

Mercer County Watersheds Act 167 Stormwater Management Plan

5.1.8. Shenango River Watershed

The following municipalities lie within the Shenango River watershed: A portion of Delaware Township, a portion of Greene Township, a portion of Greenville Borough, a portion of Hempfield Township, all of Jamestown Borough, all of Pymatuning Township, all of West Salem Township, all of Clark, part of East Lackawannock Township, all of the City of Farrell, a portion of the City of Hermitage, a portion of Jefferson Township, a portion of Lackawannock Township, all of the City of Sharon, all of Sharpsville Borough, a portion of Shenango Township, all of South Pymatuning Township, all of West Middlesex Borough, all of Wheatland Borough, and a portion of Wilmington Township.

The primary stormwater concern in the Shenango River watershed was increased runoff. Secondary issues included poor drainage, stream erosion, street flooding, and undersized culverts. Other issues mentioned were development in the floodplains, field flooding, and scouring at outfalls. (Appendix C, Figures 15 & 16).

The Shenango River watershed drains approximately the western 1/3 of the county, an area of 279,107 acres (436.1 square miles) of which 144,500 acres (226.0 square miles) lie within Mercer County. In general, the Shenango River watershed is very flat in topography, becoming steeper along the river, with some very steep slopes along the southern portion of the river. It consists of moderately drained to poorly drained soils with underlying bedrock that has moderate to low porosity and permeability, predisposing the area to runoff. Areas of high density urban land use within the northern half of the watershed include the majority of Greenville, the Transfer/Reynolds area, and small areas dotted along route 18. The highest density of urban and commercial land use in the county is found in the southern half of the watershed in an area called the “Shenango Valley”, containing the Cities of Sharon, Hermitage, and Farrell, and the Boroughs of Sharpsville, Wheatland and West Middlesex. This dense urban land use predisposes an area to increased runoff, flooding, sedimentation, and water pollution. Because the Shenango River flows through the western portion of the Borough of Greenville, the topography is steeper along the river than in the remainder of the municipality. Route 18 into Greenville closely follows the Shenango River; therefore, that portion of Greenville has steeper slopes and extreme runoff problems after rain events. The remainder of the northern Shenango River watershed consists mainly of farmland with some forested areas, especially around the Shenango Lake Reservoir. The north western corner of the watershed contains wetlands, some considerable in size. These wetlands provide flood storage and help water to infiltrate into the groundwater rather than running off into and flooding nearby creeks. The area surrounding the Shenango Valley consists mainly of farmland and forest, with some low density urban areas adjacent to the major county and state roads.

Municipal separate storm sewer systems (MS4s) are designed to collect polluted storm water runoff and discharge it, untreated, into local rivers and streams. The Environmental Protection Agency established Phase I of the National Pollutant Discharge Elimination System (NPDES) stormwater program in 1990 to implement a stormwater management program as a means to control polluted discharges. Phase I of NPDES requires the operators of MS4s that serve populations of 100,000 or greater to implement a stormwater management program as a means to control polluted discharges from those MS4s.

The Stormwater Phase II Rule extends coverage of the NPDES stormwater program to certain “small” MS4s but takes a slightly different approach to how the stormwater management program is developed and implemented.

EPA’s Stormwater Phase II Rule establishes an MS4 stormwater management program that is intended to improve the Nation’s waterways by reducing the quantity of pollutants that stormwater picks up and carries into storm sewer systems during storm events. Common pollutants include oil and grease from roadways, pesticides from lawns, sediment from construction sites, and carelessly discarded trash, such as cigarette butts, paper wrappers, and plastic bottles. When deposited into nearby waterways through MS4 discharges, these pollutants can impair the waterways, thereby discouraging recreational use of the resource, contaminating drinking water supplies, and interfering with the habitat for fish, other aquatic organisms, and wildlife (Environmental Protection Agency Website).

The only MS4 Municipalities within Mercer County lie within the Shenango River watershed. They include the Cities of Sharon and Farrell, Hermitage, and the Borough of Sharpsville.

Following is a detailed description of the Little Shenango River watershed within Mercer County:

Soils –The soils surrounding the Shenango River in the north consist mainly of the Canfield-Ravenna association, a soil association that ranges from having moderately well drained to somewhat poorly drained characteristics. This association can be found on gently sloping to moderately steep uplands underlain by glacial till. Surrounding the Shenango River in the south is the Wayland, coarse variant-Papakating-Red Hook soil association, a very poorly drained to moderately drained association found on nearly level floodplains underlain by alluvium. Surrounding is the Canfield-Ravenna association, found on gently sloping and moderately steep uplands underlain by glacial till. This association ranges from being moderately well drained to being somewhat poorly drained. The far northern river and the southern river also are surrounded by the Wayland, coarse variant-Papakating-Red Hook association. This association consists of very poorly drained to moderately drained soils found on nearly level floodplains underlain by alluvium. The soils around Big Run, and in the floodplains of the southern

portion of the Shenango River consist of the Chenango-Braceville-Halsey association, soils that range from being well drained to very poorly drained, and are found on gently sloping to moderately steep stream terraces and moraines and are underlain by sandy and gravelly deposits. The majority of the watershed consists of the Ravenna-Frenchtown association, a composition that is somewhat poorly drained to poorly drained and is found on the nearly level to gently sloping uplands surrounding the rivers. (Appendix A, Figure 6.)

Geology – The northern part of the river and the Shenango Reservoir is underlain by 8,016 (12.5 square miles) of the Berea Sandstone through Venango formation, undivided. This formation is composed of a shale conglomerate and has moderate to low porosity and permeability. The remainder of the river and the streams in this watershed are underlain by 55,315 acres (86.4 square miles) of the Cuyahoga group, composed of sandstone. This formation has low porosity and low permeability. Approximately 30,430 acres (47.6 square miles) of the Shenango formation, composed of siltstone is found surrounding the Cuyahoga group. The Shenango formation has moderate to low porosity and moderate to low permeability. Approximately 50,429 acres (78.9 square miles) of the Pottsville formation is found in this watershed. This formation consists of shale, siltstone, claystone, limestone, and coal. This formation has variable porosity and moderate to low permeability. (Appendix A, Figure 3.)

Slope – The general topography of the watershed is very flat, having 0%-8% grade. The land around the river is hillier, having 16%-25% grade. These slopes become steeper along the Shenango River, especially in the south where slopes can exceed 25% grade in places. (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 Shenango River watershed contains the highest percentage of urban land use of any watershed in Mercer County as it contains the Shenango Valley, Greenville and the Transfer/Reynolds areas. The majority of the northern portion of the watershed is farmland, intermixed with forested areas, with a forested buffer around the Shenango Lake Reservoir to the south. In the rural areas surrounding the Shenango Valley, sprawl is occurring into farmland and forested areas. The following table presents coverage of the most dominant land uses within the watershed:

Land Use	Acres	Square Miles	Percent of Watershed
Farmland	55,324	86.0	38%
Forested	53,618	83.0	37%
High Density Urban	10,930	17.0	8%
Low Density Urban	4,798	7.5	3%
Wetland	3,298	5.2	3%
Water	4,185	6.6	2%

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

Clark Borough

- Regulate and monitor overbank flows associated with extreme storm events.
- 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
- 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.
- Monitor and management of increased runoff from upstream municipalities into the Borough and into the Shenango Reservoir.
- Control the flooding of streams and streets, soil erosion, stream bed and bank erosion, in-stream sedimentation, habitat/resource damage caused by increased runoff from the development of parking lots, yards, streets, and roads.
- Finding the funding to pay for necessary improvements.
- Runoff causing channeling on properties between Charles Street and Valley View Road, between Charles Street and Milton Street, and between Nora Street and Winner Road. Also, noted problems on Route 258 at a culvert crossing (site shown on map).
- Flooding issues along Clay Furnace Road between Route 258 and Neshannock Road.

Delaware Township

- Property damage and soil erosion has occurred along Rock School Road, Beil Road, and Line Road as a result of increased runoff and poor drainage.
- Property damage and flooding has occurred along Stull Road as a result of poor drainage and undersized structures.
- Street flooding, bridge and culvert damage, and scour at outfalls has occurred along Quarry Road as a result of undersized structures.
- Bridge, culvert, and property damage has occurred along Heckman Road as a result of poor drainage and undersized structures.
- 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.
- Regulate and monitor overbank flows associated with extreme storm events.
- Delaware Township feels that current practices need to be made friendlier when replacing existing structures (i.e. bridges, large culverts); for instance, the permit process needs to be waived or expedited.

East Lackwanna Township

- Control the flooding of streams and streets, soil erosion, stream bed and bank erosion, in-stream sedimentation, habitat/resource damage caused by increased runoff from the development of parking lots, yards, streets, and roads.
- 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.
- Monitor and management of increased runoff from private golf course along Route 62.

City of Farrell

- 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
- 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. The Route 60 North storm sewer has a heavy accumulation of debris and partial obstruction of a 60” culvert pipe.
- Monitor and management of increased runoff between Pershing Drive, Landay Lane, and DeBrakeleer Avenue.
- Correction of significant ditch erosion between Pershing Drive and DeBrakeleer Avenue

Borough of Greenville

- Funding to upgrade existing storm water system.
- Controls and standards for issues that affect the runoff, erosion.
- Flooding of Stewart Avenue several times a year. Dredge the Erie Canal detention of runoff during the development of Trinity site.
- Flooding of Lancaster, Lebanon, and York Street area several times a year. Increasing drainage sizing and dredge Erie Canal.
- Flooding and erosion of road drainage in the area of East Greenville Drive and Hempfield Drive. Re-channel water upstream or detention of water, or increase and extend piping.
- Plum and Union Street - sewer cannot be cleared causing flooding. Replace old storm sewer.
- Bracken Alley - storm sewer is undermined and sink holes appear annually. Replace rusted out pipe.

- West Drive - erosion of the road side in the area west of Clarksville Street. Flooding of Clarksville Street. Dredge and drain ditches, riprap or possibility of piping ditch.
- Saul Run at Lancaster Bridge – silt and gravel build up. Could block bridge causing damage and flooding. Dredge Channel.
- Lebanon Avenue Bridge – silt and sand build up. Could block bridge causing damage and flooding. Dredge Channel.
- Saul Run – concrete channel, silt buildup; has to be dredged every couple of years.
- Henry Camp – road floods over banks every couple of years. Dike Saul Run banks to increase capacity.
- Flooding behind the Greenville Municipal building annually. Unknown solution.
- Flooding and silt and gravel build in small streams crossing North Third Street ext. Detention ponds up stream in West Salem Township.
- Flooding at the Borough line along Orangeville Road. Detention ponds up stream in West Salem Township.
- North Second Street 24” storm sewer is caving in. It could clog and cause flooding. Upgrade the old stone and clay pipe.
- Harrison Street Storm is old and undersized. Replace the sewer system in the area of Pringles.
- York Street Flooding. This will increase as the Trinity site is developed. Dredge the Erie Canal biannually; incorporate detention measures in any new development.
- Billing Alley drainage – The drainage goes onto private property in an undersized broken pipe. The pipe needs upgraded and put on a public easement.
- Stewart Avenue and Columbia Avenue – Ponding on Columbia every time it rains.
- East Avenue and Columbia Avenue – Ponding every time it rains.
- Main Street and Grant Street Ponding – Up size the pipe under the railroad crossing.
- Clinton Street and Canal Street - Up size the pipe under the railroad crossing.
- 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.
- On Cedar Drive and Birch Drive: PennDOT has culverted the water off of Conneaut Lake Road under municipal roads and into municipal culverts. This has caused increased runoff of water into the ditches and is causing erosion of the ditches along these two residential roads. Residents are losing portions of their front yards due to wash-outs.
- Control the problem associated with the intersection of Donation and Eighth Avenue caused by an undersized pipe.
- Control ponding in the vicinity of Saul Avenue and Woodbine Avenue.
- Waugh Avenue is located in the flood plain of the Shenango River and is prone to flooding during extreme storm events.
- An undersized culvert causes problems along Saint Glory Road.
- 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.

City of Hermitage

- Flooding, sedimentation and erosion of stream banks of Baker Run, washing out residential yards.
- Moderate stream flooding caused by increased runoff.
- 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
- Control the flooding of streams and streets, soil erosion, stream bed and bank erosion, in-stream sedimentation, habitat/ resource damage caused by increased runoff from the development of parking lots, yards, streets, and roads.
- 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.
- Erosion of stream banks of Bobby Run.
- Maintenance and control of flooding associated with small tributaries during extreme storm events.
- Allocating the funding to maintain the existing stormwater system and to make improvements.

Jefferson Township

- 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 caused by increased surface runoff during extreme storm events. Erosion and culvert problems on Ballpark Road, Charleston Road, Skyline Drive, and Bend Road. Ponding on Ballpark Road and Skyline Drive.

City of Sharon

- 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.
- Decrease watershed pollution including dissolved and un-dissolved pollutants from increased runoff causing negative impacts to recreation, aesthetics, and in-stream habitat
- Maintenance and control of flooding associated with small tributaries during extreme storm events.
- Stabilizing peak flow conditions.
- Ponding noted at the Fire Station, at the corner of Dock Street and the entrance to the former Flower Lumber, on South Irvine Avenue, and at corner of East State Street and Forker Blvd. Erosion along Bay Way, along Pine Run, and beneath the 24” pipe at St. Joe’s parking lot.
- A fallen tree lays across the outfall at Budd Street and Sterling Avenue.

Sharpsville Borough

- Monitor and management of increased runoff from upstream municipalities.
- Monitor and management of water quality at Buhl Farm Lakes.
- 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. Undersized culverts at Twitmeyer Avenue and along Thornton Run, and erosion along the channel at High Street.
- Stabilizing peak flow conditions.
- Regulate and monitor overbank flows associated with extreme storm events.
- Decrease watershed pollution including dissolved and un-dissolved pollutants from increased runoff causing negative impacts to recreation, aesthetics, and in-stream habitat
- Allocating the funding to maintain the existing stormwater system and to make improvements.

Shenango Township

- Control the erosion of stream banks and beds, soil erosion, in-stream sedimentation, undercut roads and utilities, damage to in-stream habitat, clogging to culverts and bridges caused by increased runoff, poor drainage, and undersized structures.

- Monitor and management of increased runoff and field flooding on Koncar Road and road flooding on Frampton Road where a culvert is washing out.
- 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 caused by increased surface runoff during extreme storm events.

South Pymatuning

- Flooding and erosion issues: Buckeye Drive between Tamarack Drive and Hunter Street, Springwood Drive, erosion on Colt Road and Town Line, Buckeye Drive and Calahan, McCullough Run flooding onto Tamarack Drive and onto private properties, flooding from fields onto Tamarack Drive, flooding on Buckeye Drive, erosion at Saranac Drive and Huron, flooding on Hartford Road, flooding on Seneca Road, undersized culverts on Kane Road Seneca Drive, Tamarack Drive, Hummingbird Way, Blue Jay Way, and Maplewood Drive.
- Stabilizing peak flow conditions.
- Control the erosion of stream banks and beds, soil erosion, in-stream sedimentation, undercut roads and utilities, damage to in-stream habitat, clogging to culverts and bridges caused by increased runoff, poor drainage, and undersized structures.
- Decrease watershed pollution including dissolved and un-dissolved pollutants from increased runoff causing negative impacts to recreation, aesthetics, and in-stream habitat
- Regulate and monitor overbank flows associated with 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.

West Middlesex Borough

- 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
- Regulate and monitor overbank flows associated with extreme storm events.
- Control the erosion of stream banks and beds, soil erosion, in-stream sedimentation, undercut roads and utilities, damage to in-stream habitat, clogging to culverts and bridges caused by increased runoff, poor drainage, and undersized structures. Cited problems with erosion of the drainage ditch at Penn Avenue, drainage problems at the West Middlesex United Methodist Church parking lot, problems on Rt. 318 between School Street and Kiwanis

Road, drainage problems on Route 18 in front of the High School, and increased flow on Hogback Run.

- 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.
- Monitor and management of increased runoff from upstream municipalities.
- Allocating the funding to maintain the existing stormwater system and to make improvements.

West Salem Township

- 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.
- Control stream and property flooding, soil erosion, in-stream sedimentation, stream bed and bank erosion, and scour at outfalls caused by increased runoff.
- Control habitat/ resource damage from unknown causes.

Wheatland

- 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
- Regulate and monitor overbank flows associated with extreme storm events.
- Control flooding on Council Avenue just north of the Shenango River.

Wilmington Township

- 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
- Regulate and monitor overbank flows associated with extreme storm events.
- Control the erosion of stream banks and beds, soil erosion, in-stream sedimentation, undercut roads and utilities, damage to in-stream habitat, clogging to culverts and bridges caused by increased runoff, poor drainage, and undersized structures.

- 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.
- Allocating the funding to maintain the existing stormwater system and to make improvements

Agency Comments

- *Shenango River Watchers*: Flooding across Route 18 North into Greenville after rain events.
- *Mercer County Conservation District*: Un-named tributaries to Big Run in Reynolds between 10th and 20th streets have flooding issues.
- *Mercer County Conservation District*: Lowango Run in New Hamburg from the mouth to SR 58 has sedimentation and bank erosion.
- *Mercer County Conservation District*: Saul Run in Greenville from CN RR to mouth has bank erosion, sedimentation, and flooding.
- *Shenango River Watchers*: Increased runoff – road flooding on State Street between Taylor Avenue and Stambaugh Avenue during rain events.
- *Shenango River Watchers*: Bank erosion issues on Shenango River near Budd Street and Shenango Valley Freeway.
- *Shenango River Watchers*: Sedimentation into river from construction of new waste water treatment plant in Sharon.
- *Shenango River Watchers*: Scrap metal along banks of river and runoff of oil into river from Mercer Company property in Sharon.
- *Shenango River Watchers*: Flooding at parking lot over Baker Run in Hermitage after every rain event.
- *Shenango River Watchers*: Flooding, bank erosion to Pine Hollow Run along Shenango Valley Freeway in Sharon.
- *Shenango River Watchers*: Flooding down streets on West Hill in Sharon during rain events.
- *Shenango River Watchers*: Flooding after every rain event at corner of Connelly Blvd. and Chestnut Street.
- *PA Fish & Boat Commission*: Flooding issues on Lamor Road in Jefferson Township.
- *PA Fish & Boat Commission*: River Road in Jefferson Township is washed out.
- *PA Fish & Boat Commission*: High sediment load in Booth Run, South Pymatuning Township.
- *PA Fish & Boat Commission*: Storm drain flows directly into stream causing erosion and pollution, especially at I-80 and Route 60 interchange, and on Dutch Lane in Hermitage.
- *PA Fish & Boat Commission*: Flooding on Edgewood Drive in Pymatuning Township.

- *Mercer County Conservation District:* Un-named tributary to the Shenango River in the west side of the campground in West Middlesex has increased sediment load, bank erosion and flooding.
- *Mercer County Conservation District:* Turkey Run in Shenango Township at Campground Road has bank erosion and increased sedimentation.
- *Mercer County Conservation District:* Hogback Run from source in Hermitage to mount has bank erosion, increased sediment load, and flooding.
- *Mercer County Conservation District:* Bobby Run from source to mount has bank erosion, sediment, and flooding.
- *Mercer County Conservation District:* In South Pymatuning Township east of Tamarack Road and Seneca Road down slope from Dean Dairy and Brookfield Farms, flooding and sedimentation noted along roadway.
- *Mercer County Conservation District:* Booth Run in West Salem Township and South Pymatuning Township from source to mouth has sedimentation, bank erosion, and flooding.
- *PA Fish & Boat Commission:* Increased sedimentation in Pine Hollow Run in Hermitage.
- *US Army Corps of Engineers (Shenango Lake Reservoir):* Extreme sedimentation problem entering reservoir from Pine Hollow Run in Hermitage.
- *Shenango River Watchers:* Ponding on Highland Road near corner of Highland Road and Boyd Drive.
- *Mercer County Conservation District:* Flooding of Pine Hollow Run at Shenango Valley Freeway near the Honda Shop.

Mercer County Conservation District: Flooding on Dutch Lane near the entrance to the trailer park.