

# SHIAWASSEE COUNTY RESOURCE ASSESSMENT

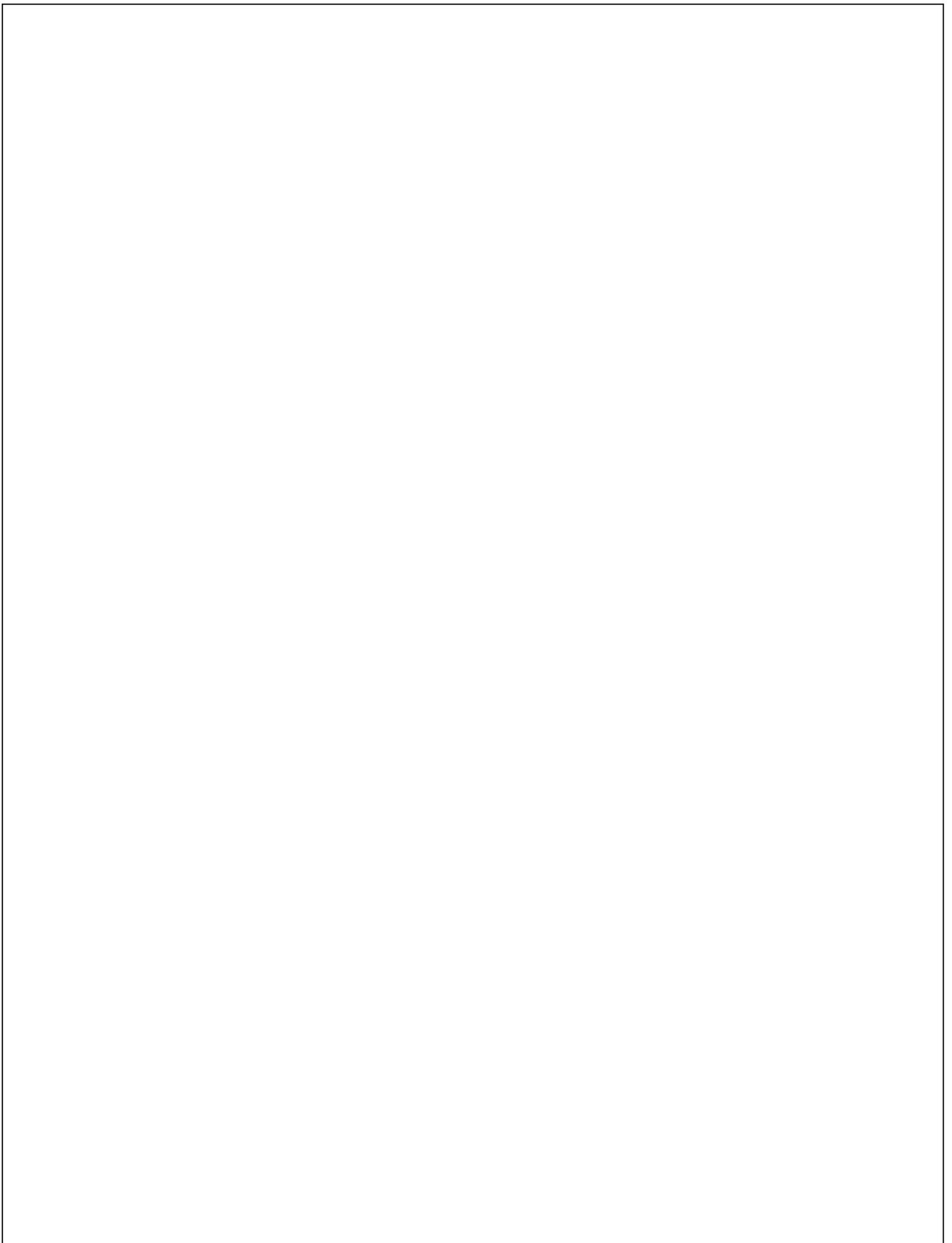
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SEPTEMBER, 2018



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## County History

In 1812, when the first settlers came to Shiawassee County, they found a densely wooded area as well as the Chippewa Tribe. The Native Americans were utilizing a large deep river, the Shiawassee River, as a major waterway through the county. The Shiawassee River, from where the county received its name, enters the southeast corner of the county, passing through Byron, Vernon, Corunna and Owosso, leaving the county out of New Haven Township as it enters into Saginaw County.

Pioneers settled in the area and began clearing the land for planting maize and wheat. However, lumber and trapping were the main sources of income for a number of years. Eventually progress came and steamers traveled the river daily, transporting large quantities of lumber, animal pelts and grains. In later years, sugar beets and pickles were included in the major crops raised and a steel forging plant had been built along the river. During those years, people worked either at the casket, steel, pickle or sugar beet factories.

Shiawassee was established as a separate county on September 10, 1822. At that time, the county not only included all of the present day land area, but also included eight townships of Livingston and eight townships of Genesee counties. In October of 1837, the first session of the County Board of Supervisors was held. In October of 1839, the County Board accepted a donated parcel of property in Corunna that was designated as the Public Square. This was the site of the County's first Courthouse as well as the location of the present day Courthouse and county seat.

Shiawassee County is also famous in the history books as being a northern locale for the Underground Railroad, with a major underground facility in Owosso. Approximately 15,000 people traveled through this passageway towards their freedom.

## District Organization

Conservation Districts in Michigan were organized under Act 297 of the Michigan Legislature in 1937. Michigan's Conservation Districts are "unique" local units of State Government, utilizing state, federal and private sector resources to solve today's conservation problems.

Created to serve as stewards of natural resources, Michigan's Conservation Districts take an ecosystem approach to conservation and protection. Conservation Districts are referred to as "gateways" in their local communities to provide linkages between land managers and a host of conservation service providers that include state, federal and local governments and conservation organizations. The delivery of these efforts by Conservation Districts allows citizens to manage their private lands for a cleaner, healthier Michigan. It allows the public a point of access in their communities when questions arise on how to manage natural resources.

Five county leaders gathered and organized the Shiawassee County Soil and Water Conservation District Board in 1948. A "Plan of Work" was adopted by a resolution of the District Governing Board on August 15, 1948. The first Plan of Work stated that, "The purpose of this District is to make possible a cooperative organization to improve the soil productivity on the farms and offer assistance to

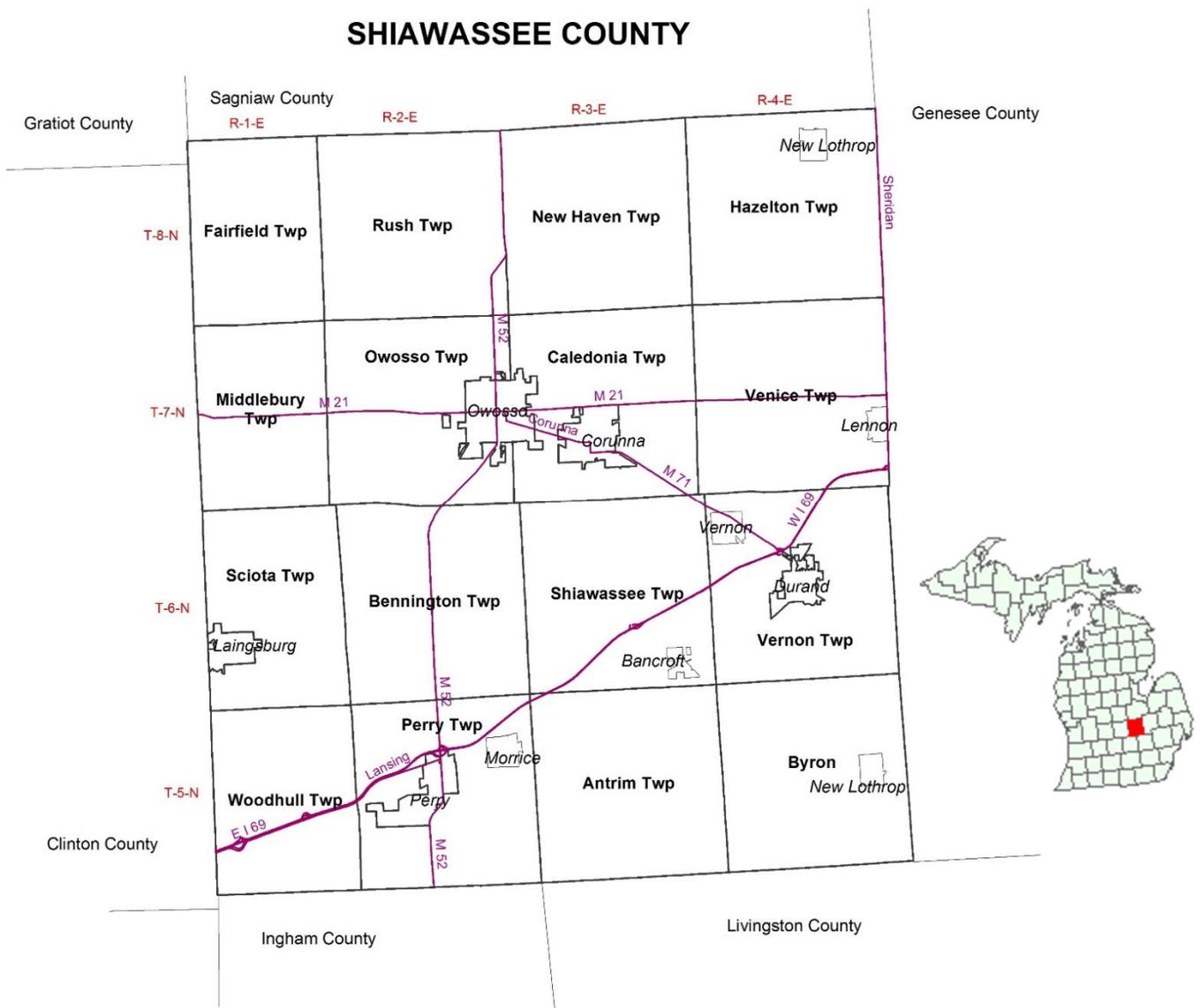
farmers of Shiawassee County.” Also, “A continuous educational program was to be maintained in the District, which will encourage and assist people to establish good soil and water conservation practices on their land.”

The present day Board of Directors is a locally elected five-member board that governs the Shiawassee Conservation District. An election of officers is held during the District’s Annual Meeting. Board members are each elected to a four-year term.

### District Boundaries

The Shiawassee Conservation District is located in the southcentral portion of the Lower Peninsula of Michigan. Physical boundaries are half way between Lansing and Flint and within 50 miles of the cities of Flint, Lansing, Pontiac and Saginaw. The county is also in the southern portion of the Saginaw Bay Watershed.

Interstate 69 (I-69) passes through the south portion of the County. Other major thoroughfares include State Highways 13, 21, 52, and 71. Although the County is reasonably close to the major population centers of Lansing and Flint, it remains rural with a relatively stable population (2007 Shiawassee County Land Use Plan).



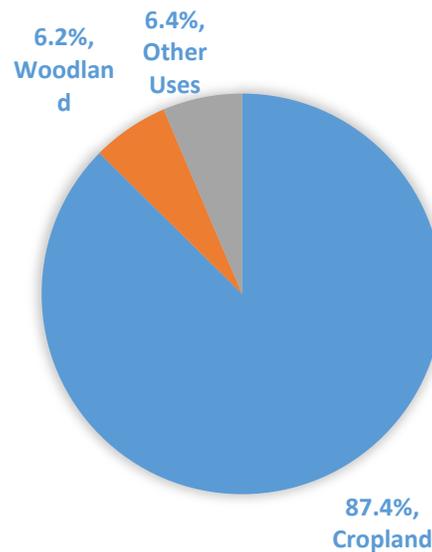
## Land Use

The total acreage in the county is approximately 346,096 or 540 square miles, with an estimated 1,033 farms utilizing 223,370 acres according to the 2012 Census of Agriculture conducted by the United States Department of Agriculture (USDA), National Agricultural Statistics Service. The majority of crops grown in Shiawassee County include soybeans, corn, wheat and forage. The emphasis on the partnership between rural and urban residents is continuous. Each entity has important concerns and each strives to best maintain the natural resources unique to its area, thus benefiting the county as a whole.

Shiawassee County has a mix of agricultural and urban land uses. A breakdown of the various land uses in Shiawassee County from the Michigan 2012 County Statistics compiled by the USDA National Agricultural Statistics Service includes:

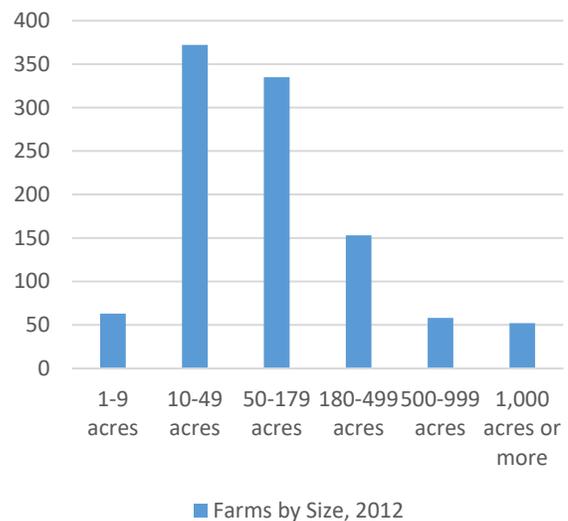
Currently, the main crop grown in Shiawassee County is soybeans. According to the USDA Census of Agriculture, there were 79,316 reported acres of soybeans planted in 2012. Additional planted crops reported were 57,460 acres of corn for grain, 26,060 acres of wheat, 15,229 acres of forage and 5,191 acres of corn for silage.

**Land in Farms, 2012 by Land Use**



For Shiawassee County, the USDA 2012 Census of Agriculture found that there were 1,033 farms in 2012 compared to 1,082 farms in 2007, causing a 5% decrease in farm numbers from 2007 to 2012. The census also found that land area in farms was 226,509 acres in 2007 and had decreased to 223,370 acres in 2012, generating a 1% reduction of acres in farm land within the county. The average size of farms increased to 216 acres in 2012 from 209 acres in 2007, causing a 3% increase in average farm size.

**Farms by Size, 2012**



Total market value of products sold, which includes crop and livestock sales, in Shiawassee County increased 65% from 2007 to 2012. The average per farm market value of products sold, increased from \$81,189 in 2007 to \$140,532 in 2012.

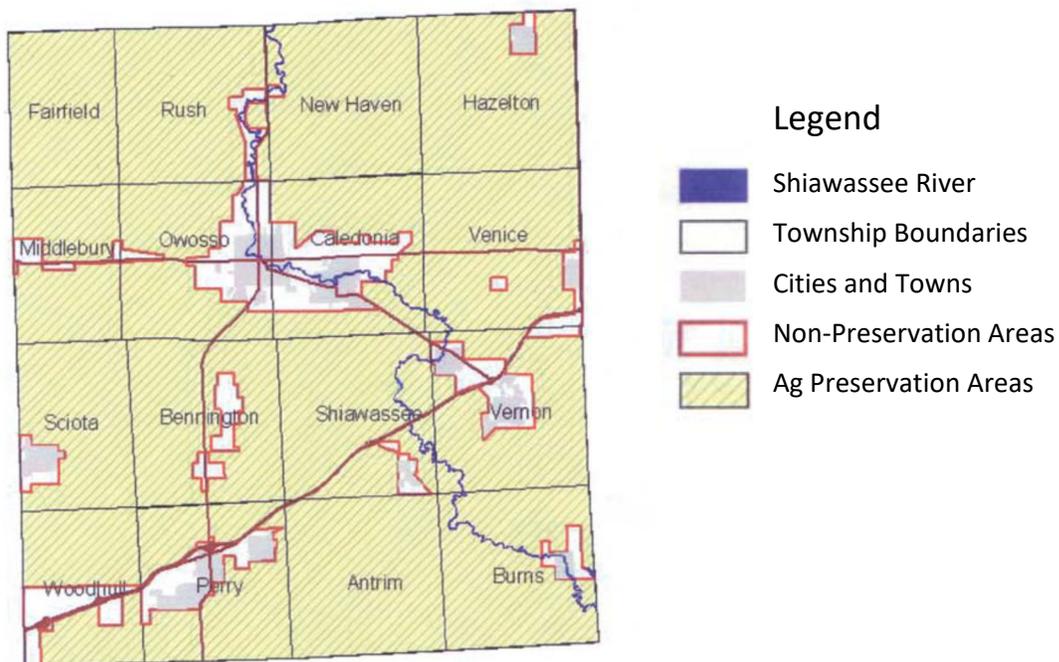
Shiawassee County's climate, soils, topography and accessibility make its agricultural land unique and economically important. The County's farmland also contributes to open space and natural resources benefits. These include scenic beauty, cultural heritage, hunting, outdoor recreation and environmental benefits such as watershed protection and wildlife habitat. These aspects provide an attractive increased quality of life to county residents. Therefore, it is important that Shiawassee County preserve its farm land.

Residential development presents a great challenge to the future of Shiawassee County's agricultural industry. Throughout the years, Shiawassee County has observed its agricultural lands converted to residential and other developmental uses as people move out into the country. When rural residential development increases in agricultural areas, it affects the long term sustainability, economics and cultural aspects of the agricultural industry. Residential development can also have negative impacts on natural areas, wildlife habitat and water quality. The 2007 Shiawassee County Land Use Plan has put together a comprehensive land use strategy. This plan promotes the preservation of important agricultural land to retain the county's agricultural resources, maintain the long term sustainability of the agricultural industry, preserve the rural character and agricultural heritage and protect the quality of life.

Lands for agricultural preservation selected in the 2007 Plan were determined to be the most important to the long term viability of the agricultural industry within the county. Preservation of Shiawassee County's prime soils was of particular importance when selecting agricultural preservation lands. Other factors included the presence of working farms in the area, parcel size, proximity to other preserved land types, developmental pressure and proximity to sewer and water utilities. As shown in the following agricultural preservation area map, the agricultural preservation area covers the majority of Shiawassee County. The preservation designation means that these lands should be prioritized as farmland preservation as other opportunities arise.

### Priority Areas for Agricultural Preservation in Shiawassee County

#### Unapproved Certification Map

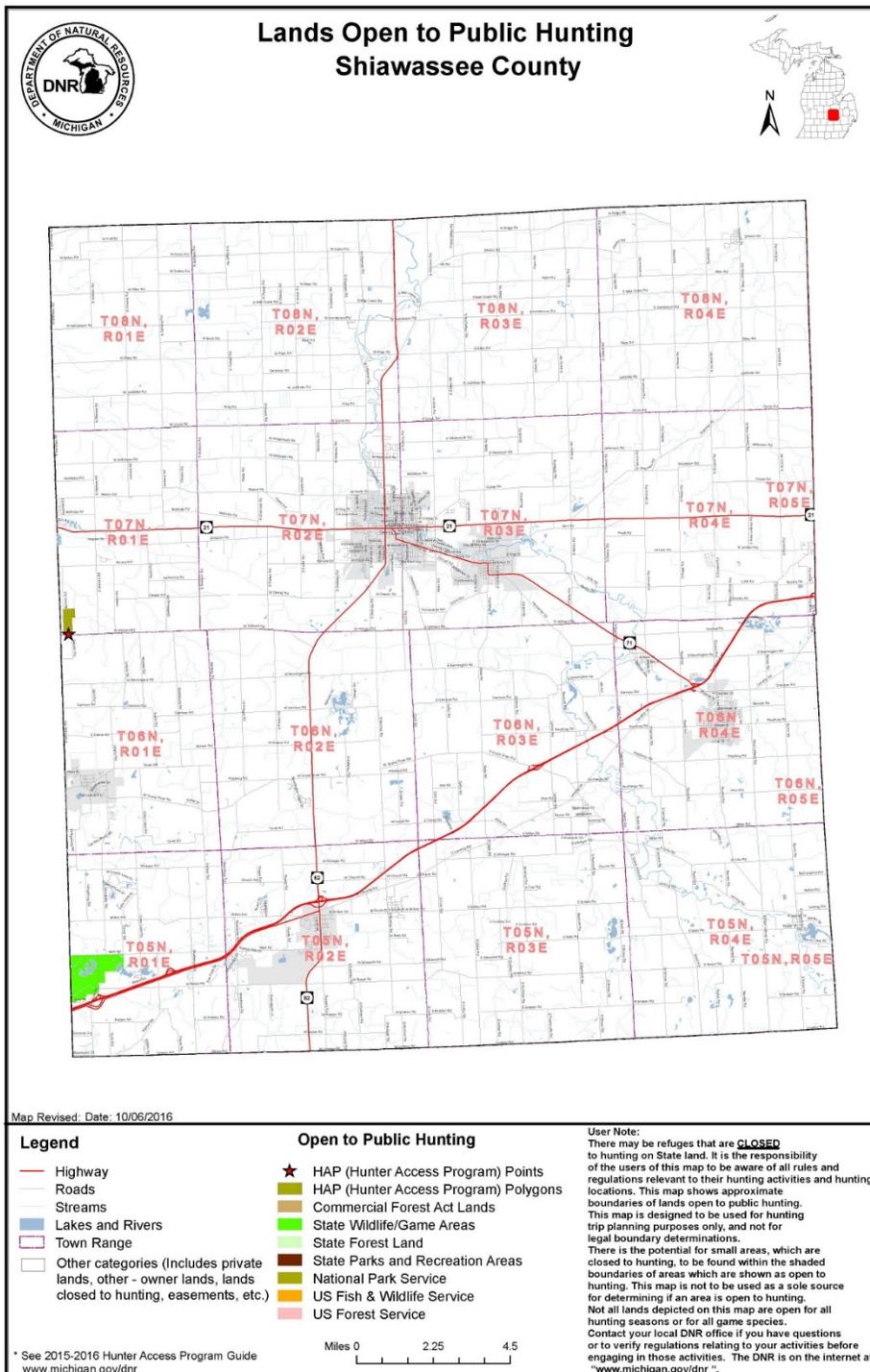


Most of the land in Shiawassee County is privately owned. A considerable amount of the county's land is in agricultural production, particularly in the northeast portion of the county. Public land area is relatively small with limited areas available for those in search of public hunting land.

Rose Lake State Wildlife Area is land that is open to public hunting and outdoor recreation within Shiawassee County. It is located just north of I-69 in Woodhull Township, which is found in the southwest corner of the county. The following map displays the Michigan Department of Natural Resources Lands Open to Public Hunting in Shiawassee County, with the location of the State Wildlife Area. Rose Lake State Wildlife Area is located in both Clinton and Shiawassee counties, covering a total of 4,140 acres. Of that area, approximately 933

acres are situated in Shiawassee County. This land contains oak and lowland woods, abandoned fields, moderately rolling farmland and wetlands. Wildlife management, soil conservation practices and wildlife research are a few of the workings occurring in the wildlife area. This area also provides outdoor educational opportunities and it is available for areas of study such as biology, ecology, and environmental science.

Another area available for public hunting in Shiawassee County is land involved in the Hunter Access Program (HAP). One HAP area can be found on the Lands Open to Public Hunting Shiawassee County map. This property is located in the southwest corner of Middlebury Township, on Hibbard Road. HAP lands are privately own, but the Department of Natural Resources (DNR) leases these lands from volunteer private landowners to provide additional hunting areas for the public. For more information visit [mi.gov/hap](http://mi.gov/hap).



## Vegetation

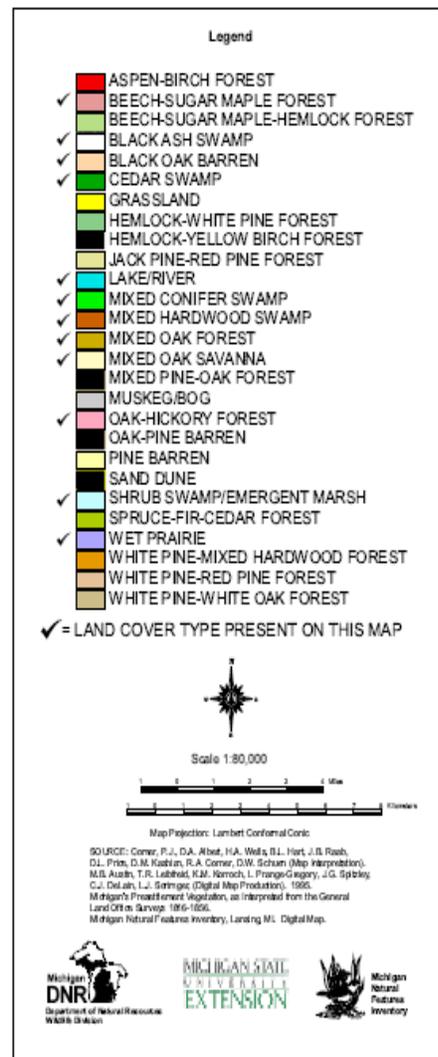
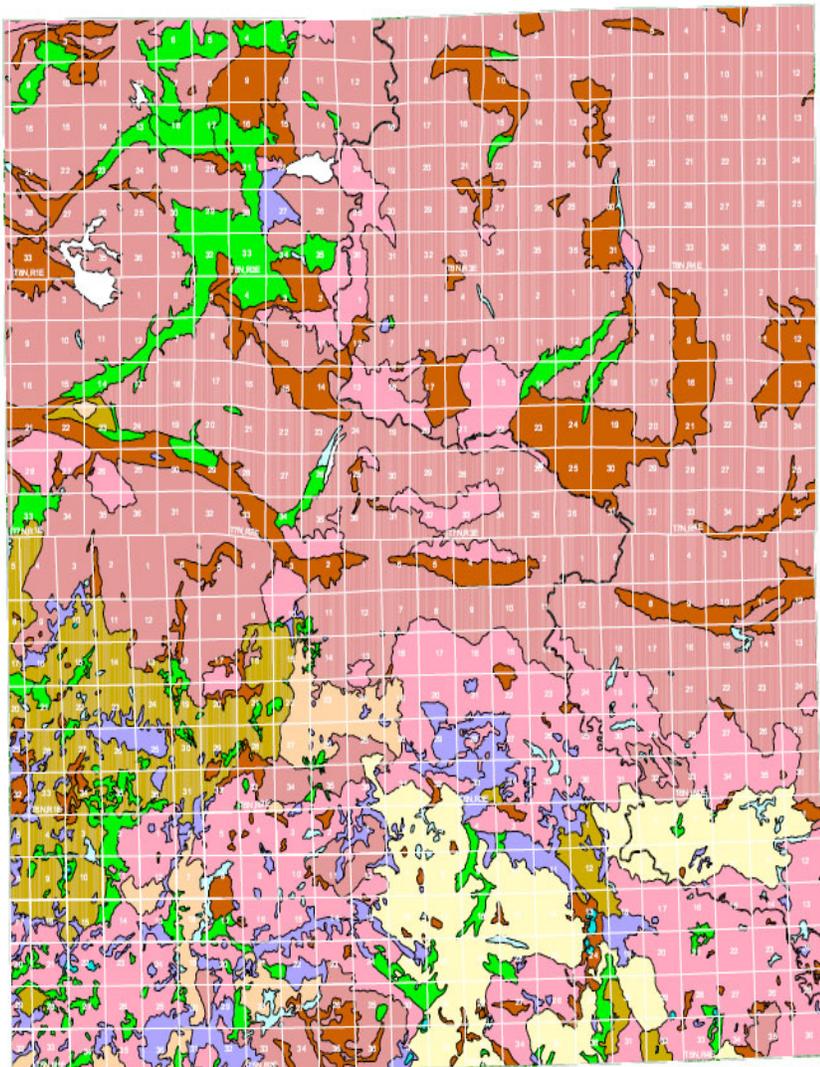
The vegetation types covering Shiawassee County are different today than they were before the wide-spread European settlement. Dominate vegetation types prior to human influence on land cover in Shiawassee County included, Beech-Sugar Maple and Oak-Hickory forests.

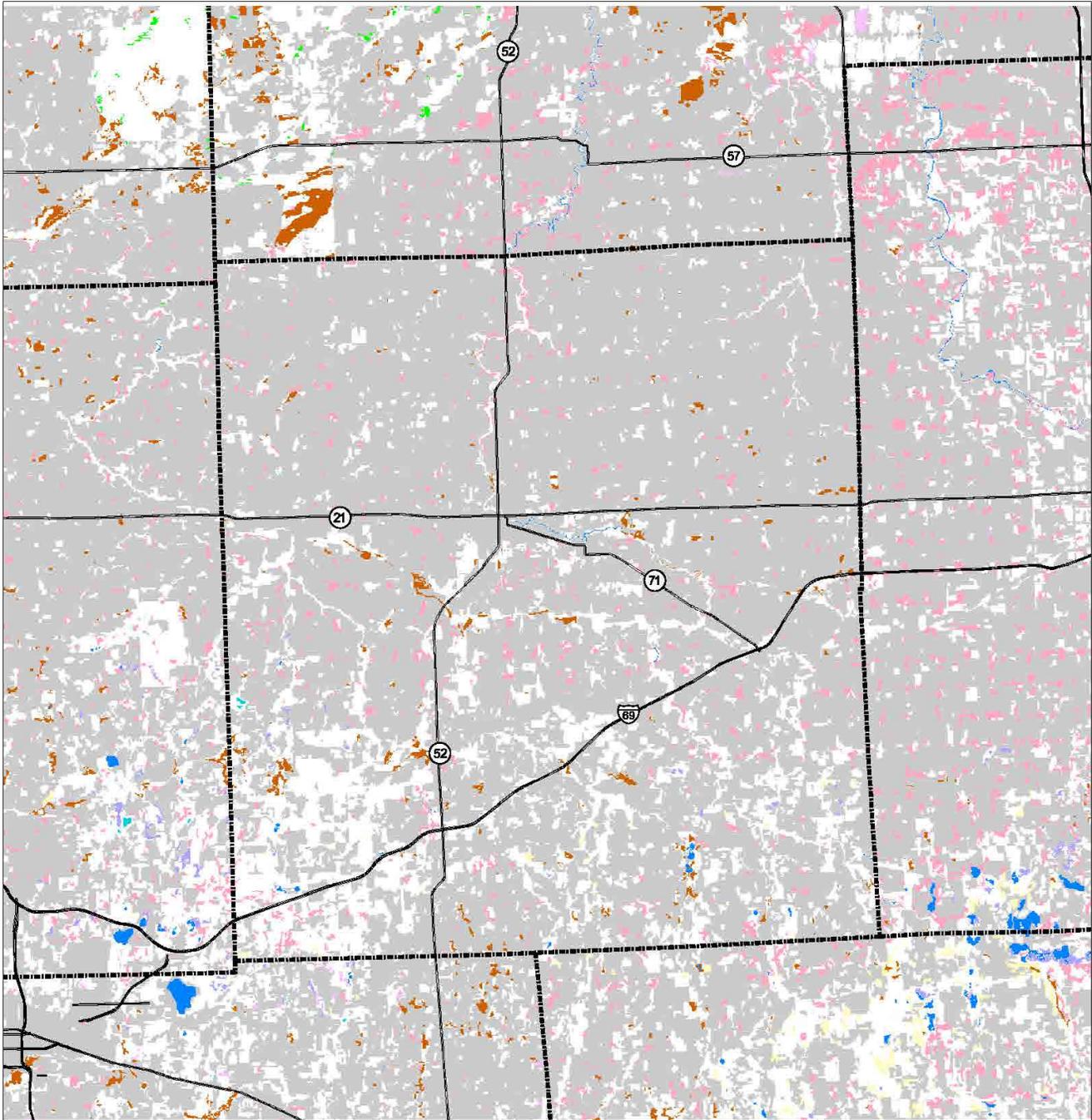
Much of the land area that was once covered with native vegetation has been converted to agricultural crops. Please refer to the following pre-settlement Vegetation circa 1800 of Shiawassee County, Michigan map (Michigan Natural Features Inventory, 1997) and Land Cover Change Map.

# Vegetation circa 1800 of Shiawassee County, Michigan

An Interpretation of the General Land Office Surveys

By P. J. Comer and D. A. Albert  
Michigan Natural Features Inventory  
1997





## Land Cover Change, 1800s - 1978

### Shiawassee County



Data Sources:  
 Circa 1800 wetlands from Michigan's Native Landscape: As Interpreted from the General Land Office Surveys 1816-1856. 1995. Comer, P.J., et al. MNFI. Lansing, MI. 78 pp. + digital map. Roads and county lines are from the 1990 USGS 100K DLG files.

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Major Roads  
 County Lines

Land Cover Change Class

- Herbaceous Openland Unchanged
- Savanna Unchanged
- Aspen/Birch Unchanged
- Central Hardwood Unchanged
- Northern Hardwood Unchanged
- Other Upland Conifer Unchanged
- Pine Unchanged

- Lowland Conifer Unchanged
- Lowland Deciduous Unchanged
- Emergent Wetland Unchanged
- Shrub Wetland Unchanged
- Water Unchanged
- Sparsely Vegetated Unchanged
- Bedrock Unchanged
- Changed to Aspen
- Changed to Urban or Agriculture
- Other Change

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0 1 2 3 4 5 6 7 8 9 10 MILES

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## Water Supply

In Shiawassee County, the domestic water source is groundwater. The City of Owosso has six groundwater wells servicing Owosso, Corunna and areas within the surrounding Townships. Water from these wells is pumped to the Owosso Wastewater Treatment Facility where it is properly treated before being sent to supply lines and distributed to homes and businesses. The City of Owosso treats and delivers approximately 1,500,000 gallons of water per day. Public water supply to other populated areas such as the Cities of Durand and Perry, and Villages of Bancroft, Byron, Morrice and New Lothrop is also derived from municipal groundwater wells. Homes not connected to a public water system obtain groundwater from private onsite wells.

The 2016 Shiawassee County Master Plan, adopted by the Shiawassee County Planning Commission, addresses the importance of groundwater protection. One objective in this plan is to respect the land and natural features, such as groundwater. Land use can negatively impact groundwater if precautions are not taken. Public education is needed to bring awareness of the effects of development on groundwater. Thorough development review and local regulations can mitigate many impacts development may have on groundwater.

Wetlands represent groundwater recharge areas. Filling and/or draining these areas for development should be discouraged. Maintaining vegetated open spaces will provide many benefits, including groundwater recharge. In Shiawassee County, there is a need to designate critical aquifer recharge areas to protect against contamination and insure long-term recharge.

Groundwater is an essential resource for all Shiawassee County residents and land users. The protection of this vital natural resource will take consensus and cooperation by landowners, municipalities and industries. Long-term groundwater protection will include a dynamic approach that should be reevaluated regularly to ensure fresh drinking water for future generations.

## Soils

There are seven soil associations that can help with general planning of land usage. A soil association is a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The general soil associations for Shiawassee County are as follows:

1. **Brookston-Berville-Conover association** – *Poorly drained and somewhat poorly drained, nearly level, loamy soils on till plains.*

This association occupies about 12 percent of the county. About 40 percent is made up of Brookston soils, 25 percent of Berville soils, 15 percent of Conover soils, and 20 percent of minor soils.

This association is well suited to grow corn, beans, small grains and forage crops. Fertility and available water capacity are high. The main concern of management is removing excess water.

Most of this association has moderate to severe limitations for non-farm uses. The well-drained soils on beach ridges have slight limitation for most non-farm uses.

2. **Conover-Brookston association** – *Somewhat poorly drained and poorly drained, nearly level to gently sloping, loamy soils on till plains.*

This association occupies about 35 percent of the county. About 50 percent is made up of Conover soils, 25 percent of Brookston soils and 25 percent of minor soils.

This association is well suited to grow corn, beans, small grains, and forage crops. Some areas are in woodlands and some are idle.

This association has moderate to severe limitations for non-farm uses.

3. **Miami-Conover-Brookston association** – *Well-drained to poorly drained, nearly level to steep, loamy soils on till plains and moraines.*

This association occupies about 24 percent of the county. About 25 percent is made up of Miami soils, 25 percent of Conover soils, 15 percent of Brookston soils and 35 percent of minor soils.

This association is well suited to grow corn, beans, small grains, and forage crops. The main concerns of management are controlling erosion and removal of excess water. Most of the acreage is used for cash crops. There are some dairy farms. A few small areas and the steeper areas of the Miami soils are used for woodland, pasture, wildlife habitat or recreation.

This association has slight to severe limitations for most non-farm uses, depending on degree of slope or wetness.

4. **Boyer-Wasept-Spinks association** – *Well-drained and somewhat poorly drained, nearly level to steep, sandy and loamy soils on outwash plains, terraces and moraines.*

This association occupies about 11 percent of the county. About 45 percent is made up of Boyer soils, 20 percent of Wasepi soils, 10 percent of Spinks soils and 25 percent of minor soils.

The less sloping soils of this association are moderately suited to grow corn, small grains, beans and forage crops if good management practices are followed. Available water capacity is low. Fertility is low in most places. The main concerns of management are conserving moisture and control of soil blowing. Most of the acreage of the less sloping soils is used for cash crops. The feeding of beef cattle is also important and there are some dairy farms. The steeper soils are used for woodland or are growing up to brush. Some areas can be used for orchards.

The less sloping areas of Boyer and Spinks soils have few limitations for non-farm uses. Wasepi soils have severe limitations for many non-farm uses because of seasonal wetness.

Boyer and Wasepi soils are potential sources of sand and gravel. They also provide good foundation material for houses, streets and highways, if the soils are not too steep.

5. **Kibbie-Colwood-Lenawee association** – *Somewhat poorly drained and poorly drained, nearly level to gently sloping, loamy soils on lake plains.*

This association occupies about 2 percent of the county. About 35 percent is made up of Kibbie soils, 30 percent of Colwood soils, 10 percent of Lenawee soils, and 25 percent of minor soils.

This association is well suited to grow corn, beans, small grains and forage crops. Fertility and available water capacity are high. The main concern of management is removal of excess water. Most of the acreage is used for cash crops. There are some dairy farms. A few small areas are used for woodland, pasture or wildlife habitat.

Most of this association has moderate to severe limitations for non-farm uses.

6. **Ceresco-Cohoctah-Sloan association** – *Somewhat poorly drained and poorly drained, nearly level, loamy soils on flood plains.*

This association occupies about 2 percent of the county. About 15 percent is made up of Sloan soils and 55 percent of minor soils.

This association is generally poorly suited for cultivated crops. Fertility is medium or high. Available water capacity is moderate or high. Main concerns of management are removal of excess water and control of flooding. Many areas are inaccessible to farm machinery, and other areas are too small to farm. Most of the acreage is used for woodland, pasture, hay crops or wildlife habitat.

This association has severe limitations for most non-farm uses because many areas are subject to flooding during some time of the year.

7. **Carlisle-Gilford-Tawas association** – *Very poorly drained and poorly drained, nearly level, mucky and loamy soils on outwash plains and in glacial drainageways.*

This association occupies about 14 percent of the county. About 30 percent is made up of Carlisle soils, 20 percent of Gilford soils, 15 percent of Tawas soils and 35 percent of minor soils.

This association is moderately suited or poorly suited to grow vegetable crops, corn and forage crops. Fertility is low in the organic soils and medium in the Gilford soils. Available water capacity is very high in the organic soils, and low in the Gilford soils. The main concerns of management are removal of excess water and controlling soil blowing. Most of Carlisle soils are used for corn, vegetable crops and sod production. Many areas of Gilford soils are used for cash crops. Most areas of Tawas soils are wooded. Some areas of this association are used for pasture. The small wooded areas provide wildlife habitat.

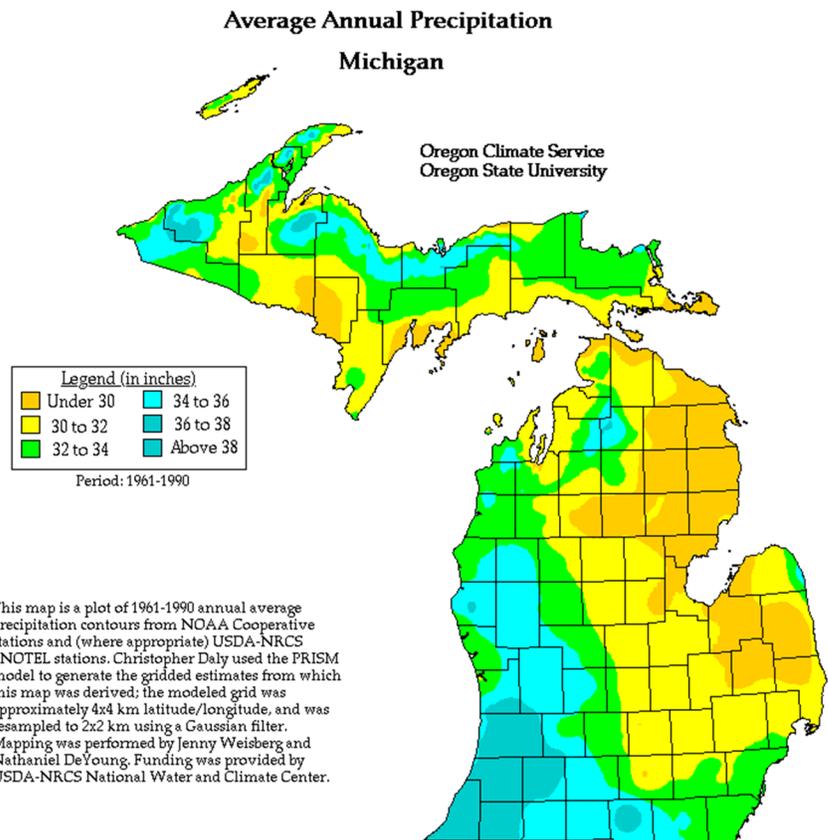
This association has very severe limitations for non-farm uses.

## Geology, Topography & Climate

The bedrock in Shiawassee County varies with glacial movement ranging from sandstone to shale. Glacial features south of Owosso consist of alternating east-west trending moraines, till plains, and outwash plains. North of Owosso, glacial features consist mostly of till plains. The Great Lakes, which were much higher than today, covered most of this till plain, leaving beaches and shorelines, that were erased or buried several times. Fine lake clays and sands were deposited, producing the broad, flat lands which exist today (Michigan Water Resources Commission, 1963).

Shiawassee County is an inland location in the State; meaning that lake effect weather conditions and or temperatures are not as severe as land located nearer to the Great Lakes.

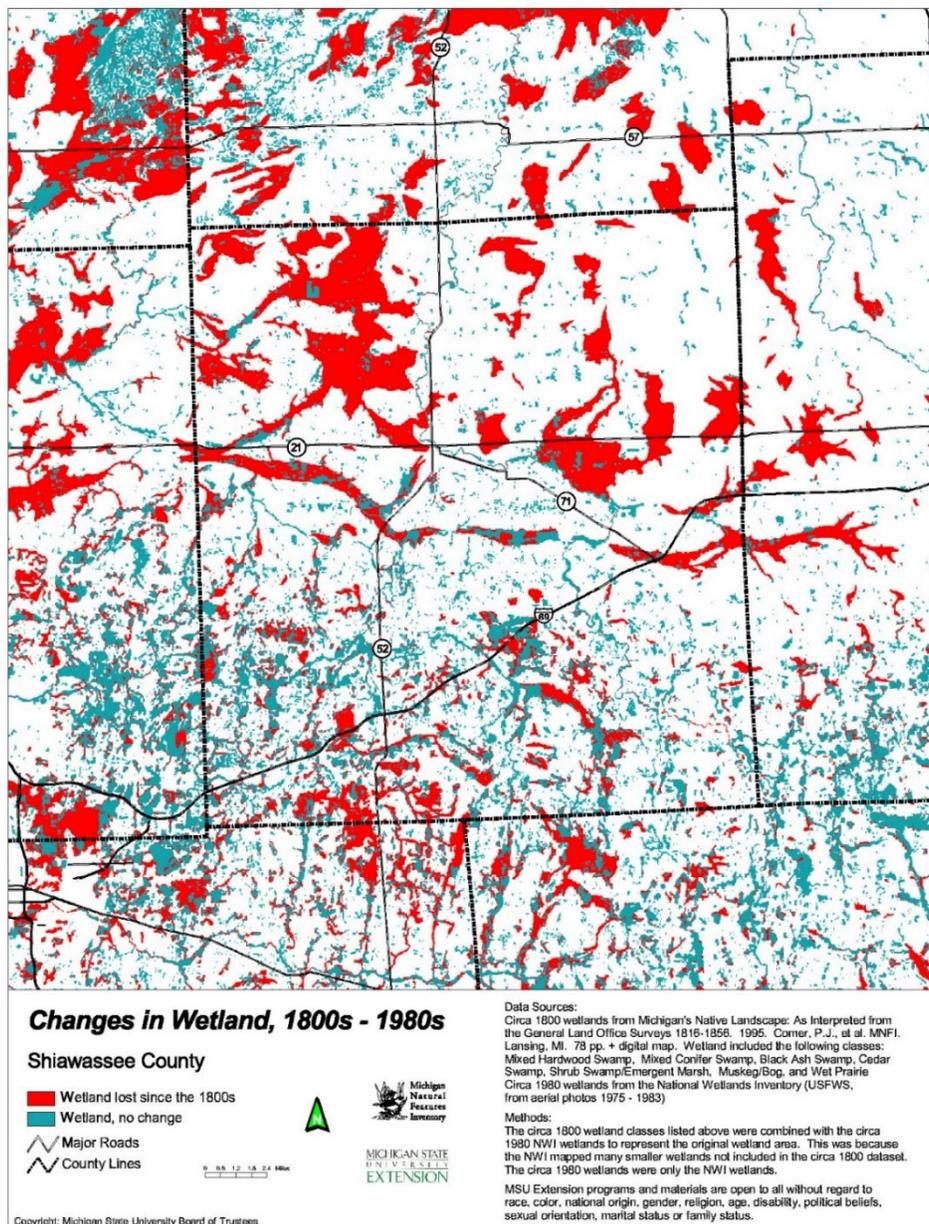
Climate in Shiawassee County is typical for southern Michigan, favorable for cash crops and livestock farming, with temperatures ranging from below zero to over 100° F. The growing season ranges from 140 to 160 days (USGS, 1998). About one-third of the precipitation, which averages 30 to 32 inches annually, runs off through the river drainage system with the highest flows in the spring and lowest flows generally in late summer (Michigan Water Resources Commission, 1963). Precipitation is heaviest during the growing season with increasing monthly averages beginning in April. The highest monthly precipitation average is in September at 3.64 inches (USDA-NRCS, 2008). Refer to the Average Annual Precipitation Map.



## Wetlands

Wetlands serve important functions to protect surface water and land. Wetland functions include water quality improvement, floodwater storage, water filtration/trapping of nutrients and sediment, fish and wildlife habitat, aesthetics, and biological productivity. Wetlands also play an important role in recharging groundwater supplies. The value of a wetland is an estimate of the importance or worth of one or more of its functions to society. For example, a value can be determined from the revenue generated from the sale of fish that depend on the wetland, by the tourist dollars associated with the wetland, or by public support for protecting fish and wildlife (U.S. EPA 843-F-01-002c September 2001).

Much of the pre-settlement wetlands in Shiawassee County have been lost due to conversion to agricultural and urban land. Shiawassee County has lost 65% of pre-settlement wetlands including 96% in the Misteguay Creek Watershed, 34% in the Looking Glass Watershed, 77% in the Shiawassee River Watershed and 54% in the Maple River Watershed (DEQ Status and Trend Reports, 2005 data). Shiawassee County has approximately 33,950 acres of land with a high potential to be restored to wetlands. Refer to the Changes in Wetland, 1800s – 1980s map.



## Shiawassee River

The Shiawassee River is a special resource in Shiawassee County. The Shiawassee River begins just southeast of Holly, Michigan, in Oakland County. The South Branch Shiawassee River begins just south of the City of Howell in Livingston County where it flows north to converge with the Shiawassee River at the Village of Byron. Approximately 110 miles in length, the Shiawassee River flows in a northerly direction, discharging into the Saginaw River and eventually into Saginaw Bay.

The most important natural resources in the Shiawassee River Watershed are water supplies, rich soils and non-metallic mineral deposits, such as gravel, sand, clay and shales (Michigan Water Resources Commission, 1963). The Shiawassee River provides excellent outdoor recreational opportunities because of its water, fish, wildlife and beauty. The Shiawassee River was ranked the 7<sup>th</sup> best water trail on a Top 11 list in a poll assembled by the Michigan DNR.

Fisheries present vast opportunities and face many challenges throughout the Shiawassee River. The following species of fish can be found in the Shiawassee River:

- Blue gill (*Lepomis macrochirus*)
- Smallmouth bass (*Micropterus dolmieu*)
- Northern pike (*Esox lucius*)
- Carp (*Cyprinus carpio*)
- Suckers (*Catostomus* sp.)
- Rock bass (*Ambloplites rupestris*)
- Black crappie (*Pomoxis nigromaculatus*)
- Walleye (*Stizostedion vitrum*)
- Chubs
- Darters (*Etheostoma* sp.)
- Sunfish (*Lepomis cyanellus*)

Three categories of wildlife support hunting and/or recreation in the area:

- Openland Wildlife - including quail, pheasant, meadowlarks, field sparrows, red fox, cottontail rabbits, small rodents, woodchucks and hawks.
- Woodland Wildlife - including squirrels, raccoons, ruffed grouse, woodcocks, woodpeckers, warblers, nuthatches, whitetail deer and owls.
- Wetland Wildlife - muskrat, beaver, ducks, geese, herons, rails, kingfishers, minks, cranes and bitterns (USDA-NRCS, 1974).

## Recreation Areas

The Shiawassee County area has a wide range of recreational opportunities. Seven county parks, many along the Shiawassee River, offer picnicking, hiking and other outdoor activities, such as fishing and canoeing. Parks also add to a better quality of life to county communities and residents. Quality of life benefits include relief of social problems, physical and mental health benefits and environmental/civic stewardship. The county park system is complemented by an extensive municipal and private park system with many located on water and all offering a diverse array of amenities. The 100-acre YMCA Outdoor Educational Center located along the Shiawassee River offers a number of educational and recreational opportunities. DeVries Nature Conservancy encompasses 136 acres of farmland, forest, restored prairie and floodplain along the Shiawassee River. DeVries offers a great place to hike, cross country ski, utilize educational opportunities or even just a place to get away and find a quiet place in nature.

The county is home to seven county parks which include: Geeck Road Park, Henderson Park, Kerby Park, Lytle Road Park, Shiatown Park, Pinegrove Park and Davis Park. These parks stretch from southern Shiawassee County up to the northern county boundary. The strategic locations of the parks contribute to reasonable access for all county communities and residents. These parks combine for more than 50 acres of mixed forestland, lowland, bluffs and woodland prairie. They provide great opportunities for fishing, canoeing, and hiking. Pavilions, sand volleyball courts, canoe/kayak launches, grills and viewing decks are a few of the amenities offered at county parks.

The Shiawassee County Parks and Recreation Commission has put together a five-year Parks, Recreation and Open Space Plan for 2016-2020. This plan was developed to benefit Shiawassee County citizens and all visitors and tourists who wish to engage the outdoors through the use of county parks and other public recreational areas. Some components of the plan include: improvements to canoe/kayak and fishing access, improvements to walking/hiking and biking trails, enhancement of fish habitat, invasive species control, establishment of native grasses, wildflowers, shrubs and trees, updated level of maintenance plan and upgrades to park facilities.

## Endangered, Threatened & Special Concern Species

Shiawassee County is home to several endangered, threatened and special concern species. Endangered species are those determined to be in danger of extinction throughout all or a significant part of their range. Threatened species are those vulnerable to the possibility of becoming endangered. Species that are on the Endangered and Threatened Species Lists are protected by law and not to be disturbed without going through a complex legal procedure. Special concern species do not have legal protection, but do have a precarious continued existence and need protection to stop them from slowly disappearing. The following list of Shiawassee County threatened, endangered, and special concern species was derived from the Michigan Natural Features Inventory.

Common Name	Scientific Name	State Status*	Type
Blanding's turtle	<i>Emydoidea blandingii</i>	SC	Animal
Clinton's bulrush	<i>Scirpus clintonii</i>	SC	Plant
Copper button	<i>Mesomphix cupreus</i>	SC	Animal
Eastern massasauga	<i>Sistrurus catenatus catenatus</i>	SC	Animal
Elktoe	<i>Alasmidonta marginata</i>	SC	Animal
Ellipse	<i>Venustaconcha ellipsiformis</i>	SC	Animal
Hairy angelica	<i>Angelica venenosa</i>	SC	Plant
Hay-scented fern	<i>Dennstaedtia punctilobula</i>	T	Plant
Heart-leaved plantain	<i>Plantago cordata</i>	E	Plant
Kidney shell	<i>Ptychobranhus fasciolaris</i>	SC	Animal
Pugnose shiner	<i>Notropis anogenus</i>	E	Animal
Rainbow	<i>Villosa iris</i>	SC	Animal
Regal fritillary	<i>Speyeria idalia</i>	E	Animal
Round pigtoe	<i>Pleurobema sintoxia</i>	SC	Animal
Showy orchis	<i>Galearis spectabilis</i>	T	Plant
Slippershell	<i>Alasmidonta viridis</i>	T	Animal
Snow trillium	<i>Trillium nivale</i>	T	Plant
Spotted turtle	<i>Clemmys guttata</i>	T	Animal
Swamp metalmark	<i>Calephelis mutica</i>	SC	Animal
Torrey's bulrush	<i>Scirpus torreyi</i>	SC	Plant
Twinleaf	<i>Jeffersonia diphylla</i>	SC	Plant
Vasey's rush	<i>Juncus vaseyi</i>	T	Plant
White or prairie false indigo	<i>Baptisia lactea</i>	SC	Plant
Woodland vole	<i>Microtus pinetorum</i>	SC	Animal

**\*State Status** The symbol of the element's legal protection, or recognized rarity within the state. E = Endangered (legally protected); T = Threatened (legally protected); SC = Special Concern (rare or uncertain; not legally protected)

## **Invasive Species**

Invasive species are species that were introduced to an area (non-native) and cause or have the potential to cause harm to the environment, economy or human health. Invasive species can be plants, animals or diseases and can become established in a wide variety of habitats. These species are either intentionally or unintentionally introduced by people. Invasive species damage ecosystems when they out-compete native species. They rapidly grow and reproduce in their new environment where they have little or no natural predators or population controls. When invasive species grow out of control they change the natural balances of the ecosystems which humans depend on. Invasive species cost the United States citizens, government and companies more than \$120 billion per year, in the repair of industrial, public and private infrastructure, water quality treatments, damage to agricultural and forestry products, and from losses of enjoyment and revenues from the fishing, hunting, outdoor recreation and tourism industries (U.S. Fish and Wildlife Service, 2012). Invasive species are a problem all around the country and Michigan is no exception. A short list of some of the invasive species in Michigan include: Mute swan, Rusty crayfish, Oak wilt disease, Sea lamprey, Emerald ash borer, Feral swine, Zebra mussel and Phragmites.

Similar to every other county in Michigan, Shiawassee County is home to a variety of invasive species and is susceptible to new invasions. A few of the invasive plant species that can be found in Shiawassee County include: Phragmites, Japanese knotweed, Garlic mustard, Autumn olive, Bell's honeysuckle, Dame's rocket and Multiflora rose.

Early detection and timely treatment of these species is crucial for increasing the chances of preventing their establishment and limiting potential ecological, social and economic impacts.

## **Watershed Management**

The four watersheds within Shiawassee County are the Upper Maple River, Upper Looking Glass River, Flint River and the Mid-Shiawassee River. Refer to the Shiawassee County Watersheds Map.

The Maple River begins in Shiawassee Township, and flows northwest into Clinton County through the Village of Ovid. The Upper Maple River Watershed covers the northwestern portion of Shiawassee County. This watershed encompasses approximately 513 square miles in Shiawassee, Clinton and Gratiot counties. Water from the Upper Maple River Watershed eventually flows into Lake Michigan. Soils within this watershed are generally well suited for agriculture.

In Shiawassee County, the Flint River Watershed covers the northeastern portion of the county, covering most of Hazelton and Venice townships as well as portions of Caledonia and New Haven townships. In Shiawassee County, water from the Misteguay Creek and its tributaries flows to the Flint River. Water from the Flint River Watershed ultimately drains into the Saginaw Bay of Lake Huron. Land use in this watershed is dominated by agriculture.

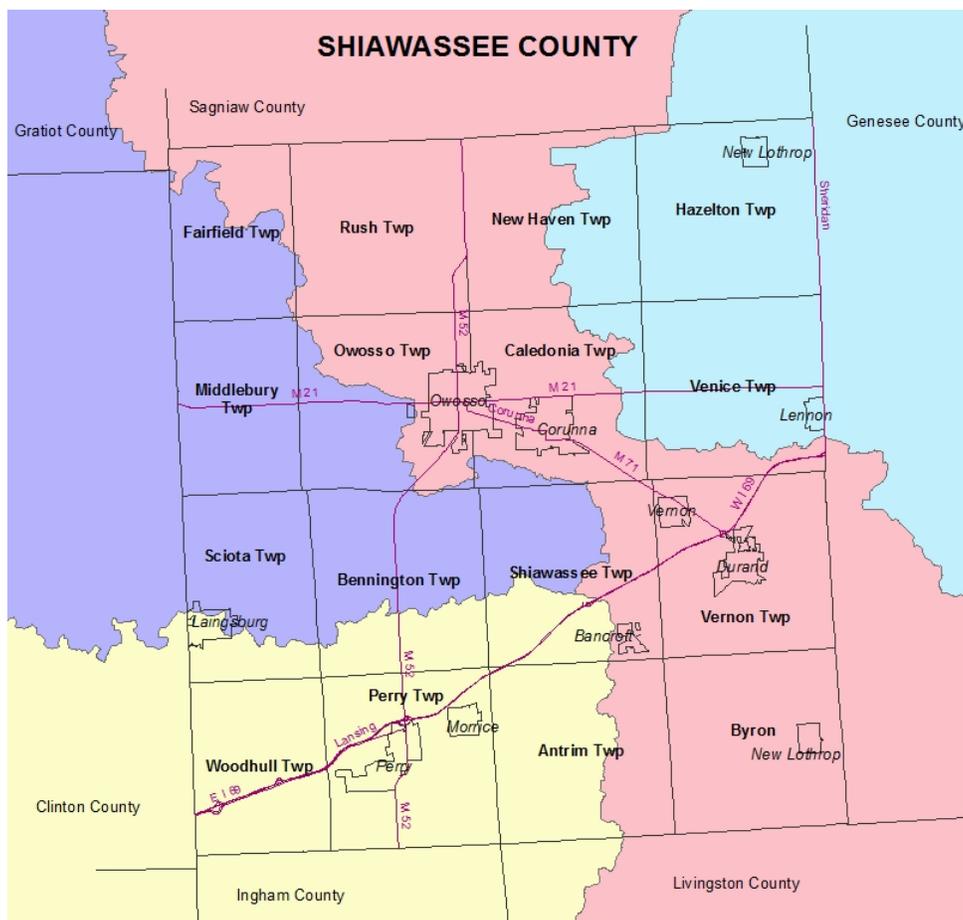
The Mid-Shiawassee River Watershed is a 138,178 acre portion of the 742,400 acre Shiawassee River Watershed. The Mid-Shiawassee Watershed lays predominantly in Shiawassee County with portions extending south into Livingston, southeast into Genesee and north into Saginaw counties. In Shiawassee County, the Mid-Shiawassee River Watershed has an hourglass shape that is located in Vernon, Burns, Antrim, Shiawassee, Venice, Caledonia, Owosso, New Haven, Rush and even small portions of Fairfield, Middlebury and Bennington townships. Land use in this watershed is dominated by agriculture with urban and natural areas spread throughout.

The Looking Glass River headwaters begin in Livingston County, flowing approximately 65 miles before emptying into the Grand River. The Upper Looking Glass River Watershed covers 130,532 acres of Shiawassee, Clinton, Ingham and Livingston counties. Agriculture is the dominant land use in the Upper Looking Glass, but this watershed still contains large areas of wetland and forested floodplain along with approximately 539 acres of lakes and ponds (Protecting and Restoring the Upper Looking Glass River: A Watershed Management Plan,

2008). In Shiawassee County this watershed is located in Antrim, Perry, Woodhull, Sciota, Shiawassee and Bennington townships. Water from the Upper Looking Glass Watershed eventually drains into Lake Michigan.

In Shiawassee County, Watershed Management Plans (WMP) have been generated for the Upper Maple River Watershed, Upper Looking Glass River Watershed and the Mid-Shiawassee River Watershed. A plan for the Upper Misteguay Creek Watershed is currently under development. The Upper Looking Glass River WMP is being updated to include new inventory data and implementation action plans. WMPs are intended to be used by local officials, landowners and others who have an interest in, or impact on, watersheds and their water quality. The primary purpose of WMPs is to improve cooperation between all groups in an effort to protect, restore and enhance water quality, environmental quality and other natural resources within watersheds and, in Michigan, ultimately the Great Lakes Basin. WMPs involve inventory data that assesses water quality conditions. It defines designated and desired water use, land uses and other natural resources such as soil, fish and wildlife habitat. WMPs use this data to outline guidance for long term efforts to address sources and causes of pollutants and to protect and restore high quality areas. WMPs ensure sustainable improvements to water and natural resources quality within their designated watershed area.

### Shiawassee County Watersheds



- Maple River Watershed
- Looking Glass River Watershed
- Shiawassee River Watershed
- Flint River Watershed

## **Purpose of the Resource Assessment**

The Resource Assessment was created in order to better assist landowners with the conservation and management of the County's natural resources. The Resource Assessment will be used by the District to develop a long-range strategic plan. Annual implementation plans will then be prepared with short term goals and milestones, which identify actions the District will take to address the priority issues outlined in the resource assessment.

The approach used to accomplish the Resource Assessment included contacting stakeholders and asking for their input on major resource concerns and how they feel the District could best address those issues. A total of 115 stakeholders completed the Resource Assessment Questionnaire.

### **Stakeholders Contacted**

- County Residents
- Township Supervisors
- Farm Service Agency
- Shiawassee County Health Department
- Shiawassee County Road Commission
- Cities
- Villages
- NRCS, District Conservationist
- Shiawassee Conservation Association
- Shiawassee MSU Extension
- Shiawassee Drain Commission
- Shiawassee County Commissioners
- Pheasants Forever

### **2018 Resource Assessment Questionnaire Results**

1. Stakeholders were asked what type of setting they lived in. The response was as follows:
  - 1) 50% Farm
  - 2) 28% Rural Residential
  - 3) 14% Urban (city or village)
  - 4) 7% Suburban
2. Stakeholders were asked how they stay informed about Shiawassee County's natural resources. The responses are ranked as follows:
  - 1) Newspaper
  - 2) Word of mouth
  - 3) Local TV news
  - 4) Social media
  - 5) Local government meetings
  - 6) Member of a habitat/farming organization
  - 7) Internet

3. Stakeholders were asked to choose all Shiawassee Conservation District activities that they have participated in or were aware of. The responses are ranked as follows:
  - 1) Tree sale
  - 2) Conservation field day
  - 3) Plat book sales
  - 4) Watershed management and planning
  - 5) Michigan Agricultural Environmental Assurance Program (MAEAP)
  - 6) Electronic recycling
  - 7) Conservation planning
  - 8) Environmental education program
  - 9) Water quality monitoring
  - 10) No-Till equipment rental program
  - 11) Farm Bill cost share program
  - 12) Informational workshops
  - 13) Invasive species monitoring and removal
  - 14) Septic System Assistance Program
  - 15) Tree and pest diagnostics
  
4. The Stakeholders were asked how interested they would be in attending field trips, workshops or presentations on specific topics. They were able to choose each topic as very interested, somewhat interested or not interested. The following results represent the rankings of the topics chosen as very interested.
  - 1) Wildlife habitat
  - 2) Status of the Great Lakes
  - 3) Identifying/controlling invasive species
  - 4) Planting/care of native trees and flowers
  - 5) Soil health
  - 6) Forest management
  - 7) Beekeeping and pollinator habitat
  - 8) Water management
  - 9) Small scale farming
  - 10) Hunter Access Program
  - 11) Orchard care
  - 12) Residential stewardship activities
  - 13) On-Farm pollution risk reduction
  - 14) Streambank stabilization
  - 15) Natural shoreline management

5. Stakeholders were then asked to rate natural resource issues that they think are important in Shiawassee County and should be made a priority in the next five years. Participants were able to rate each resource issue as either high, medium or low priority. The following list represents the rankings of resource issues chosen as high priority.
  - 1) Farmland preservation
  - 2) Water quality (ground/surface water contamination and stormwater)
  - 3) Recycling
  - 4) Invasive species (land and aquatic plants and animals)
  - 5) Agricultural management (nutrient, pesticide and animal waste management)
  - 6) Soil erosion and sedimentation
  - 7) Wildlife habitat improvement
  - 8) Forestland health and management
  - 9) Wetland restoration
  - 10) Air quality (industrial emissions, vehicular emissions and ozone)
  - 11) Climate change (carbon footprint, energy use and deforestation)
  - 12) Threatened or endangered species
6. The stakeholders were also asked to select from a list the natural resources that they value most in Shiawassee County. These results are shown below.
  - 1) Water bodies (lakes, rivers and streams)
  - 2) Agricultural land
  - 3) Outdoor spaces (parks, nature preserves and recreation areas)
  - 4) Fish and/or wildlife
  - 5) Hunting land
  - 6) Private forestland
7. Lastly, the stakeholders were asked if the Shiawassee Conservation District were to pursue funding to expand programs to support the conservation of Shiawassee County's natural resources, would they would support it. These results are presented below.
  - 1) 46% Yes, I would support it financially through a capital campaign or millage
  - 2) 32% Unsure or did not respond
  - 3) 22% Yes, I would support it, but not financially

## Summary

The Shiawassee Conservation District is continually looking at ways to improve their service to the citizens of Shiawassee County. By distributing the Resource Assessment survey, the District gained a better understanding of Shiawassee County citizen's resource concerns. The Shiawassee Conservation District will utilize the information gained from the Resource Assessment to develop a plan of work. This plan will identify issues the District can address with the resources currently available. Over the next five years, the District will seek opportunities to obtain resources to address the major resource concerns through action items in the plan. Taking into account existing knowledge of county natural features and the data gathered from the Resource Assessment, the District will be able to better serve the citizens and natural resources.

## Project Objectives & Goals

### **Goal: Support Agricultural Objectives outlined in the Shiawassee County Master Plan**

#### **Objectives:**

- Promote the Farmland Preservation Program (formerly PA 116) as an opportunity for residents to preserve land for agriculture in exchange for certain tax benefits and exemptions
- Provide review and local feedback on applications for the Farmland Preservation Program
- Educate Shiawassee County residents about the cultural, ecological and long-range environmental benefits of farmland preservation
- Promote conservation planning encouraging soil health to protect agricultural land as an irreplaceable natural resource

### **Goal: Assist Shiawassee county residents with water quality improvement and protection**

#### **Objectives:**

- Educate homeowners on proper septic system maintenance and sign of system failure
- Assist with technical resources for system installation, upgrades, replacement and process for municipal connection
- Assist landowners in the adoption of the protection of groundwater and surface water under the Michigan Agricultural Environmental Assurance Program (MAEAP)
- Hold annual well water screening for nitrates and nitrites; provide education on types of well water tests and importance of periodic water testing for well water users
- Assist producers (livestock and cropland) with knowledge and resources to properly manage manure waste and apply nutrients

**Goal: Increase recycling by Shiawassee County residents by promoting education and improving access to recycling opportunities**

**Objectives:**

- Assist residents with education and resources to properly manage and dispose of hazardous household material, compostable and recyclable materials in an environmentally safe manner
- Provide educational programs to youth audiences about the environmental benefits of recycling
- Increase access in schools and public buildings to recycling opportunities
- Hold bi-annual electronic recycling program for Shiawassee County residents
- Promote other local recycling programs such as the County Hazardous Household Waste Collection and Big Red Barrel Project
- Educate residents on composting methods and benefits in reducing waste

**Goal: Provide technical assistance Shiawassee County residents in invasive species management, eradication and preventative measures**

**Objectives:**

- Promote use of native plant and tree species
- Provide education through workshops, website, social media and other sources to educate residents on invasive species
- Provide conservation planning and technical assistance to control invasive species
- Advance partnership to provide technical and financial assistance to Shiawassee County residents to control invasive species such as phragmites, Japanese knotweed and other high risk species

**Goal: Increase the knowledge of the importance of our natural resources to Shiawassee County**

**Objectives:**

- Hold educational workshops to adults and youth on topics requested from our local communities
- Facilitate and lead conservation programs through school and summer camp activities, and community events
- Share conservation information to a broad audience using social media
- Assist farmers in achieving Michigan Agricultural Environmental Assurance Program (MAEAP)
- Increase the knowledge of nonpoint source pollution and foster an appreciation of watersheds

**Goal: Provide technical assistance to Shiawassee County residents to address natural resource concerns**

**Objectives:**

- Assist landowners through thoughtful one-on-one whole system conservation planning
- Assist landowners in the adoption of Best Management Practices in long-term conservation programs such as the Environmental Quality Incentive Program (EQIP), Great Lakes Restoration Initiative (GLRI), Conservation Stewardship Program (CSP) and Continuous Conservation Reserve Program (CCRP)
- Promote wildlife management through long-term conservation programs such as Continuous Conservation Reserve Program (CCRP) and Agricultural Conservation Easement Program (ACEP)
- Promote and assist landowners in the use of no-till through equipment rental program
- Provide technical assistance to urban and rural non-farm residents
- Promote and assist landowners in the use of proper pest management through Farm Bill Programs
- Promote and assist landowners in the Energy Activity through Conservation Stewardship Program (CSP)
- Assist residents with education and resources to properly manage and dispose of hazardous household material, compostable and recyclable materials in an environmentally safe manner

**Goal: Assist Shiawassee County landowners with forestry management**

**Objectives:**

- Assist landowners with forestry management including: timber harvest, timber stand improvement, disease control, pest control and tree planting through thoughtful, one-on-one conservation planning and Farm Bill Programs
- Promote reforestation through annual tree fundraisers and workshops
- Provide plant/tree disease diagnostics services
- Assist with invasive species control

## Sources Referenced

- Michigan Natural Features Inventory
- USDA-NRCS
- City of Owosso – <http://ci.owosso.mi.us>
- USDA-National Agriculture Statistics Service
- The County of Shiawassee – [www.shiawassee.net](http://www.shiawassee.net)
- USDA-2012 Census of Agriculture
- Michigan Department of Natural Resources
- Michigan Water Resources Commission
- United States Geological Survey
- U.S. Fish and Wildlife Service
- Mid-Shiawassee River Watershed Management Plan, 2011
- Protecting and Restoring the Upper Looking Glass River: A Watershed Management Plan, 2008
- Upper Maple River Watershed Management Plan, 2010
- U.S. Environmental Protection Agency (EPA), September 2001
- Shiawassee County Soil Survey Book
- 2007 Shiawassee County Land Use Plan
- Michigan Department of Environmental Quality (DEQ), 2016 Michigan Community Public Water Supplies
- 2016 Shiawassee County Master Plan
- Michigan Department of Environmental Quality (DEQ), Status and Trends Reports, 2005
- Shiawassee County Health Department