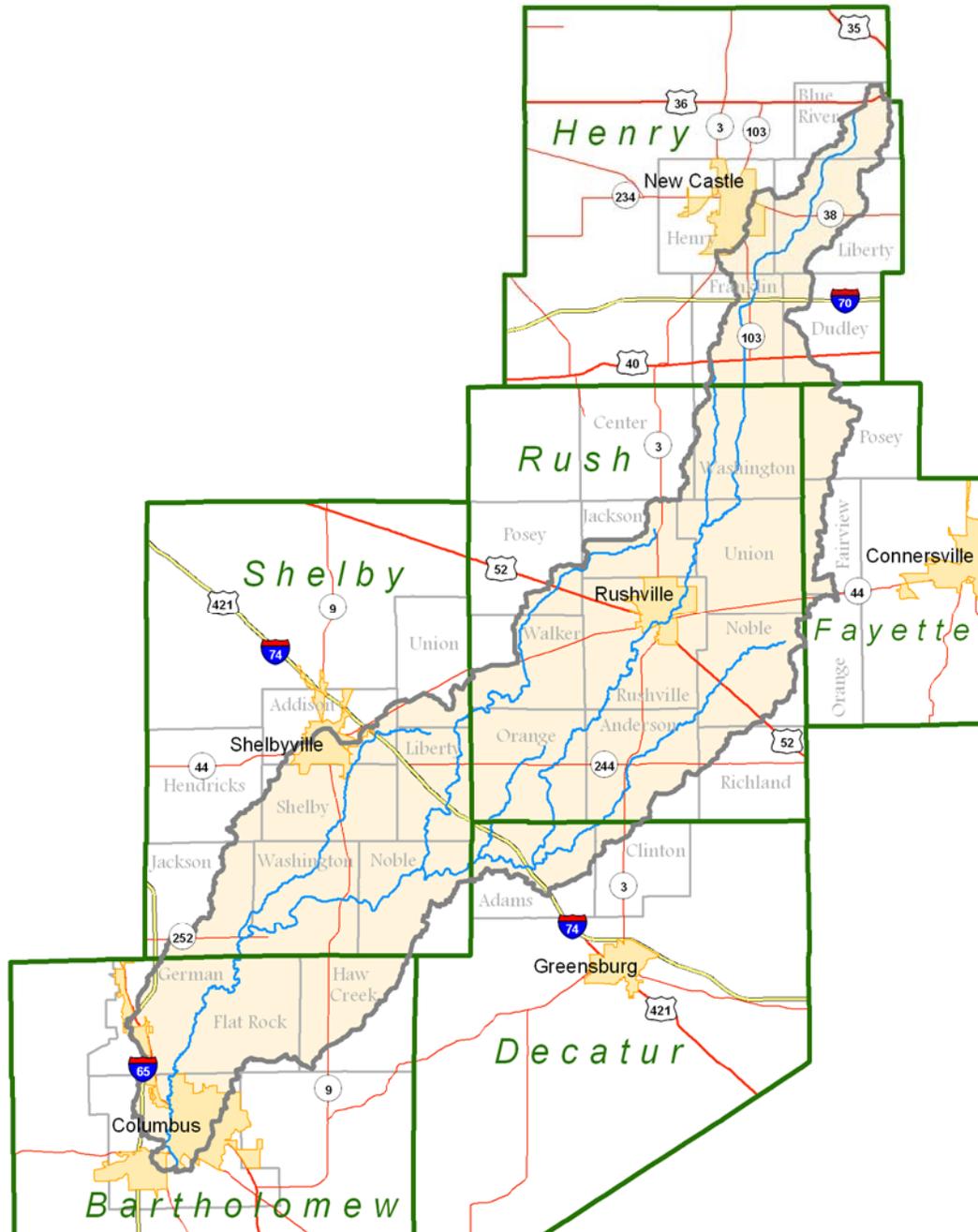


Rapid Watershed Assessment Flatrock-Haw Watershed

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

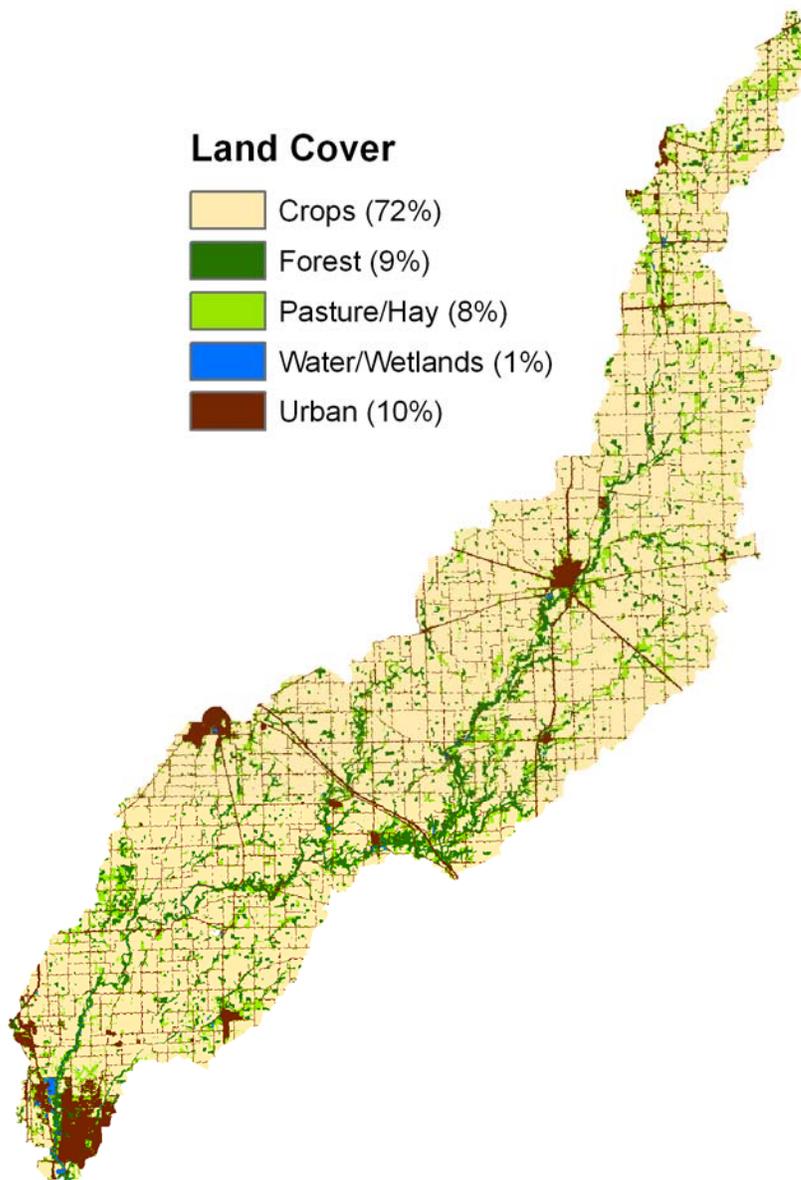


Flatrock-Haw Watershed



Introduction

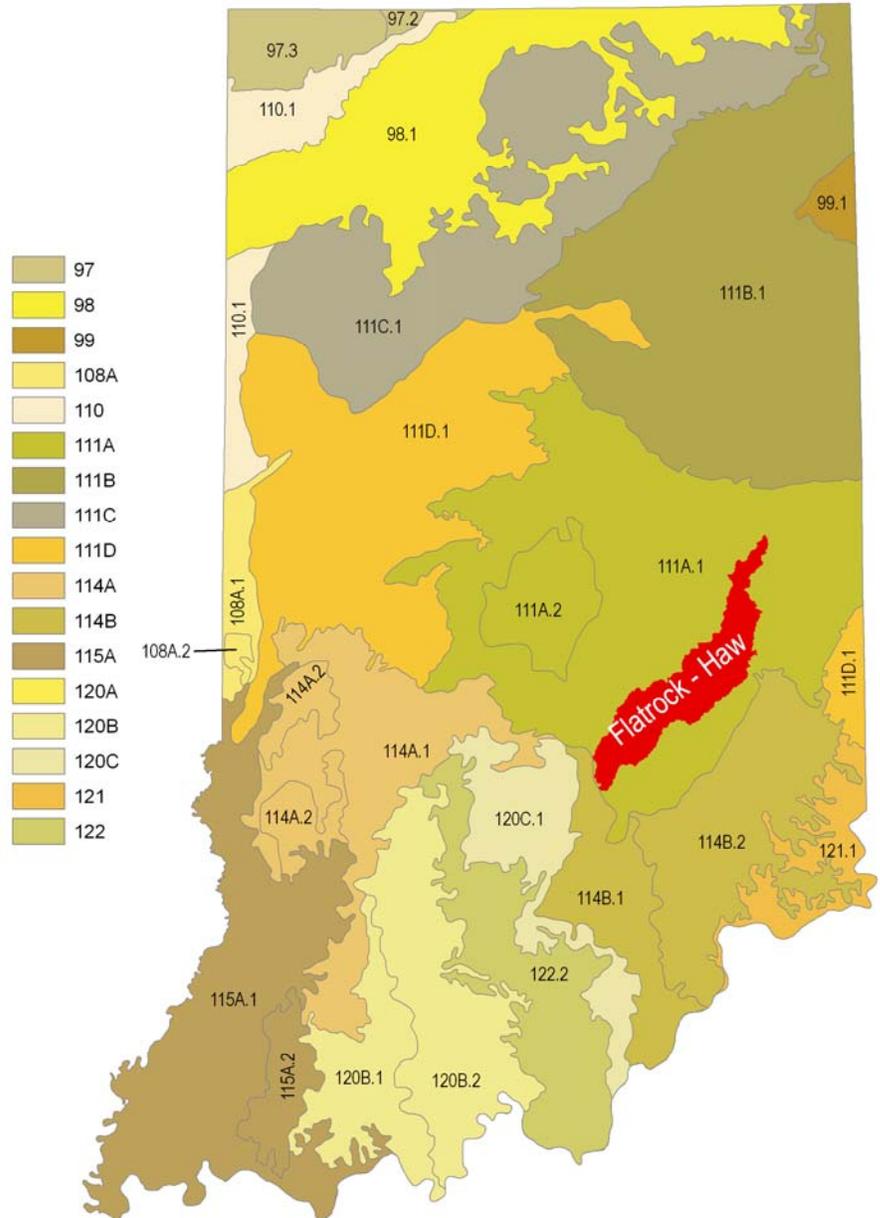
The Flatrock-Haw watershed is an eight digit (05120205) hydrologic unit code HUC) watershed located in the South central part of Indiana. The watershed drainage area is just over 375,000 acres. The watershed covers eight different Indiana counties. It is subdivided into 23 subbasins represented on the map by 12 digit HUCs (Figure 2-1).



Common Resource Area

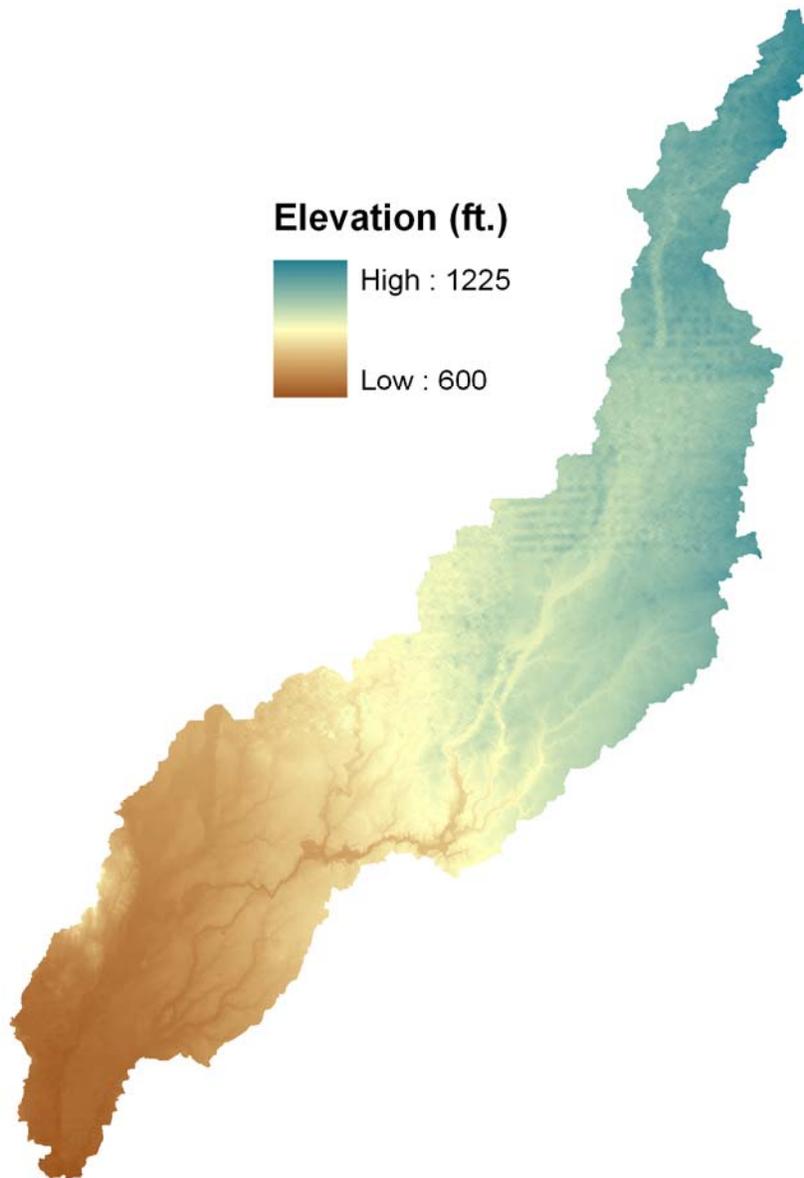
The common resource area for the watershed:

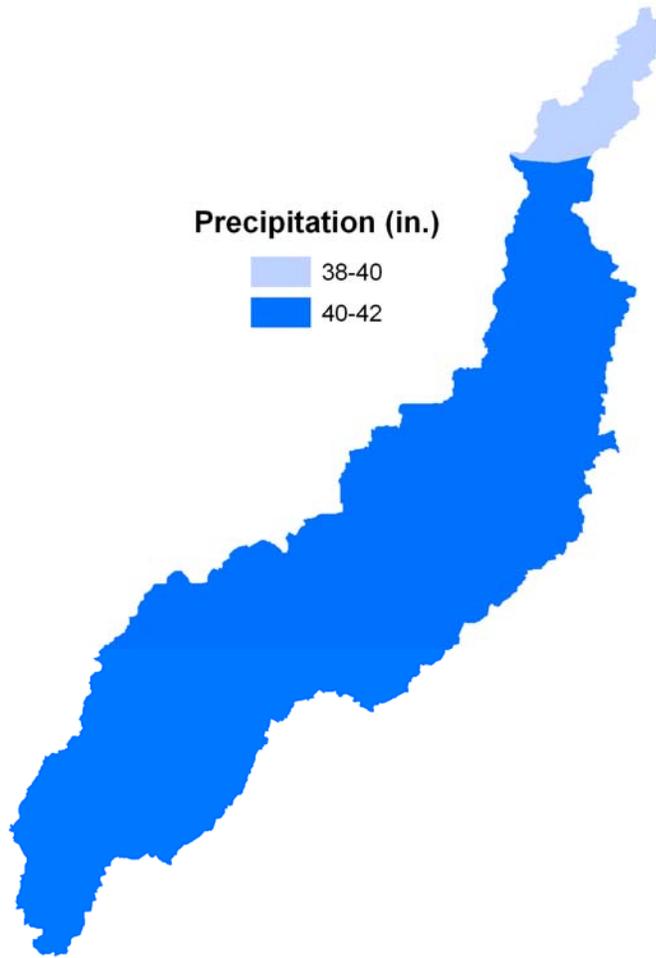
The Indiana and Ohio Till Plain, Central Part – (111A.1) Level to rolling glacial till plain broken by hilly end moraines, kames, and outwash terraces with moderate relief. Corn, soybean, and livestock farming with scattered woodlands in areas not affected by urban development. Soils dominantly are well drained to very poorly drained, formed in Wisconsin Age glacial drift derived mostly from limestone and dolomite.



Physical Description

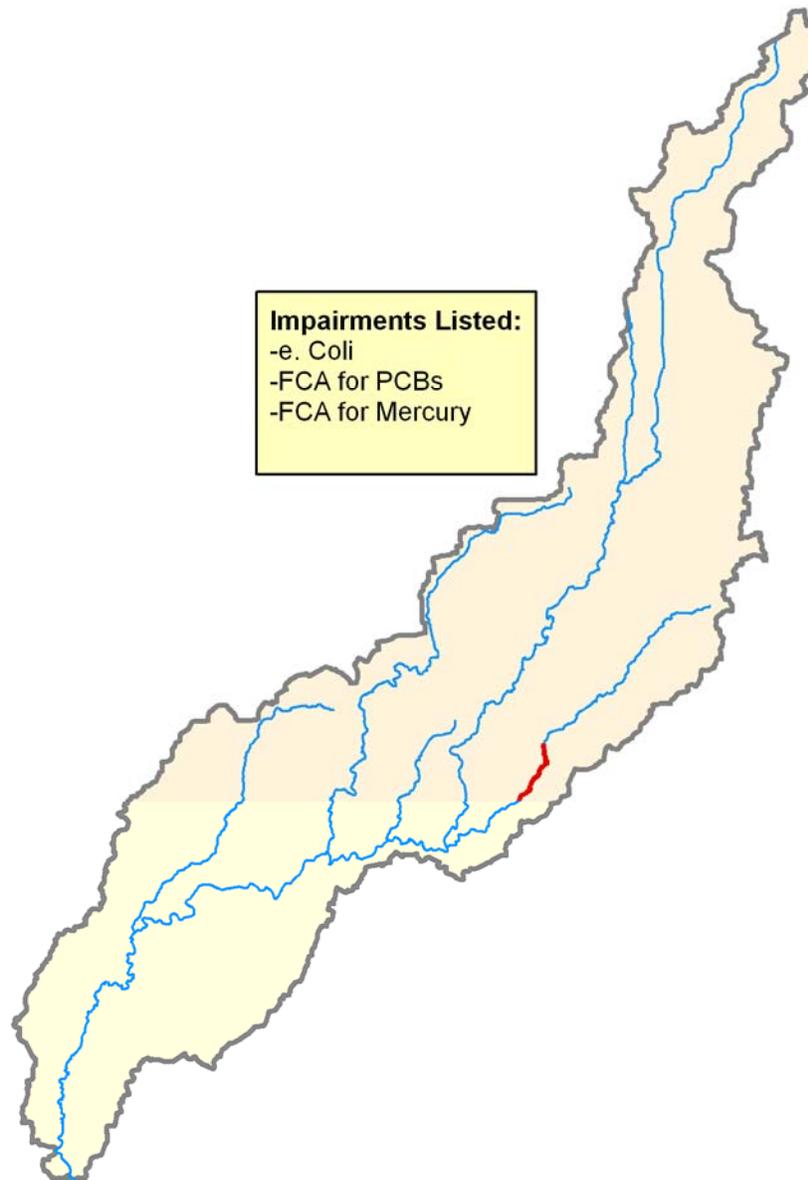
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Assessment of waters
 Section 303(d) of the Clean Water Act requires states to identify waters that do not meet, or are not expected to meet, applicable water quality standards. The Clean Water Act Section 303(d) list for Indiana provides a basis for understanding the current status of water quality in the Flatrock-Haw Watershed.

WATERBODY SEGMENT ID	WATERBODY SEGMENT NAME	CAUSE OF IMPAIRMENT
INW0561_M1015	EAST FORK WHITE R-COLUMBUS	FCA for PCBs
INW052A_T1009	FLATROCK RIVER	FCA for MERCURY
INW0551_T1012	FLATROCK RIVER-GENEVA	FCA for MERCURY
INW0551_T1012	FLATROCK RIVER-GENEVA	FCA for PCBs
INW0543_T1011	FLATROCK RIVER-GERMANTOWN (GAGE)	FCA for MERCURY
INW0543_T1011	FLATROCK RIVER-GERMANTOWN (GAGE)	FCA for PCBs
INW0541_T1010	FLATROCK RIVER-ST. OMER	FCA for MERCURY
INW0541_T1010	FLATROCK RIVER-ST. OMER	FCA for PCBs
INW0552_T1013	FLATROCK RIVER-WILLOW PARK	FCA for MERCURY
INW0552_T1013	FLATROCK RIVER-WILLOW PARK	FCA for PCBs
INW0537_00	LITTLE FLATROCK RIVER-AT COUNTY LINE	E. COLI



Soils

The dominant soil orders in MLRA (111A.1) are Alfisols, Inceptisols, and Mollisols. The MLRA also has small areas of Histosols. The soils in the area have a mesic soil temperature regime, an aquic or udic soil moisture regime, and mixed mineralogy. They are very deep, generally are very poorly drained to somewhat poorly drained, and are loamy or clayey. The dominant kinds of parent material are till, outwash, and loess. Others include alluvium, glaciolacustrine sediments, residuum, and organic deposits.

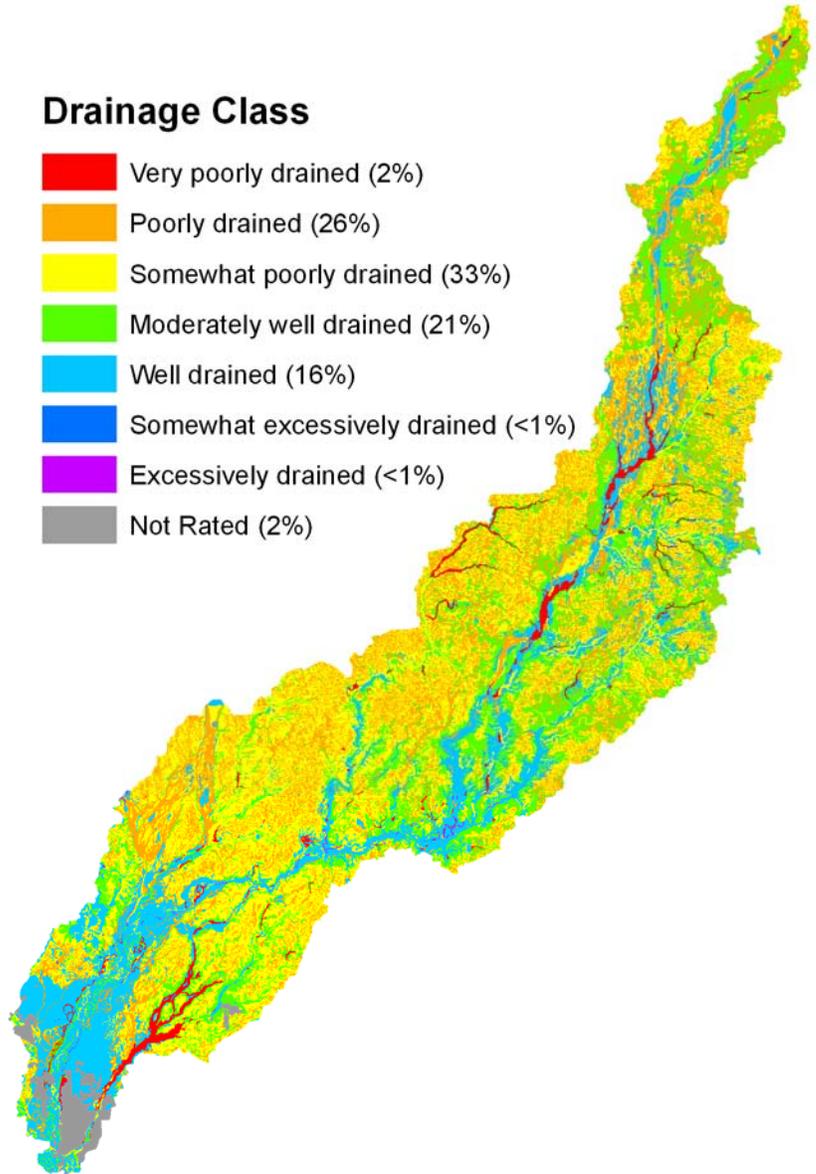
Hapludalfs (Cardington, Celina, Lewisburg, Losantville, Miami, Miamian, Milton, Russell, Strawn, Wawaka, Williamstown, and Xenia series) and Epiaqualfs (Crosby and Fincastle series) are on moraines. Some Argiaquolls (Brookston, Cyclone, Kokomo, and Treaty series) are in depressions on ground moraines. Other Argiaquolls (Lippincott and Westland series) and Endoaquolls (Patton and Pella series) are in depressions on outwash plains and terraces. Hapludalfs (Eldean, Fox, Martinsville, and Ockley series) and Endoaqualfs (Sleeth and Whitaker series) are on terraces and outwash plains. Haplosaprists (Linwood and Palms series) and Humaquepts (Martisco series) are in deep depressions or potholes. Eutrudepts (Eel and Genesee series), Hapludolls (Ross series), Endoaquepts (Shoals series), and Endoaquolls (Sloan series) are on flood plains.

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.”

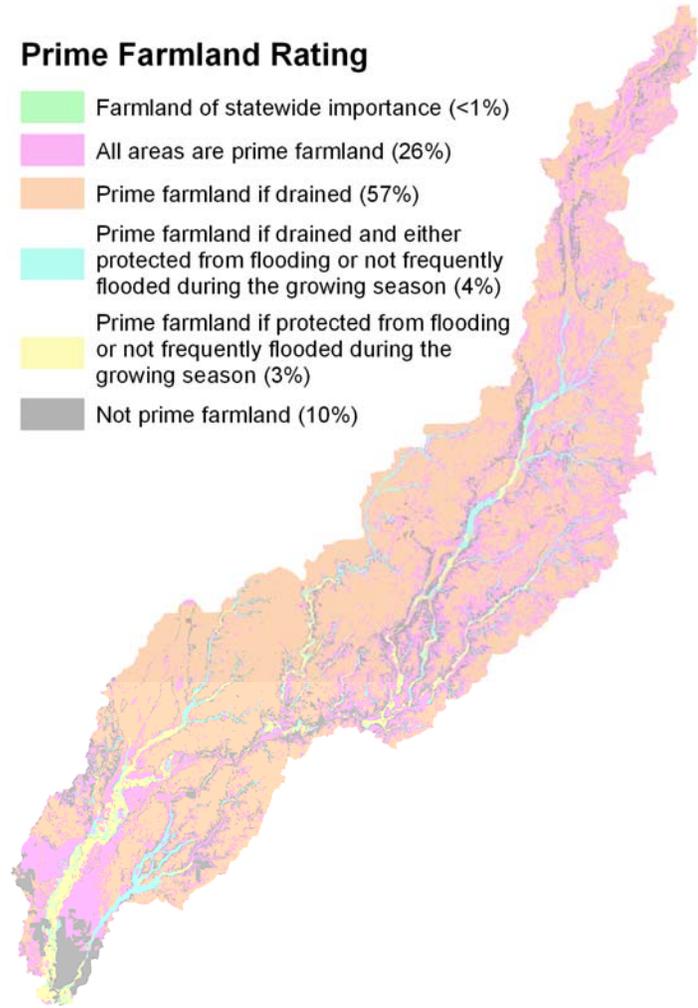
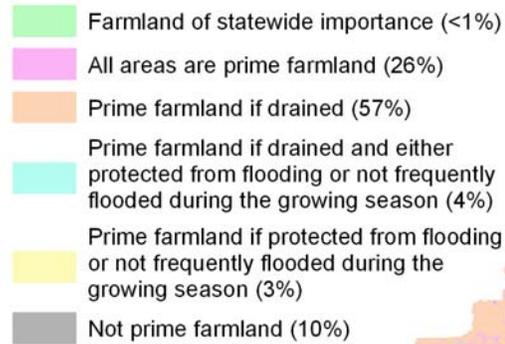
Drainage Class

-  Very poorly drained (2%)
-  Poorly drained (26%)
-  Somewhat poorly drained (33%)
-  Moderately well drained (21%)
-  Well drained (16%)
-  Somewhat excessively drained (<1%)
-  Excessively drained (<1%)
-  Not Rated (2%)



Farmland Classification Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local 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.

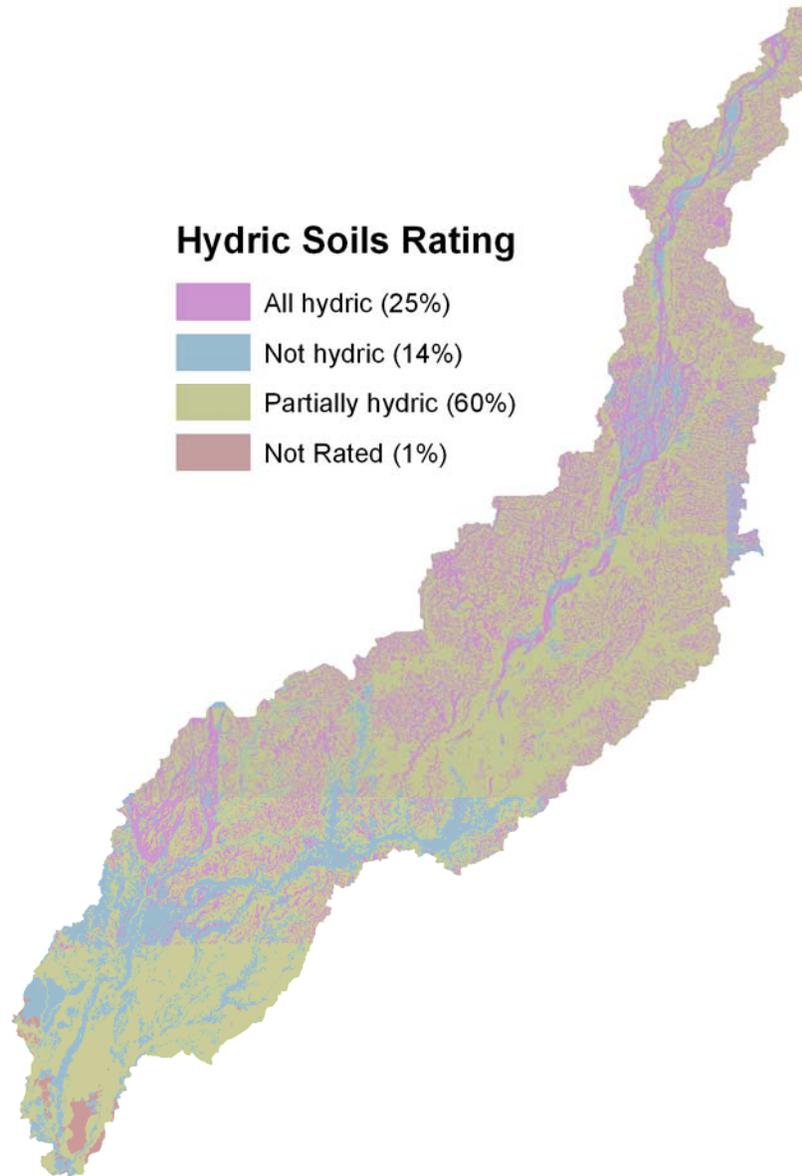
Prime Farmland Rating



Hydric Soils 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 non-hydric soils in the higher positions on the landform, and map units dominantly made up of non-hydric 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.

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make on site determinations of hydric soils are specified in “Field Indicators of Hydric Soils in the United States” (Hurt and others, 2002).

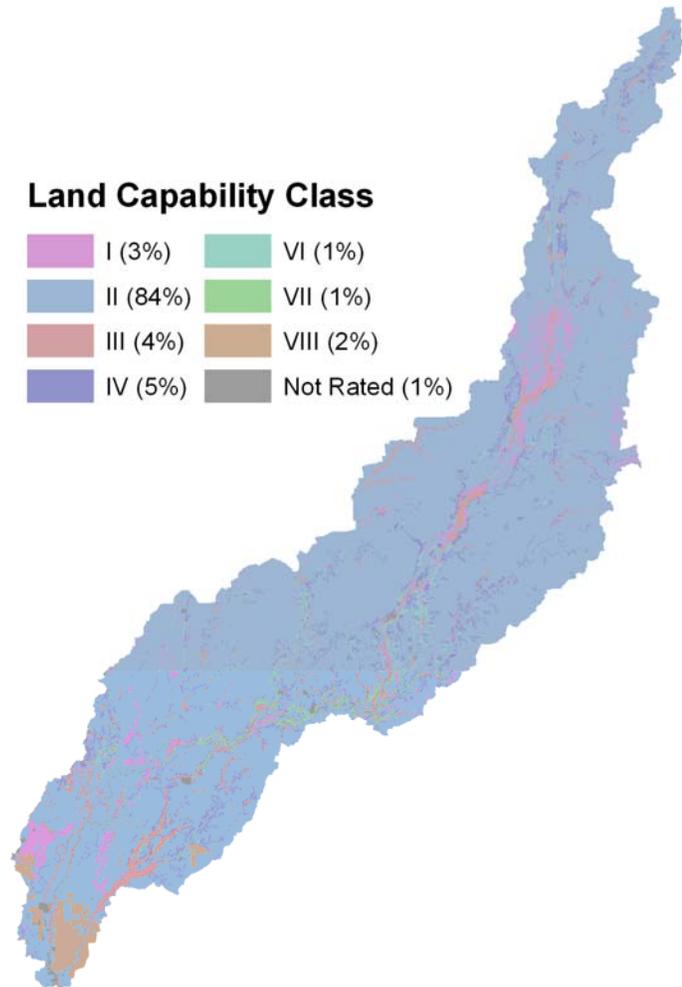


Highly Erodible Land (HEL)

A soil map unit with an erodibility 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.

Land Capability Classification

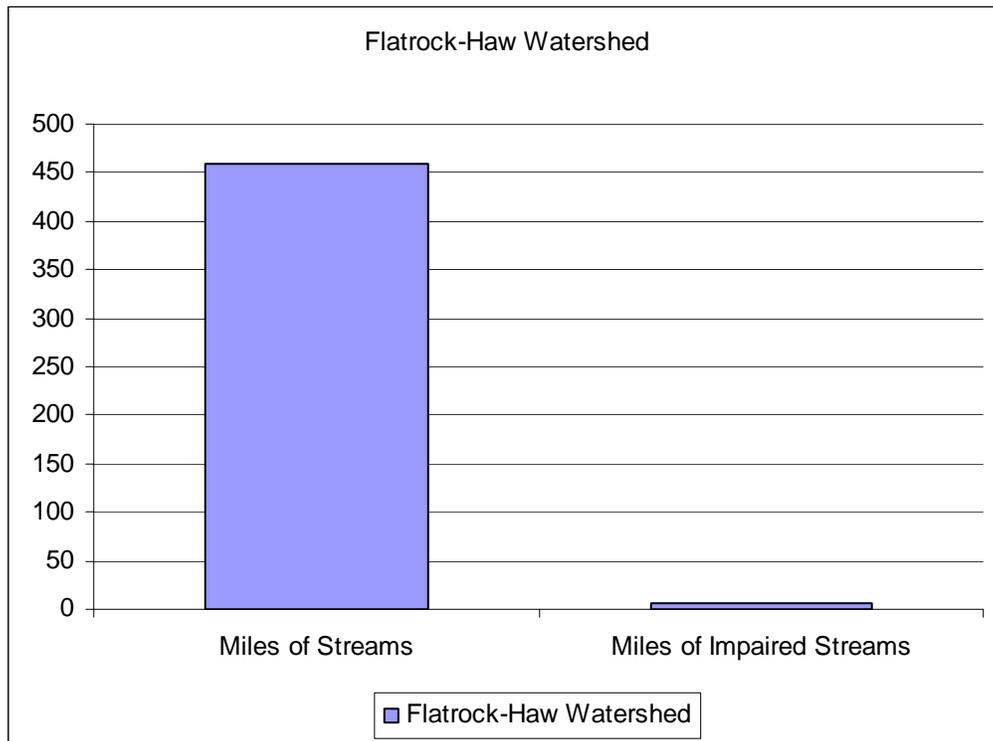
Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive land forming 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 designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.



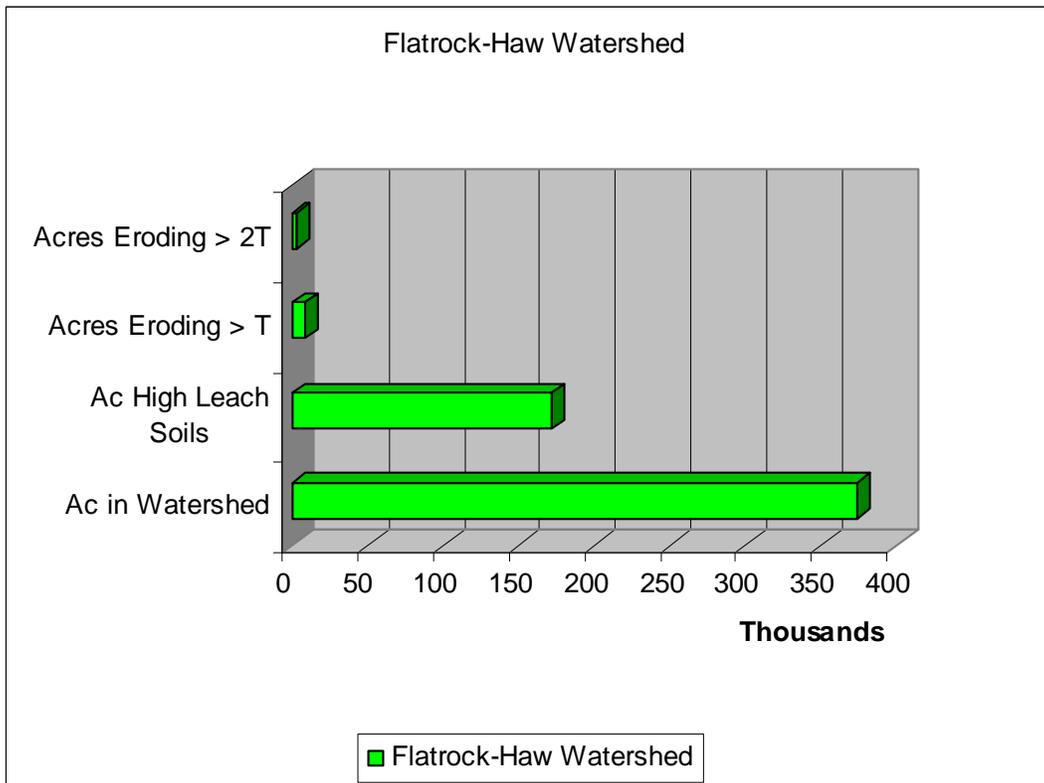
Resource Concerns

Stakeholders and electronic analysis have been identified the following resource concerns as being the top priority:

- Surface Water Quality – There is approximately 1.4 percent or 6 miles of the 458 total miles of the streams within the watershed that have identified impairments. Excessive amounts of sediments, nutrients, and bacteria degrade the water quality causing an unbalanced fish community with depressed populations and limited diversity.



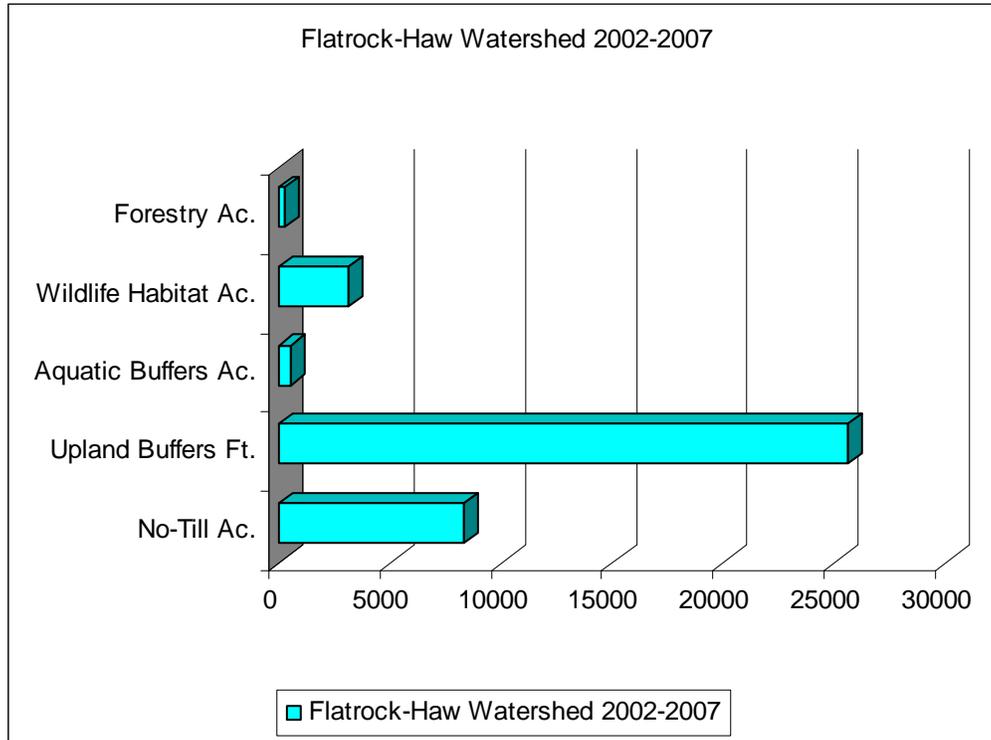
- **Ground Water Quality** - The watershed has in excess of 171,900 acres of soils with high leaching index (> 10) which allows containments on the land surface to be carried easily into the ground water from infiltrating water. There are an additional 9,500 acres of wellhead protection areas. Because of this condition, non–point pollutants such as fertilizers, pesticides, and livestock waste have the potential to contaminate the ground water aquifer.



- **Soil Quality** – The watershed has over 8,700 acres of soils subject to soil erosion. There is over 2,800 acres eroding at twice the tolerable level or “T”.
- **Air Quality** – 24.5 percent of the watershed has been identified by the Environmental Protection Agency as have an air quality concern.
- **Threatened & Endangered Species** – Just over 6.2 percent of the 375,000 acres in the watershed lie within the range of know Threatened and Endangered Species.

Performance Results System and Other Data

The producers within the watershed have implemented a variety of conservation practices over the past five years.

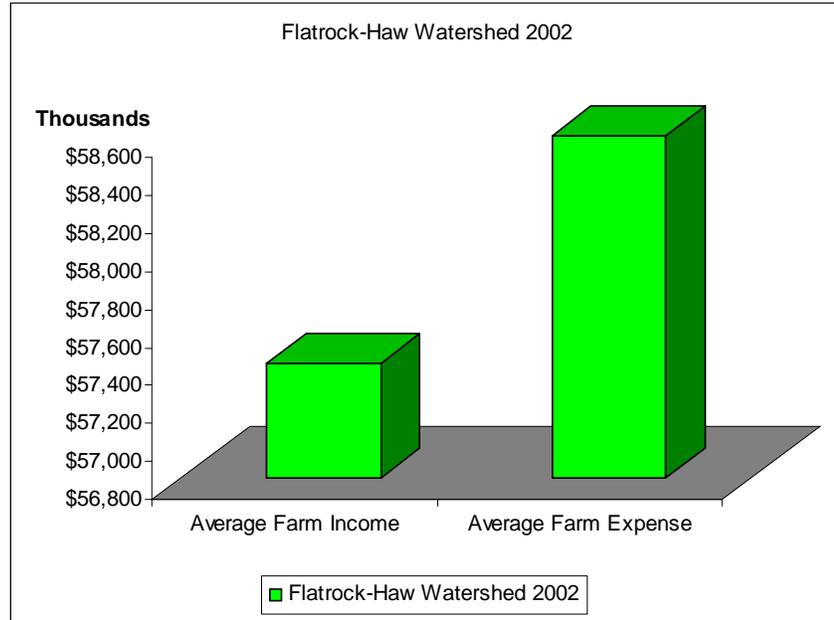


Since 2002 through 2007 landowners have implemented over 8,300 acres of No-Till, approximately 25,600 feet of upland buffers, and just over 500 acres of aquatic buffers. Wildlife habitat has been improved or established on more than 3,100 acres within the watershed and just over than 300 acres of forestry practices have been applied.

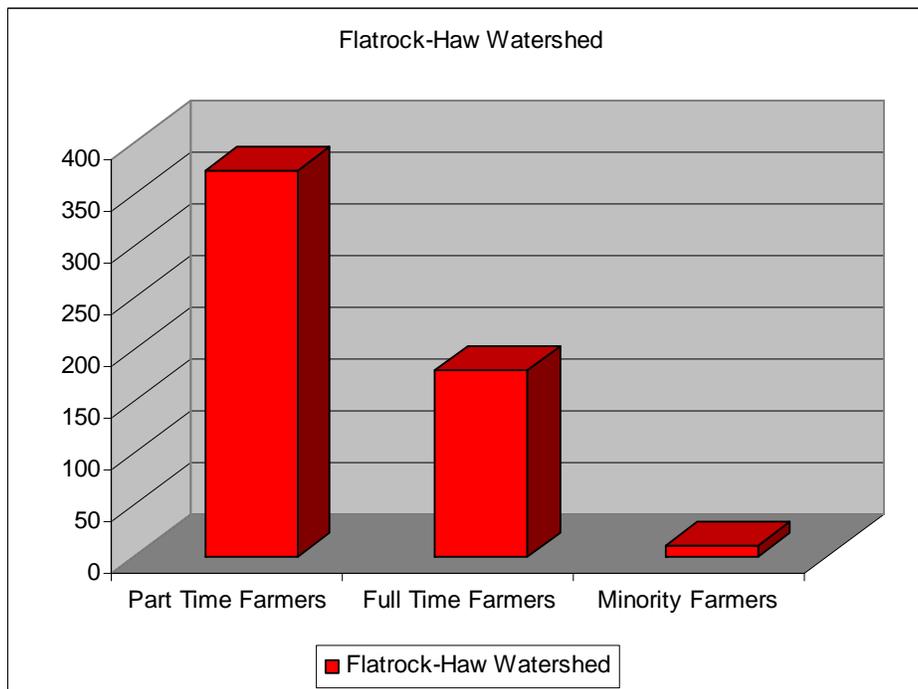
Census and Social Data (Relevant)

There are approximately 3700 farms in the watershed that average approximately 288 acres in size.

The 2002 average farm total income for all the counties was \$57,400,000 while average expense was \$58,600,000.



There are approximately 371 part time farmers, 179 full time farmers and 10 minority farmers.



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Data Sources:

Indiana Common Resource Area (CRA) Map delineations are defined as geographical areas where resource concerns, problems, or treatment needs are similar. It is considered a subdivision of an existing Major Land Resource Area (MLRA) map delineation or polygon. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographic boundaries of a CRA.

Indiana Agricultural Statistics 2003 – 2004 - Indiana Agricultural Statistics, 1435 Win Hentschel Blvd., Suite B105, West Lafayette

Major Land Resource Area Map Tool - Indiana NRCS Soils Page -
<http://www.in.nrcs.usda.gov/mlra11/soils.html>

Indiana Hydrologic Units Indiana Geodata

Indiana Watershed Action Strategy Plan

Indiana Rapid Watershed Assessment (Electronic Data Sets – Web based application.

Indiana 2006 303d List – Indiana Department of Agriculture, Division of Natural Resources

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