

= Mud Creek ( Chillisquaque Creek ) =

Mud Creek is a tributary of Chillisquaque Creek in Columbia County and Montour County in Pennsylvania , in the United States . It is approximately 8 @. @ 3 miles ( 13 @. @ 4 km ) long and flows through Madison Township , Columbia County and Derry Township , Montour County . The main tributaries of the creek are unnamed tributaries . The creek 's watershed has an area of 17 @. @ 70 square miles and is in West Hemlock Township , Montour County as well as the two townships it flows through . The watershed is mostly agricultural and forested and the main developed areas are Washingtonville and Jerseytown .

As of 2011 , the daily load of sediment in Mud Creek is 24 @, @ 165 @. @ 59 pounds ( 10 @, @ 961 @. @ 33 kg ) and the daily load of phosphorus is 16 @. @ 64 pounds ( 7 @. @ 55 kg ) . Various other compounds and metals are also found in the creek . The main rock formations in the watershed include the Hamilton Group , the Trimmers Rock Formation , and the Onondaga and Old Port Formations . The main soil series are the Watson @- @ Berks @- @ Alvira series , the Chenango @- @ Pope @- @ Holly series , and the Berks @- @ Weikert @- @ Bedington series . The watershed is in the ridge and valley region of the Appalachian Mountains .

Mud Creek is named for its muddiness . An area near it was settled as early as 1772 and several bridges were built across it and its tributaries in the 20th century . The creek is designated as a warm @- @ water fishery .

= = Course = =

Mud Creek begins in central Madison Township , Columbia County . It flows south for a short distance before turning southwest and passing through Jerseytown , where it crosses Pennsylvania Route 44 . The creek then continues to flow southwest , parallel to Pennsylvania Route 254 . Over the next several miles , its direction gradually changes from southwest to west and it exits Madison Township . Mud Creek then enters Derry Township , Montour County . It turns southwest again , continuing to follow Pennsylvania Route 254 . Over the next few miles , the creek receives several unnamed tributaries . It then crosses Pennsylvania Route 54 and enters Chillisquaque Creek 16 @. @ 79 miles ( 27 @. @ 02 km ) upstream of its mouth , immediately south of Washingtonville .

= = Hydrology = =

As of 2011 , a total of 54 @. @ 78 miles ( 88 @. @ 16 km ) of streams in the watershed of Mud Creek were affected by organic enrichment , low concentrations of dissolved oxygen , and heavy loads of sediment . The entirety of every stream in the creek 's watershed was considered by the Pennsylvania Department of Environmental Protection to be impaired as of 2011 .

The daily load of sediment in Mud Creek was 24 @, @ 165 pounds ( 10 @, @ 961 kg ) as of 2011 , but the total maximum daily load , above which water quality is considered impaired , is only 11 @, @ 371 @. @ 58 pounds ( 5 @, @ 158 @. @ 06 kg ) . The largest contributor of sediment to the creek was cropland , which contributed 19 @, @ 538 @. @ 46 pounds ( 8 @, @ 862 @. @ 50 kg ) per day . 3 @, @ 188 @. @ 05 pounds ( 1 @, @ 446 @. @ 08 kg ) of sediment per day came from stream banks and 1 @, @ 016 @. @ 05 pounds ( 460 @. @ 87 kg ) came from hay and pastures . 229 @. @ 80 pounds ( 104 @. @ 24 kg ) came from land classified by the Pennsylvania Department of Environmental Protection as " transition " , 115 @. @ 78 pounds ( 52 @. @ 52 kg ) per day came from forest , and 77 @. @ 36 pounds ( 35 @. @ 09 kg ) from land classified by the Pennsylvania Department of Environmental Protection as " low @- @ intensity development " . 0 @. @ 05 pounds ( 0 @. @ 023 kg ) came from wetlands . Many of the streams in the watershed can be muddy for a number of days after thunderstorms . A United States Geological Survey report from the 1960s observed a total of 1 @. @ 5 tons of dissolved solids flowing through the creek daily .

As of 2011 , the load of phosphorus in Mud Creek was 16 @. @ 64 pounds ( 7 @. @ 55 kg ) per day , but the total maximum daily load is 6 @. @ 71 pounds ( 3 @. @ 04 kg ) . 12 @. @ 92 pounds ( 5 @. @ 86 kg ) per day came from cropland , 2 @. @ 18 pounds ( 0 @. @ 99 kg ) from groundwater ,

and 1 @. @ 10 pounds ( 0 @. @ 50 kg ) from hay and pastures . An average of 0 @. @ 14 pounds ( 64 g ) per day of phosphorus came from land classified by the Pennsylvania Department of Environmental Protection as " transition " . 0 @. @ 07 pounds ( 32 g ) came from forest , 0 @. @ 07 pounds ( 32 g ) from land classified by the Pennsylvania Department of Environmental Protection as " low @- @ intensity development " , and 0 @. @ 07 pounds ( 32 g ) from stream banks . Septic systems contributed 0 @. @ 06 pounds ( 27 g ) of phosphorus per day to the creek and wetlands contributed 0 @. @ 0002 pounds ( 0 @. @ 091 g ) .

The discharge of Mud Creek ranges from 0 @. @ 1 to 13 cubic feet per second and averages 5 @. @ 8 cubic feet per second . Its pH ranges from 6 @. @ 3 to 7 @. @ 9 and the specific conductance is between 162 and 312 micro @- @ siemens per centimeter at 25 ° C ( 77 ° F ) .

A United States Geological Survey report in the 1960s measured the concentration of bicarbonate in Mud Creek to range from 41 to 109 milligrams per liter , but there were no carbonates in the water . The creek 's nitrate concentration ranged from 3 @. @ 3 to 6 @. @ 3 milligrams per liter for filtered water and the concentration of sulfates ranged from 23 to 29 milligrams per liter , again for filtered water . The concentration of chlorides in the creek 's filtered waters ranged from 7 to 23 milligrams per liter . The calcium and magnesium concentrations in filtered water were 20 to 44 and 4 @. @ 4 to 6 milligrams per liter , respectively .

Mud Creek experiences nonpoint source pollution . The Montour County Natural Areas Inventory recommended remedying this pollution .

= = Geography , geology , and climate = =

The elevation near the mouth of Mud Creek is 502 feet ( 153 m ) above sea level . The elevation of the creek 's source is approximately 760 feet ( 230 m ) above sea level . The highest areas of the watershed are in its southeastern portion . The watershed of Mud Creek is in the ridge and valley physiographic region of the Appalachian Mountains .

The main rock type in the watershed is shale , mainly that of the Hamilton Group . Siltstone and sandstone are also found in the watershed , in the Trimmers Rock Formation and the Onondaga and Old Port Formations . The Trimmers Rock Formation occurs on the southern side of the watershed and also in the northeastern corner of it . The Onondaga and Old Port Formations occur in the lowest reaches of the watershed and the Hamilton Group occurs everywhere else . 80 percent of the watershed 's rock is of the Hamilton Group , 15 percent is of the Trimmers Rock Formation , and 5 percent is of the Onondaga and Old Port Formations .

The Lower Helderberg Limestone occurs a small distance north of Mud Creek , where it is quarried . It is a flaggy and blue @- @ colored limestone that is 15 feet ( 4 @. @ 6 m ) thick and dips at an angle of six to eight degrees . There are small pieces of the Oriskany sandstone close to the confluence of the creek with Chillisquaque Creek .

The most common soil series in the watershed of Mud Creek is the Watson @- @ Berks @- @ Alvira series . It is a shaly silt loam that mostly occurs in the watershed 's plains and highlands . Other soil series in the watershed include the Berks @- @ Weikert @- @ Bedington series and the Chenango @- @ Pope @- @ Holly series . The Chenango @- @ Pope @- @ Holly occupies areas near the creek itself in its lower reaches and the Berks @- @ Weikert @- @ Bedington series occurs throughout most of the southern edge of the watershed . All other parts of the watershed lie over soil of the Berks @- @ Weikert @- @ Bedington series . 80 percent of the soil is of the Watson @- @ Berks @- @ Alvira series , 12 percent is of the Berks @- @ Weikert @- @ Bedington series , and 8 percent is of the Chenango @- @ Pope @- @ Holly series . The Holly @- @ Monogahela @- @ Basher soil association is found in the floodplain of the creek .

On average , 44 @. @ 5 inches ( 113 cm ) of precipitation fall in the watershed of Mud Creek annually . The annual level of runoff in the watershed is 0 @. @ 13 inches ( 0 @. @ 33 cm ) on average .

= = Watershed = =

The watershed of Mud Creek has an area of 17 @.@ 70 square miles . It is mainly in Madison Township , Columbia County and Derry Township , Montour County , but a small part of it is in West Hemlock Township , Montour County . The watershed of the creek is in the Washingtonville and Millville United States Geological Survey 7 @.@ 5 minute quadrangles . It is on the eastern edge of the West Branch Susquehanna River watershed . The creek 's major tributaries include several unnamed tributaries .

The main land use in the watershed of Mud Creek is agricultural land , which accounts for 62 @.@ 97 percent of the total area . 31 @.@ 49 percent of the watershed is forested and 5 @.@ 54 percent is developed land . Most of the forested land is on the watershed 's southern and eastern edges , but there are some patches of it elsewhere , most of which are fairly small . Most of the developed land is near Jerseytown and Washingtonville , but there are several other small areas of development in the watershed 's lower reaches and a few other areas in its upper reaches .

The major communities in the Mud Creek watershed are Jerseytown and Washingtonville . Major roads in the watershed include Pennsylvania Route 254 . There are also a number of township roads that go to the creek and its tributaries .

#### = = History and etymology = =

An early settler in the area was George Whitmoyer , who built a cabin in the valley of Mud Creek at Jerseytown in 1772 . The Mud Creek Bridge was built over Mud Creek in 1907 . It is a Pratt pony truss bridge that was built in 1907 and is 40 feet ( 12 m ) . The bridge is near to collapse and is closed to traffic . Another eight bridges also cross the creek . Four were built in the 1930s , one in 1946 , two in 1962 , and the most recent in 1984 . An additional four bridges were built over its tributaries in the 1940s .

John Gosse Freeze gives the name Mud Creek as the east branch of Chillisquaque Creek in his 1888 book A History of Columbia County , Pennsylvania : From the Earliest Times , but adds that the creek 's name is more correctly the East Branch of the Chillisquaque . Mud Creek is named for its muddiness , which is especially pronounced following storms .

#### = = Biology = =

There are few or no riparian buffers along Mud Creek where it flows through agricultural land . However , the Montour County Natural Areas Inventory has recommended restoring the riparian buffers in Derry Township . A wet meadow is located along the creek north of Washingtonville . Plant types typically found in wet meadows include various ferns , sedges , grasses , and red maples . Mud Creek is designated as a warm @-@ water fishery .