreation, aesthetics, and in-stream habitat

- Maintain groundwater supplies as increasing runoff decreases the amount of rain that becomes groundwater. Decreased groundwater supplies may have negative effects on well water supplies or dry up stream baseflow in dry periods.
- Control the erosion of stream beds and banks, undercut roads and utilities, damage to in-stream cover, and clogging of bridges and culverts during extreme storm events.
- Regulate and monitor overbank flows associated with extreme storm events.

Hempfield Township

- New commercial development and stormwater runoff from PennDOT owned and maintained roadways.
- Stabilizing peak flow conditions.
- Control the erosion of stream beds and banks, undercut roads and utilities, damage to in-stream cover, and clogging of bridges and culverts during extreme storm events.

New Vernon Township

- Stormwater controls and best management practices.
- Control the erosion of stream beds and banks, undercut roads and utilities, damage to in-stream cover, and clogging of bridges and culverts during extreme storm events.
- Stabilizing peak flow conditions.
- Maintain groundwater supplies as increasing runoff decreases the amount of rain that becomes groundwater. Decreased groundwater supplies may have negative effects on well water supplies or dry up stream baseflow in dry periods.
- Regulate and monitor overbank flows associated with extreme storm events.

Otter Creek Township

- Control road flooding and ponding north of the intersection of Route 358 and Freeland/Henry Road during heavy rain events.
- Control road flooding and ponding on Hughley Road north of the intersection of Hughley Road and Lyn Tyro Road during heavy rain events.
- Control the erosion of stream beds and banks, undercut roads and utilities, damage to in-stream cover, and clogging of bridges and culverts caused by increased surface runoff during extreme storm events.
- Maintain groundwater supplies as increasing runoff decreases the amount of rain that becomes groundwater. Decreased groundwater supplies may have negative effects on well water supplies or dry up stream baseflow in dry periods.
- Stabilizing peak flow conditions.
- Regulate and monitor overbank flows associated with extreme storm events.

- Property damage, bridge/culvert damage, stream, street, and property flooding have occurred as a result of poor drainage and undersized structures insufficiently transporting stormwater.

Salem Township

- Because of the hills in Salem Township, the most important issues are wash outs on the roads and keeping the culverts open.
- Regulate stream flooding, soil erosion, stream bed and bank erosion, in-stream sedimentation, and bridge/ culvert damage caused by increased runoff.
- Control the erosion associated with roadways and keeping culverts free of obstructions.
- Stabilizing peak flow conditions.
- Control the erosion of stream beds and banks, undercut roads and utilities, damage to in-stream cover, and clogging of bridges and culverts during extreme storm events.

Sandy Creek Township

- Control stream bank erosion along Tributary 36226 to Morrison Run along Pearson Road south of the intersection of Pearson Road and Petersburg Road.
- Control the erosion of stream beds and banks, undercut roads and utilities, damage to in-stream cover, and clogging of bridges and culverts during extreme storm events.
- Regulate stream flooding, soil erosion, stream bed and bank erosion, and bridge/ culvert damage caused by increased runoff, undersized structures, and floodplain development.

Agency Comments

- *PA Fish & Boat Commission*: Erosion and flooding on Werner Road and Leech Road. Pasture flooding onto the road.
- *Mercer County Conservation District*: Flooding problems on Log Cabin Road and Leech Road in Sugar Grove Township.