= Little Wapwallopen Creek =

Little Wapwallopen Creek is a tributary of the Susquehanna River in Luzerne County , Pennsylvania , in the United States . It is approximately 17 miles (27 km) long and flows through Rice Township , Dorrance Township , Conyngham Township , and Hollenback Township . The watershed of the creek has an area of 39 @.@ 5 square miles (102 km2) . The creek is designated as a Coldwater Fishery and a Migratory Fishery and is not considered to be impaired . It has two named tributaries : Pond Creek and Nuangola Outlet . Wild trout naturally reproduce in the creek .

Little Wapwallopen Creek ranges from slightly acidic to slightly basic . It is a significant source of flooding in Conyngham Township , Dorrance Township , and Rice Township . Numerous bridges have been constructed across the creek . The surficial geology in its vicinity consists of alluvium , alluvial terrace , alluvial fan , Wisconsinan Ice @-@ Contact Stratified Drift , Wisconsinan Till , and wetlands . Numerous bridges have also been constructed across the creek .

= = Course = =

Little Wapwallopen Creek begins in Boyle Pond in Rice Township . It flows west for several tenths of a mile and passes through another pond before turning south @-@ southwest for more than a mile (two kilometers) . It then turns west for a few tenths of a mile and receives Nuangola Outlet , its first named tributary , from the right . The creek turns south @-@ southwest for more than a mile before turning southwest and crossing Interstate 81 and entering Dorrance Township . Several tenths of a mile further downstream , it passes through Andy Pond and turns west @-@ northwest for a short distance . It then turns west @-@ southwest for considerably more than a mile before turning west and then west @-@ northwest . The creek then turns north for a few tenths of a mile before turning west for several tenths of a mile . For the next few miles , it flows roughly west @-@ southwest , entering Conyngham Township . The creek then turns south for several tenths of a mile , briefly entering Hollenback Township before turning north and flowing alongside Hess Mountain as it reenters Conyngham Township . Its valley broadens and it flows west @-@ southwest for a few miles , receiving the tributary Pond Creek and crossing Pennsylvania Route 239 . A short distance further downstream , it reaches its confluence with the Susquehanna River .

Little Wapwallopen Creek is approximately 17 miles (27 km) long . It joins the Susquehanna River 168 @.@ 16 miles (270 @.@ 63 km) upriver of its mouth .

= = = Tributaries = = =

Little Wapwallopen Creek has numerous unnamed tributaries and two named tributaries : Nuangola Outlet and Pond Creek . Pond Creek joins Little Wapwallopen Creek 1 @.@ 52 miles (2 @.@ 45 km) upstream of its mouth . Its watershed has an area of 9 @.@ 69 square miles (25 @.@ 1 km2) . Nuangola Outlet joins Little Wapwallopen Creek 14 @.@ 55 miles (23 @.@ 42 km) upstream of its mouth . Its watershed has an area of 2 @.@ 35 square miles (6 @.@ 1 km2) .

= = Hydrology = =

The discharge of Little Wapwallopen Creek near its mouth has been observed to range from 0 @.@ 87 to 54 cubic feet per second (0 @.@ 025 to 1 @.@ 529 m3 / s) . The turbidity level of the creek at this location was once measured to be fewer than 5 Jackson Turbidity Units . Its specific conductance ranged from 60 to 80 micro @-@ siemens per centimeter at 25 ° C (77 ° F) . The creek 's pH ranged between a slightly acidic 6 @.@ 3 and a slightly basic 7 @.@ 4 . The concentration of water hardness ranged from 19 to 23 milligrams per liter (0 @.@ 019 to 0 @.@ 023 oz / cu ft) . The creek is not considered to be impaired as of 2006 .

The concentration of dissolved oxygen in the waters of Little Wapwallopen Creek was measured in the 1970s to be 11 @.@ 0 milligrams per liter (0 @.@ 0110 oz / cu ft) . The carbon dioxide concentration ranged from 0 @.@ 5 to 9 @.@ 7 milligrams per liter (0 @.@ 00050 to 0 @.@ 00969

oz / cu ft) . The concentration of bicarbonate ranged from 8 to 12 milligrams per liter (0 @.@ 0080 to 0 @.@ 0120 oz / cu ft) and no carbonate was observed .

The concentration of organic nitrogen in Little Wapwallopen Creek was once measured to be 0 @.@ 06 milligrams per liter (6 @.@ 0 × 10 ? 5 oz / cu ft) and the ammonia concentration was once measured to be 0 @.@ 064 milligrams per liter (6 @.@ 4 × 10 ? 5 oz / cu ft) . The concentration of nitrogen in the form of nitrates was measured to be 0 @.@ 74 milligrams per liter (0 @.@ 00074 oz / cu ft) and the concentration of nitrogen in the form of nitrites was measured to be 0 @.@ 13 milligrams per liter (0 @.@ 00013 oz / cu ft) .

In the 1970s , the concentration of calcium in the waters of Little Wapwallopen Creek were found to range from 5 @.@ 00 to 5 @.@ 90 milligrams per liter (0 @.@ 00499 to 0 @.@ 00589 oz / cu ft) . The magnesium concentration ranged from 1 @.@ 50 to 2 @.@ 20 milligrams per liter (0 @.@ 00150 to 0 @.@ 00220 oz / cu ft) . The combined concentrations of sodium and potassium ranged from 2 @.@ 3 to 3 @.@ 0 milligrams per liter (0 @.@ 0023 to 0 @.@ 0030 oz / cu ft) and the recoverable iron concentration was once measured at 0 @.@ 08 milligrams per liter (8 @.@ 0 × 10 ? 5 oz / cu ft) . The sulfate concentration ranged from 12 @.@ 0 to 16 @.@ 0 milligrams per liter and the concentration of chloride ranged from 2 @.@ 3 to 7 @.@ 0 milligrams per liter (0 @.@ 0023 to 0 @.@ 0070 oz / cu ft) .

The concentration of dissolved solids in Little Wapwallopen Creek was once measured to be 60 milligrams per liter (0 @.@ 060 oz / cu ft) .

At its mouth , the peak annual discharge of Little Wapwallopen Creek has a 10 percent chance of reaching 2 @,@ 750 cubic feet per second (78 m3 / s) . It has a 2 percent chance of reaching 5 @,@ 250 cubic feet per second (149 m3 / s) and a 1 percent chance of reaching 7 @,@ 000 cubic feet per second (200 m3 / s) . The peak annual discharge has a 0 @.@ 2 percent chance of reaching 12 @,@ 500 cubic feet per second (350 m3 / s) . Upstream of the tributary Pond Creek , the peak annual discharge of the creek has a 10 percent chance of reaching 2 @,@ 150 cubic feet per second (61 m3 / s) . It has a 2 percent chance of 4 @,@ 400 cubic feet per second (120 m3 / s) and a 1 percent chance of reaching 5 @,@ 900 cubic feet per second (170 m3 / s) . The peak annual discharge has a 0 @.@ 2 percent chance of reaching 10 @,@ 400 cubic feet per second (290 m3 / s) .

At a point 0 @.@ 6 miles (0 @.@ 97 km) downstream of Blue Ridge Trail , the peak annual discharge of Little Wapwallopen Creek has a 10 percent chance of reaching 1 @,@ 400 cubic feet per second (40 m3 / s) . It has a 2 percent chance of reaching 2 @,@ 300 cubic feet per second (65 m3 / s) and a 1 percent chance of reaching 2 @,@ 700 cubic feet per second (76 m3 / s) . The peak annual discharge has a 0 @.@ 2 percent chance of reaching 3 @,@ 900 cubic feet per second (110 m3 / s) . At a point 0 @.@ 3 miles (0 @.@ 48 km) upstream of Blue Ridge Trail , the peak annual discharge of the creek has a 10 percent chance of reaching 1 @,@ 250 cubic feet per second (35 m3 / s) . It has a 2 percent chance of 2 @,@ 070 cubic feet per second (59 m3 / s) and a 1 percent chance of reaching 2 @,@ 470 cubic feet per second (70 m3 / s) . The peak annual discharge has a 0 @.@ 2 percent chance of reaching 3 @,@ 550 cubic feet per second (101 m3 / s) .

= = Geography , geology , and climate = =

The elevation near the mouth of Little Wapwallopen Creek is 495 feet (151 m) above sea level . The elevation of the creek 's source is approximately 1 @,@ 220 feet (370 m) above sea level . The course of the creek is tortuous .

Alluvium , which consists of stratified sand , silt , and gravel , as well as some boulders , occurs in the valley of Little Wapwallopen Creek to a depth of 10 feet (3 @.@ 0 m) or more . Numerous deposits of Wisconsinan Ice @-@ Contact Stratified Drift are present as well . Alluvial terrace also occurs near the creek , which is the only place in the quadrangle of Sybertsville that contains it in the surficial geology . Wisconsinan Loess , which consists of windblown silt and fine sand , occurs in the southern part of the creek 's valley in the Sybertsville quadrangle . The remains of outwash terraces also occur near the creek in that quadrangle .

In the Sybertsville quadrangle , the surficial geology in the valley of Little Wapwallopen Creek mainly consists of alluvium , alluvial terrace , alluvial fan , Wisconsinan Ice @-@ Contact Stratified Drift , and some small patches of Wisconsinan Till . The surficial geology on the valley slopes and uplands mainly consists of bedrock . In the quadrangle of Freeland , the surficial geology near Little Wapwallopen Creek mainly features Wisconsinan Till , Wisconsinan Ice @-@ Contact Stratified Drift , and alluvium . The surficial geology near the creek in the Wilkes @-@ Barre West quadrangle mainly consists of Wisconsinan Till , with some scattered areas of bedrock and alluvium .

The Berwick Axis , which is also known as the Montour Axis , crosses the Susquehanna River half a mile downstream of the mouth of Little Wapwallopen Creek . There is concealed Marcellus shale near the creek in Hollenback Township .

The water temperature of Little Wapwallopen Creek near Wapwallopen was measured several times during the 1970s . The values ranged from 7 @.@ 0 ° C (44 @.@ 6 ° F) in May 1971 to 19 @.@ 5 ° C (67 @.@ 1 ° F) in September 1972 .

= = Watershed = =

The watershed of Little Wapwallopen Creek has an area of 39 @.@ 5 square miles (102 km2) . The mouth of the creek is in the United States Geological Survey quadrangle of Berwick . However , its source is in the quadrangle of Wilkes @-@ Barre West . It also flows through the quadrangles of Freeland and Sybertsville . The creek is one of the major streams in Luzerne County .

The land in the 100 year floodplain of Little Wapwallopen Creek mainly consists of agricultural and forested land . However , there are also some areas of rural residential land . A natural gas pipeline 42 inches (110 cm) in diameter and owned by the Transcontinental Gas Pipeline Company crosses an unnamed tributary of Little Wapwallopen Creek .

A 160 @-@ acre (65 ha) lake known as Lilly Lake is in the watershed of Little Wapwallopen Creek , on one of its tributaries . A pond known as Triangle Pond is also in the upper reaches of the watershed . Henry C. Bradsby 's book History of Luzerne County , Pennsylvania described Round Pond as being in the watershed as well . A swamp known as Turner Swamp is also in the watershed . Other lakes in the creek 's vicinity include Andy Pond , Lake Blytheburn , Boyle Pond , Nuangola Lake , and the Ice Ponds . Many patches of wetlands are found in the watershed 's upper reaches .

A package wastewater treatment facility operated by the Crestwood School District discharges into Little Wapwallopen Creek in Rice Township . It has a capacity of 11 @,@ 000 US gallons (42 @,@ 000 l) per day . Another package wastewater treatment facility is operated by Wilbar Realty in the same township and discharges into the creek . It serves 176 homes in Laurel Lake Village and has a capacity of 87 @,@ 500 US gallons (331 @,@ 000 l) .

Little Wapwallopen Creek is one of the main sources of flooding in Conyngham Township , along with the Susquehanna River . The creek is also the main source of flooding in Dorrance Township and one of the main sources in Rice Township . A 100 year flood of the creek would flood substantial areas . Such flooding would also be exacerbated by backwater flooding from the Susquehanna River .

= = History = =

Little Wapwallopen Creek was entered into the Geographic Names Information System on August 2 , 1979 . Its identifier in the Geographic Names Information System is 1179707 .

Historically , a Native American path went from Council Cup up the Little Wapwallopen Creek valley and to Wilkes @-@ Barre . The path ran from Council Cup to the creek and then northeast alongside it before going past Lily Lake and over Penobscot Mountain towards where Wilkes @-@ Barre is now located . The first person to settle in Conyngham Township was Martin Harter , who settled on the creek near its mouth in 1795 .

In the late 1800s , there was an old ferry road near the mouth of Little Wapwallopen Creek . A railroad bridge also crosses the creek . Historically , a road ran from a small settlement on Big Wapwallopen Creek to an even smaller one on Little Wapwallopen Creek , near where Church Road

presently is . The Glen Brook Water Company once had plans to construct a dam on the creek and also on its tributary Pond Creek . The Wilkes @-@ Barre Ice Company and the Hazleton Ice Company also dammed a stream in the creek 's watershed in 1912 and 1916 respectively , forming the Ice Ponds .

A concrete stringer / multi @-@ beam or girder bridge carrying Blytheburn Road was built over Little Wapwallopen Creek in 1920 . It is 33 @.@ 1 feet (10 @.@ 1 m) long . A concrete slab bridge was built across the creek in 1935 and repaired in 2007 . It is 23 @.@ 0 feet (7 @.@ 0 m) long and carries T @-@ 477 / Weyhenmyr Street . In 1940 , a bridge carrying Pennsylvania Route 239 was constructed over the creek in Conyngham Township . This bridge is a steel stringer / multi @-@ beam or girder bridge with a length of 65 @.@ 0 feet (19 @.@ 8 m) long .

A three @-@ span bridge carrying Interstate 81 northbound over Little Wapwallopen Creek was constructed in Rice Township in 1964 and repaired in 1987 . This bridge is a prestressed box beam bridge with a length of 162 @.@ 1 feet (49 @.@ 4 m) . A bridge of the same type was built over the creek for Interstate 81 southbound in 1965 . This bridge was also repaired in 1987 and is 185 @.@ 0 feet (56 @.@ 4 m) long . In 1975 , a prestressed stringer / multi @-@ beam or girder bridge carrying State Route 3008 / Ruckle Hill Road was built over the creek . This bridge is 92 @.@ 9 feet (28 @.@ 3 m) long and is in Conyngham Township . A prestressed box beam or girders bridge was built in Dorrance Township in 1988 . It is 63 @.@ 0 feet (19 @.@ 2 m) long . Another bridge of the same type , but with a length of 37 @.@ 1 feet (11 @.@ 3 m) was constructed in 1996 for T @-@ 406 / Georges Road . A steel girder and floorbeam system bridge was built over the creek in 1997 . It is 60 @.@ 0 feet (18 @.@ 3 m) long and carries T @-@ 392 / Hollow Road .

Floodwaters from Little Wapwallopen Creek reached a height of 2 feet (0 @.@ 61 m) over St. Marys Road in Dorrance Township during a storm in 1972 . This is the only recorded flooding of a developed area caused by a major storm in the township . The creek also once flooded to a depth of 18 to 20 inches (46 to 51 cm) over Hislop Road in Rice Township .

In August 2002 , the Pennsylvania Environmental Council received $ 57 @,@ 897 @.@ 76 to carry out a restoration plan on the upper reaches of Little Wapwallopen Creek . Since 2005 , a project to remedy streambank erosion on the creek has been successful . The creek has a watershed association known as the Little Wapwallopen Creek Watershed Association .

= = Biology = =

The drainage basin of Little Wapwallopen Creek is designated as a Coldwater Fishery and a Migratory Fishery . Wild trout naturally reproduce in the creek from its mouth upstream for 4 @.@ 40 miles (7 @.@ 08 km) to T @-@ 392 . They also do so in the tributary Pond Creek from its headwaters downstream to its mouth .

Henry C. Bradsby 's 1893 book History of Luzerne County , Pennsylvania stated that Long Pond and Round Pond , two ponds in the watershed , had a large fish population . The creek was stocked with 700 fingerling , yearling , and adult brook trout in 1909 .

The greenway of Little Wapwallopen Creek has been proposed as a conservation area in the Open Space , Greenways & Outdoor Recreation Master Plan for Luzerne County and Lackawanna County .