

Mackinaw River Management Plan
Subwatershed
West Branch, Panther Creek

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for
The Nature Conservancy
Illinois Environmental Protection Agency

Second Draft

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COMPONENT #1: MISSION STATEMENT

We intend to preserve and enhance the natural resources of the Mackinaw River watershed through education, good management practices and voluntary cooperation while respecting property owner rights.

COMPONENT #2: WATERSHED DESCRIPTION

Panther Creek, a fifth order tributary of the Mackinaw River, is located in Woodford County, Illinois. The mouth of Panther Creek is located at Mackinaw River mile 64.7, approximately 3 miles north of the town of Congerville. The West Branch of Panther Creek, a fourth order tributary of the Mackinaw River, is also located in Woodford County. It arises 4.8 miles west of the town of Roanoke and flows in an east-south-easterly direction for approximately 18.4 miles where it joins the main branch of Panther Creek just north of Woodford County Route 5 between 2200E and 2300E.

The West Branch of Panther Creek subwatershed is approximately 38,000 acres, with a drainage area of 59 square miles. (IEPA data, pg. 2-15, Vol.2 Mackinaw River Assessment, IDNR) The IEPA waterbody identification code for the West Branch of Panther Creek is ILDKKB01.

The watershed deliniation encompasses the Woodford County hydrologic unit area 0713004-050, section 14 and 15, and is identified as the West Branch of Panther Creek. (Hydrologic Unit Map, NRCS, Woodford County, 1981) There are no major lakes in this watershed. The only other bodies of water are a 25 acre sewage lagoon in the town of Roanoke, which drains into the WB of Panther Creek, and a 5 acre pond east of Roanoke.

The area is almost entirely private access, with the only public access areas at county highway bridges.

COMPONENT #3: WATERSHED ACTIVITIES

Watershed activities in the West Branch of Panther Creek have included slide shows of the Mackinaw River Project by TNC, a presentation to area farmers by TNC, The Mackinaw River Project, NRCS and Woodford County SWCD, a presentation to the town of Roanoke by the Biology and Agriculture class of Roanoke- Benson High School, and 3 demonstration/Best Management projects initiated by the Mackinaw River Project/Illinois EPA, IDNR and NRCS. The students have also conducted Macroinvertebrate sampling at 5 locations within this subwatershed. In addition, 8 sign-ups for EQIP (Environmental Quality Improvement Program) were allocated by the Woodford County NRCS. Specific information on these activities are as follows:

<u>Date</u>	<u>Type of Activity</u>	<u>Success</u>	<u>Reasons for Success</u>
1996	RoanokeTown Council Presentation	Yes	Cooperation, concern about water quality issues, interest in development of stormwater ordinance for town
1996-98	Water sampling	Yes	Generation of data
1997-98	Conservation Conference	Yes	Awareness, education
1997	Rotary Presentation	Yes	Awareness, education
1997	Neighborhood Breakfast	Yes	Residential awareness
1997-98	Tree Planting	Yes	Student involvement
1998	Landowner visits	Yes	Awareness of programs
1998	Environmental Fair	Yes	Education, student involvement

COMPONENT #4: WATERSHED RESOURCE INVENTORY

Waterbodies:

There are only two relatively small waterbodies located within the West Branch of Panther Creek subwatershed. One sewage treatment lagoon is located just east of the village of Roanoke, and has approximately 25 surface acres, and another lake, approximately 5 acres in size, is located approximately 2.5 miles east of Roanoke, on private property near 2000E between 1300N and 1400N. There are approximately 10 farm ponds.

The West Branch of Panther Creek, with a length of approximately 18 stream miles, is considered a perennial stream with continuous flow during the year. Based on Illinois EPA data from 1987 (site DKKB-01), it has a water quality index of 34.9, which indicates minor water quality problems. The mean WQI value for the entire Mackinaw River watershed was 42.9. (Illinois EPA Survey of the Mackinaw River Basin, Short, 1987).

The only water quality problems detected in the 1987 study were for fecal coliform (2700/100ml). (A more detailed analysis of water quality data can be found in the 1987 Illinois EPA Survey of the Mackinaw River Basin by Matthew Short.)

Since water quality data was not obtained from the same site in the 1994 Illinois EPA report, it is not possible to compare data or to detect any trends. (Closest site was DKK-01, Main Branch of Panther Creek.) However, high levels of fecal coliform were again detected in 1996 downstream of Roanoke, according to a study done by Dr. Tim Kelley of Illinois State University. The sampling site location was different than that of the Illinois EPA location however.

Collection of comparative data, using the 1987 Illinois EPA sampling site DKKB-01, would be needed to establish the existence of any decrease in water quality values.

Water Quality Index Values: Illinois EPA Site DKKB-01 (West Branch Panther Creek), 1987:

Water Temperature= 13, DO=0, pH=5, P=40, TSS= 22, Cond.TDS=22, Toxic Metals= 10, Ammonia= 12 (Values range from 0; no problems to 100; severe problems)
WQI=34.9 (Mean for Mackinaw River Basin= 42.9)

Habitat Data: Illinois EPA Site DKKB-01 (West Branch Panther Creek), 1987:

Stream Order: 4, Stream Width: 22 feet, Depth: 0.8 feet, Velocity (ft/sec) 0.02, Discharge (cfs): 0.4

Instream Cover: 9%, Pool: 20%, Riffle: 0%, Shade: 64%, Silt/Mud: 8%, Sand: 8%, Fine Gravel: 12%, Medium Gravel: 13%, Coarse Gravel: 23%, Small Cobble: 10%, Large Cobble: 13%, Boulder: 2%, Bedrock: 0%, Claypan: 2%, Plant Detrius: 0%, Vegetation: 12%, Submerged logs: 0%

IBI: 41.7 (mean of 46.1 for Mackinaw River Basin), Category of Biotic Potential: B, AIBI: 49.1 (mean of 48.7 for Mackinaw River Basin), MBI: 6.1, PIBI: 41.7.

This data indicates that this subwatershed is classified as a highly valued aquatic resource. (Intensive Survey of the Mackinaw River Basin, M. Short, 1987)

The overall use of the West Branch of Panther Creek is to serve as a means to

transport water drained from agricultural fields and from the village of Roanoke. It may be used by farmers to water livestock. Recreational uses such as fishing, swimming, hunting, etc. would be limited only to those who own property along the West Branch of Panther Creek. There is no public access. This subwatershed does provide habitat for a variety of aquatic life forms.

Designated Use/Designated Use Support:

The designated use for the West Branch of Panther Creek is Full support for Overall Use (01F), and Full support for Aquatic Life (04F). (Illinois Water Quality Report, 1994-1995, Vol. II, pg. 37)

Implementation strategies should be directed towards protection of this water resource.

Impairments:

Causes of Impairments:

Within this sub-watershed, the causes of impairment in water quality are the same as for the Mackinaw River watershed as a whole, just on a smaller scale. These causes are listed below, which were identified by the Mackinaw River Planning committee. (The Illinois Water Quality Report for 1994-1995 did not indicate either causes or sources of impairments)

Sedimentation: an increase in velocity and volume of water resulting in increased erosion in agricultural fields, streambanks, and urban areas. (slight to moderate)

Suspended solids and turbidity (slight to moderate)

Fecal coliform (moderate to high)

Sources of Impairments:

The Illinois Water Quality Report for 1994-1995 did not indicate sources of impairment for the West Branch of Panther Creek. However, due to the fact that this subwatershed is primarily rural, with only one urban area (Roanoke), it can be assumed that the sources for impairment in water quality are largely of rural origin. According to the Illinois EPA Intensive Survey of the Mackinaw River in 1994, there were 17 sites identified as having a slight potential for impairment, and all of these were considered rural sources. One site was rated as having a moderate potential (also rural), and five sites were considered as having a high potential of impairment. Two of these sites were urban (Roanoke Concrete and Roanoke Wastewater Treatment facility), and three sites were rural. (Illinois EPA Intensive Survey of the Mackinaw River, 1994, Figure 13, pg. 105)

In 1970, the village of Roanoke constructed a secondary waste treatment facility, processing .22 million gallons per day. The effluent discharge flows into the West Branch of Panther Creek. Research done by Dr. Tim Kelley of Illinois State University in 1996 indicated a fecal coliform level of up to 97 CFU/1ml. Any level above about 20 CFU/1ml is above recommended maximal levels.

The Illinois EPA document, while implicating certain geographical locations as sources of impairment, does not qualify the actual impact of these potential sources. However, based on the data, and that the majority of potential impairment sources are of rural origin, overall impairment in water quality appears to be minimal. The Illinois EPA document does not link the specific site to the type of land use or management practice, but the following sources would be considered as reasons for impairment in water quality.

Alteration of hydrologic regime:

- increased flood flows, reduced base flows
- Increased drainage and loss of wetlands
- Stormwater runoff from impermeable surfaces

Agricultural practices:

- Application of farming chemicals
- Rural septic systems
- Livestock waste
- Removal of streamside vegetation, loss of riparian habitat

Urban sources:

- Stormwater runoff, Sewage treatment plant
- Loss of riparian habitat

Groundwater:

Confined/unconfined aquifer?

The village of Roanoke obtains its public water supply from a sand and gravel aquifer with well depths from 50-121 feet.

Capture zone?

Re-charge area?

Wellhead protection area?

Priority Groundwater Protection Planning region?

Water wells: As this is primarily a rural area, the majority of active water wells are from rural homesteads. There are an estimated 150 private water wells, and the village of Roanoke has 3 active wells providing the water supply for residents. In 1995, 83,800 gallons were used, with a per capita water use of 114 gallons per day. (table 3-15, Vol. I, Mackinaw Area Assessment, IDNR) There are 2 improperly abandoned wells in this subwatershed, and there exists the possibility of more that have not been reported.

The susceptibility of nitrogen and pesticide leaching is minimal, according to the Illinois Water Quality Report, 1994-1995.

Irrigation:

There are no known irrigation systems within this subwatershed.

Drainage:

The effects of surface drainage within this subwatershed results in an increase in soil erosion, therefore there is a decrease in water quality. The majority of surface drainage would come from surface runoff from farm fields and pastures, and from roadways and surface storm sewers associated with the village of Roanoke. "Roanoke is surrounded and dissected by tributaries of the West Branch of Panther Creek. Its surface waters drain in all directions toward one or another of these tributaries." (Point Source Pollution in the Mackinaw River Watershed, Schnieder, 1995). There does appear to be an increase in surface drainage within this watershed.

The effects of subsurface drainage result in an increase in water volume after a rain event and altered hydrology. The majority of subsurface drainage would come from farm field tile systems. There does appear to be an increase in farm field tile systems (J. Schuler, Woodford County NRCS), but no data exists to support this.

There are no active Drainage districts within this watershed.

There is no record of the extent of drainage systems in farm fields within this watershed.

Floodplain Boundaries:

The only flooding data available for the West Branch of Panther Creek is from information recorded by a resident of the village of Roanoke (Tom Fehr). Based on his records, which are only for the 1990's, flooding dates for the Roanoke area are the following:

1990: June 20, June 29, November 27

1993: September 14

1995: May 13

1996: May 27

Flood structures: there are no known flood structures

Flood plain boundaries: A map of the flood plain boundaries is available from FIRM (flood insurance map), located at the Woodford County NRCS office. The 100 year flood zone is marked on the map.

Flood damage estimates: no flood damage estimates are available.

Municipal/Industrial:

There are two landfill sites located in this watershed; both are in the Roanoke area. Lewis Martin Farms, Roanoke, has an Illinois EPA land application permit and is considered operational. The Armigoni landfill, located at 27N O1E 26, has a status of CFC (closed Final Cover) (Source: Mackinaw River Area Assessment, Vol. II, pg. 2-24).

There is one welding shop in Roanoke with an underground fuel storage tank, and one electrical booster station. Stormwater runoff from the village of Roanoke flows into the West Branch of Panther Creek. There are two NPDES surface impoundment sites within the watershed, both located in Roanoke. One is located at Martin Brothers Implement in Roanoke, the other is the sewerage system of the Village of Roanoke. "In 1988, concentrations of human fecal bacteria were detected in Panther Creek downstream from the Roanoke wastewater treatment plant." (Point Source Pollution in the Mackinaw River Watershed, Schnieder, 1995)

Riparian Corridors:Streambank Erosion:

A detailed survey of the amount and extent of streambank erosion has not been done for this subwatershed.

Existing vegetation:

The type of existing vegetation occurring along the WB of Panther Creek is primarily cool-season grasses and trees and shrubs (no detailed survey has been done to date). Most of the corridor is bordered by pasture or cropland. No riparian trees exist until Roanoke (approximately 5 miles), where a thin band exists. This corridor continues until the confluence with the main branch of Panther Creek (approximately 13 miles). The riparian areas are unmanaged woodlands, with a width of 50 feet or less. Approximately 5 miles of filter strips exist along the main corridor of the West Branch of Panther Creek.

Hydrologic Modifications:

The upper portion of the West Branch of Panther Creek west of Roanoke and through Roanoke has been channelized. The width of the channel varies from 15 to 30 ft. There are approximately 20 bridges located in this subwatershed, and no dams. Downcutting does occur in some areas, with a resulting effect of increased erosion. Specific data regarding hydrologic modifications is not available.

Stormwater Management:

Stormwater Ordinance: Woodford County has adopted the *Model Soil Erosion Ordinance* which was developed by the Tri-County Regional Planning Commission (Tazewell County).

Stormwater Control Practices: ?

Discharge Location:?

Combined Sewer Systems:?

(Stormwater management is the responsibility of Woodford County)

Wetlands:

Within the West Branch of Panther Creek, there are 91 acres of non-forested wetlands, and 89 acres of forested wetlands. (IDNR MRAA, Vol. 1, pg 1-15). This represents a very small (0.005%) percentage of the total acres within this subwatershed.

Former wetlands existed in greater number in this watershed, but the existing floodplains are no longer hydrologically connected to the stream channel. The condition of these wetlands are degraded in diversity and hydrologically impaired.

Fish:

There are a variety of fish species present in the West Branch of Panther Creek: The list of species present is as follows:

<u>Species</u>	<u>Number found</u> (1987/1994)	<u>Species</u>	<u>Number found</u> (1987/1994)
Creek chub	12/3	White sucker	16/3
Hornyhead chub	61/0	Yellow bullhead	1/0
Suckermouth minnow	3/1	Stonecat:	1/0
Striped shiner	97/2	Smallmouth bass	7/0
Bigmouth shiner	1/0	Green sunfish	12/0
Red shiner	5/0	Longear sunfish	5/0
Sand shiner	2/1	Rock bass	1/0
Redfin shiner	5/1	Jonny darter	7/1
Bluntnose minnow	179/3	Orangethroat darter	3/1
Common stoneroller	44/1	Fantail darter	0/1
Golden redhorse	28/0	Shorthead redhorse	2/0
Northern hogsucker	17/0		

Data is from Intensive Survey of the Mackinaw River Basin, M. Short, 1987 and from Aquatic Classifications and Conservation of Aquatic Communities in the Mackinaw River, Retzer, 1996.

Fish size: data not available

Fish kills: There were no fish kills reported within this subwatershed.

Habitat: the IBI rating for the West Branch of Panther Creek was 49.1 (1987), an indication of an highly valued aquatic resource. (ie: good quality habitat)

Population: according to 1987 Illinois EPA data, 509 fish were collected, representing 22 taxa species. (1987 Intensive Survey of the Mackinaw River Basin, pg. 44,45) 19 total fish were collected by M. Retzer in 1996, representing a decline of 26% in population and a 2% decline in diversity.

Priority Waterbody:

The West Branch of Panther Creek has been designated as a priority area for the EQIP program for 1997 and 1998, and is proposed for 1999. It has also been classified by the Illinois EPA as a high priority subwatershed concerning groundwater issues. Based on the division into Conservation Priority Zone by The Nature Conservancy, the West Branch of Panther Creek is considered to be in a Zone B, which has a high priority for restoration. All agricultural areas bordering waterways in this subwatershed are considered high priority areas for the CRP and the new CREP federal farm program. The subwatershed is also a part of the C2000/Ecosystem Partnership Program administered by the Illinois Department of Natural Resources, and is a Targeted Watershed Approach subwatershed area (Illinois EPA) with a low priority for Multiple Program Interests (Illinois EPA Targeted Watershed Approach, 1997).

Soil Classification:

Soil Types: There are six different soil types/associations found within this subwatershed.

The most common soil type (37%, 14,456 acres) is classified as Ipava-Sable-Tama. The soil composition of this type is primarily silt loam, with a slope of from 0-5% (flat to gently sloping). The water table varies from .5-6 feet, with a permeability of .6-2 in/hr. at a 0-16 inch depth. The land use capability class is I, 2W, and 2E, the erodability index is from 0.0978 to 2.980, and it is not considered a hydric soil. This type of soil association is nearly level, and the soil is somewhat poorly drained. These soils are used mainly for cultivated crops and pasture.

The next most common soil type (24%, 9,177 acres) is classified as Chenoa-ElPaso-Graymont. Its soil composition is silty clay loam, with a slope of 0-5%. The water table is from .5 to 6 feet, with a permeability of .6-2 in/hr. at a 0-21 inch depth. The land use class is 2W and 2E, the erodability index is from 0.978 to 4.158, and it is not considered a hydric soil type. Chenoa and Graymont soils are gently sloping and are somewhat poorly to moderately well drained soils. This association is used mainly for cultivated crops or for pasture and hay.

19% of the soils (7,218 acres) are classified as Drummer-Flanagan. This soil is a combination of silty clay loam and silt loam, with a slope of 0-2%. The water table is from .5 to 3.5 feet, with a permeability rate of .6-2 in/hr. at a 0-18 inch depth. The land use class is 2W and I, the erodability index is 0.978, and it is a combination of both hydric soil and non hydric soil. Drummer and Flanagan soils are nearly level and are poorly drained. This association is used mainly for cultivated crops or for pasture and hay.

17% of the soils (6,525 acres) are classified as Harco-Sable-Elkhart. The soil composition of this type is a combination of silty clay loam and silt loam. The slope ranges from 0-5%. The water table is from 4-6 feet, with a permeability index of .6-2.0 in/hr. at a 0-15 inch depth. The land use capability class is I and 2E, the erodability index is from 1.129 to 2.980, and it is not considered a hydric soil.

Only a small percent (3%, 1,133 acres) is classified as Miami-Birkbeck-Hennepin soil. This soil type is primarily silt loam. The slope of this soil type varies widely, from 2-5% (Birkbeck) to 25-35% (Hennepin). The water table is from 3-6 feet, with a permeability rate of .6-2.0 in/hr. at a 0-9 inch depth. The land use class is 3E, 2E, and 6E. The erodability index is from 3.477 (Birkbeck) to 12.82 (Miami). This soil is not considered a hydric soil. The Birkbeck soils are gently sloping to sloping and occur on broad ridgetops and shoulds of slopes. They are moderately well drained.

The smallest percentage of soil types (1% or 499 acres) is the Ross-Lawson-Sawmill type. This soil is a combination of loam, silt loam, and silty clay loam. The slope ranges from 0-3% (nearly level), and the water table ranges from 0-6 feet. The permeability index is from .6-2.0 inch/hr, with a depth of 0-22 inches. The Land Use class is 2W and 3W, the erosion index is from 0.978 to 1.129, and this soil type is a combination of both hydric (Sawmill) and non-hydric (Lawson, Ross) soils. These soils are found on nearly level flood plain areas, and are subject to occasional flooding. They are somewhat to poorly drained. This soil type association is used mainly for cultivated crops or for pasture and hay.

The majority of soils found in this subwatershed are considered suitable for agricultural purposes. The majority of acres in this subwatershed (65%) could be considered prime farmland (20,00 acres), with 15% (16,000 acres) considered HEL (Highly Erodable Land). Overall, the erodability indexes indicate that the soils are generally not highly erodable, and the Land Use Capability ratings from 1-3 and both E (erodable) and W (wet) indicate that the soils are a combination that support agriculture.

Soil Erosion:

Soil erosion is of concern in this subwatershed. As this watershed is almost entirely agricultural, row crop production and some tillage practices expose the soil to erosion. Erosion problems also exist on pasture land, forested areas, and areas near where there is urban development (Roanoke). In any given area, some soil erosion will occur naturally. Even agricultural land that is at “T”(tolerable soil loss), or has a rate of erosion that will sustain soil productivity, may sustain erosion levels that can be detrimental to water quality. Therefore, the total amount of soil erosion, regardless of the cause or whether acres of farmland are at “T” should be considered.

In the West Branch of Panther Creek, 22,907 acres of farmland are at “T” or below, 5079 acres are from 1-2T, and 2258 acres are over 2T. It is estimated that 31,372 tons of soil per year are delivered into the streambodies of this subwatershed. (NRCS Soil Erosion Report, Brown, et. al) As there is no major urban construction occurring within this watershed, most of the soil erosion is occurring from agricultural sources. The village of Roanoke does contribute to water volume within the streambody after a rain event, but the extent of this contribution to erosion rates is not estimated.

The soil types with the highest erosion index are the Miami and Birkbeck types, which is a very small percentage of soils within this subwatershed.

There are four distinct types of erosion occurring in the West Branch of Panther Creek. These types are listed below, along with erosion and sedimentation levels and sedimentation rate:

<u>ErosionTypes</u>	<u>Amount</u>	<u>SD rate</u> (sediment delivery)	<u>Sedimentation</u>
Sheet and Rill Erosion 115,580 tons	157,282 tons	0.70	
Ephemeral	12,350 tons	0.80	9,880 tons
Gully	13,300 tons	0.85	11,305 tons
Streambank	10,640 tons	1.00	10,640 tons
Total	193,572 tons		147, 405 tons

Of the total level of sedimentation, approximately 25%, or 36,851 tons of sediment is available for transport to the stream. (Inventory and Evaluation of Erosion and Sedimentation, M.Brown, 1997)

Geology:

The West Branch of Panther Creek originates on top of the Eureka Moraine where it flows east for approximately 18 miles. It is considered a low slope headwater stream, and its banks vary from clay to silt, with coarser stone imbedded. The bed material is composed of coarse glacial till-gravels and cobbles with sand, with occasional clay or silt in areas. (Gough, 1994)

The land surface of the watershed consists of Wisconsin glacial till and secondarily deposited alluvium and loess subsequent to the glaciation. (A Natural and Cultural Resource Assessment of the Mackinaw River Basin, 1985) The thickness of Glacial Drift in this watershed is fairly thin, mostly less than 100 feet.

There are no active sand and gravel pits, no areas of significant sand and gravel deposits within this subwatershed. (IDNR Mackinaw River Area Assessment map, Vol 1, pg. 2-17)

Topography:

Elevation: 650 to 736 feet above sea level.

Size: 59 square miles, 37,630 acres, 5.17% of the Mackinaw River Watershed (pg. 2-15, Mackinaw River Area Assessment, Vol. 2)

Shape: somewhat rectangular, short and thick

Drainage pattern: The headwaters of the WB of Panther Creek are of low slope and the entire watershed is tiled extensively. The drainage pattern is somewhat leaf-like.

Drainage density: The drainage density is determined by the total acres in the watershed divided by the miles of stream. 2,065 acres per mile is the drainage density of the West Branch of Panther Creek.

Land Use:

Agriculture is the dominant land use in this subwatershed (95% of total acres) 32,285 acres (83%) are devoted to row crop production, 5,400 acres are in hayland production, 4,479 acres in pasture, and 521 acres in small grains. The dominant crops are corn and soybeans. The average size of farms in this subwatershed is 300 acres, with a total number of farmsteads of about 60.

Data is not available regarding % cash rent and % Crop share farming, nor the number of absentee landowners. Values for agricultural acreage varies from \$3,000 per acre to \$4000 per acre.

Livestock: there are from 5-10,000 head of hogs, no major cattle producers, but many farms do have from 5-50 head of cattle. Five hog confinement operations are located in this subwatershed. There are no open feedlots.

The woodland resources include 981 total acres of woodland, 392 acres of closed canopy deciduous trees, 418 acres of open canopy deciduous trees, and 171 acres of forested wetlands. (ISWS, Varner,1997) Mesic upland forest is the most prevalent type found in the entire Mackinaw River watershed, and to date, no detailed data is available for this subwatershed. It can be assumed that the canopy tree species would include various types of oaks, hickories, maples, walnut, black cherry, basswood, and white ash. Subcanopy species would include mulberry, alternate-leaved dogwood, hop hornbeam, paw paw, and Ohio buckeye. (IDNR Mackinaw River Area Assessment, Vol. 1, pg. 4-20)

The condition and value of these woodland resources has not been assessed. There are no known commercial or private logging operations within this subwatershed, and human use of the woodland resources would be shade for homes, firewood, and esthetics.

There are 37.5 acres of major roadways in the WB of Panther Creek, and these are State Rt. 116/117, which passes over the West Branch of Panther Creek, and Woodford County Rts. 13 and 5. Active railroads comprise 58.3 acres, and 40 acres are abandoned railroads.

The only major municipality is the village of Roanoke, with a population of 1,910 individuals. (1990 census) The population has remained stable from the years 1990 to 1995, with no projected growth estimated at present. A proposed new roadway may impact growth and development in this area. Zoning ordinances are the domain of Woodford County. Woodford County has adopted the *Model Soil Erosion Control Ordinance*, developed by the Tri-County Regional Planning Commission. (Tazewell County)

There are no major industries located in this subwatershed. Commercial businesses located in or near Roanoke are gas stations (3), car dealerships (2), a furniture store, grocery store, post office, a trucking company, feed store, grain elevator, and a fertilizer company. There are no airports, railways, or bus services.

County: Woodford County has a population of 32,653 (1990) individuals, with an increase of 17% from 1970 to 1990. There is projected growth of 8% in the area, with an increasing number of households moving from the larger urban areas of Bloomington-Normal and Peoria. The development potential for this subwatershed is fairly minimal however, as is it comparatively more distant than that of other locations in the Mackinaw River watershed from major roadways (I-74, I-39, I-55). Most of the growth in Woodford

County is located near Metamora, Germantown Hills, Eureka, and Goodfield. If however, a proposed roadway from Peoria to Chicago is approved, it would impact development and growth in this subwatershed.

CRP Program: to date, approximately 200 acres are enrolled in the CRP program, which is about 6% of the total acres in Woodford County.

Illegal dumps may be present in the West Branch of Panther Creek subwatershed, but no data is present to confirm this. There is one inactive landfill (Armagoni) located near Roanoke. There are two fertilizer companies, Farm Services and Studer Fertilizer, located in or near Roanoke.

There are no public hunting areas located in this subwatershed, no natural areas (forest or prairie), no county conservations areas, state parks, etc.

One abandoned mine is located in this subwatershed area, and it is located in Roanoke.

There are no underground cables or pipelines. 29 underground storage tanks are located in or near Roanoke.

Existing Best Management Practices: There were 38 sign-ups in Woodford County for the 1997 EQIP program. These included terraces, conservation tillage, structures, etc.

The best management practices indicated for this subwatershed (according to the Mackinaw River Basin Assessment of the Conservation Treatment Needs report by the USDA) include the following:

Conservation Tillage: 3,500 acres in 1yr. no-till, 780 acres in no-till

Contouring: 32 acres

Terraces: 4,675 ft.

WASCOB's: 404

Structures: 22

Waterways: 76.76 acres

Filterstrips: 265,600 ft.

Stormwater runoff and detention/retention basins would be recommended for the village of Roanoke.

Air Quality:

There are no controlled or permitted toxic releases to air within this watershed.

Climate: The climate for Illinois is classified as humid continental. Most of the precipitation occurs between April and September (May, June and July the wettest months), with precipitation average for the entire Mackinaw River watershed at 35 inches per year. The average rainfall yearly for the Roanoke area ranges from 32 to 60 inches per year. (years 1992-1996). The wettest year was in 1993. The average temperature ranges for the Mackinaw River watershed are from a mean low of 16 degrees F to a mean high of 87 degrees F. The mean annual temperature is 51.8 degrees F. There is not a great deal of year to year variability in mean annual temperatures, but there may be a return to a warming trend. (Mackinaw River Area Assessment, Vol .1, pg. 3-12)

Wildlife:

There are no endangered or threatened species found within this subwatershed. However, just north of the confluence with the Main branch of Panther Creek, the Elk Toe (*Alasmidonta marginata*) mussel was found. (Retzer, 1994)

Wildlife to be found within the West Branch of Panther Creek include deer, beaver, fox, coyote, racoon, and numerous other species. A complete inventory of wildlife resources is listed in the IDNR Mackinaw River Area Assessment, Vol. 1. Bird, mammal, insect, fish, and freshwater mussel species are listed for the entire Mackinaw River watershed, and no known inventory has been completed for the West Branch Panther Creek subwatershed.

Socio-Economic/Human Resources:

There is no specific demographic data for this subwatershed. The data available is from Woodford County.

The population of Woodford County is 32,653. Of that number, there are 1,910 people who live in the village of Roanoke. There are an estimated 980 rural residents of the WB of Panther Creek subwatershed. The average annual income of Woodford County residents is \$40,037. Woodford County unemployment rate is fairly low.

Farmer/Non-farmer relationship: There are no known conflicts or issues within this subwatershed between farmers and non-farmers.

Minorities: less than 1% (Woodford County)

Economy: primarily agricultural or agricultural related. (Specific economic characteristics of Woodford County are found in IDNR Mackinaw River Area Assessment, Vol. 2)

Infrastructure: The Panther Creek watershed has 618 acres of major roadways.

Agricultural identity: This subwatershed has a very strong agricultural identity, and the village of Roanoke is typical of a small farming related, rural town or village. A rural atmosphere is most definitely present.

Outreach programs: The programs that are available to subwatershed residents are through the Woodford County NRCS/SWCD, the University of Illinois Extension Service, The Nature Conservancy via the Mackinaw River Project, the State of Illinois IDNR, and through the federal government programs such as CRP, CREP, WRP, and EQIP.

Limited resource producer: the number or percentage of limited resource producers is not available.

Agricultural associations: The Woodford County Farm Bureau, which would represent farmers within the WB of Panther Creek, is located in Eureka.

Conservation Associations: The Woodford County Soil and Water Conservation District, which would represent landowners within this watershed, is located in Eureka.

There are no Conservancy districts located in this subwatershed.

There are no drainage districts.

Federal/State Agencies: none located within this subwatershed.

Local government: Woodford County seat is located in Eureka.

Environmental Organizations: none located within this subwatershed.

Media/Educational Outlets: The Roanoke Review and the Woodford County Journal are two weekly newspapers available to residents of this subwatershed. These papers cover local (Roanoke and Eureka) and county wide (Woodford) issues. Other media sources are located in the Peoria and Bloomington-Normal area.

There are approximately 60 farmsteads located within the West Branch of Panther Creek. The average size of these farms is 300 acres, 78% of which have been operated by the same operator for over 10 years. The average farm gross income, estimated from 1993 Farm cash receipts is \$75,000. (Woodford County data). Statistics from 1996 Illinois Agricultural Association show that 23 farms earned \$25,000 or less. 40% of farm operators own their farm, 42% own some and lease some acreage, and 18% lease the entire acreage.

Median age: 34.1 (Woodford County)

Recreational/Educational Opportunities: No portion of the WB of Panther Creek has recreational opportunities available to the public. Fishing, hunting, and hiking would be the primary recreational pursuits, however, this would be limited to private landowners and their guests.

School age children attend schools within the Roanoke-Benson School District 60. The closest higher educational opportunities are Eureka College (Eureka), Illinois Central College (East Peoria), Bradley University (Peoria), and Illinois State University (Normal). Community Support: There has been tremendous interest and support for improving this watershed from the community of Roanoke, and in particular, students Roanoke High School.

Other Resources:

No other resources are available to date.

COMPONENT #5: PROBLEM STATEMENT

Problem #1:

High velocity and volume of water after a storm event, caused primarily by altered hydrology, which enters the West Branch of Panther Creek is resulting in an increase in streambank erosion and sedimentation, and thereby a decline in water quality.

Problem #2:

High levels of chemical pollutants and fecal coliform concentrations, caused by excessive nutrient runoff from agricultural fields, stormwater runoff, and sewage discharge from septic fields and sewage treatment plants into the West Branch of Panther Creek is resulting in a decline in water quality.

Problem #3:

Water quality and wildlife diversity within the West Branch of Panther Creek subwatershed has decreased due to the loss of wetland areas, a decrease in natural riparian areas, and increased water flows due to urbanization and agricultural practices within the subwatershed.

Problem #4:

There is lack of awareness about the relationship between land use and the condition of the river/stream, and the value of our water resources. This results in low participation in conservation programs and a subsequent decline in water quality.

COMPONENT #6: GOALS AND OBJECTIVES

Goal #1:

To reduce the volume and velocity of water which enters the West Branch of Panther Creek after a storm event, thereby reducing sediment loads and erosion and improving water quality.

Objective #1:

To reduce and retain where possible, surface and subsurface runoff on 23,400 acres by promotion of such Best Management practices as Terraces, WASCOBS, Contouring, Waterways, Filter Strips, Stormwater detention/retention basins, etc.

Goal #2:

To reduce the levels of chemical pollutants and fecal coliform levels that occur in the West Branch of Panther Creek which would contribute to an improvement in water quality.

Objective #2:

- A. Promote the use of conservation tillage practices, grass waterways and filter strips.
- B. Provide education and assistance to landowners to improve riparian corridors.
- C. Provide technical assistance and support for livestock and human waste management.

Goal #3:

To increase the extent of wetland and riparian areas within the West Branch of Panther Creek.

Objective #3:

- A. Provide education and assistance to landowners in restoration of wetlands and improvement in riparian corridors.

Goal #4:

To increase the awareness and participation in Best Management Practice application of residents, which will improve water quality within the watershed.

Objective #4:

Provide educational opportunities, technical and financial assistance to residents of the watershed to learn about water resources and watershed management.