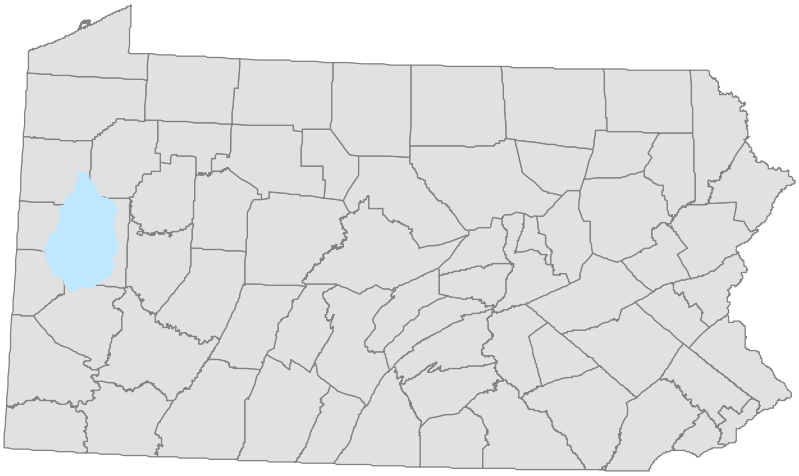
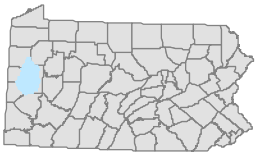
United States Department of Agriculture
Natural Resources Conservation Service



Rapid Watershed Assessment
Connoquenessing Watershed

Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help landowners and local leaders set priorities and determine the best actions to achieve their goals.



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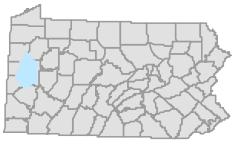


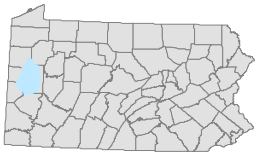
Preface

The Natural Resources Conservation Service (NRCS) is initiating rapid watershed assessments in order to increase the speed and efficiency generating resource information to guide conservation implementation, as well as the speed and efficiency of putting it into the hands of local decision makers. While these rapid assessments provide less detail and analysis than full-blown studies and plans, they do provide a foundation for watershed studies or area planning. In addition, the assessments provide the benefits of NRCS locally-led planning for resource conservation and conservation program implementation in less time and at a reduced cost than more complex studies.

Rapid watershed assessments will be valuable for Farm Bill program delivery, and provide useful information for county, watershed and regional planners. These assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments can help landowners and local leaders set priorities and determine the best actions to achieve their goals.

To produce the assessments, quantitative and qualitative data is collected and organized to create a watershed profile using Geographic Information System (GIS) technology. The data is analyzed to allow resource concerns and conditions to become apparent, and to generate maps and information to help people make better decisions about conservation needs and programs.

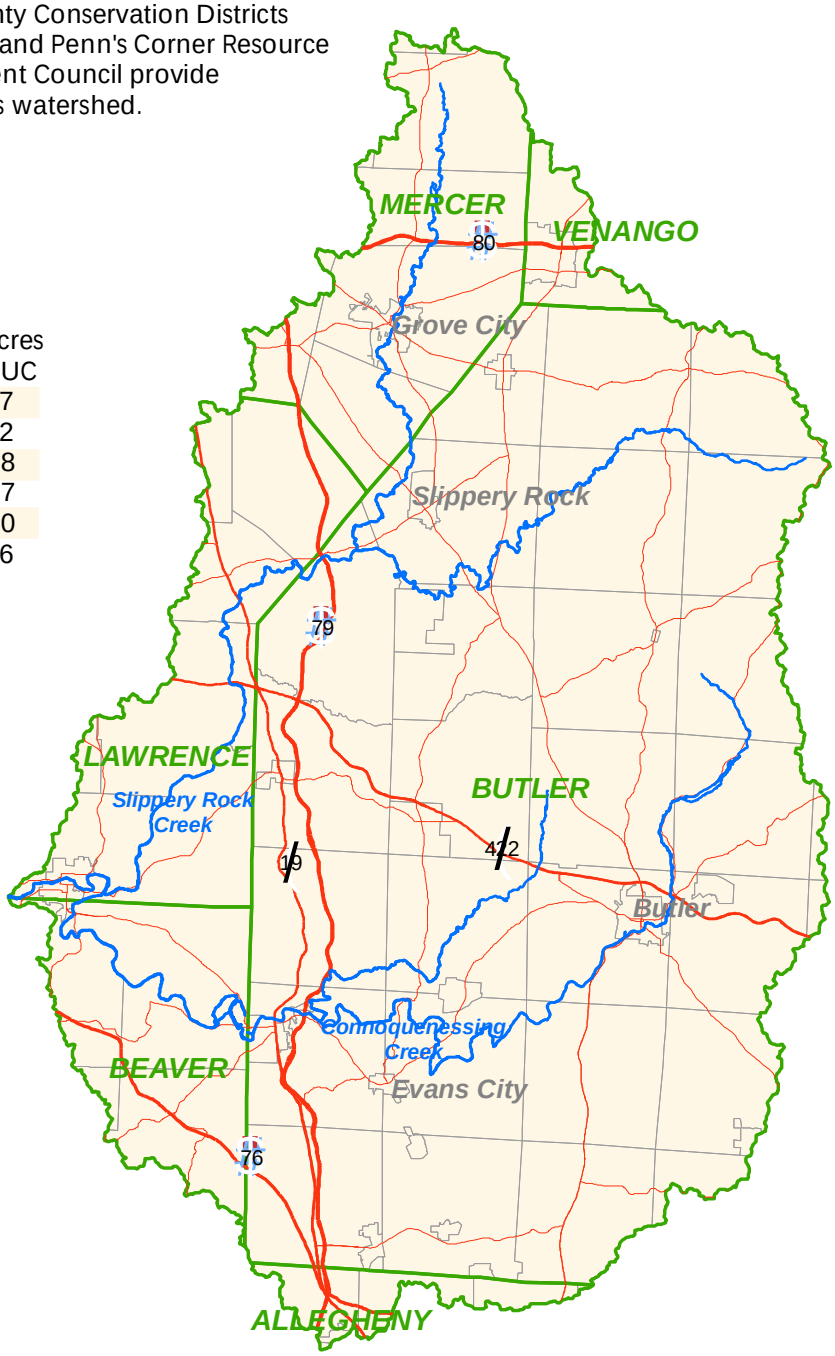
/s/ Craig R. Derickson
Pennsylvania State Conservationist



Introduction

The Connoquenessing Watershed is located in Western Pennsylvania in portions of Allegheny, Beaver, Butler, Lawrence, Mercer, and Venango Counties. The Connoquenessing Watershed is slightly over 538,000 acres in size, of which almost 143,000 acres is cropland. Three Service Centers of the Natural Resources Conservation Service, six county Conservation Districts and portions of the Penn Soil and Penn's Corner Resource Conservation and Development Council provide conservation assistance in this watershed.

	Acres in HUC	% Acres of HUC
Allegheny	9068	1.7
Beaver	38,524	7.2
Butler	370,242	68.8
Lawrence	57,479	10.7
Mercer	54,314	10.0
Venango	8803	1.6

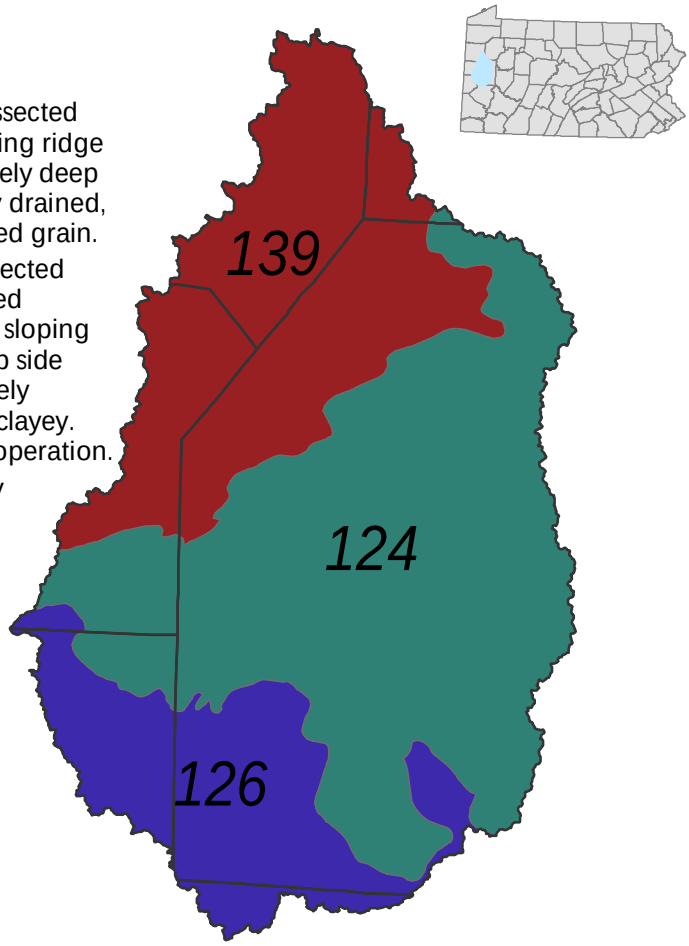


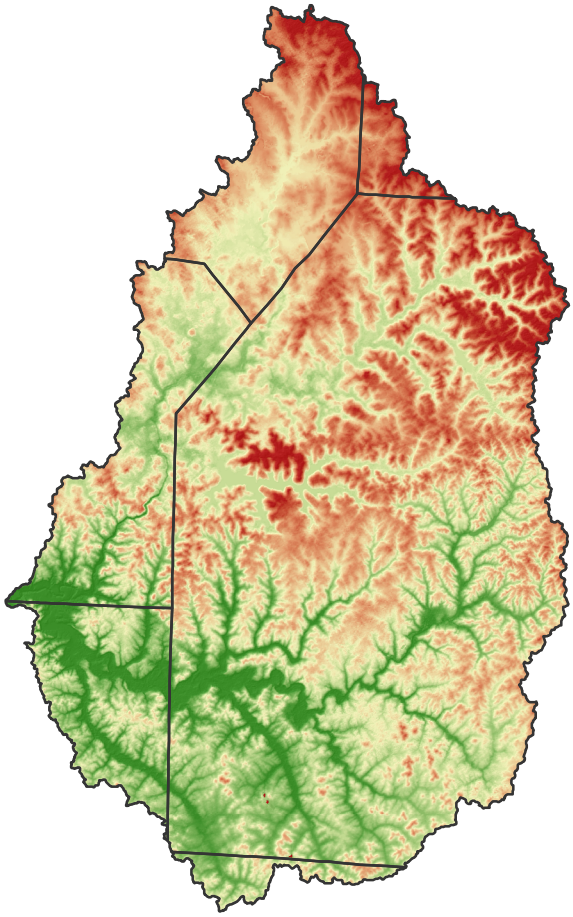
Common Resource Area (CRA)[1]

124 - Western Allegheny Plateau: This CRA is on a dissected plateau that consists of narrow, level valley floors, rolling ridge tops, and hilly to steep ridge slopes. Soils are moderately deep to very deep, excessively drained to somewhat poorly drained, and loamy. Most farms in the area are for hay and feed grain.

126 - Central Allegheny Plateau: This CRA is on a dissected plateau that is underlain mainly by horizontally bedded sedimentary rocks. Narrow, level valleys and narrow, sloping ridge tops are separated by long, steep and very steep side slopes. Soils are mainly shallow to very deep, excessively drained to somewhat poorly drained, and skeletal to clayey. Most farms in the CRA are beef cattle and diary farm operation.

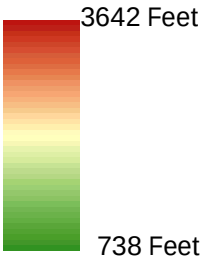
139 - Lake Erie Glaciated Plateau: This CRA is a gently rolling to strong rolling, dissected plateau. A narrow band along Lake Erie is fairly flat. Soils are very deep, well drained to poorly drained, and loamy or clayey. Feed grain and forage for diary cattle are the main crops in the area.

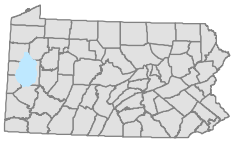




Elevation[2]

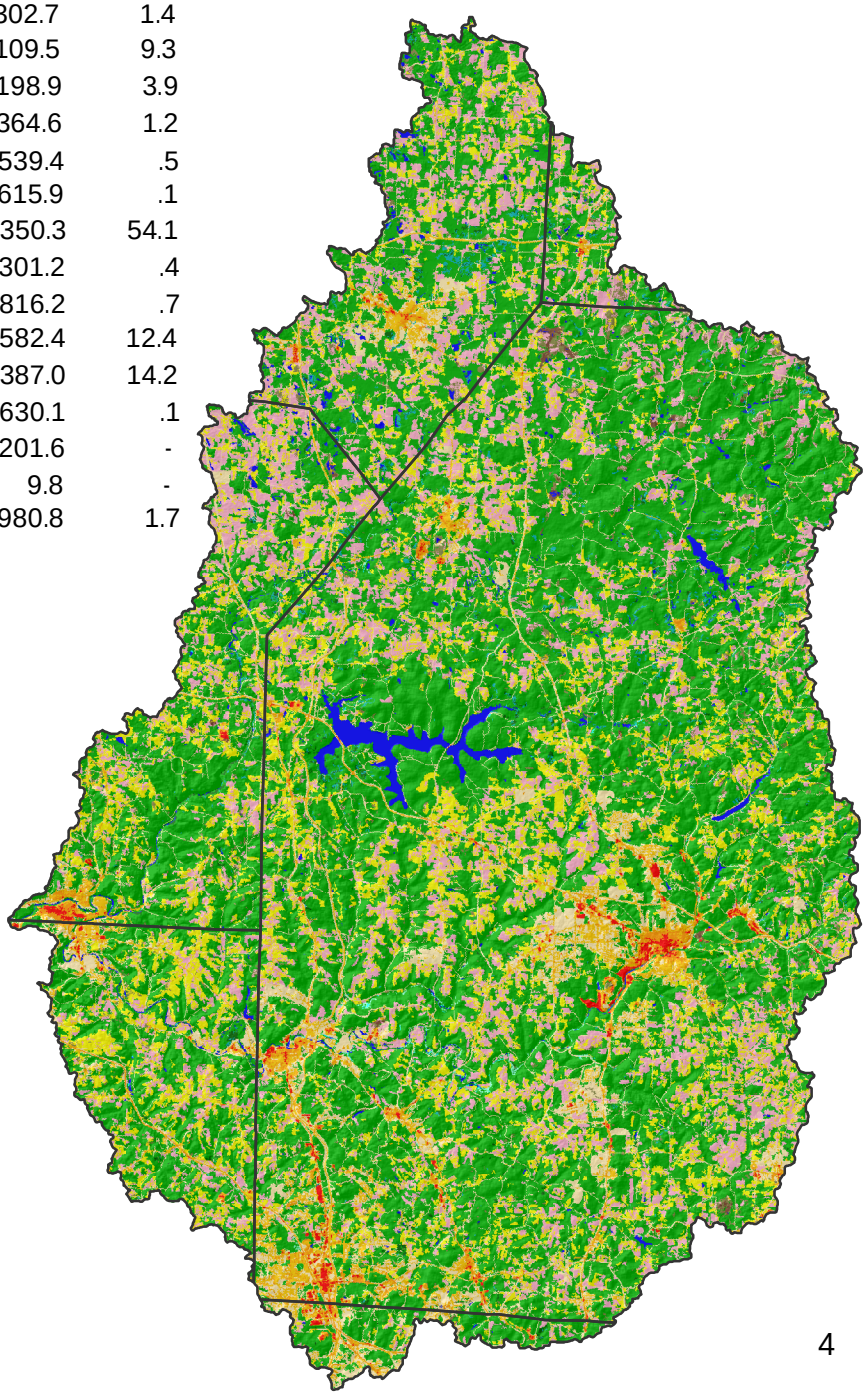
Elevation in the Connoquenessing Watershed ranges from 3642 feet (1110 meters) at it's high point to 738 feet (225 meters) at a low point.

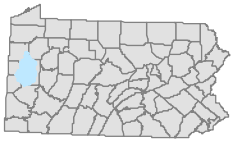


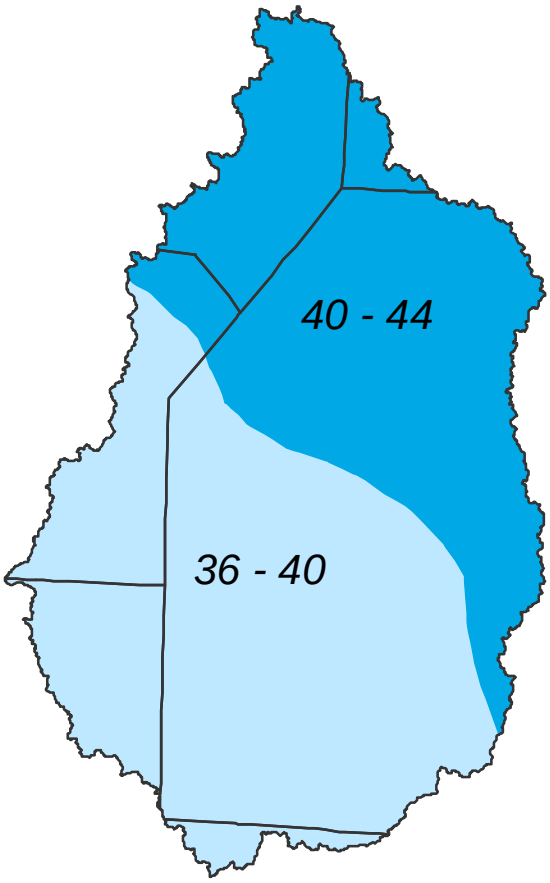


Land Use / Land Cover 2001[3]

	Acres	Percent
Water	7302.7	1.4
Developed, Open Space	50,109.5	9.3
Developed, Low Intensity	21,198.9	3.9
Developed, Medium Intensity	6364.6	1.2
Developed, High Intensity	2539.4	.5
Barren Land (Rock/Sand/Clay)	615.9	.1
Deciduous Forest	291,350.3	54.1
Evergreen Forest	2301.2	.4
Mixed Forest	3816.2	.7
Pasture/Hay	66,582.4	12.4
Cultivated Crops	76,387.0	14.2
Woody Wetlands	630.1	.1
Emergent Herbaceous Wetlands	201.6	-
Shrub / Scrub	9.8	-
Grassland / Herbaceous	8980.8	1.7





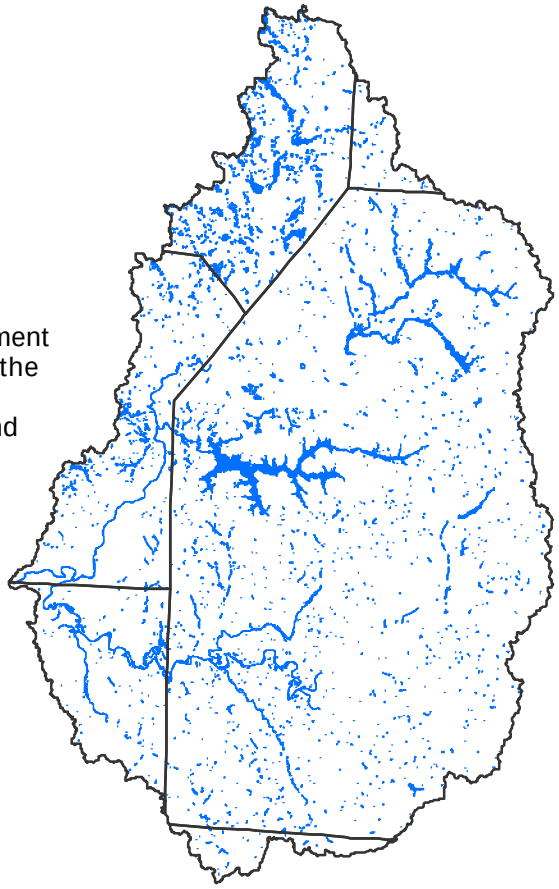


Average Annual Precipitation (Inches)[4]

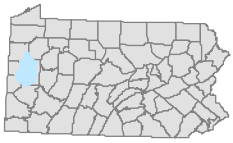
National Wetlands Inventory[5]

Wetlands are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface.

NWI digital data files are records of wetlands location and classification as developed by the U.S. Fish & Wildlife Service. The classification system was adopted as a national classification standard in 1996 by the Federal Geographic Data Committee.



National Wetlands Inventory

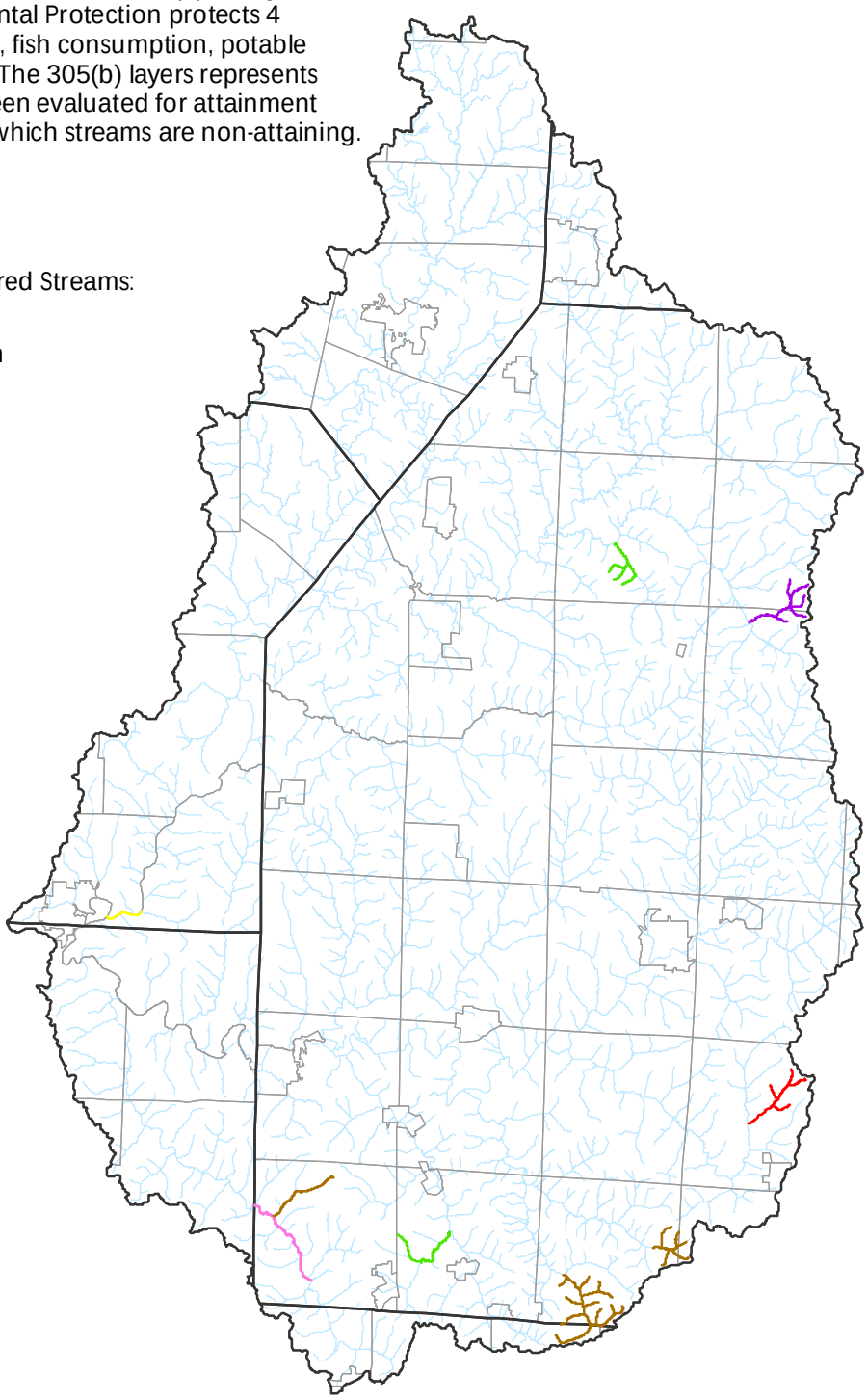


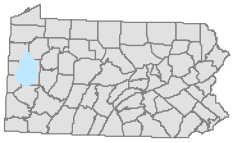
Impaired Streams [6]

The Streams Integrated List (2006) represents stream assessments in an integrated format for the Clean Water Act Section 305(b) reporting and Section 303(d) listing. PA Department of Environmental Protection protects 4 stream water uses: aquatic life, fish consumption, potable water supply, and recreation. The 305(b) layers represents stream segments that have been evaluated for attainment of those uses and determine which streams are non-attaining.

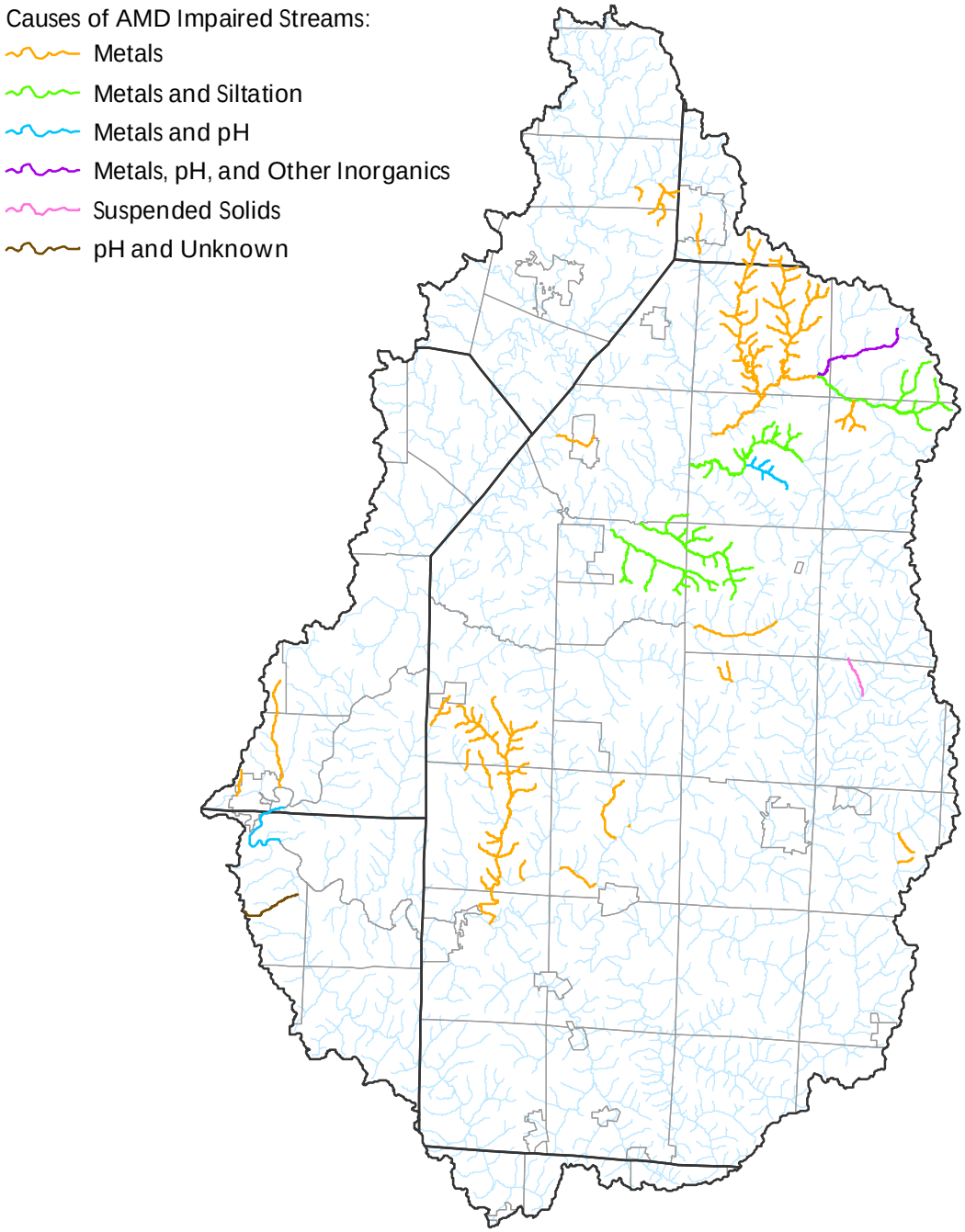
Causes of Agriculturally Impaired Streams:

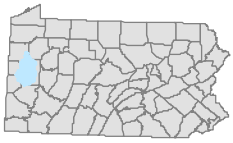
- Nutrients
- Nutrients and Siltation
- Pathogens
- Siltation
- Turbidity
- Unknown
- Streams
- Townships
- County Boundary





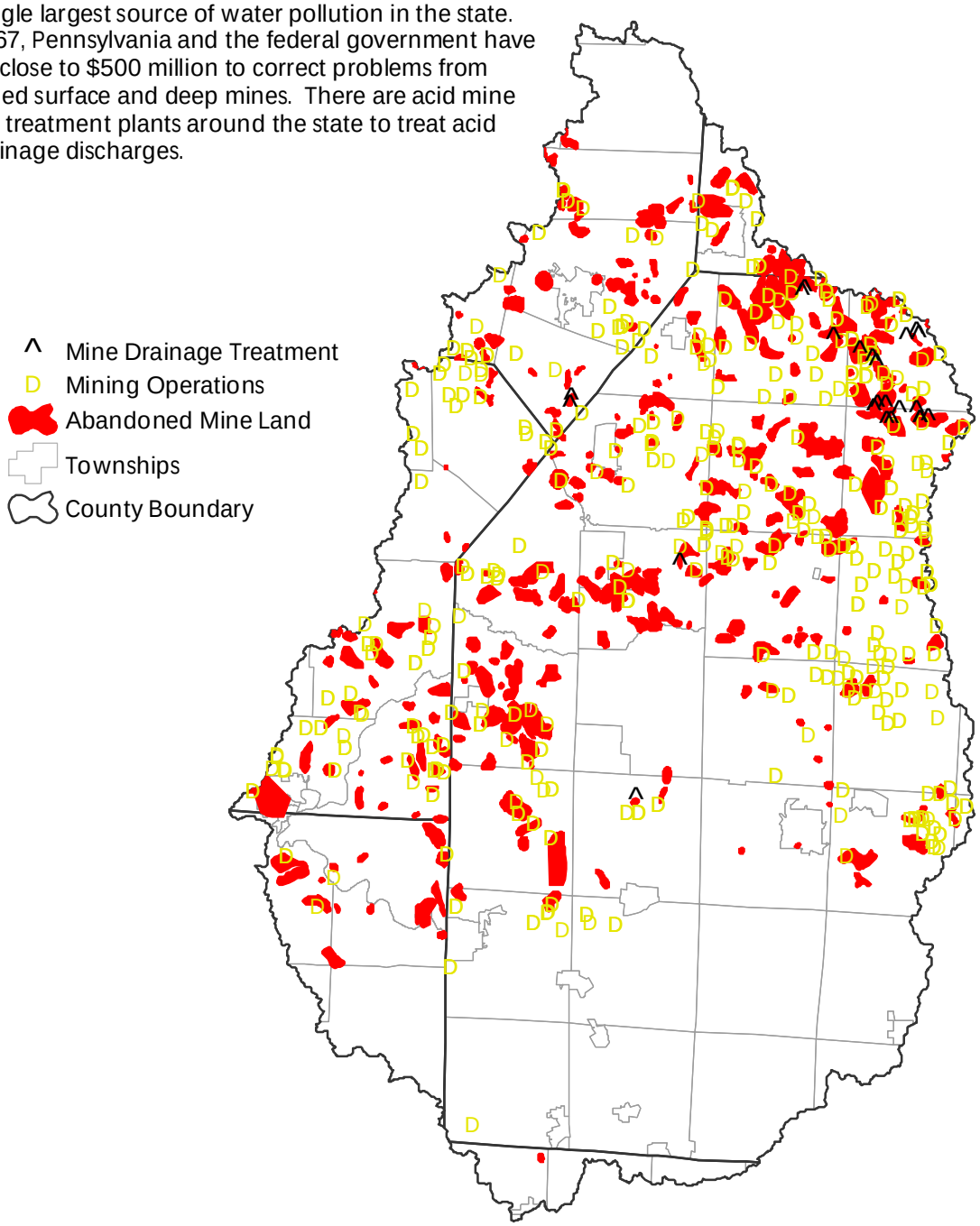
Abandoned Mine Drainage Impaired Streams

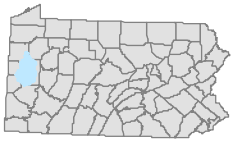


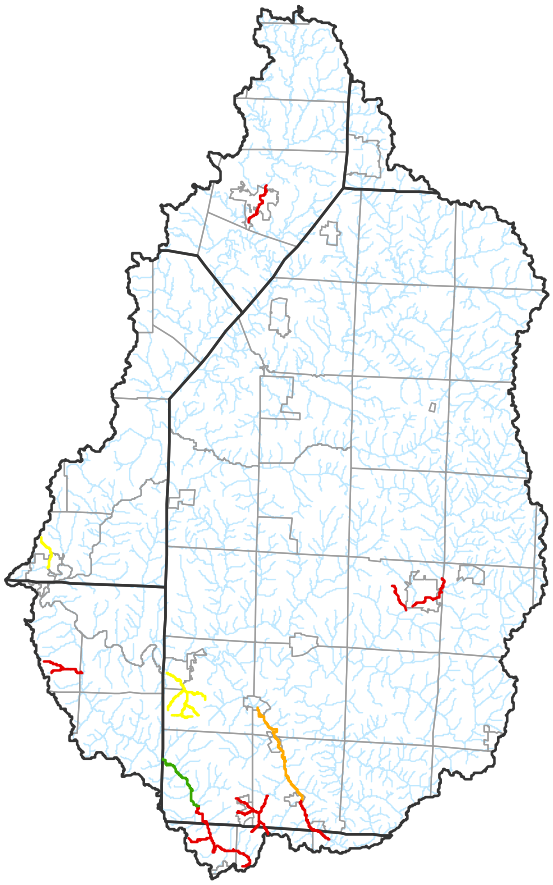


Abandoned Mine Land [7]

Coal mining in Pennsylvania began in the mid-1700's. Pennsylvania is the fourth largest coal producer in the United States, producing over 69.5 million tons in 1995 in 878 mining operations.
The environmental legacy of hundreds of years of coal mining in PA includes over 2,400 miles of PA's 84,000 miles of streams effected by acid mine drainage from old coal mining operations. Acid mine drainage in the single largest source of water pollution in the state.
Since 1967, Pennsylvania and the federal government have invested close to $500 million to correct problems from abandoned surface and deep mines. There are acid mine drainage treatment plants around the state to treat acid mine drainage discharges.

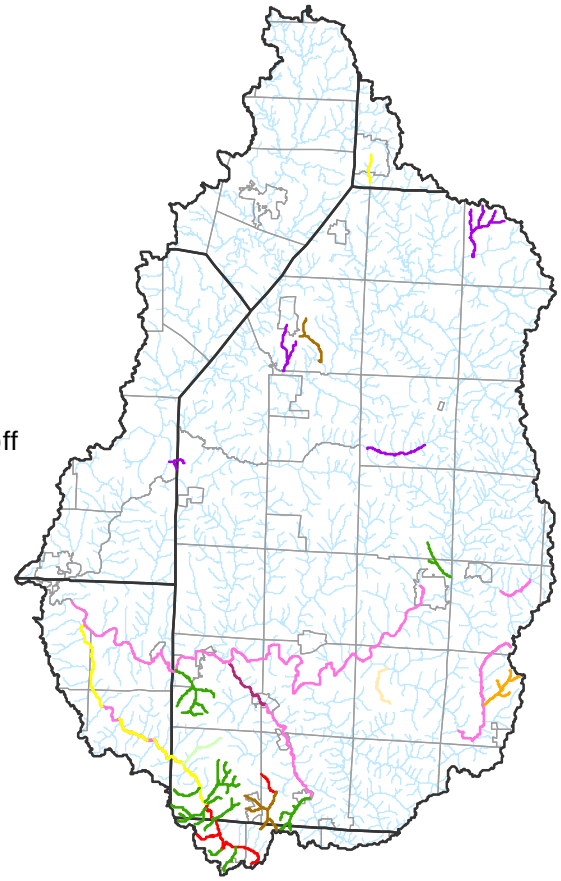






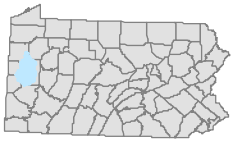
Causes of Urban Runoff/Storm Sewer Impaired Streams:

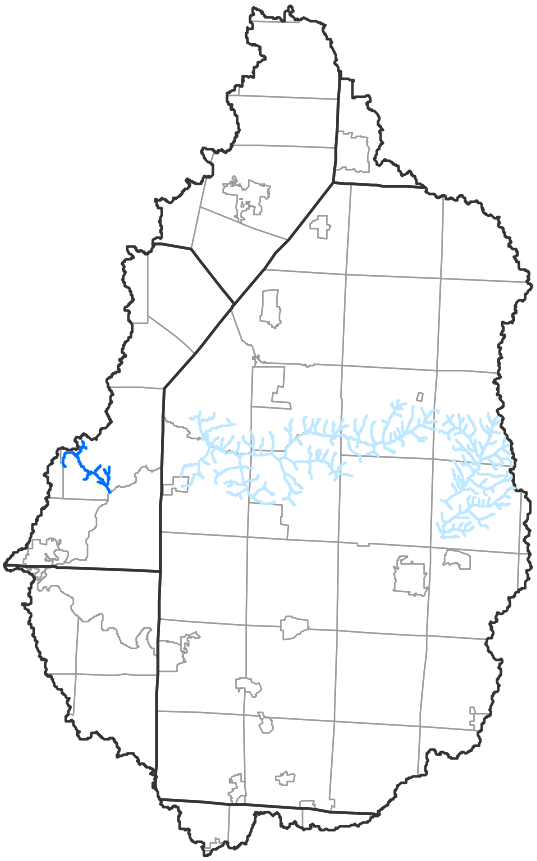
- Siltation
- Siltation and Unknown
- Siltation and Water Flow Variability
- Unknown
- Streams
- Townships
- County Boundary



Other Sources of Impairment:

- Construction
- Flow Regulations/Modifications
- Habitat Modifications
- Land Development
- Municipal Point Source
- Road Runoff
- Small Residential Runoff and Road Runoff
- Surface Mining
- Unknown
- Upstream Impoundment and Unknown
- Streams
- Townships
- County Boundary





Exceptional Value and High Quality Streams[8]

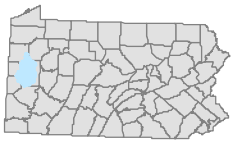
In accordance to Chapter 93 of Pennsylvania Code, streams with excellent water quality may be designated High Quality Waters (HQ) or Exceptional Value Waters (EV). The water quality in an HQ stream can be lowered only if a discharge is the result of necessary social or economic development, the water quality criteria are met, and all existing uses of the stream are protected. EV waters are to be protected at their existing quality; water quality shall not be lowered.

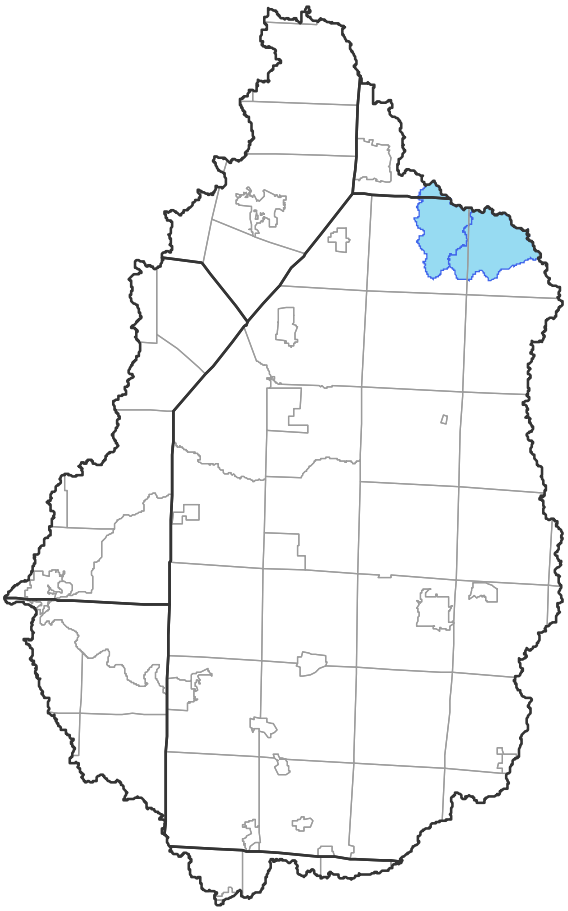
- Exceptional Value Streams
- High Quality Streams
- Townships
- County Boundary

Pennsylvania Trout Waters[9]

Approved Trout Waterbodies and Approved Trout Streams are waters which contain significant portions that are open to the public for fishing and are stocked with trout. Wilderness Trout Streams are designed to protect and promote native (brook trout) fisheries, the ecological requirements necessary for natural reproduction of trout and wilderness aesthetics. The superior quality of these watersheds is considered an important part of the overall angling experience on wilderness trout streams.

- # Approved Trout Waterbodies
- Approved Trout Streams
- Wilderness Trout Streams
- Townships
- County Boundary



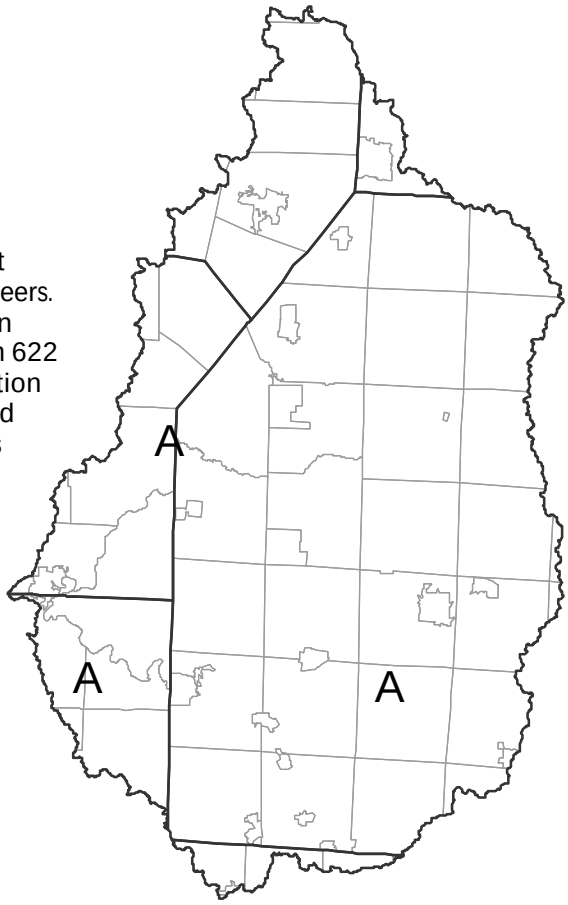


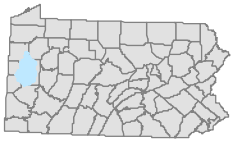
Total Maximum Daily Load[10]

A Total Maximum Daily Load (TMDL) sets a ceiling on the pollutant loads that can enter a water body so the water body will meet water quality standards. The Clean Water Act requires states to list all waters that do not meet their water quality standards even after pollution controls required by law are in place. For these waters, the state must calculate how much of a substance can be put in the water without violating the standard and distribute that quantity to all the sources ofthe pollutant on that water body. A TMDL plan includes waste load allocations for point sources, load allocations for nonpoint sources, and a margin of safety.
TMDL plans were completed in the shaded areas of this watershed in 2003 due to Acid Mine Drainage.

Water Quality Testing Points[11]

The water quality testing points are locations at which the water quality is monitored by volunteers. A database of these points contains information on water quality from 1986 to the present from 622 testing sites throughout Pennsylvania. Information in records includes at least alkalinity and pH and includes nitrates and phosphates for some sites since 1996.





Water Resource Points[12]

A Water Resource is a DEP primary facility type related to the Water Use Planning Program. The sub-facility types related to Water Resources that are included are:

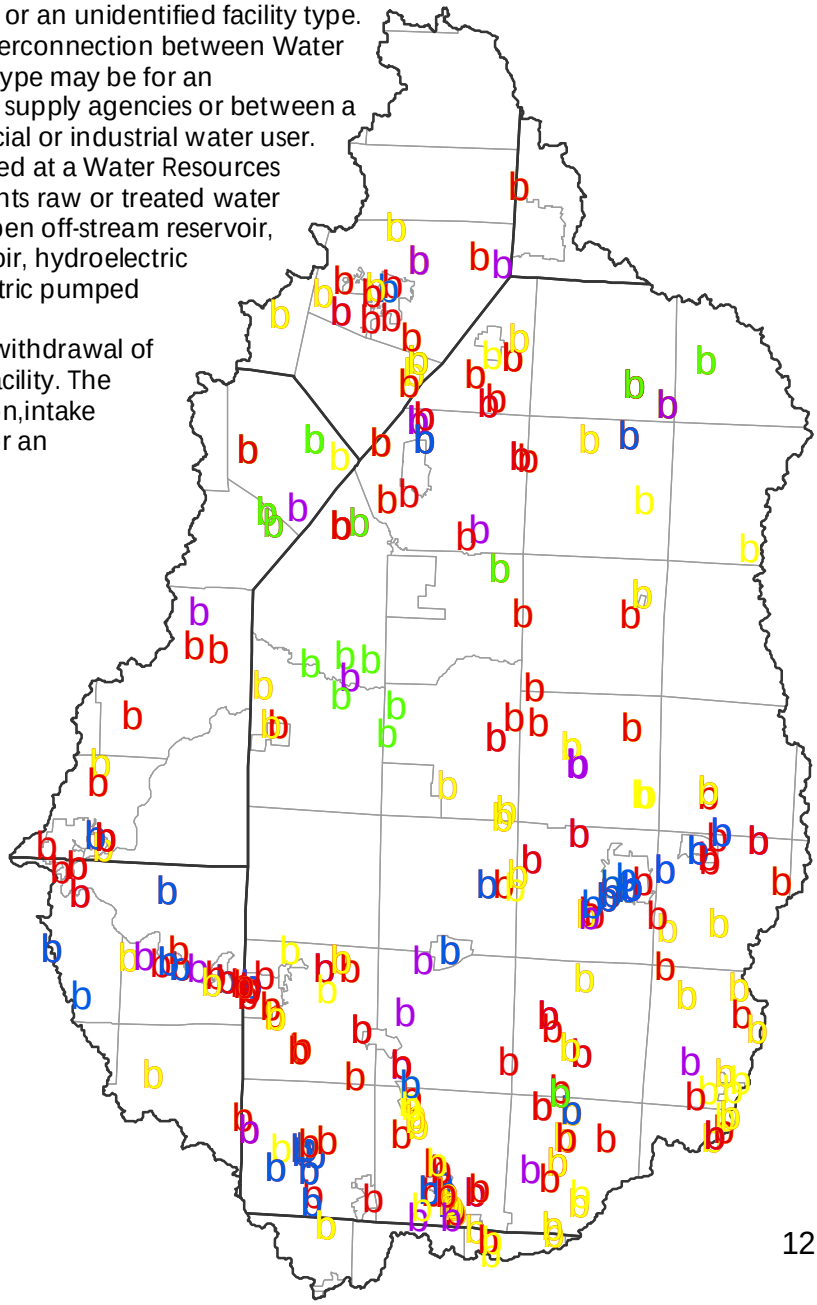
Discharge: represents the return of water used at a Water Resources primary facility. The subfacility type may be a sewage treatment plant, instream discharge, spray irrigation field, groundwater recharge, on-lot septic or an unidentified facility type.

Ground Water Withdrawal: represents the withdrawal of water used at a Water Resources primary facility. The subfacility type may be a well, spring, quarry, infiltration gallery, deep mine, surface mine or an unidentified facility type.

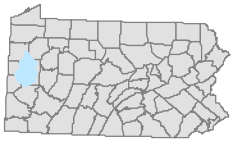
Interconnection: represents the point of interconnection between Water Resources primary facilities. The subfacility type may be for an interconnection between two public water supply agencies or between a public water supply agency and a commercial or industrial water user.

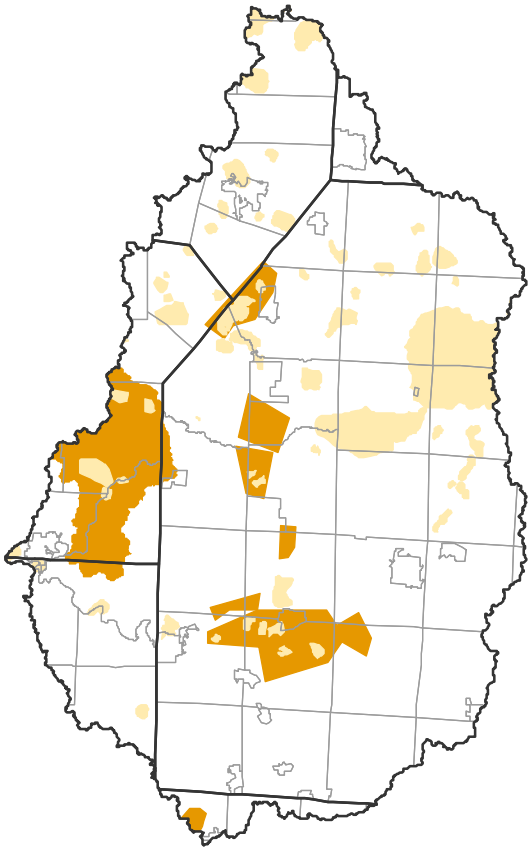
Storage: represents the storage of water used at a Water Resources primary facility. The subfacility type represents raw or treated water storage and may be a quarry, standpipe, open off-stream reservoir, closed off-stream reservoir, instream reservoir, hydroelectric dam, natural lake, pond,silt dam, hydroelectric pumped storage or an unidentified facility type.

Surface Water Withdrawal: represents the withdrawal of water used at a Water Resources primary facility. The subfacility type may be an instream diversion,intake from a dam, natural lake, pond, river well, or an unidentified facility type.



- Discharge
- Ground Water Withdrawal
- Interconnection
- Storage
- Surface Water Withdrawal
- Townships
- County Boundary





Natural Heritage Inventory Sites[13]

These areas are intended to identify outstanding floral, faunal, and geologic features, including natural communities (habitats) and locations of animal and plant species of special concern (endangered, threatened, or rare). Area Types in this watershed include:

BDA - Biological Diversity Area - an area containing plants or animals of special concern at state or federal levels, exemplary natural communities, or exceptional native diversity. BDAs include both the immediate habitat and surrounding lands important in the support of these special elements.

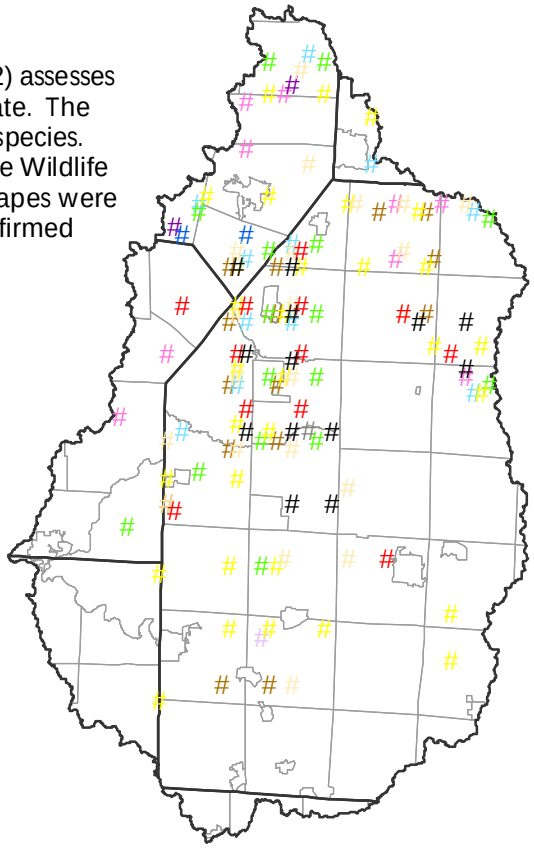
LCA - Landscape Conservation Area - a large contiguous area that is important because of its size, open space, habitats, and/or inclusion of one or more Biological Diversity Areas. Although an LCA includes a variety of land uses, it typically has not been heavily disturbed and thus retains much of its natural character.

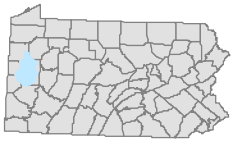
- BDA
- LCA
- Townships
- County Boundary

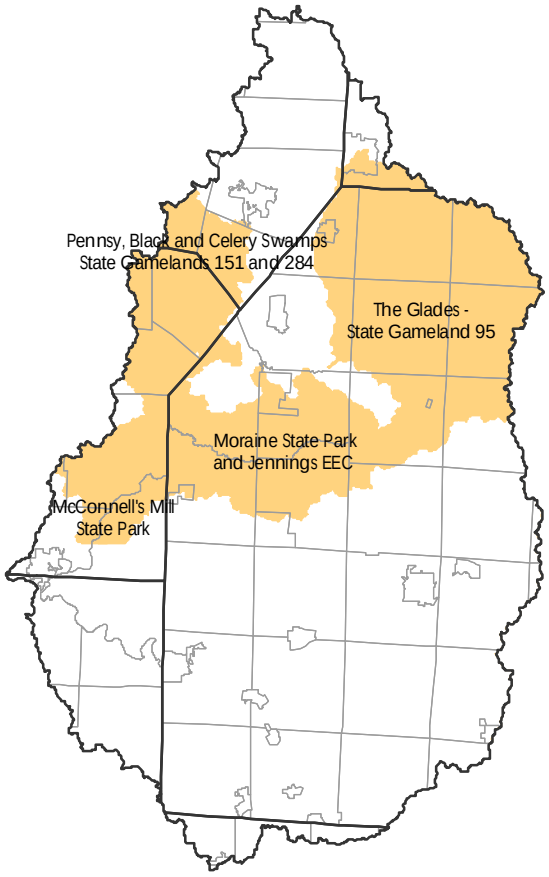
Pennsylvania Breeding Bird Atlas[14]

The 1st Pennsylvania Breeding Bird Atlas (1992) assesses the distribution of breeding birds across the state. The areas below are confirmed breeding areas for species. Fourteen birds species from Pennsylvania's state Wildlife Action Plan associated with agricultural landscapes were focused on in this assessment, not all have confirmed breeding area in this watershed.

- # American Woodcock
- # Blackbilled Cuckoo
- # Bobolink
- # Eastern Meadowlark
- # Grasshopper Sparrow
- # Henslows Sparrow
- # Marsh Wren
- # Northern Bobwhite
- # Northern Harrier
- # Redheaded Woodpecker
- # Whip-poor-will
- # Yellow Breasted Chat
- Townships
- County Boundary







Important Bird Areas[15]

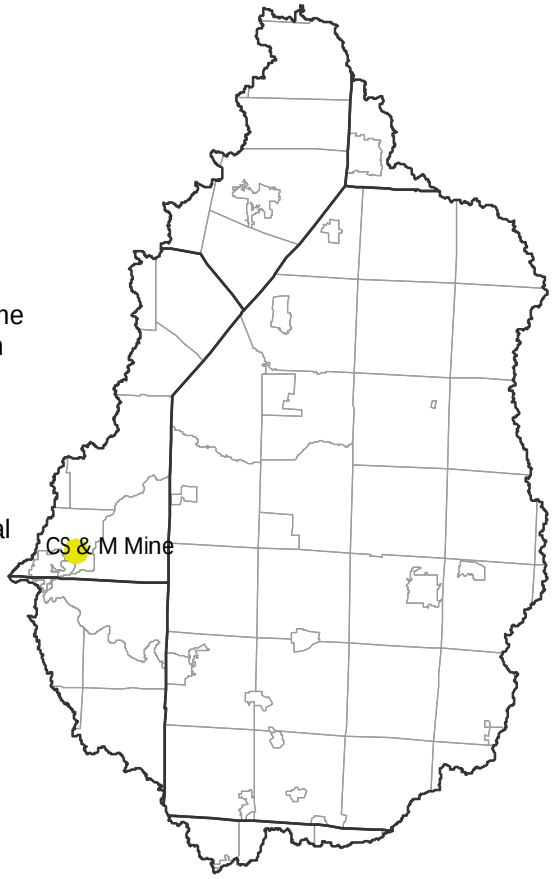
Important Bird Areas (IBA) are sites that provide essential habitat for one or more species of bird. IBAs include sites for breeding, wintering, and/or migrating birds. IBAs may be a few acres or thousands of acres, but usually they are discrete sites that stand out from the surrounding landscape. IBAs may include public or private lands, or both, and they may be protected or unprotected.

Important Bird Areas
Townships
County Boundary

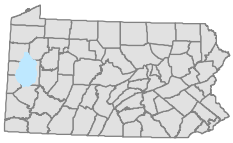
Important Mammal Areas[16]

The Important Mammal Areas Project is being carried out by a broad based alliance of sportsmen, conservation organizations, wildlife professionals, and scientists. The primary concern is to help ensure the future of Pennsylvania's wild mammals, both game and non-game species. Although particular attention is given to species of special concern, they are also interested in habitats that simply have high mammal diversity. Because a commitment to preserve natural heritage requires understanding the needs of native species, they also identify places where people can learn about mammals and enjoy them in their natural environment.

Important Mammal Areas
Townships
County Boundary



Soils [17]

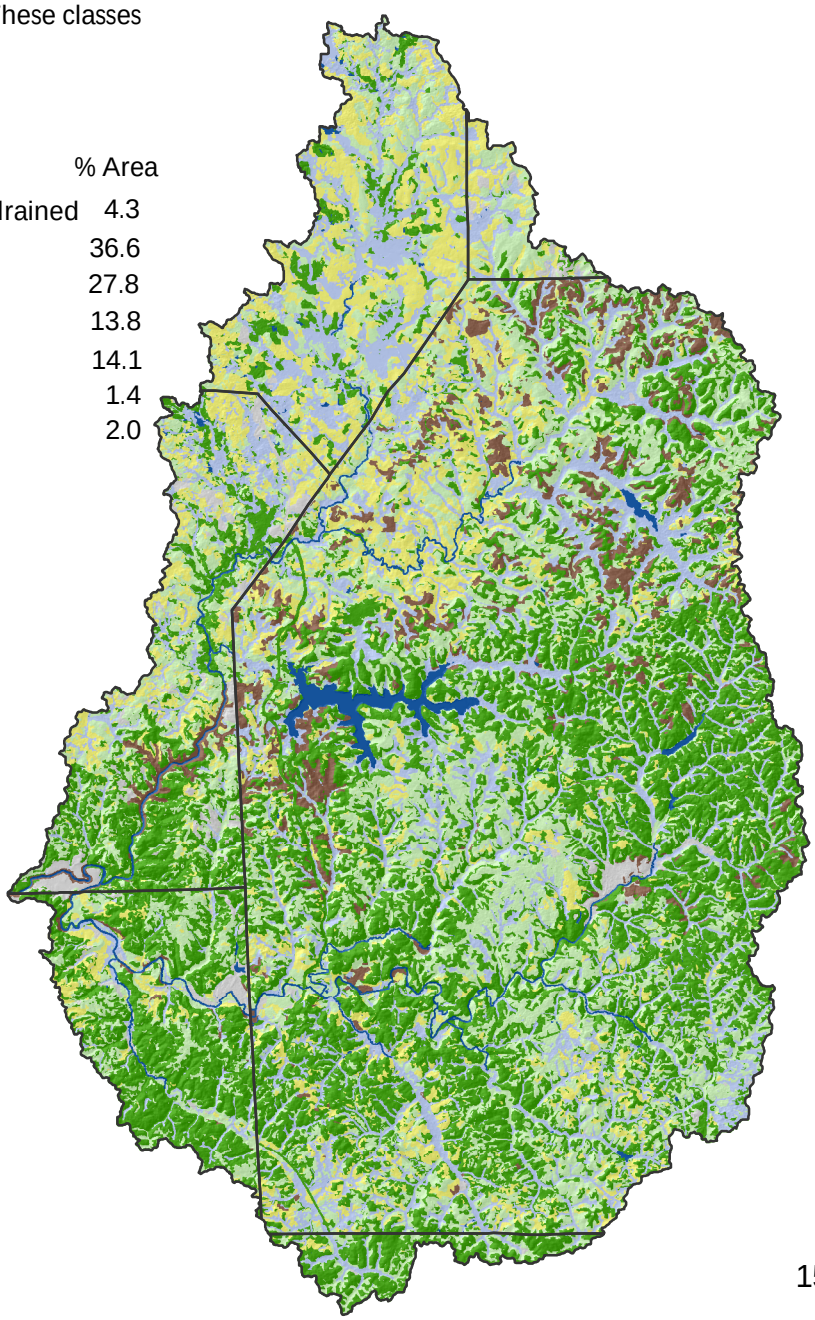


Drainage Classification

Drainage class (natural) refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized -- excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."

Drainage Classification

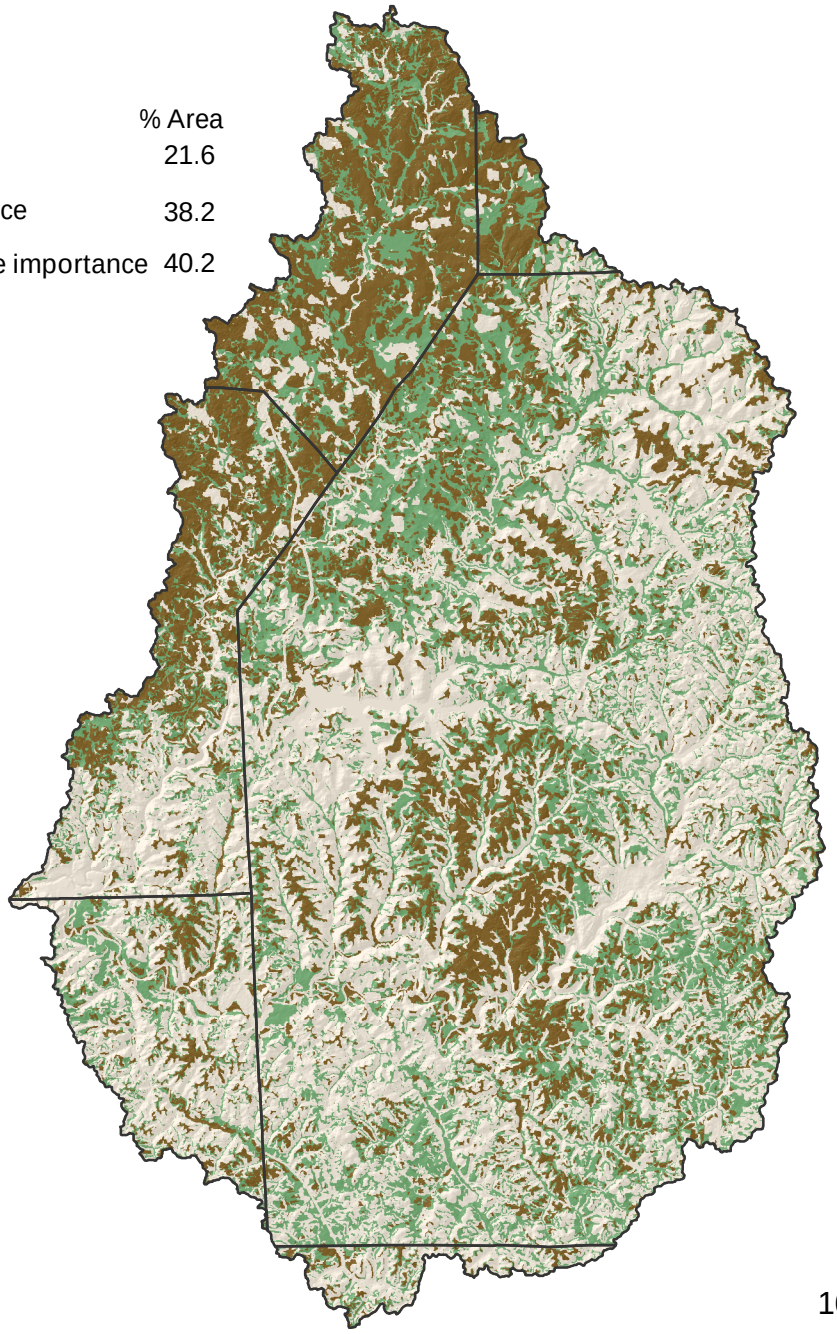
	% Area
Excessively - Somewhat excessively drained	4.3
Well drained	36.6
Moderately well drained	27.8
Somewhat poorly drained	13.8
Poorly -Very poorly drained	14.1
Water	1.4
Unclassified	2.0
County Boundary	



Farmland Classification

Farmland classification identifies soil map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. Farmland classification identifies the location and extent of the most suitable land for producing food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the Federal Register, Vol. 43, No. 21, January 31, 1978.

Farmland Classification	% Area
All areas are prime farmland	21.6
Farmland of statewide importance	38.2
Not prime farmland or statewide importance	40.2
County Boundary	



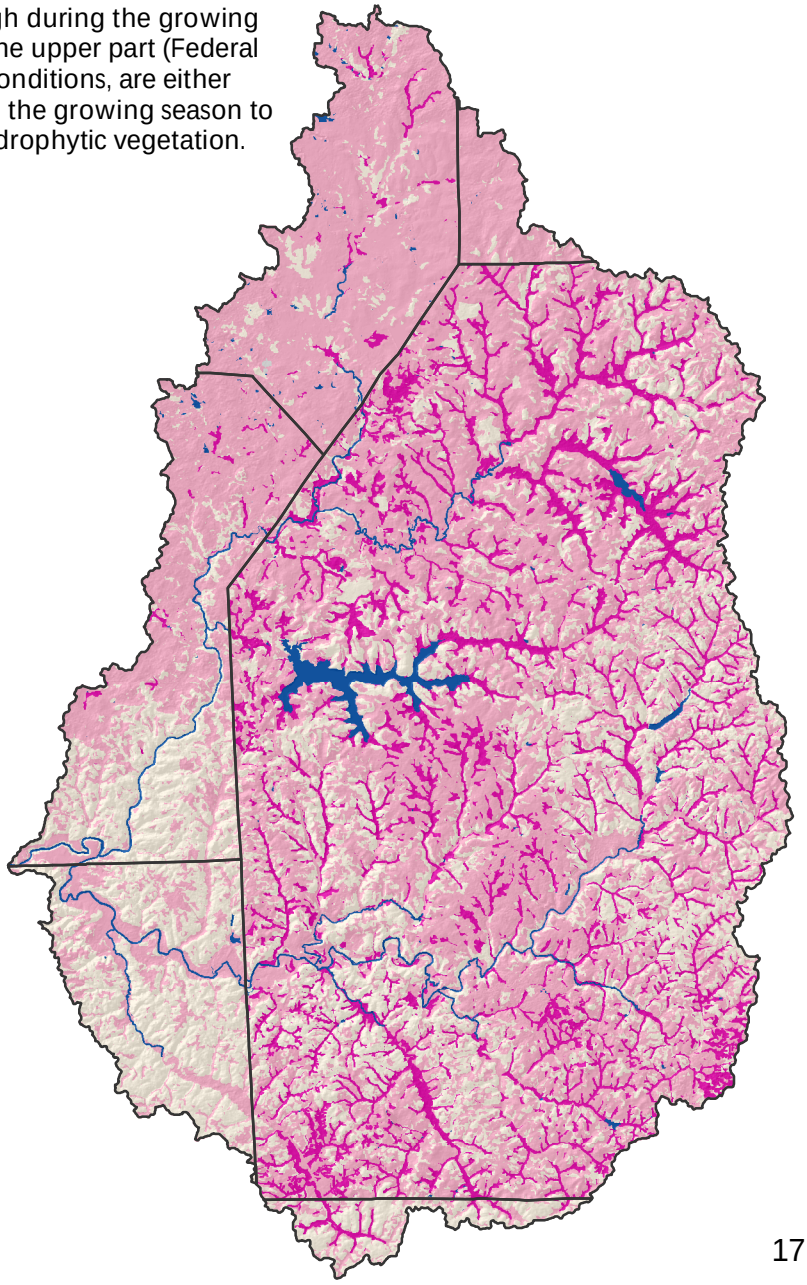
Hydric Soil Classification

This rating provides an indication of the proportion of the map unit that meets criteria for hydric soils. Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

Hydric Classification

	% Area
Not Hydric	31.0
Partially Hydric	57.9
All Hydric	9.7
Water	1.4
County Boundary	

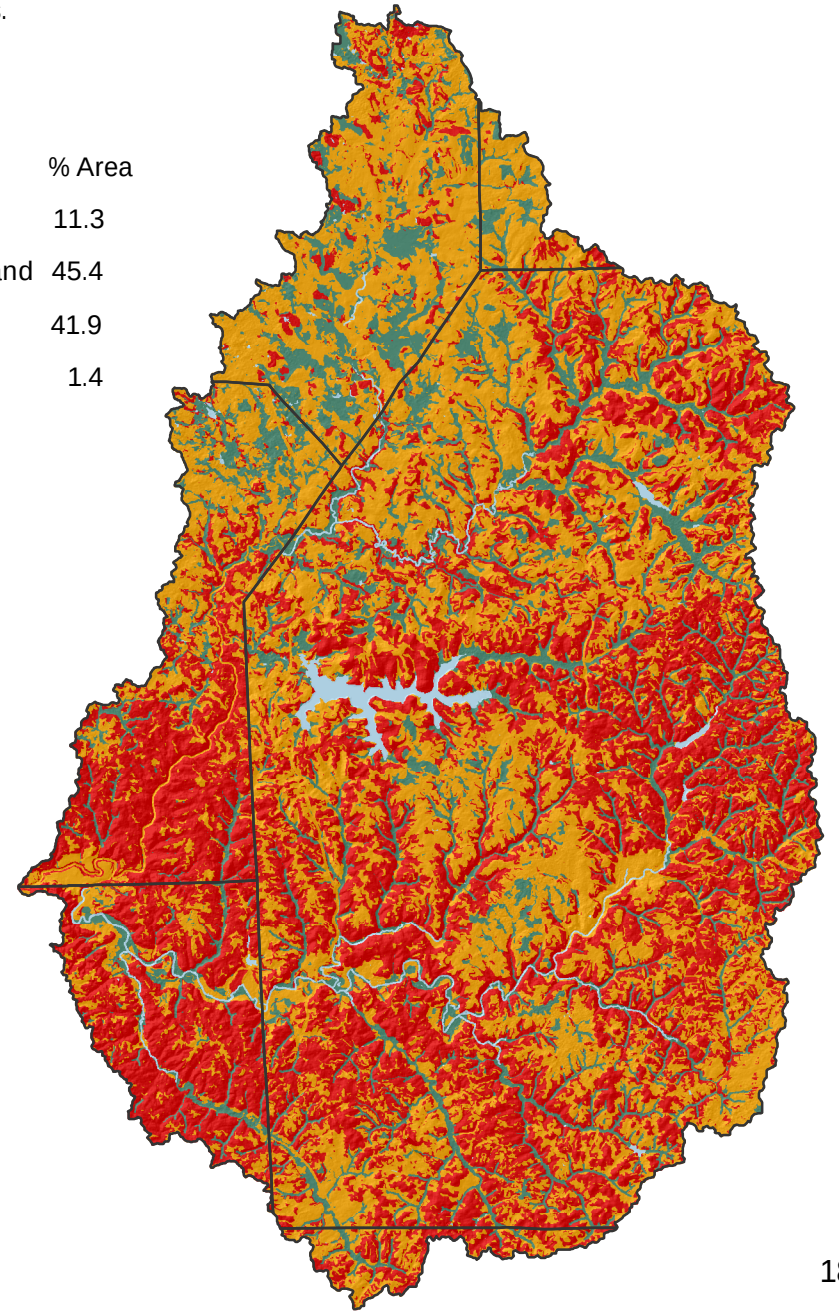


Highly Erodible Land

A soil map with an erodibilty index (EI) of 8 or greater is considered to be highly erodible land (HEL). The EI for a soil map unit is determined by dividing the potential erodibility for the soil map unit by the soil loss tolerance (T) value established for the soil in the FOTG as of January 1, 1990. Potential erodibility is based on default values for rainfall amount and intensity, percent and length of slope, surface texture and organic matter, permeability, and plant cover. Actual erodibility and EI for any specific map unit depends on the actual values for these properties.

Erosion Classification

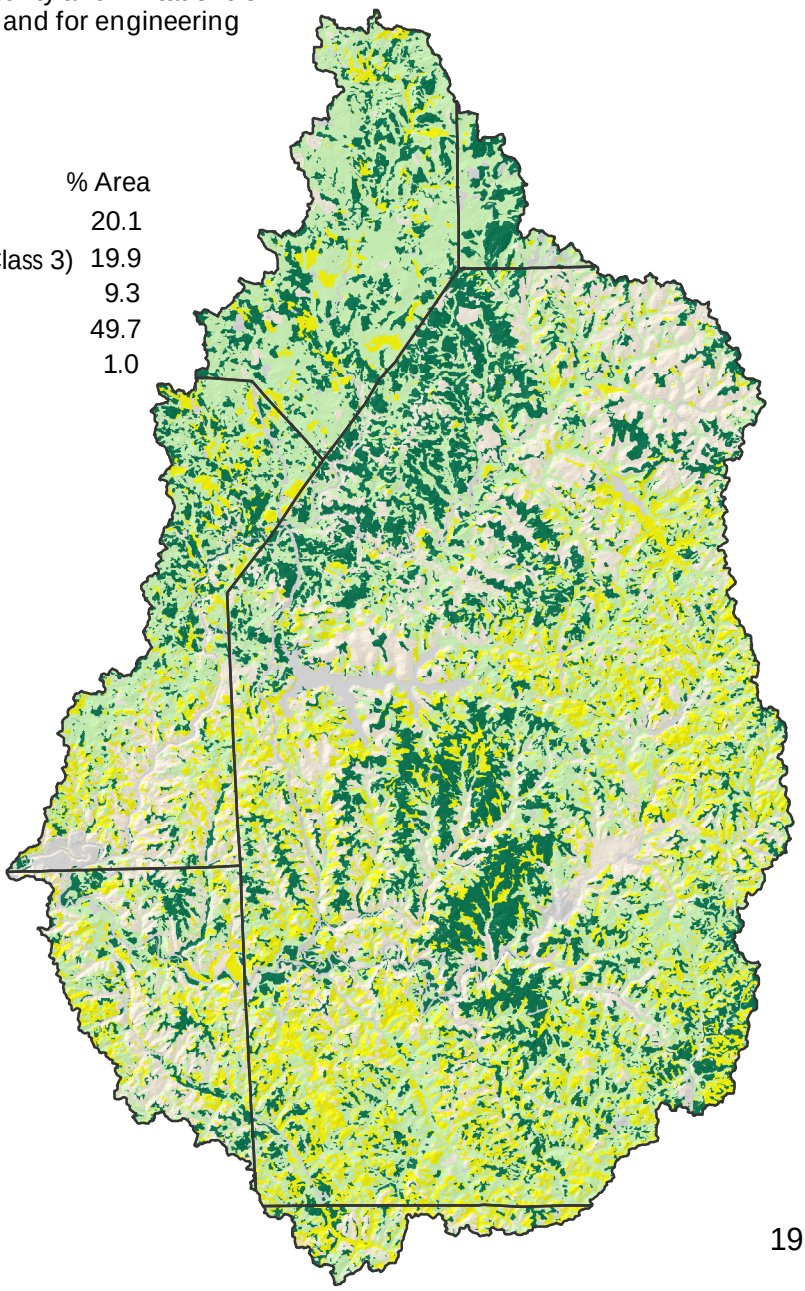
	% Area
Not highly erodible land	11.3
Potentially highly erodible land	45.4
Highly erodible land	41.9
Water	1.4
County Boundary	

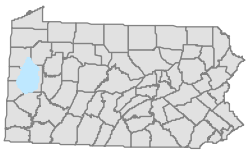


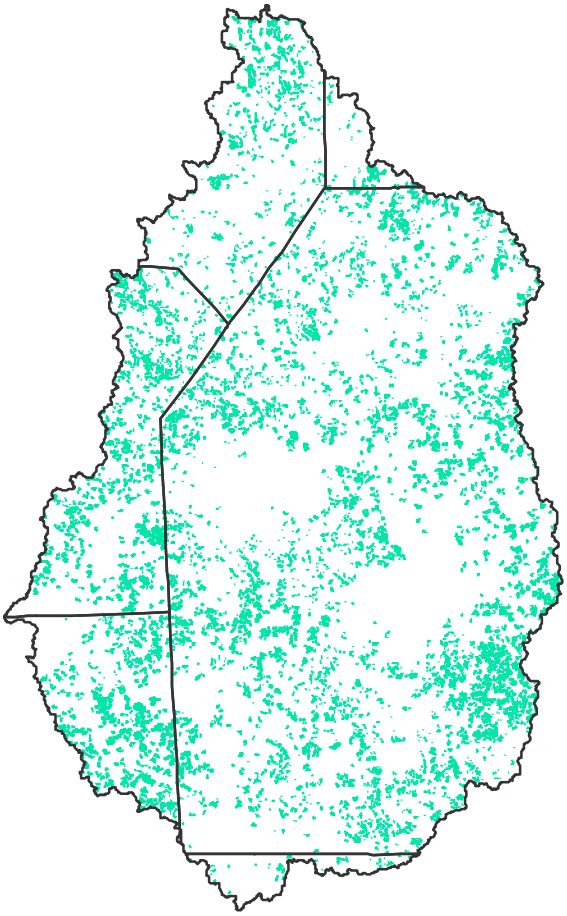
Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes.

Land Capability Classification	% Area
Well Suited (Capability Class 1 -2)	20.1
Moderately well suited (Capability Class 3)	19.9
Poorly suited (Capability Class 4 -5)	9.3
Unsuited (Capability Class 6 - 8)	49.7
Unclassified	1.0
County Boundary	





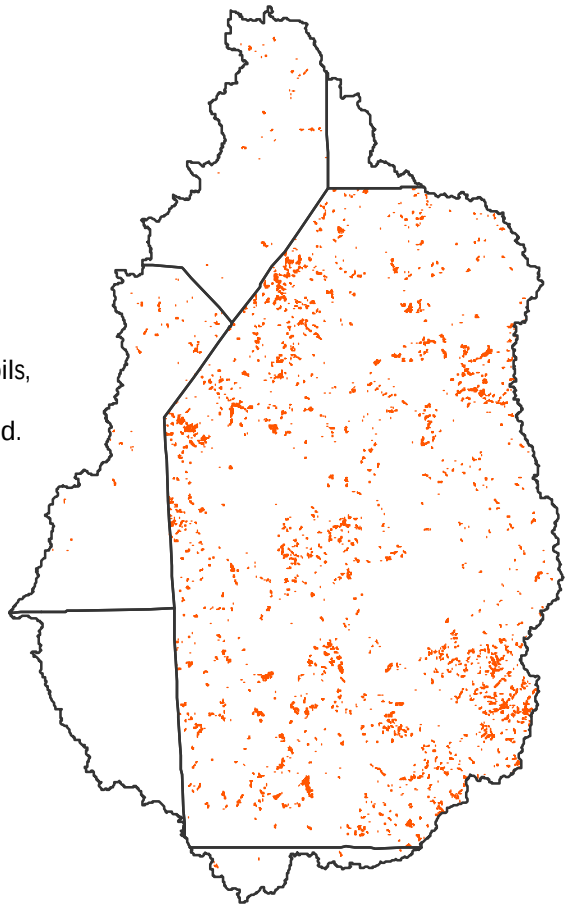


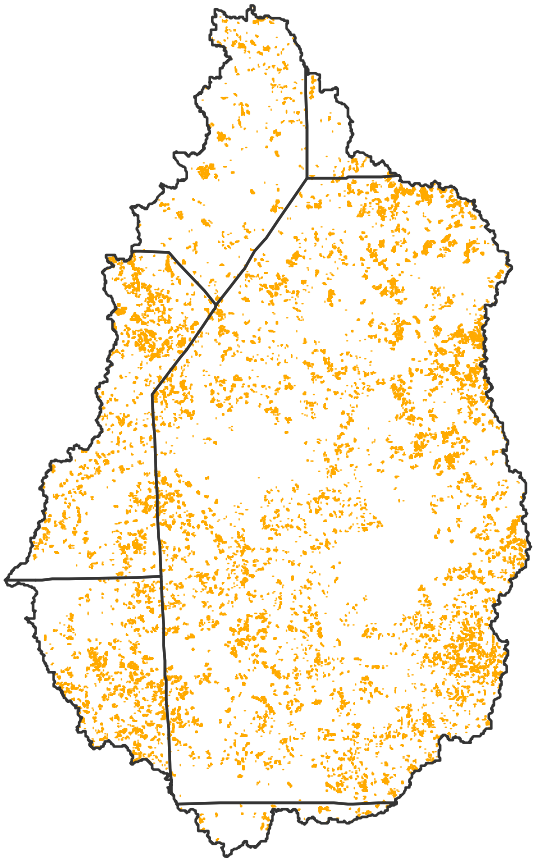
Cropland on Highly Erodible Land

There are 21,548.0 acres on highly erodible land, which is approximately 28.2% of all the cultivated cropland in the watershed.

Cropland on Hydric Soils

There are 4118.3 acres on hydric soils, which is approximately 5.4% of all cultivated cropland in the watershed.

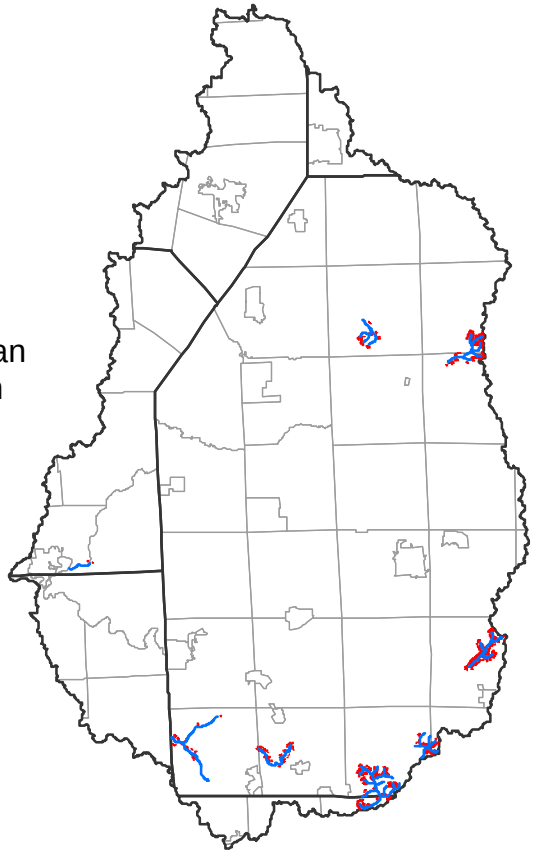


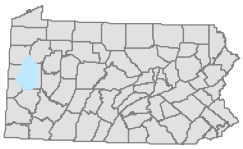


Cropland on Poor or Unsuited Soil

There are 13,725.4 acres on poor or unsuited land, which is approximately 18.0% of all the cultivated cropland in the watershed.

Cropland within 1000 feet of an Agricultural Impaired Stream





Resource Concerns

Major resource concerns in the area include:

- sheet and rill erosion
- streambank erosion
- sedimentation
- gullying
- surface compaction resulting from livestock
- reduction of organic matter on cropland
- subsidence resulting from mining
- land slippage
- soil productivity
- management of soil moisture

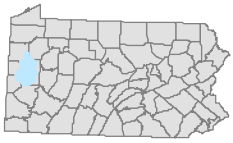
Conservation Practices

Common conservation practices for cropland:

- crop rotation
- contour farming
- nutrient management
- grassed and riparian forest buffers
- cover crops
- hayland planting
- diversions
- grassed waterways
- residue management
- grass - legume planting

Common pasture management practices:

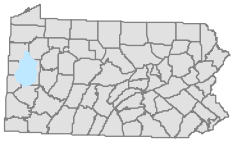
- prescibed grazing
- watering systems
- fencing
- managing livestock access to streams
- pasture planting
- nutrient management



PRS Performance Measures [18]

	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	Total
Total Conservation Systems Planned (acres)	726	3195	4611	4192	2393	NA	5083	3745	23,945
Total Conservation Systems Applied (acres)	476	2783	2813	3657	1517	NA	4662	2344	18,252
Key Conservation Treatments									
Waste Storage Facility (number)	0	1	2	0	0	0	0	1	4
Riparian Forest Buffer (acres)	0	100	59	145	31	0	47	76	458
Erosion Control Total Soils Saved (tons/year)	367	2485	2509	3880	1833	NA	NA	NA	11,074
Nutrient Management (acres)	0	0	225	1813	2494	195	363	230	5,320
Pest Management (acres)	0	0	0	0	0	0	170	33	203
Prescribed Grazing (acres)	0	325	166	261	2843	110	106	155	3,966
Tree and Shrub Establishment (acres)	0	0	13	16	25	0	8	3	65
Residue Management (acres)	337	1352	1311	929	623	83	3534	1231	9,400
Wildlife Habitat (acres)	8	21	108	334	712	30	638	703	2,554
Wetlands Created, Restored, or Established	0	15	12	4	74	2	39	22	168
Acres in Conservation Programs									
Conservation Technical Assistance									
Planned	174	1362	1401	3668	2111	NA	3684	2636	15,036
Applied	476	1104	1621	3368	1382	NA	3880	922	12,753
Conservation Reserve Program									
Planned	0	69	214	0	0	NA	1416	807	2,506
Applied	0	67	658	6	0	NA	631	1033	2,395
Environmental Quality Incentive Program									
Planned	0	0	0	0	0	NA	584	69	653
Applied	0	41	17	20	3	NA	115	328	524
Farmland Protection Policy/Farm and Ranch Lands Protection Program									
Planned	276	664	390	0	0	NA	0	0	1,330
Applied	93	531	250	0	0	NA	0	0	874
Forestry Incentive Program									
Planned	0	10	0	0	0	NA	0	0	10
Applied	0	10	25	17	5	NA	0	0	57
Grasslands Reserve Program									
Planned				0	0	NA	0	0	0
Applied				0	0	NA	0	0	0
Grazing Lands Conservation Initiative									
Planned	0	275	332						607
Applied	0	185	756						941
Wildlife Habitat Incentive Program									
Planned	0	0	2	0	0	NA	0	0	2
Applied	0	0	0	23	0	NA	4	0	27
Wetlands Reserve Program									
Planned	0	0	0	0	0	NA	0	0	0
Applied	0	0	0	32	32	NA	0	0	64

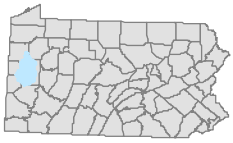
NA - Reporting was unavailabel by Hydrologic Unit Code



Social and Census Data [19]

	Allegheny	Beaver	Butler	Lawrence	Mercer	Venango	Total
Farms (number)	9	87	851	174	154	9	1,284
Land in farms (acres)	642	8,478	104,389	21,486	20,374	1,291	156,660
Total cropland (acres)	365	5,216	69,844	14,581	13,523	645	104,174
Principal operator by primary occupation - Farming (number)	4	48	457	101	85	5	700
Farms by Size							
1 to 9 acres	2	8	57	13	8	1	89
10 to 49 acres	3	26	231	48	35	2	345
50 to 179 acres	3	42	408	79	81	5	618
180 to 499 acres	1	9	125	27	25	1	188
500 to 999 acres	0	1	25	6	3	0	35
1,000 acres or more	0	0	5	1	1	0	7
Livestock and Poultry							
Cattle and calves inventory (farms)	2	42	439	101	90	5	679
Cattle and calves inventory - Beef cows (farms)	2	31	332	64	54	4	487
Cattle and calves inventory - Milk cows (farms)	0	7	62	33	27	1	130
Hogs and pigs inventory (farms)	0	5	63	24	12	1	105
Sheep and lambs inventory (farms)	1	8	46	14	8	1	78
Layers 20 weeks old and older inventory (farms)	1	7	66	21	14	1	110
Broilers and other meat-type chickens sold (farms)	0	1	7	4	4	0	16
Crops Harvested							
Corn for grain (acres)	18	466	10,361	3,045	3,051	95	17,036
Corn for silage or greenchop (acres)	5	263	3,625	1,096	850	41	5,880
Wheat for grain, all (acres)	7	121	1,849	542	374	5	2,898
Oats for grain (acres)	8	228	3,779	774	703	2	5,494
Barley for grain (acres)	0	43	508	48	37	(D)	636
Soybeans for beans (acres)	1	97	2,379	1,347	1,178	19	5,021
Forage - land used for all hay and all haylage, grass silage, and greenchop (acres)	147	2,375	29,675	5,007	4,753	294	42,251
Vegetables harvested for sale (acres)	17	33	961	74	94	2	1,181
Land in orchards (acres)	2	20	111	27	10	1	171
Total cropland harvested (acres)	231	3,650	54,250	11,629	10,769	469	80,998
Farm Operator by Ethnicity							
White	13	131	1,250	253	229	14	1,890
Black or African American	0	0	0	1	0	0	1
Asian	0	0	1	0	0	0	1
Hispanic	0	2	4	2	1	0	9
American Indian/Alaskan Native	0	0	4	0	0	0	4
Pacific Islander	0	0	0	1	0	0	1
Women	4	43	367	60	61	4	539

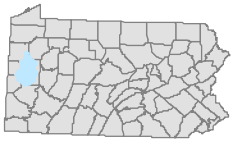
(D) - Withheld to avoid disclosing data for individual farms



Partnership Groups:

A cooperative project involving NRCS and conservation partners, including:

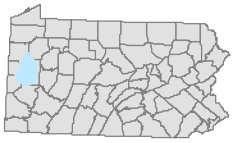
- State Conservation Commission
- Pennsylvania Department of Environmental Protection
- Pennsylvania Game Commission
- Pennsylvania Grazing/Forage Lands Conservation Coalition
- Pennsylvania Fish & Boat Commission



Footnotes/Bibliography

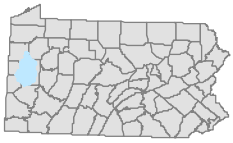
All data is provided "as is". There is no warranties, express or implied, including the warranty of fitness for a particular purpose, accompanying this document. Use for planning purpose only.

1. Common Resource Area
   Common Resource Area (CRA) delineation is defined as a geographical area where resource concerns, problems, or treatment needs are similar. More information can be found online at http://soils.usda.gov/survey/geography/cra.html
2. National Elevation Dataset (NED)
   The NED is a seamless mosaic of the best-available elevation data. The primary source data were the USGS 7.5-minute (30-meter or 10-meter resolution) DEM's. A hillshade grid was also created using the DEM and used to creare a 3-D effect. More inforamtion on NED can be found online at http://ned.usgs.gov/
3. Land Use / Land Cover 2001
   Land Use / Land Cover map was created using the National Land Cover Dataset. The National Land Cover Dataset was compiled from Landsat satellite TM imagery with a spatial resolution of 30 meters and supplemented by various ancillary data (where available). More inforamtion can be found online at http://landcover.usgs.gov/
4. Average Annual Precipitation
   The average annual precipitation data for this map layer were produced through a partnership between NRCS and the Spatial Climate Analysis Service at Oregon State University (OSU). The average annual precipitation is from 1961 through 1990. More information can be found online at http://www.ncgc.nrcs.usda.gov/products/datasets/climate/index.html
5. National Wetlands Inventory (NWI)
   The NWI maps do not show all wetlands since the maps are derived from aerial photointerpretation with varying limitations due to scale, photo quality, inventory techniques, and other factors. More information can be found online at http://www.fws.gov/nwi/
6. Impaired Streams
   Impaired Streams were derived from Pennsylavania Department of Protection Office of Water Management, 2006 list on Non-Attaining Streams. More information can be found on DEP website at http://www.depweb.state.pa.us/dep/site/default.asp
7. Abandoned Mine Land
   Abandoned Mine Land data was received from the Office of Surface Mining. The data set shows the approximate location of Abandoned Mine Land Problem Areas containing public health, safety, and public welfare problems created by past coal mining. More information can be found online at http://www.osmre.gov/osmaml.htm
8. Exceptional Value and High Quality Streams
   Exceptional Value and High Quality Streams were taken from the Chapter 93 data layer received from Pennsylvania Department of Environmental Protection. For more information on what qualifies a stream as exceptional value or high quality or any information on Chapter 93 streams go to http://www.pacode.com/secure/data/025/chapter93/chap93toc.html



Footnotes/Bibliography

9. Pennsylvania Trout Waters
   Pennsylvania Trout Water data is compiled by the Pennsylvania Fish and Boat Commission. This layer was created based on the 1:24000 National Hydropahy Dataset (NHD) water bodies layer. More information can be found online at http://www.fish.state.pa.us/fishpub/summary/troutwaters.html
10. Total Maximun Daily Load (TMDL)
    TMDL is the sum of the individual waste load allocations and load allocations which would not produce a violation of water quality standards. The data used is from 2003, the PA Department of Environmental Protection is currently working on updating the GIS data available. More information can be found on TMDL locations in PA at http://www.dep.state.pa.us/watermanagement_apps/tmdl/, and/or nationally at http://www.epa.gov/owow/tmdl/
11. Water Quality Testing Points
    Water Quality Testing Points monitor water quality with emphasis on stream acidity in Pennsylvania with an assoiciated database. The database contains more than 33,466 records on water quality from 1986 to the present from 622 testing sites throughout Pennsylvania. Information in the records includes alkalinity and Ph and includes nitrates and phosphates for some sites since 1996.
    The information is maintained by the Alliance for Aquatic Resource Monitoring. More information can be found online at http://alpha.dickinson.edu/storg/allarm/allarm%20projects/database.htm
12. Water Resource Points
    A Water Resource is a DEP primary facility type related to the Water Use Planning Program. More information can be found http://www.depweb.state.pa.us/dep/site/default.asp
13. Natural Heritage Inventory Sites
    The Natural Areas polygons were developed by the Pennsylvania Natural Heritage Program (PNHP) County Natural Heritage Inventory (CNHI) Program. Natural Areas were identified using map and air photo interpretation, aerial rconnaissance, and field surveys. More information and county reports can be found online at http://www.naturalheritage.state.pa.us/
14. Pennsylvania Breeding Bird Atlas
    Data was taken for the 1st Pennsylvania Breeding Bird Atlas (1992). For this watershed assessment, fourteen bird species were chosen to be focused on. More information about all bird species can be obtained at http://www.carnegiemnh.org/atlas/home.htm
15. Important Bird Areas
    The Important Bird Areas Program (IBA) is a global effort to identify and conserve areas that are vital to birds and other biodiversity. For more information nationally and/or on the state level go to http://www.audubon.org/bird/iba/
16. Important Mammal Areas
    Important Mammal Areas Project, IMAP, the first program of it's kind, was created by the Mammal Technical Committee of the Pennsylvania Biological Survey (PaBS). For more inforamtion go online to http://www.pawildlife.org/imap.htm



Footnotes/Bibliography

17. Soils

    Soil Survey spatial and tabular data were used for the following survey areas:

    Allegheny County (PA003)
    Beaver County (PA603)
    Butler County (PA019)
    Lawrence County (PA603)
    Mercer County (PA085)
    Venango County (PA121)

    Spatial and tabular data an be downloaded at http://soildatamart.nrcs.usda.gov/

18. Performance Results System (PRS)

    PRS data was extracted from PRS by year, conservation system, conservation practice, and proagrams by hydrologic unit code. More information can be found online at the PRS homepage http://ias.sc.egov.usda.gov/prshome/

19. Social and Census Data

    Ag census data and ethnicity data were downloaded from the National Agricultural Statistics Service (NASS). The data was adjusted by percent of hydrologic unit in the county. More information can be found online at http://www.nass.usda.gov/Census_of_Agriculture/index.asp

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