

Exhibit A: Compensation Planning Framework

COMPENSATION PLANNING FRAMEWORK

A WATERSHED APPROACH TO COMPENSATION PLANNING

BACKGROUND

In 2008, the US EPA created a new rule to regulate in-lieu fee mitigation programs which requires that a “compensation planning framework” be used for selecting and permitting mitigation projects funded through an in-lieu fee mitigation program. The rule states the following: “The approved instrument for an in-lieu fee program must include a compensation planning framework that will be used to select, secure, and implement aquatic resource restoration, establishment, enhancement, and/or preservation activities. The compensation planning framework must support a watershed approach to compensatory mitigation.”

The required compensation framework must include the following ten elements:

1. The geographic service area(s), including a watershed-based rationale for the delineation of each service area;
2. A description of the threats to aquatic resources in the service area(s), including how the in-lieu fee program will help offset impacts resulting from those threats;
3. An analysis of historic aquatic resource loss in the service area(s);
4. An analysis of current aquatic resource conditions in the service area(s), supported by an appropriate level of field documentation;
5. A statement of aquatic resource goals and objectives for each service area, including a description of the general amounts, types and locations of aquatic resources the program will seek to provide;
6. A prioritization strategy for selecting and implementing compensatory mitigation activities;
7. An explanation of how any preservation objectives identified in element 5 and addressed in the prioritization strategy in element 6 satisfy the criteria for use of preservation;
8. A description of any public and private stakeholder involvement in plan development and implementation, including coordination with federal, state, tribal and local aquatic resource management and regulatory authorities;
9. A description of the long-term protection and management strategies for activities conducted by the in-lieu fee program sponsor;
10. A strategy for periodic evaluation and reporting on the progress of the program in achieving the goals and objectives above, including a process for revising the planning framework as necessary.

Based on TNC’s own experience and the best practices of colleagues and partners, TNC established a science-based conservation approach for setting goals and priorities, developing strategies, taking action and measuring results, which is called “*Conservation by Design*” (TNC,

2001). This methodology satisfies all of the requirements of the 2008 compensatory mitigation rule for aquatic and wetland resources, and is the basis for the proposed prioritization strategy for selecting and implementing compensatory mitigation activities. The *Conservation by Design* approach is described below.

PART I. TNC'S **CONSERVATION BY DESIGN**



The mission of TNC is to conserve the lands and waters on which all life depends. In order to fulfill this mission, TNC uses a collaborative, science-based conservation approach and a common set of analytical methods to identify the biodiversity that needs to be conserved, decide where and how to conserve it and measure effectiveness of those efforts. Together this conservation approach and set of analytical methods form the core of *Conservation by Design*. The basic concepts of this conservation approach are simple and follow an adaptive management framework of setting goals and priorities, developing strategies, taking action and measuring results.

Setting Goals and Priorities. Conservation goals describe the results we want to achieve for biodiversity. Based on the best available scientific information, TNC sets long-term goals for the abundance and geographic distribution of species and ecological systems necessary to ensure their long-term survival. To make the most effective progress toward these goals, TNC establishes

priorities in places with high biodiversity that are most in need of conservation action or promise the greatest conservation return on investment.

Priority places are identified through ecoregional assessments. An ecoregion is a large area of land or water that contains a geographically distinct assemblage of ecosystems and natural communities, and is differentiated by climate, geology, physiography, hydrology, soils, and vegetation. Appendix 1 of the CPF provides more information on the different Level IV Ecoregions found in Ohio. TNC works with partners to assess ecoregions using data on the distribution and status of biodiversity, habitat condition, current and future threats and the socio-political conditions that influence conservation success within those ecoregions.

These data allow us to set long-term conservation goals for conservation targets — ecosystems, natural communities and imperiled or declining species representative of an ecoregion, and to establish ecoregional priorities for resource allocation — specific landscapes, threats to biodiversity and strategic opportunities that affect one or more ecoregions and demand immediate attention. Ecoregional data also provide a baseline against which we can measure progress toward long-term conservation goals for representative ecosystems and species within an ecoregion.

Developing Strategies. TNC works with others to transform ecoregional priorities into conservation strategies through Conservation Action Planning. This method is used to design and manage conservation projects that advance conservation at any scale — from efforts to conserve species and ecosystems in a single watershed or landscape, to efforts to reform regional or national policies. As with ecoregional assessments, Conservation Action Planning is driven by data on the distribution and status of biodiversity, current and future threats, and the socio-political conditions within the project area. These data are used to develop strategies of sufficient scope and scale to abate threats, maintain or restore biodiversity and strengthen capacity to ensure long-term results. The data also provide a baseline for evaluating effectiveness of strategies and progress in achieving project goals, and for modifying strategies to changing circumstances as needed.

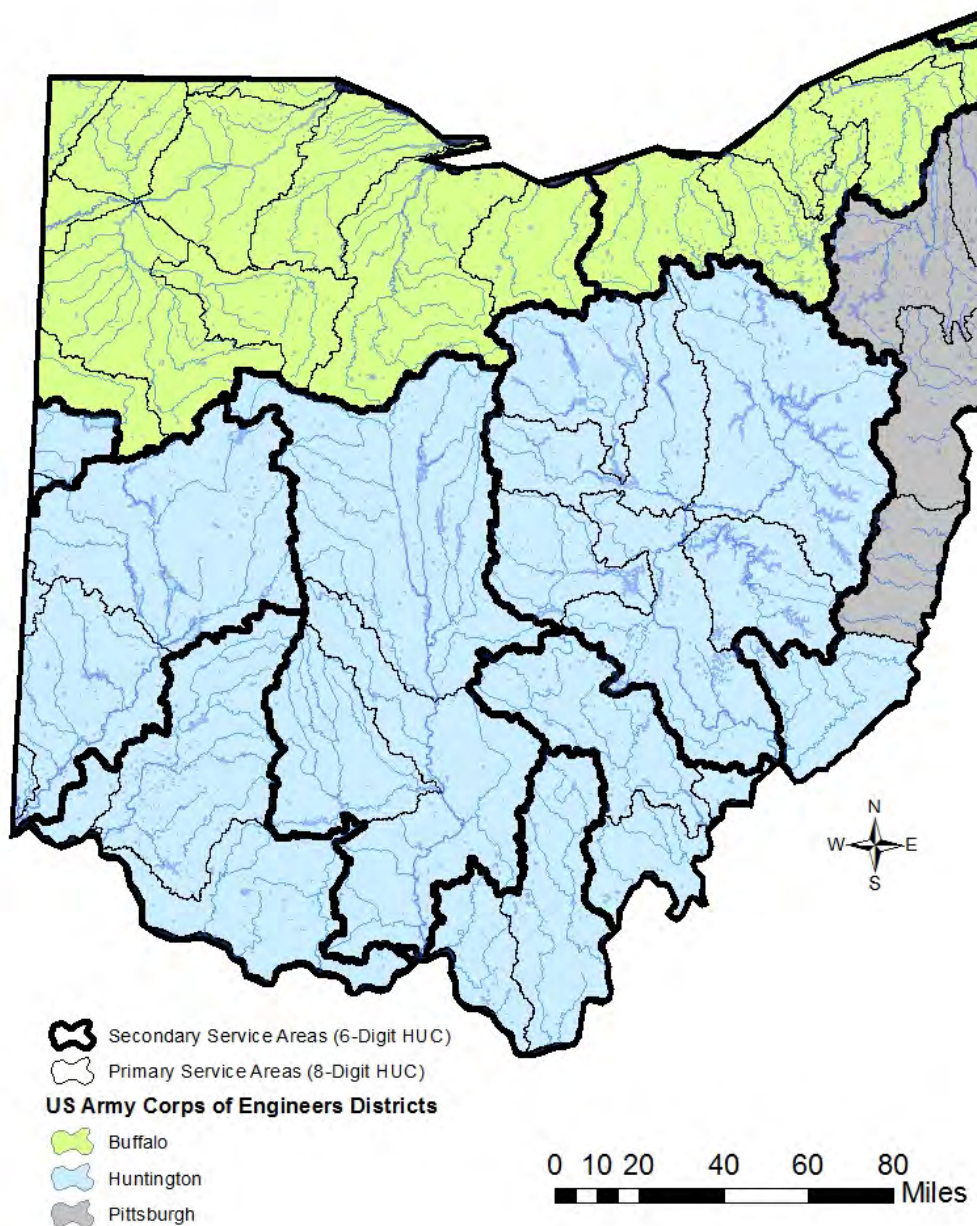
Taking Action. TNC is committed to place-based results by taking action locally, regionally and globally, as called for by conservation strategies developed with partners. The strategies are varied, but typically include investing in science to inform decision-making; protecting and managing land and water; forging strategic alliances with a variety of groups from all sectors; creating and maintaining supportive public policies, practices and incentives; strengthening the institutional capacity of governments and non-governmental organizations to achieve conservation results; developing and demonstrating innovative conservation approaches; building an ethic and support for biodiversity conservation; and, generating private and public funding.

Measuring Results. TNC measures effectiveness by answering two questions: “How is the biodiversity doing?” and “Are the strategic actions having the intended impact?” The first question evaluates the status of species and ecosystems. The second question more specifically evaluates the effectiveness of conservation strategies and actions. Tracking progress toward goals and evaluating the effectiveness of strategies and actions provide the feedback needed to adjust the goals, priorities and strategies.

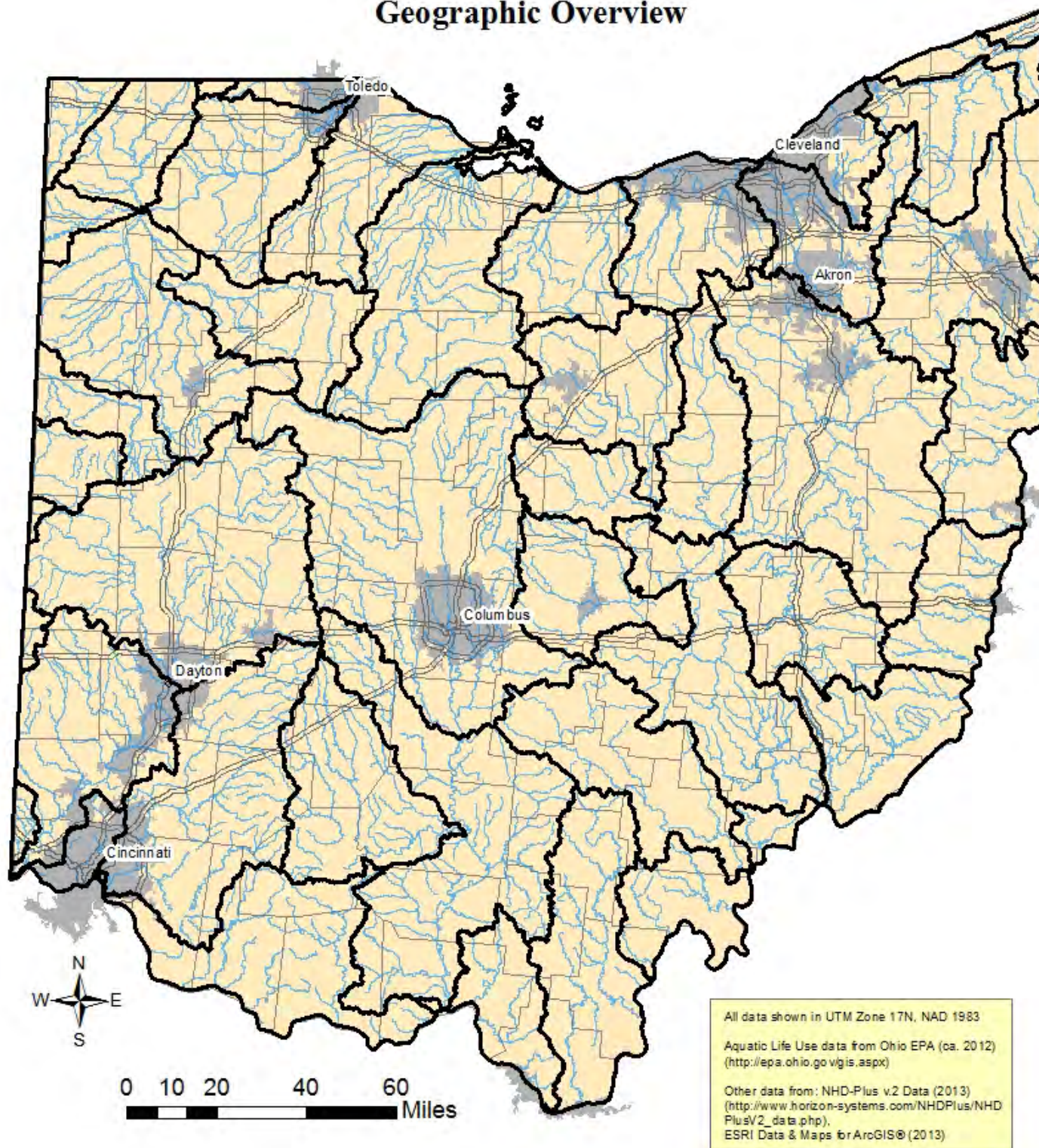
Element 1. The geographic service area(s), including a watershed-based rationale for the delineation of each service area.

The proposed areas in which this Program is authorized to provide compensatory mitigation required by Corps and Ohio EPA permits ("Service Areas") are the whole or partial watersheds defined as Primary and Secondary Service Areas in the state of Ohio. Primary Service Areas are the Fourth Level (8-digit) hydrologic unit codes ("HUC") watersheds. In addition to the Primary Service Areas, Secondary Service Areas are defined as each 6-digit HUC. These Service Areas are depicted in Figure 1 and further described and illustrated in Part 2 below.

TNC will mitigate for aquatic resource loss within the watersheds by completing projects in the same watershed where the impact occurred whenever possible. The type of impacts and watershed priorities will guide ILF project selection, plan development, and implementation.



Geographic Overview



Element 2. A description of the threats to aquatic resources in the service area(s), including how the in-lieu fee program will help offset impacts resulting from those threats.

Part 2 of the CPF provides detailed information for each Primary Service Area regarding the threats to aquatic resources.

Generally, threats to aquatic resources, or any ecosystem chosen as a priority for conservation, are defined as past, current, or future human activities that directly cause degradation, impairment, or destruction of the species and habitat associated with the ecosystem, or the natural processes that support the ecosystem. Threats are identified and prioritized in the planning process so that impacts from the threat can be avoided or mitigated. Drawing on TNC's statewide ecoregional assessments the highest ranked threats to Ohio's aquatic resources are described below.

Habitat Loss and Fragmentation. Residential, commercial, and industrial development with its associated infrastructure, such as roads and utilities, is the most significant cause of habitat loss and fragmentation. In addition to the loss of wetlands, floodplains, and coastal areas, land development also contributes to the hardening and erosion of shorelines, and changes to the hydrological connection of wetlands and streams with their surrounding landscape. While conversion of land to agriculture has also contributed significantly to wetland fragmentation and degradation, loss of wetland or stream habitat is more often the result of permanent structures such as buildings and roads. Floodplain modifications to allow development close to streams generally results in destruction of riparian forest and other floodplain habitat that can radically alter meandering flow or other physical characteristics of a stream. The placement of roads can cause multiple impacts to aquatic resources by altering hydrological connections through accelerated water flow and sediment transport, disrupting wildlife corridors, and providing pathways for the establishment of invasive species.

Altered Hydrology. Urban and rural development along with many other land-based activities can affect natural hydrology by altering surface flow and hydrological connections that can degrade aquatic resources. Removal of vegetation, channelization of streams, excessive water withdrawals from streams and wetlands, draining and filling of wetlands, sand and gravel removal, and dams of various sizes are examples of activities that can change the natural hydrology.

Degradation of aquatic resources can result from contaminated runoff flowing directly from impervious surfaces such as parking lots into streams and wetlands. Dams and structures at road crossings can create barriers for species that require stream migration to successfully complete their reproductive cycle or other critical life stages. These alterations can cause changes in water flow patterns, flood storage capacity, substrate composition, temperature, and water quality which are all important factors for healthy streams and wetlands. Cumulative impacts from altered hydrology within a watershed can be especially damaging when certain disturbance thresholds are reached.

Nutrient Enrichment and Sedimentation. Elevated nutrients in streams can lead to excessive algal growth, decreased light penetration, low concentrations of dissolved oxygen, and loss of

desirable flora and fauna either through displacement or mortality (e.g. fish kills). Harmful algal blooms (HABs), toxin-producing algae that form during the summer, are increasingly problematic in Lake Erie and some inland waterways like Grand Lake St. Marys. Triggered primarily by excess phosphorus, HABs adversely impact aquatic life and human health as well as recreation opportunities, fishing, and property values.

In recent years, severe outbreaks of blue-green algae in western Lake Erie and Grand Lake St. Marys have become a huge public health concern. For extended periods of time public access to beaches and lake waters has been restricted or banned over concern about the algae's toxic effects on humans and pets. Although, the problem is most often associated with agricultural watersheds, nutrients (primarily phosphorus and nitrogen) that contribute to HABs originate from a variety of sources. Major sources of phosphorus and other non-point source pollution include animal wastes, human wastes (commonly from failing septic systems or inadequate wastewater treatment), fertilizers, pesticides, and herbicides. Municipal wastes and fertilizers are also significant nutrient sources from urban areas.

Sedimentation is a natural occurrence in healthy stream systems, but it is also a common source of pollution in Ohio streams. Floodplains with intact riparian forests and wetlands provide natural filters and buffer areas from the damaging effects of excessive sedimentation. When these habitats are modified or destroyed, the negative impacts of nutrient and sediment pollution greatly increase. Excessive sedimentation can result when people fail to use best management practices in agriculture, forestry or construction activities, creating harmful stream conditions with devastating consequences, especially on fish and mussel populations.

Invasive Species. Introduced non-native species, either deliberate or accidental, that become well established in streams and wetlands can pose a serious threat to the survival of Ohio's native species. Zebra mussel and purple loosestrife are two familiar examples of non-native invasive species that have had a negative impact on Ohio's wetlands and waters. The common reed *Phragmites australis* is one example of a widespread plant invader of wetlands throughout Ohio. Disturbed or modified wetlands can accelerate the establishment of this species which can quickly displace native wetland plants and ultimately create a monoculture and highly degraded wetland of little benefit to wildlife.

Not all introduced species become invasive, but those that do can readily displace native species through competition for food and habitat, predation on native species (e.g. round goby on native fish eggs), and by transmitting diseases, thereby causing serious ecological and economic harm. Once established, it can become difficult or nearly impossible, to eradicate or control some invaders. Many destructive insects, fungal diseases, and other aquatic invaders are introduced through international trade routes or spread by infected plants sold in the commercial plant industry. This is the reality of the expanding global economy. New methods of early detection and rapid response will need to be developed to prevent future introductions from causing devastating consequences.

Climate Change. Naturally occurring changes in climate are not necessarily problematic, but the rapid change we are seeing today is a concern driven almost completely by increased greenhouse gas emissions from human sources—driving cars, heating buildings, cutting and burning trees,

and generating electricity from fossil fuels. In Ohio, records show that spring is arriving earlier, summers are growing hotter, winters are becoming warmer, ice on Lake Erie is forming later and melting earlier, and severe weather is more frequent (Williamson et al, 2008). Climate change is likely to exacerbate loss and degradation of aquatic ecosystems and the services they provide. Some of the changes that are occurring, or that scientists believe will occur (Chou and Schroeder, 2012; Groves et al, 2010) are discussed below.

Changes in amount and timing of precipitation and an increase in severe weather could increase costly flooding. Reduced summer precipitation and a loss of ice cover in winter will drive down water levels in Lake Erie. Decreased snow cover and winter precipitation will result in less available moisture in the spring, threatening freshwater wetlands, streams, and floodplains which depend on this seasonal inundation. Increased flooding will impair the ability of wetlands and floodplains to absorb excess water, resulting in altered stream hydrology and increased water pollution from excessive nutrient and sediment runoff.

In some watersheds, changes in temperature and water availability will likely cause isolation of nearby wetlands and a loss of habitat for wetland dependent fish and amphibians. The cold water streams in Ohio would be especially vulnerable. Warmer temperatures will cause some aquatic species to disappear or migrate. Coldwater species are likely to decline, while species that can adapt to the warmer water temperatures and are more tolerant of other stressors like invasive species and nutrient enrichment, will increase in numbers. Some species will have difficulty adapting without habitat corridors to migrate within.

Severe rainfall events and warmer temperatures anticipated with climate change are expected to exacerbate harmful algal blooms. Early season warming also will drive both an increase in magnitude and duration of harmful algal blooms. In areas of the state with combined sewer systems, heavy seasonal precipitation is likely to increase the number of overflow events which will increase the flow of untreated sewage and other pollutants into our waterways.

The TNC-Ohio ILF Program will offset the threats described above by focusing projects on areas where improvements can be achieved. The Program will concentrate on developing effective mitigation projects in priority conservation areas identified within each service area that will compensate for the resources being impacted within the service area. As mitigation needs develop in each service area we will consult local watershed management plans and assessments to inform the site location and design of proposed mitigation projects. We can also develop projects that will promote adaptation and resilience to climate change and other stresses by conserving larger, more diverse areas, creating connecting corridors, and by restoring hydrology and reducing invasive species and other threats. This approach could provide benefits to the people that depend on these systems for water quality, flood control, recreation, building materials and good health. Healthy ecosystems offer some of the most cost-effective and powerful protection from the consequences of climate change and other impacts on Ohio's aquatic resources.

Element 3. An analysis of historic aquatic resource loss in the service area(s).

Part 2 of the CPF provides detailed information for each Primary Service Area regarding the historic aquatic resource loss.

In the early 1700s, Ohio's environment was described by early settlers as a predominantly forested landscape with scattered openings, clean streams and numerous wetlands with lush vegetation and abundant wildlife. The Natural Vegetation Map of Ohio at the time of the earliest land surveys (Gordon, 1966), shows large and widely distributed areas comprised of elm-ash swamp forests, prairie, freshwater marshes and fens, sphagnum peat bogs and bottomland hardwood forest wetlands in Ohio (ODNR and OEPA, 1999). It has been estimated that nearly 90 percent of Ohio's original wetlands have disappeared. From the 1780s to the 1980s, Ohio's wetland areas declined from about 5,000,000 acres to about 483,000 acres (Dahl, 1990).

Wetlands are typically located in low-lying areas that are covered or saturated by water during at least part of each year resulting in specialized soil types and water-dependent plants. Ohio's wetlands are found across the state and include such diverse communities as marshes, swamps, wet meadows, vernal pools, bogs and fens. Ohio's original wetlands were very large. Over time, most of Ohio's wetlands have been drained and filled to make way for farms, roads, houses and other development. Today, the scale is much different—wetlands that are considered to be large today would actually be very small in comparison to original wetlands. Approximately 63 percent of Ohio's wetland losses (2,850,000 acres of 4,500,000 acres) occurred through alteration of the Great Black Swamp in northwest Ohio.

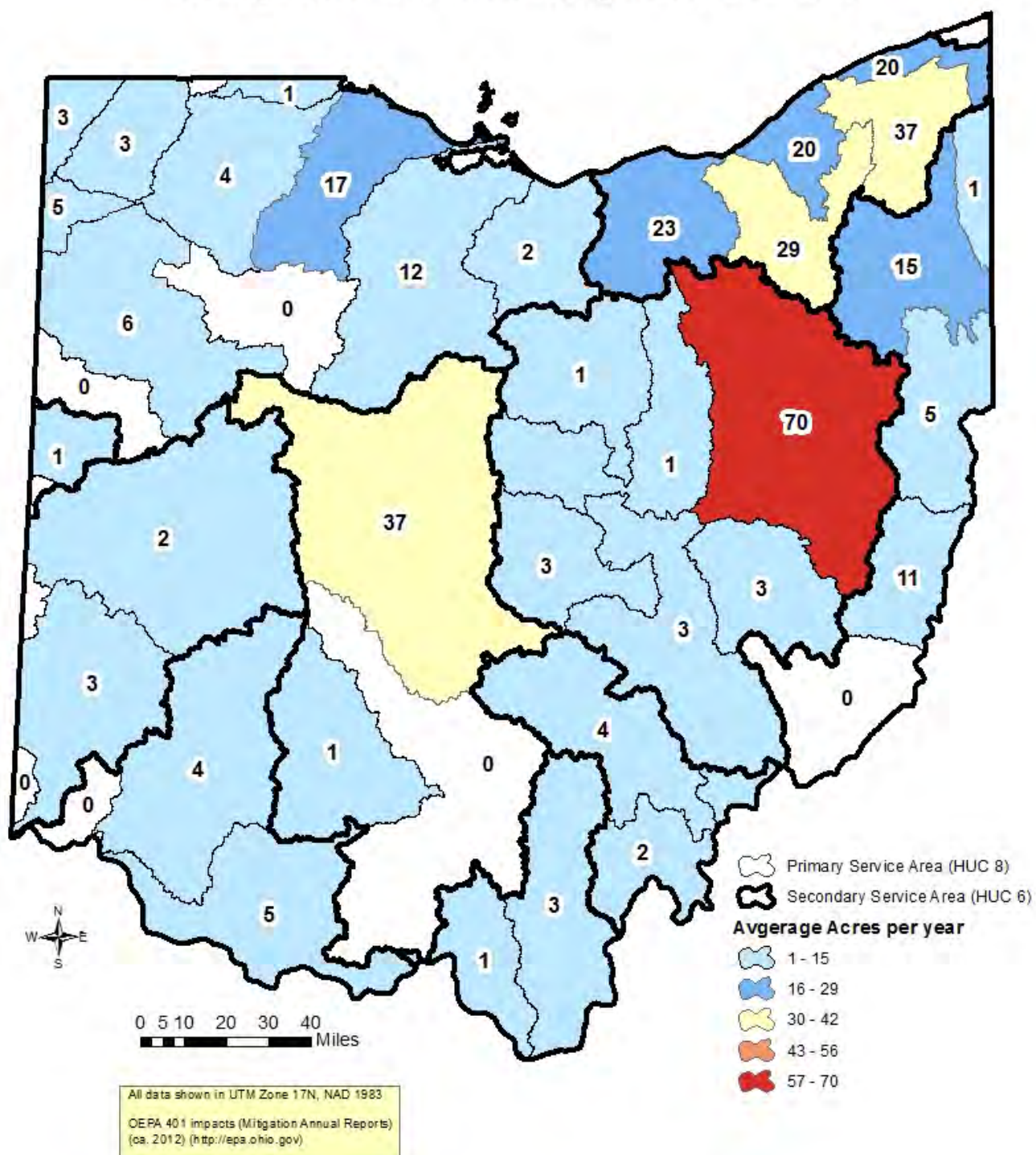
During the past 200 years human activities have also resulted in dramatic changes to the physical, chemical and biological characteristics of Ohio's streams. As cities were built, forests were cleared, wetlands were drained, and the quality of streams also declined. Industries such as mining and logging have had a significant impact on Ohio's wetlands and streams. The water flow in many streams was impeded or altered by dams or diversions, and ditches were installed to drain the land more quickly. Many streams were heavily polluted as there was limited or no sewage treatment and rivers were used to dispose of human and industrial waste.

Stream and wetland degradation continued unabated for the most part until the 1960s and 1970s when state and federal laws were passed in an effort to reverse the degradation, and protect the remaining freshwater resources that were still in good condition. In addition, watershed groups and concerned citizens organized across the state to protect and restore streams and wetlands (Sanders, ed. and Zimmerman, 2002). As a result, Ohio has benefited from improvements in water quality and there is a higher value placed on maintaining healthy aquatic resources.

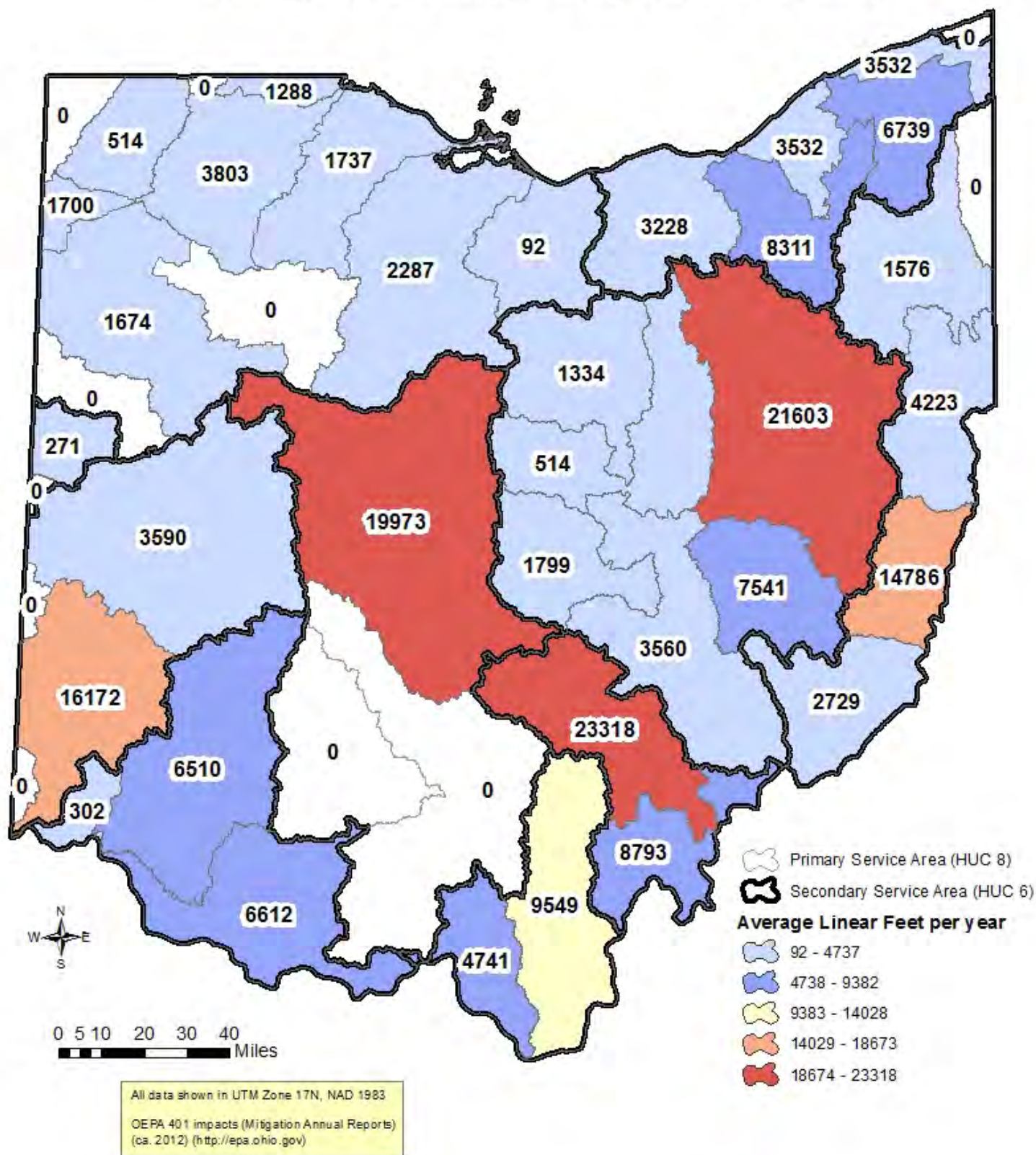
Historical documentation of the loss or alteration of Ohio's streams and wetlands is based on comparisons between early descriptions of the landscape by European settlers and the landscape that exists today. Prior to the Clean Water Act of 1972, there were no systematic methods in place to classify or quantify the diversity of streams and wetlands that were lost over time, nor was there enough concern over wetland loss to demand such an accounting.

Since 2002 the OEPA has published annual reports on isolated wetland permitting in Ohio and in 2003 began including 401 Water Quality Certifications in the reports. These reports provide insight to the stream and wetland impacts that have been permitted in Ohio over the last 10 years. Below are two maps that illustrate the average annual mitigation for both stream and wetlands for each of the 8-digit HUC watersheds, and a third map that shows the locations of the permitted impacts.

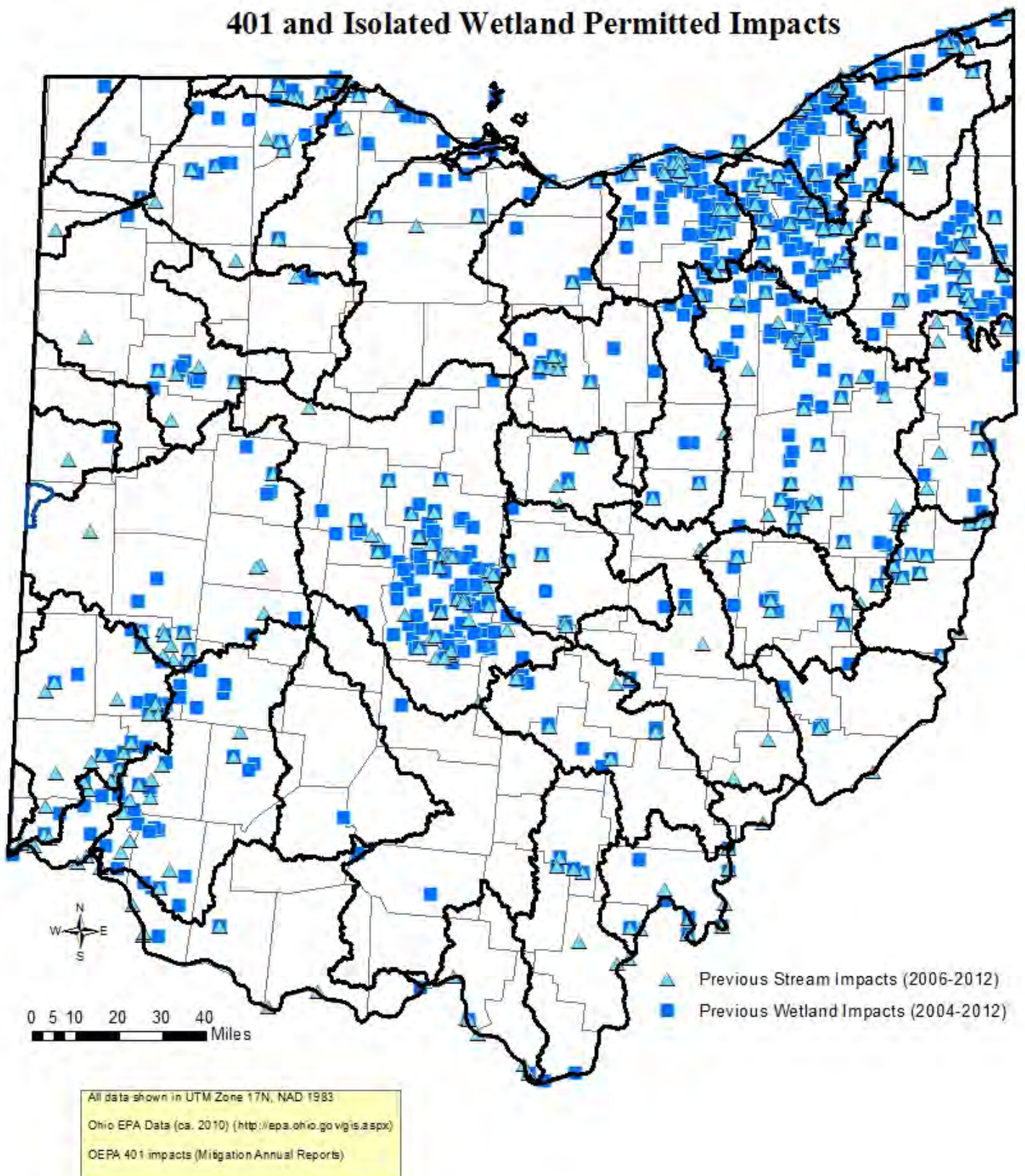
Average Annual Wetland Mitigation (2006-2012)



Average Annual Stream Mitigation (2006-2012)



401 and Isolated Wetland Permitted Impacts



Element 4. An analysis of current aquatic resource conditions in the service area(s), supported by an appropriate level of field documentation.

Part 2 of the CPF provides detailed information for each Primary Service Area regarding the current aquatic resource conditions.

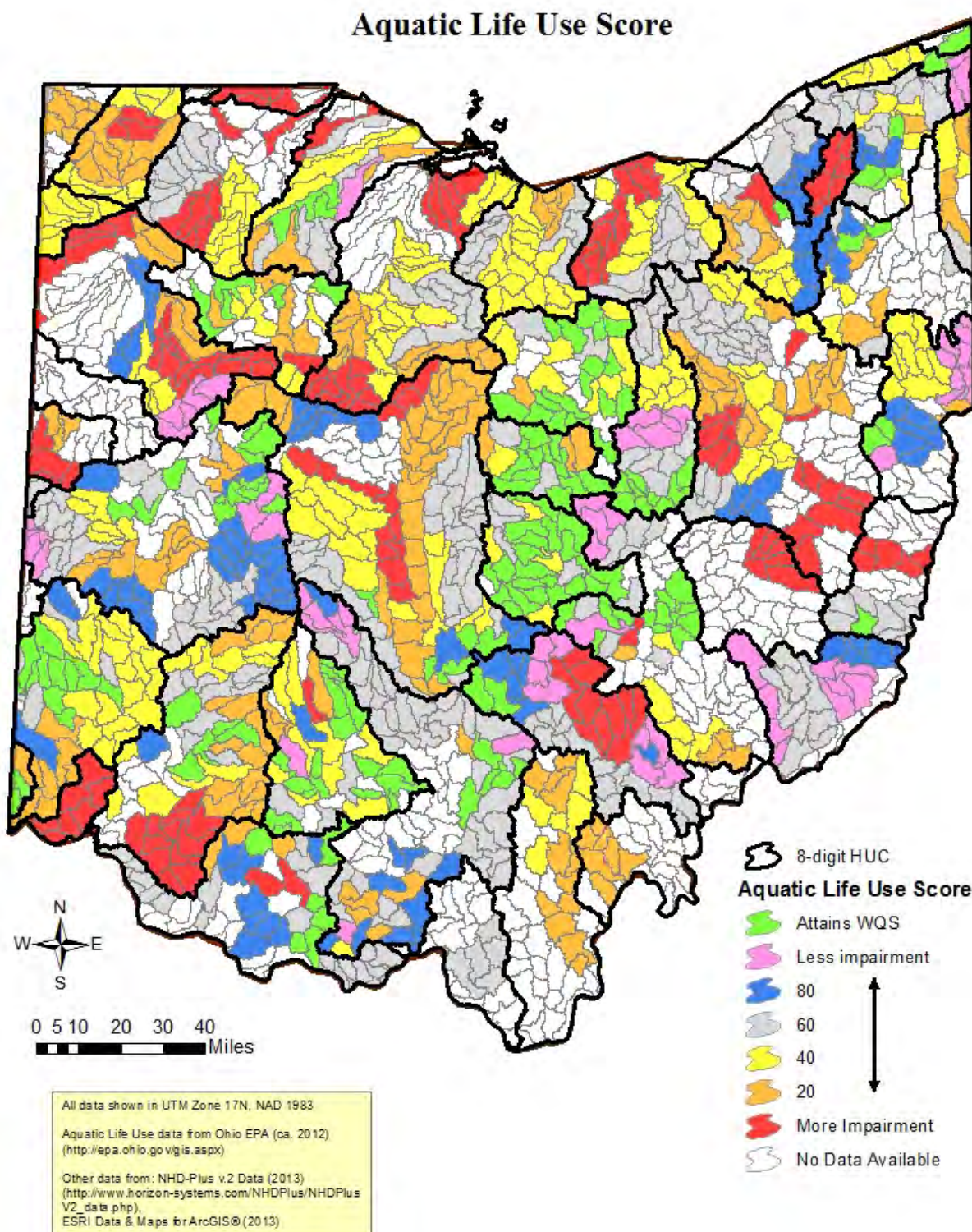
The US Fish & Wildlife 2011 report, Status and Trends of Wetlands in the Conterminous United States 2004-2009, indicates that while there have been some gains in wetland conservation in recent years across the country, cumulative effects of losses and reductions in wetland extent may limit opportunities for wetland reestablishment and watershed rehabilitation. While the report doesn't provide a report for each state, it would be reasonable to assume that in a state like Ohio where 90% of its original wetlands have been lost, the national trends apply. The report concludes that because wetland abundance and distribution affect biodiversity, mitigation could improve ecological processes if wetland type and geospatial interspersions were taken into consideration. The report does not address wetland condition or quality but states that the U.S. Environmental Protection Agency (EPA), in collaboration with other state and federal agencies will conduct the first-ever National Wetland Condition Assessment (NWCA) to be completed by 2013. The NWCA will characterize wetland condition nationwide for different wetland types and with the status and trends report will provide national information on wetland quantity and quality.

Ohio EPA's 2012 Integrated Report on water quality, <http://epa.ohio.gov/dsw/tmdl/2012IntReport/2012IRAssessmentSummaries.aspx> summarizes information about the current condition of Ohio's aquatic resources, recent monitoring data, and considerations for future monitoring and assessments. Ohio's rich water resources support a diverse and strong economy based in manufacturing, agriculture, and recreation, as well as the emerging energy industry associated with oil and gas production in the region of Utica shale deposits. With Lake Erie to the north and the Ohio River to the south, and many miles of streams and rivers that drain the land between them, there is an abundance of water to meet the daily needs for maintaining a high quality of life for Ohio residents.

The Ohio EPA is recognized as a nationwide leader for the methods it has developed to assess water quality. In particular, in addition to considering chemical pollution, Ohio EPA assesses biological integrity and habitat, and uses the combined measures to assess the progress with which the state's waters are meeting goals outlined in the Clean Water Act (see map below). These assessments allow for an understanding of current conditions and the identification of specific needs for improving water quality. The 2012 Integrated Report outlines recent monitoring results that indicate, while some Ohio waterways are impaired and not in full attainment of the water quality goals, water quality continues to improve statewide.

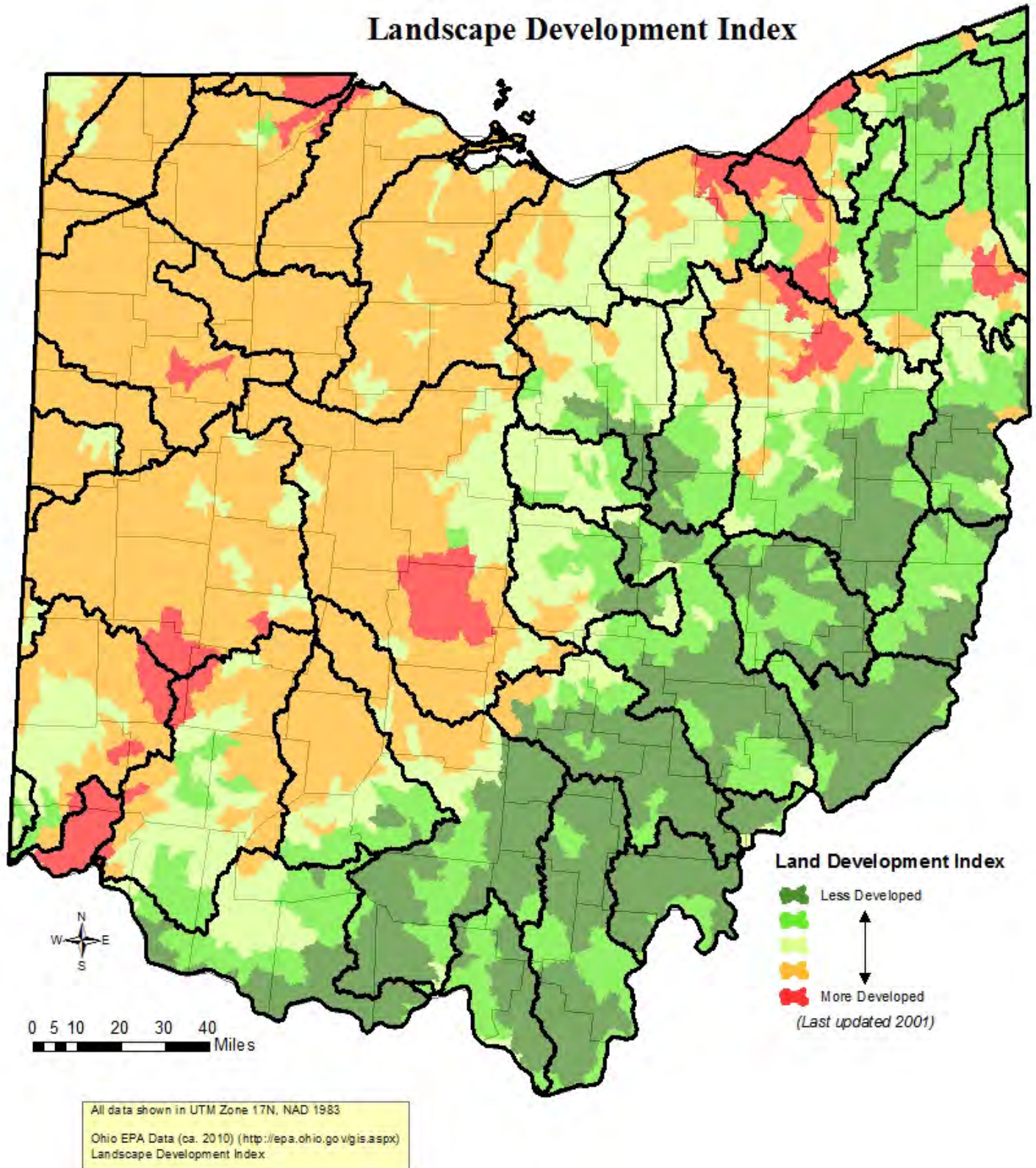
Ohio's large rivers (those that drain more than 500 square miles) show the most improvement with 89% of the large rivers meeting water quality standards today compared to 62% in the 1990s. Overall, smaller watersheds show increases in water quality, although at lower levels than large rivers. In general, lower water quality is typically associated with smaller drainage areas or streams. The report also states that most water quality impairments are related to modifications in the landscape that result from various land use practices. The report goes on to recommend that,

in addition to managing land use more effectively, restoring and protecting natural stream function is critical to improving Ohio's surface water quality and will require a collaborative effort. This suggests that the TNC-Ohio ILF Program could be an effective mechanism for improving water quality in impaired watersheds. Additional information can be found on the Ohio EPA's Division of Surface Water web site <http://www.epa.ohio.gov/dsw> and related links.



Additionally, the Landscape Development Index (LDI) is as an index developed by the OEPA that shows the relative level of human induced impacts on the biological, chemical, and physical processes of

Landscape Development Index



Element 5. A statement of aquatic resource goals and objectives for each service area, including a description of the general amounts, types and locations of aquatic resources the program will seek to provide.

Part 2 of the CPF provides detailed information for each Primary Service Area regarding the aquatic resource goals and objectives.

In keeping with the Guidelines for Wetland Mitigation Banking in Ohio, ILF stream and wetland mitigation sites will contain features that make each site conducive to the development or restoration of high quality streams and wetlands that:

- replace the desired type of aquatic resource (typically the same as what is being lost)
- provide multiple functions
- are appropriate for the landscape
- are compatible with surrounding land use
- can be managed in a relatively easy and sustainable manner
- are ecologically of the highest quality achievable and compatible with current and historic site conditions

In determining appropriate sites for mitigation, priority will be placed on locating projects within the Service Areas in close proximity to high quality wetlands and streams identified through TNC's ecoregional assessments. Where mitigation projects can preserve, enhance or restore additional wetland acreage or stream segments within or adjacent to habitat for rare or native species and natural communities, preference may be given for those projects, assuming that they contain the features stated in the list above.

Goals and objectives for aquatic resources in this program will be primarily determined by the impacts that will need to be mitigated in each service area and replacing those resources accordingly. In addition, an objective for wetland resources will be to mitigate for the same wetland type and size in an effort to achieve no net wetland loss, or to gain wetland acreage, and to restore some of the wetland diversity that Ohio has lost over time.

Goals and objectives for streams in each service area will also be determined using any existing Watershed Action Plans for the watershed and the completed TMDL (Total Maximum Daily Load) implementation plans. The objective of the TMDL process is to systematically identify impaired or threatened waterbodies and the pollutant(s) causing the impairment and ultimately establish a scientifically based strategy – a TMDL – for correcting the impairment or eliminating the threat and restoring the waterbody.

Through the TMDL process the Ohio EPA establishes restoration targets that will result in attainment of water quality standards for Ohio watersheds, and develops strategies to achieve those targets. A restoration target is a quantitative or qualitative determination of the changes needed to reduce a stress in an aquatic system to meet and/or maintain water quality standards. Actions identified in the TMDL implementation plan will be incorporated into the TNC-Ohio ILF Program as appropriate to meet mitigation requirements for each project. All types of mitigation -

restoration, establishment, enhancement, and/or preservation - will be offered as appropriate in all watersheds to meet mitigation requirements.

The TMDL process provides a road map for the specific implementation of a watershed-based delivery of Ohio EPA resources aimed at eliminating impairments to Ohio waters. Additional information on the TMDL plans, assessment unit summaries, and stream mitigation protocol can be accessed at the Ohio EPA web sites below.

<http://www.epa.ohio.gov/portals/35/tmdl/FinalTMDLReport.pdf>

<http://www.epa.ohio.gov/dsw/tmdl/index.aspx>

<http://www.epa.ohio.gov/dsw/tmdl/2012IntReport/2012IRAssessmentSummaries.aspx>

http://epa.ohio.gov/portals/35/rules/DraftStreamMitigationProtocol_presentation_Anderson_050311.pdf

(Ohio's draft stream mitigation protocols will be used until a final version has been approved.)

Element 6. A prioritization strategy for selecting and implementing compensatory mitigation activities.

Process: After credits are sold within a Primary Service Area, TNC will contact potential partners whom have a presence in that region and inform them that potential mitigation sites are being sought. TNC will also undertake its own search using the CPF as guidance to search for potential mitigation properties.

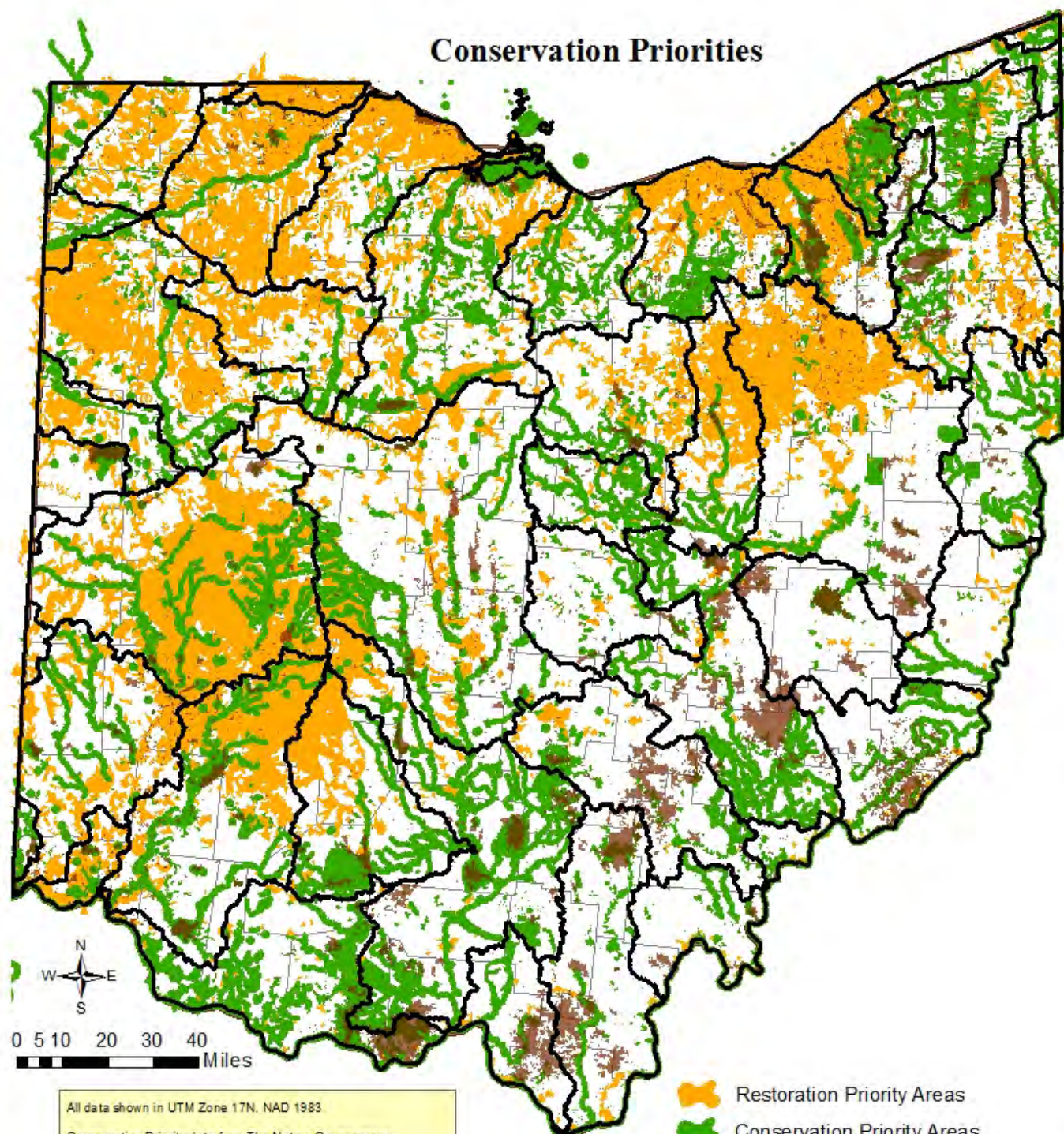
Once an adequate amount of credits are sold in that Primary Service Area to fund a mitigation project, TNC will create a request for proposals (RFP) detailing the project needs and the possible budget. Partners will be asked to fill out proposals that will be used as an objective way of evaluating the potential mitigation sites. Concept Plans will be developed for the best site or sites. The number of concept plans developed will depend on the projected budgets and the amount of funding available in that Primary Service Area. The Concept Plans will be submitted to the IRT for review. Only those Concept Plans that receive approval from the IRT will move to the Mitigation Plan stage.

Watershed Approach: Site selection will prioritize projects that:

- Address the specific needs of the watershed identified through from the CPF, existing plans, reports, analyses, and stakeholder input.
- Capture multiple occurrences of each aquatic system within each Service Area to ensure representative conservation of biodiversity and habitat types by using all available options to meet mitigation requirements.
- Create a network of hydrologically connected aquatic systems to ensure representative and functional conservation areas within the service area and across the state.
- Maximize potential for success and sustainability for each mitigation site by considering the surrounding land use patterns, local ecological processes and environmental regimes that establish and maintain the aquatic system (e.g. hydrologic flow, seasonal hydroperiods, presence of invasive species, climate regimes).
- Include such factors as species having access to habitats/resources needed for life cycle completion, proximity to other protected ecological communities and systems, and the ability of aquatic species to adapt to environmental change through dispersal, migration, or re-colonization.
- **Conservation Priorities:** Protect places with high biodiversity that are most in need of conservation action or promise the greatest conservation return on investment. Conservation priority sites are identified by TNC and its conservation partners through ecoregional assessments using data on the distribution and status of biodiversity, habitat condition, current and future threats and the socio-political conditions that influence conservation success within those Ecoregions (see map below).

- **Examples of aquatic resources identified as conservation priorities could include:**
 - Category 3 wetlands;
 - Streams with aquatic life use designation of exceptional warmwater habitat, cold water habitat, seasonal salmonid or any equivalent designation and/or performance;
 - Streams with antidegradation category of superior high quality water, outstanding national resource water or outstanding state water;
 - State wild and scenic rivers;
 - National wild and scenic rivers;
 - General high quality waters which harbor federal and/or state listed threatened and/or endangered species;
 - Great Lakes and Ohio River Basin Fish Habitat Partnership analysis identifying the priority restoration and preservation catchment basins for high ecological value fish and mussels.





This approach offers great potential for mitigation project site selection. It signifies TNC's attempt to identify the best examples of aquatic biodiversity across Ohio and should serve as a starting point for selecting areas where mitigation projects might be most appropriately located to achieve maximum success in meeting the mitigation requirements of a watershed. The CPF provides a framework for thinking about conservation and restoration of aquatic systems, particularly in a landscape with heavily fragmented and disconnected aquatic systems.



All data shown in UTM Zone 17N, NAD 1983.

Conservation Priority data from The Nature Conservancy
(ca. 2008) (Ecoregional Assessment Targets)

Other data from: NHD-Plus v2 Data (2013)
(http://www.horizon-systems.com/NHDPlus/NHDPlusV2_data.php),
Ducks Unlimited Conservation And Recreation Lands (2013)
(<http://www.ducks.org/conservation/glaro/carl-gis-layer>),
Ohio Natural Heritage Database (2007)
(http://www.dnr.state.oh.us/Home/wild_resource/subhomepage/ResearchandSurveys/OhioBiodiversityDatabase/tabid/23852/Default.aspx), and
Protected Area Database (PAD-US v2) (2013)
(<http://consbio.org/products/projects/pad-us-obi-edition>)
Ohio River Basin and Southeast Aquatic Resources geodatabase
(<http://midwestfishhabitats.org/document/ohio-river-basin-and-southeast-aquatic-resources-partnership-geodatabase>)
Great Lakes Fish Habitat Partnership (<http://greatlakes.fishhabitat.org/content/tributary-habitat-assessment-modeling3>)

-  Restoration Priority Areas
-  Conservation Priority Areas
-  Conservation and Recreation Lands
-  Conservation Priority Areas on Conservation and Recreation Lands

Element 7. An explanation of how any preservation objectives identified in Element 5 and addressed in the prioritization strategy in Element 6 satisfy the criteria for use of preservation.

The 2008 rule (73 FR 19670, Apr. 10, 2008) requires that goal setting for and prioritization of aquatic resources as required by Elements 5 and 6 above also satisfy the criteria for use of preservation. In the rule, preservation may be used to provide compensatory mitigation for activities when the following criteria [§332.3(h)] are met:

- (i) The resources to be preserved provide important physical, chemical, or biological functions for the watershed;
- (ii) The resources to be preserved contribute significantly to the ecological sustainability of the watershed. In determining the contribution of those resources to the ecological sustainability of the watershed, the district engineer must use appropriate quantitative assessment tools, where available;
- (iii) Preservation is determined by the district engineer to be appropriate and practicable;
- (iv) The resources are under threat of destruction or adverse modifications; and
- (v) The preserved site will be permanently protected through an appropriate real estate or other legal instrument (e.g., easement, title transfer to state resource agency or land trust).

Where preservation is used to provide compensatory mitigation, to the extent appropriate and practicable the preservation shall be done in conjunction with aquatic resource restoration, establishment, and/or enhancement activities. This requirement may be waived by the district engineer where preservation has been identified as a high priority using a watershed approach described in paragraph (c) of this section (§332.3), but compensation ratios shall be higher.

TNC's approach to setting goals for preservation and the criteria used for selecting and prioritizing aquatic systems and occurrences of species and communities is designed with the explicit purpose of capturing critical environmental gradients (changes in abiotic factors or biotic interactions over space and time that are linked to connectivity and natural disturbance), ecological processes, and genetic diversity to ensure the persistence and sustainability of viable biological diversity, ecological systems and functional landscapes in the Service Area.

Conservation actions at those sites are designed to abate threats and maintain and restore the viability, function and sustainability of the aquatic systems and diversity with the intent of providing permanent protection of the resource. The design principles discussed in this document are wholly consistent with the criteria articulated in the 2008 rule.

Element 8. A description of any public and private stakeholder involvement in plan development and implementation, including coordination with federal, state, tribal and local aquatic resource management and regulatory authorities.

TNC works closely with public and private partners and experts to develop a conservation vision and set priorities through ecoregional assessments and to design and implement effective conservation strategies at multiple scales to conserve biological diversity. We depend on a wide diversity of partners from state and federal agencies, non-governmental organizations, industry, and academic institutions to inform and influence our work while supporting the alliances necessary to achieve meaningful conservation results.

For example, the proposed TNC-Ohio ILF Program is an exemplary partnership involving the Ohio Environmental Protection Agency, Ohio Department of Natural Resources, Ohio Department of Transportation, US Army Corps of Engineers, US Fish & Wildlife Service, and TNC by which multiple conservation objectives are accomplished through collaborative action.

Moreover, we have involved partners in our conservation action planning efforts in Ohio in which we identify conservation targets, threats to targets, develop measurable conservation objectives and design conservation actions to abate threats and restore viability to targets. Relying on the expertise of agency and academic scientists is crucial to the scientific integrity of establishing our conservation priorities.

During the course of developing the ILF program, TNC met with the Interagency Review Team to discuss this proposed approach to an Ohio In-Lieu Fee stream and wetland program and to invite preliminary feedback. In addition, TNC conducted a WebEx presentation for conservation partners for the specific purpose of getting perspective and comments from stakeholders on the draft prospectus for this Ohio Stream and Wetland In-Lieu Fee Program. Partner support and engagement in implementing mitigation projects through this program will be critical to its success.

As outlined in Element 6, stakeholders will also be approached when credits are sold in a primary service area in order to elicit proposals for mitigation project sites. In practice, it is anticipated that a significant portion of the lands included in this program will be owned and managed by other organizations, with TNC in the role of seeking proposals, selecting those to be considered by the IRT, and eventually turning over the long-term management responsibilities and funds to the project partner.

Element 9. A description of the long-term protection and management strategies for activities conducted by the in-lieu fee program sponsor.

TNC implements a variety of restoration and conservation strategies at multiple scales across the state and region to conserve biological diversity in priority conservation areas. Strategies are developed with partners and designed to abate a range of threats at the scales at which they occur including global climate change, habitat loss and fragmentation, invasive species, nutrient and sediment runoff, and altered hydrological regimes of streams and wetlands. Stewardship strategies include wetland and stream restoration, the use of prescribed fire, invasive species control, and rare species recovery efforts. In general, strategies are designed to achieve clearly articulated, measurable conservation objectives.

As the sponsor of the Ohio Stream and Wetland In-Lieu Fee Mitigation Program, TNC will evaluate proposed projects based on the projected ability to implement the long-term protection and restoration goals of the project. Project requirements will include a long-term management and monitoring plan that will provide quantitative results for evaluating whether the project meets the mitigation goals and the standards developed by the Corps and OEPA.

Legal mechanisms will be established for long term protection and management of the mitigation site. Potential long-term site managers include public agencies, land trusts, park districts, watershed groups and other conservation entities with the capacity to follow through on the long term protection, monitoring, and management of the mitigation site. Long-term protection mechanisms could include conservation easements or restrictive covenants held by a third party, deed restrictions, or other legal mechanisms, approved by the IRT, to ensure land protection and fulfillment of the mitigation requirements.

Element 10. A strategy for periodic evaluation and reporting on the progress of the program in achieving the goals and objectives above, including a process for revising the planning framework as necessary.

The business of TNC is to implement conservation strategies that are intended to maintain or restore biodiversity and ecosystem processes for the long term. To be successful, it is necessary to know whether the trends in the viability and integrity of biodiversity, the status of threats, and the ecological management of conservation lands and waters are heading in a positive direction, holding steady, or declining. Moreover, it is essential to know whether our strategies are having the intended outcomes and fulfilling measurable conservation objectives. A major component of *Conservation by Design* is measuring results and making changes as necessary to achieve those results. This is the cornerstone of all good adaptive management. TNC's organizational commitment to measuring results is a high priority.

A great deal of monitoring work is already being done by state agencies and academic institutions in Ohio's wetlands, streams, and other aquatic habitats and waterways. Examples include Ohio EPA's water quality assessment and biological monitoring methodology (e.g. ORAM, FQAI, VIBI, AmphIBI, QHEI) and ODNR's stream monitoring and rare species assessments. TNC strategically uses and tracks this type of data to better inform conservation strategies now and into the future.

In addition, TNC seeks to measure whether individual strategies and associated actions taken within a conservation project are having their intended effect on abating threats and restoring ecological targets. These measures of strategy effectiveness are used to evaluate progress in achieving desired outcomes and results that stem from implementing strategies, by tracking progress toward measurable objectives. This approach will be required of all mitigation projects submitted for consideration to the IRT through the TNC-Ohio ILF Program.

TNC will submit an annual report on its TNC-Ohio ILF Mitigation Program to the IRT providing an opportunity to assess the program and recommend changes to improve implementation and ecological outcomes of the mitigation projects and overall administration of the program.

CONCLUSION

TNC will utilize the information provided within this document to guide the identification of priority project sites. As necessary, secondary locations may be identified when mitigation needs exist and projects cannot be implemented within the first priority locations, or where additional information suggests a more suitable site location.

This section of the prospectus addresses the ways in which TNC's *Conservation by Design* approach including ecoregional assessments and conservation action plans satisfy the elements required by the compensation planning framework rule required for in-lieu fee mitigation programs.

Conservation by Design provides an integrated approach that can be used in a comprehensive statewide mitigation program to establish conservation goals and priorities, guide actions, and direct resources to gain the greatest ecological results from mitigation projects. It is an adaptive approach that can operate at multiple scales, from local to global, and has been successfully employed in diverse geographic and cultural settings. It is a highly effective method "to select, secure, and implement aquatic resource restoration, establishment, enhancement, and/or preservation activities" as required by the 2008 rule for compensatory mitigation.

Many of the concepts and methods of *Conservation by Design* have been incorporated into the *Open Standards for the Practice of Conservation* Version 2.0 developed by the Conservation Measures Partnership which is a partnership of conservation non-governmental organizations, including TNC, that seek better ways to design, manage, and measure the impacts of their conservation actions. The *Open Standards* represent the collective experience of its members in conservation project design, management, and monitoring and, as such, provides the steps and general guidance necessary for the successful implementation of conservation projects, including mitigation.

The *Open Standards for the Practice of Conservation* can be found at <http://www.conservationmeasures.org/CMP/>

Moreover, the methods and tools associated with *Conservation by Design* are available to the public through TNC's *Conservation by Design* Gateway website at <http://www.conservationgateway.org/>

The *Conservation by Design* Gateway is a workspace for the global conservation community to find and share guidance, tools and resources supporting *Conservation by Design* or the process of setting goals, developing strategies, implementation and measuring results for biodiversity conservation. Industry, state agencies and other non-profit conservation groups can use and adapt this approach to satisfy mitigation requirements, resulting in more strategic project selection and success in conserving Ohio's aquatic resources.

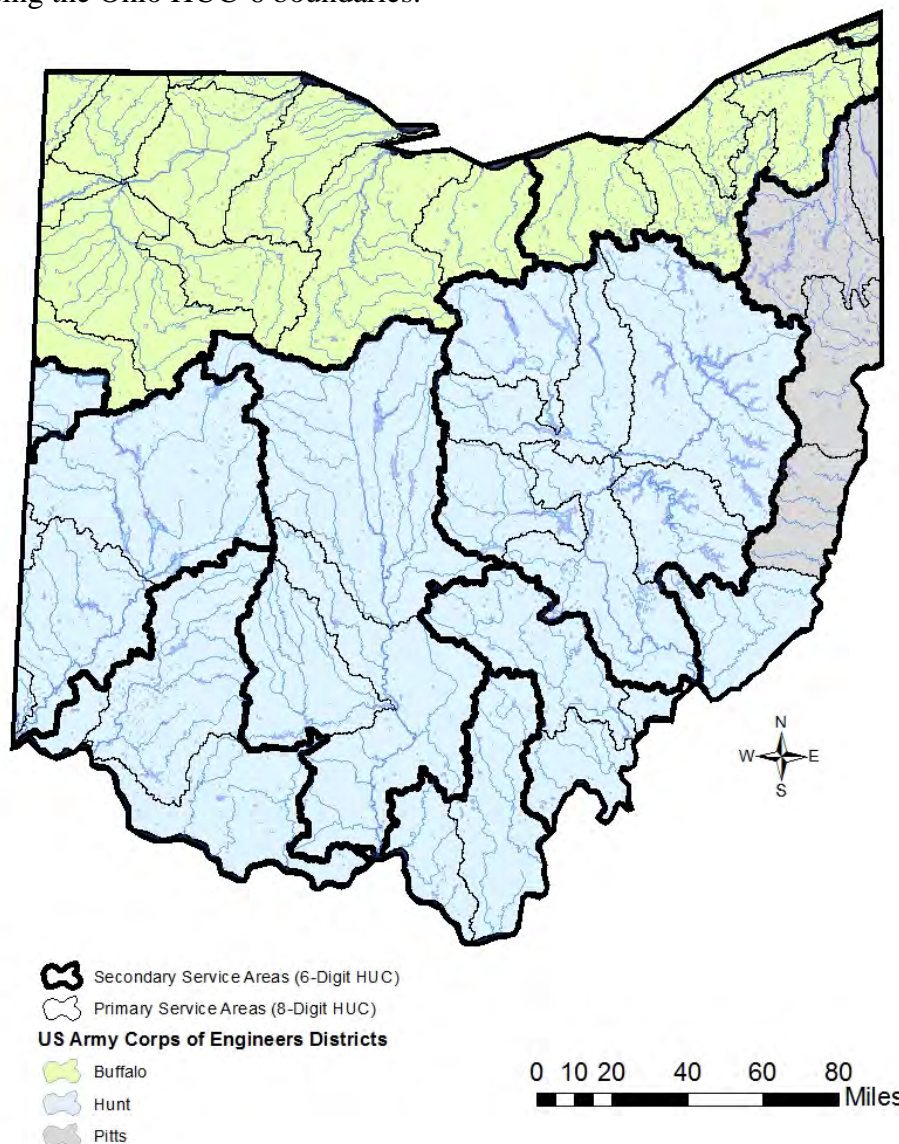
PART II. OVERVIEW OF PRIMARY SERVICE AREAS
Elements 2, 3, 4, and 5

Service Areas and U.S. Army Corps of Engineers Districts

PRIMARY SERVICE AREAS (8-DIGIT HUC)

The Primary Service Areas have been defined using the Ohio HUC-8 boundaries.

SECONDARY SERVICE AREAS (6-DIGIT HUC) – The Primary Service Areas have been defined using the Ohio HUC-6 boundaries.



Primary Service Areas

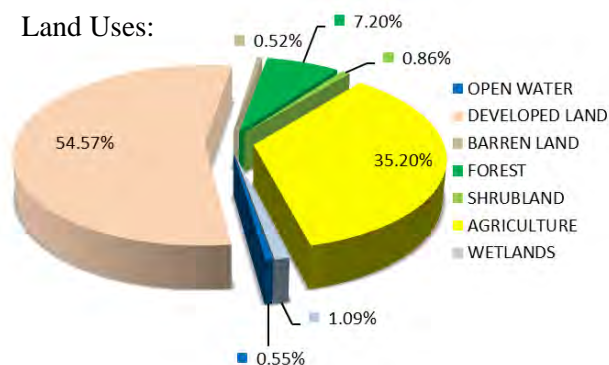
| | |
|--|-----|
| Ottawa-Stony HUC 04100001 | 29 |
| Raisin HUC 04100002 | 32 |
| St. Joseph River HUC 04100003..... | 35 |
| St. Mary's River HUC 04100004..... | 39 |
| Upper Maumee River HUC 04100005 | 43 |
| Tiffin HUC 04100006..... | 47 |
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| Blanchard River HUC 04100008 | 55 |
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| Cedar - Portage River HUC 04100010 | 63 |
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| Upper Great Miami HUC 05080001 | 168 |
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All data used for the CPF Primary Service Area analyses has been cited in the References Section at the end of the document.

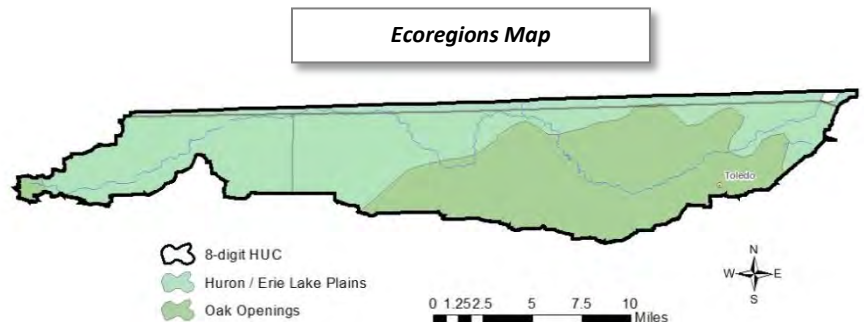
Service Area 1**Ottawa-Stony
HUC 04100001****Watershed Characteristics**

- 8-digit HUC size: 146 miles²
- 2-digit HUC: Lake Erie
- 6-digit HUC: Western Lake Erie
- Number of 12-digit HUCs: 7
- Corps district: Buffalo
- Approximate 2010 population: 254,000

Geographic Overview Map• **Land Uses:**

- Counties: Lucas, Fulton
- Waterbodies
 - Total open water: 0.34 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - wetlands: 3,200 acres
 - Named Streams: 49 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), Karner blue butterfly (E), Kirtland's warbler (E), piping plover (E), rayed bean (E), eastern prairie fringed orchid (T), eastern massasauga (C), bald eagle (SC)

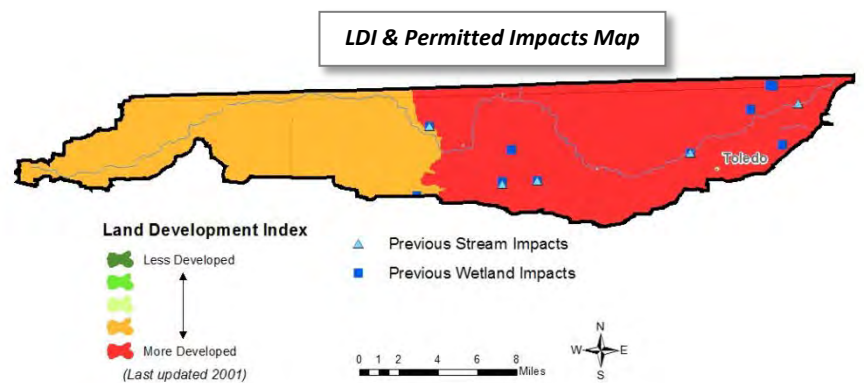
- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Huron/Erie Lake Plains (57a)
 - Oak Openings (57b)



Threats and Impacts

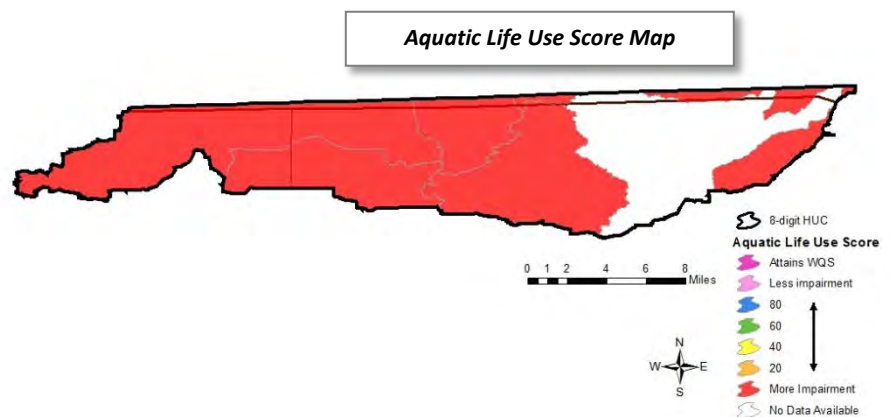
The Landscape Development Index (LDI) for the service area shows significant impact across the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been:

1,288 linear feet. And the average annual wetland mitigation (2004-2012) has been: 1 acre.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use. The OEPA's 2012

Integrated Report and two OEPA Biological and Water Quality Reports [Ottawa River and Principal Tributaries (2010), Ottawa River – Lower Nine Miles (2006)] have identified sources of water quality threats and impacts including: direct habitat alterations, nutrients, flow alteration,



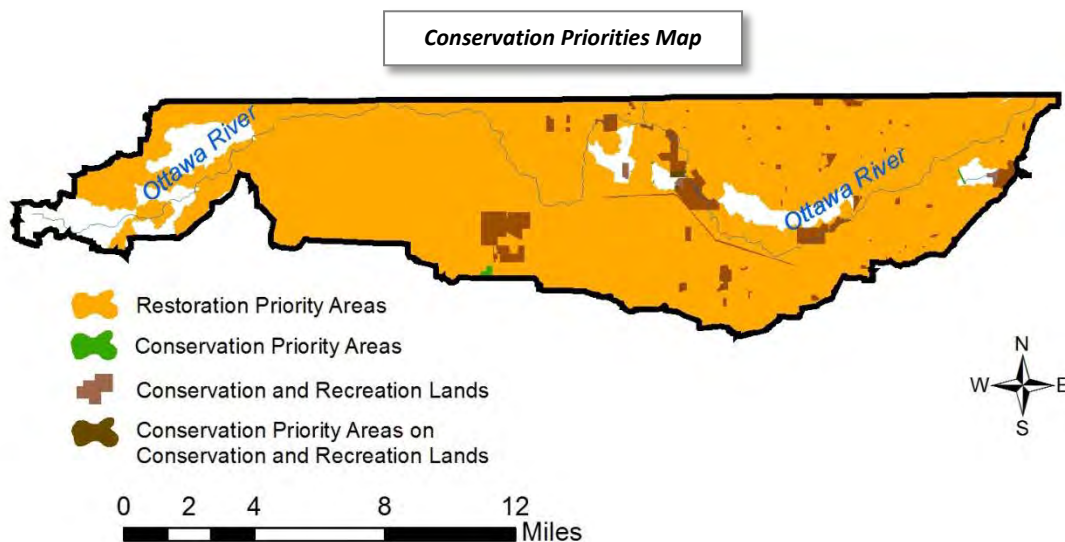
elevated PCBs and PAH compounds, organic enrichment, sedimentation, and siltation. Additionally, the urbanized condition causes pollution from combined sewer overflows, sanitary sewer overflows, landfills, and urban runoff. The lower 16 miles of the Ottawa River has a 'do not wade or swim' advisory and a 'do not eat' advisory for fish and snapping turtles

Aquatic Resource Goals

A Watershed Action Plan has been developed for the Ottawa River (Maumee Area of Concern Stage 2: Watershed Restoration Plan, Volumes 1 & 2, 2006). The Watershed Action Plan goals that the TNC In-Lieu Fee Program might support include:

- Remove dams and other obstructions that serve as barriers to fish movement or restrict or alter flow conditions
- Stream and wetland restoration
- Stream bank restoration
- Upland habitat restoration
- Improve and increase riparian habitat
- Aquatic habitat restoration
- Public education on water quality issues

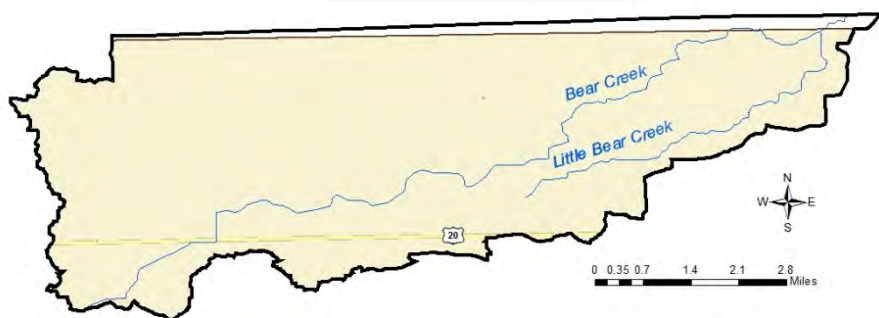
Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



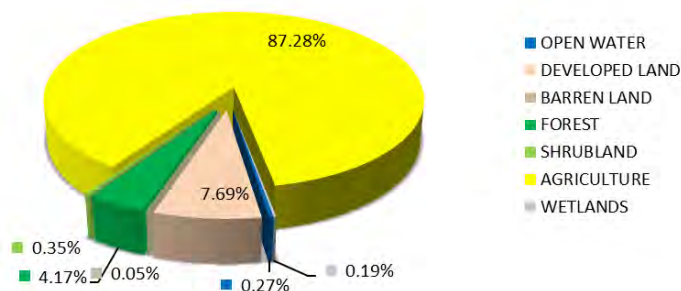
Additionally, the State of Ohio has developed various standards and designations that identify priority waterways including cold water habitat, exceptional warmwater habitat, superior state waters and outstanding state waters. No streams in this primary service area have been designated in such a way.

Service Area 2**Raisin****HUC 04100002****Watershed Characteristics**

- 8-digit HUC size: 26 miles²
- 2-digit HUC: Lake Erie
- 6-digit HUC: Western Lake Erie
- Number of 12-digit HUCs: 3
- Corps district: Buffalo
- Approximate 2010 population: 1435

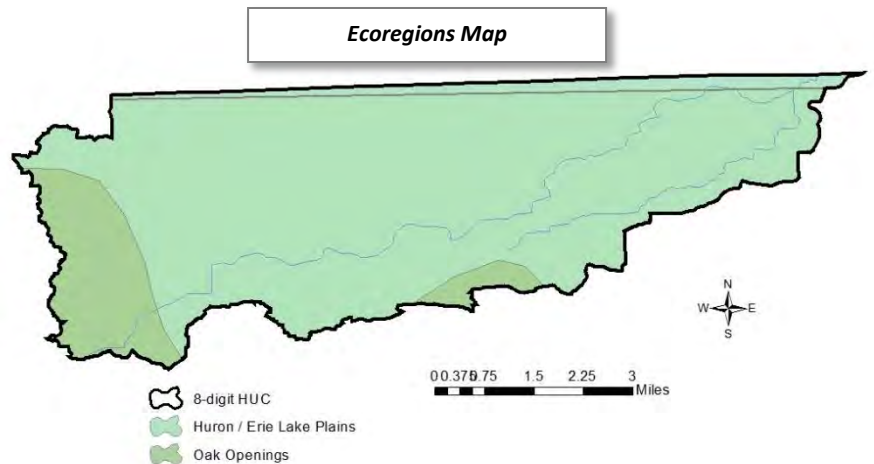
Geographic Overview Map

- Land Uses:



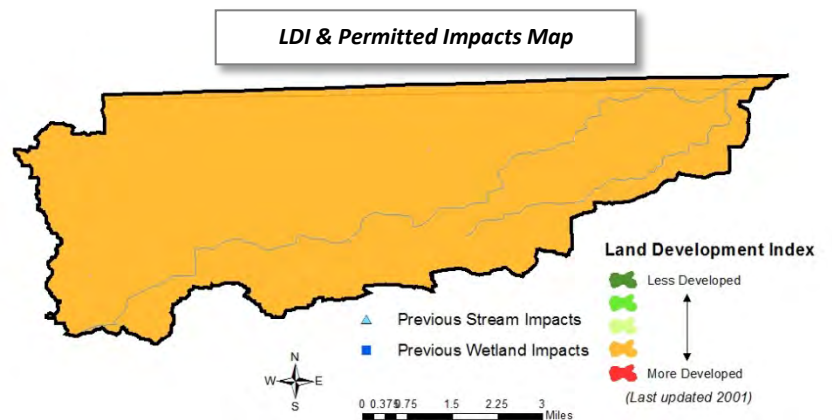
- Counties: Fulton
- Waterbodies
 - Total open water: 0 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - Wetlands: 406 acres
 - Named Streams: 18 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), rayed bean (E), bald eagle (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Huron/Erie Lake Plains (57a)
 - Oak Openings (57b)

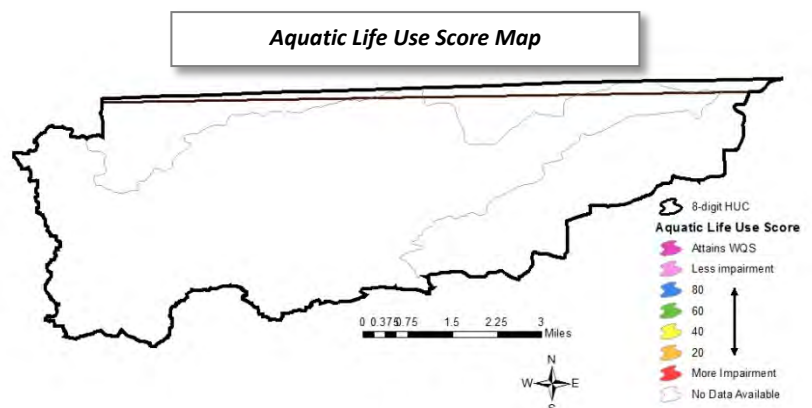


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows significant impact across the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Despite this, the watershed has had few permitted impacts to both the streams and wetlands. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 0 linear feet. And the average annual wetland mitigation (2004-2012) has been: 0 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that



are meeting biological expectations and the designated aquatic life use. The above map shows that there is no data for this watershed; however, the River Raisin Watershed Plan (2009) identified sources of water quality threats and impacts including: direct habitat alterations, nutrients, flow alteration, sedimentation, and siltation.

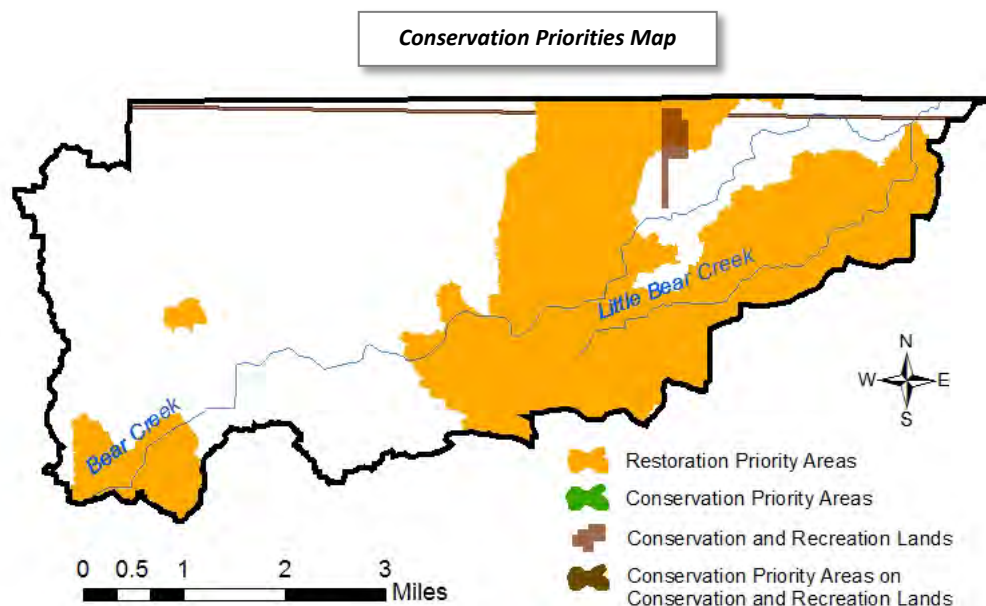
Aquatic Resource Goals

A Watershed Action Plan has been developed for the Raisin River watershed by the River Raisin Watershed Council (2009). Goals for this Watershed Action Plan that the TNC In-Lieu Fee Program might support include:

- Reduce sediment loading and sedimentation
- Improve aquatic life habitat
- Improve and increase riparian habitat
- Maintain water quality standards in all unimpaired stream segments
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were searched using the criteria presented in Element 6 of the CPF. No priority areas were identified. The results are shown in the map below.

Additionally, the State of Ohio has developed various standards and designations that identify priority waterways including cold water habitat, exceptional warmwater habitat, superior state waters and outstanding state waters. No streams in this primary service area have been designated in such a way.



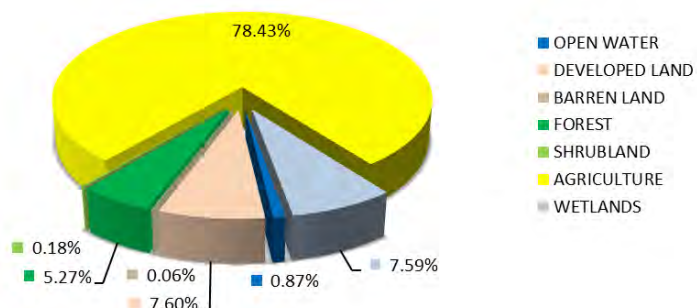
Service Area 3

St. Joseph River HUC 04100003

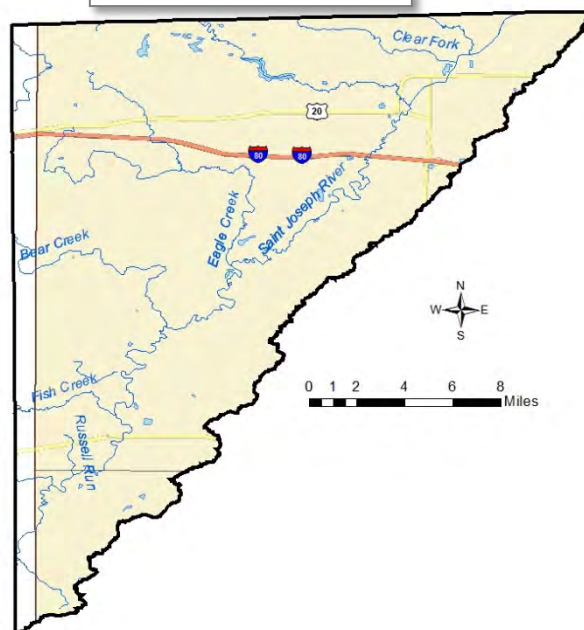
Watershed Characteristics



- 8-digit HUC size: 238 miles²
- 2-digit HUC: Lake Erie
- 6-digit HUC: Western Lake Erie
- Number of 12-digit HUCs: 27
- Corps district: Buffalo
- Approximate 2010 population: 15,700
- Land Uses:

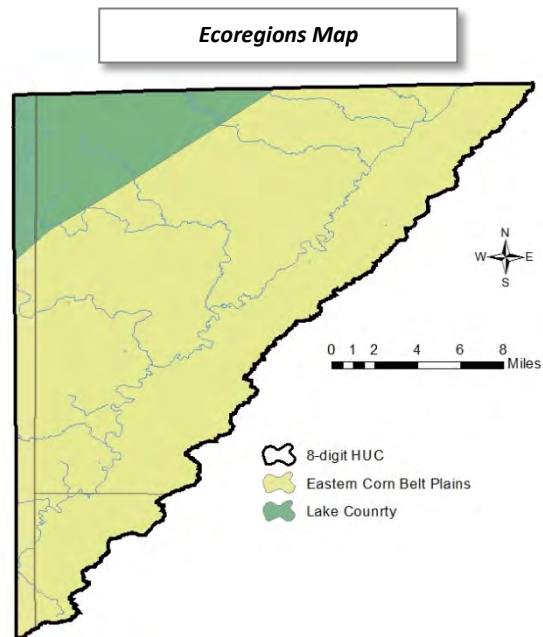


Geographic Overview Map



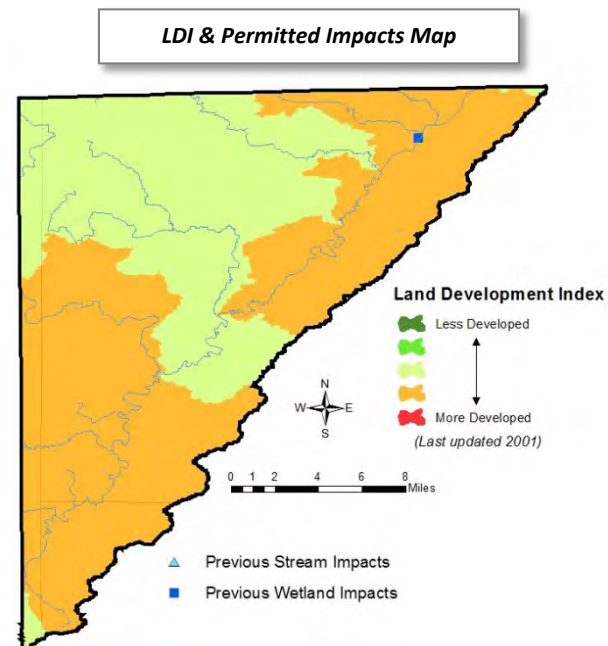
- Counties: Williams, Defiance
- Waterbodies
 - Total open water: 1.3 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - Wetlands: 11,670 acres
 - Named Streams: 142 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), clubshell (E), northern riffleshell (E), white cat's paw pearly mussel (E), rayed bean (E), copperbelly water snake (T), bald eagle (SC), rabbitsfoot (PT/PCH),

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Eastern Corn Belt Plains (55a)
 - Lake Country (56a)

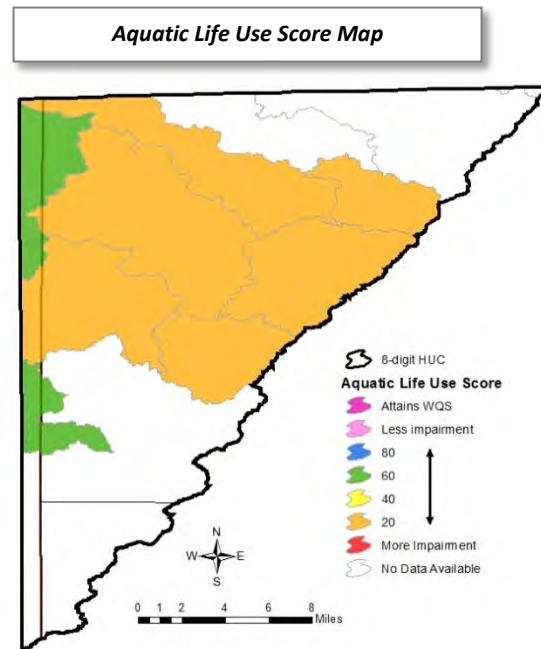


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows significant impact across the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Despite this, the watershed has had few permitted impacts to both the streams and wetlands. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 0 linear feet. And the average annual wetland mitigation (2004-2012) has been: 3 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and several OEPA Biological and Water Quality Reports [St. Joseph River and Selected Tributaries (1993), Fish Creek (2002) & (1997) & (1994)] have identified sources of water quality threats and impacts including: direct habitat alterations, nutrients, flow alteration, metals, organic enrichment, sedimentation, and siltation.

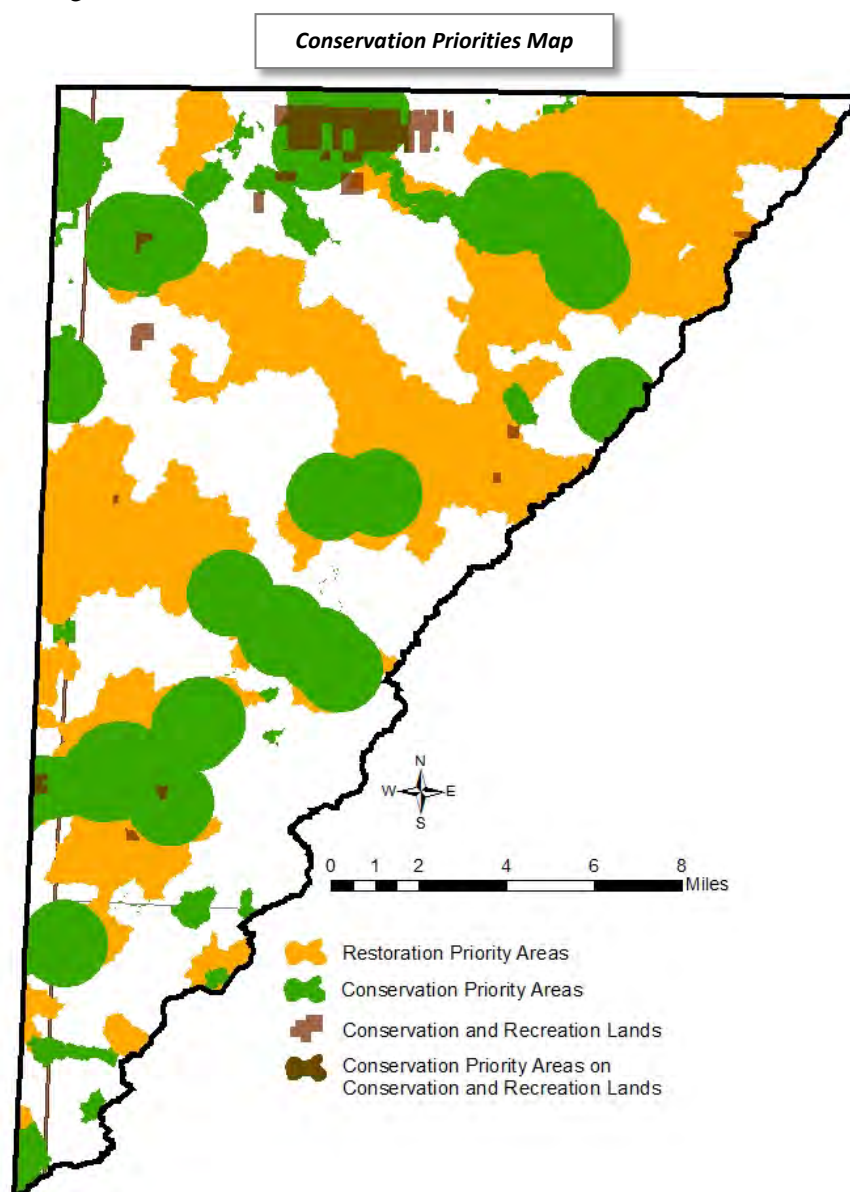


Aquatic Resource Goals

The Saint Joseph Watershed Initiative: Watershed Management Plan identified some goals that the TNC In-Lieu Fee Program might support including:

- Reduce sediment loading
- Reduce total suspended solids
- Remove livestock from stream areas
- Improve and restore in-stream physical habitat
- Improve and increase riparian habitat
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

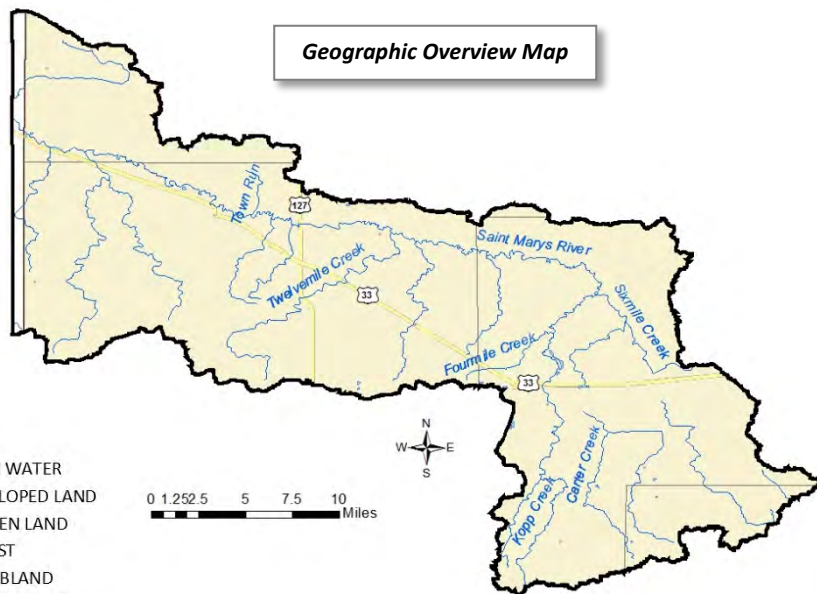
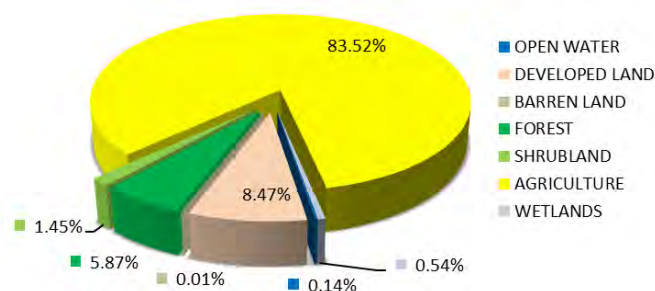
| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|------------------------------|--------------------|---|---|---|
| Fish Creek | | Indiana state line (RM 5.57) to the mouth | state line (RM 5.57) to co. rte. 3 (RM 2.4) | headwaters to the Indiana state line (RM 29.37) |
| West Branch St. Joseph River | | | | Michigan state line (RM 11.41) to the mouth |

Service Area 4

St. Mary's River HUC 04100004

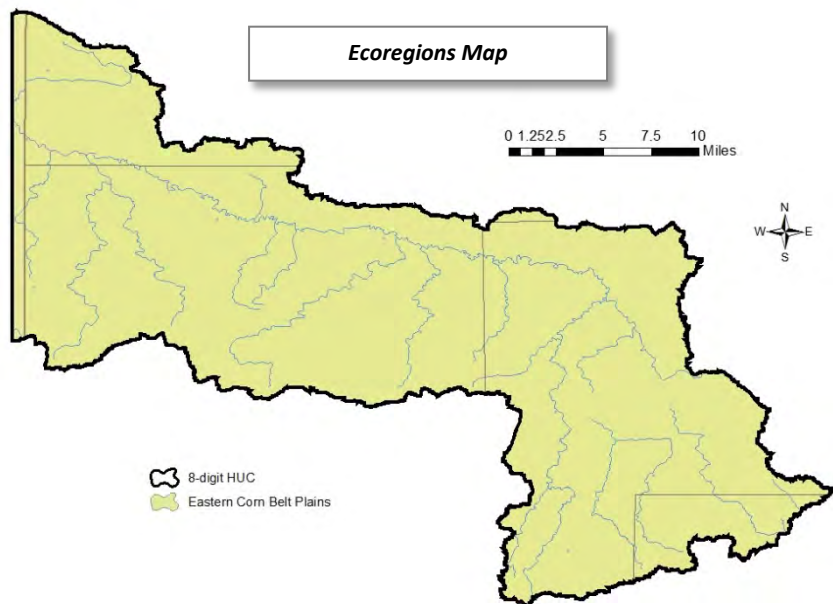
Watershed Characteristics

- 8-digit HUC size: 400 miles²
- 2-digit HUC: Lake Erie
- 6-digit HUC: Western Lake Erie
- Number of 12-digit HUCs: 22
- Corps district: Buffalo
- Approximate 2010 population: 33,450
- Land Uses:



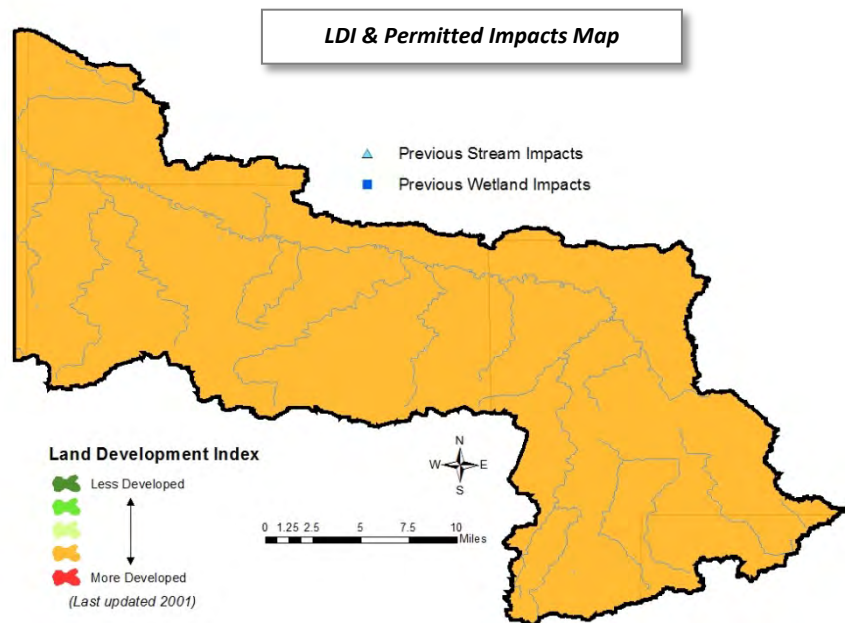
- Counties: Allen, Auglaize, Mercer, Shelby, Van Wert
- Waterbodies
 - Total open water: 0.25 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - Wetlands: 5,250 acres
 - Named Streams: 225 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), rayed bean (E), bald eagle (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Eastern Corn Belt Plains (55a)

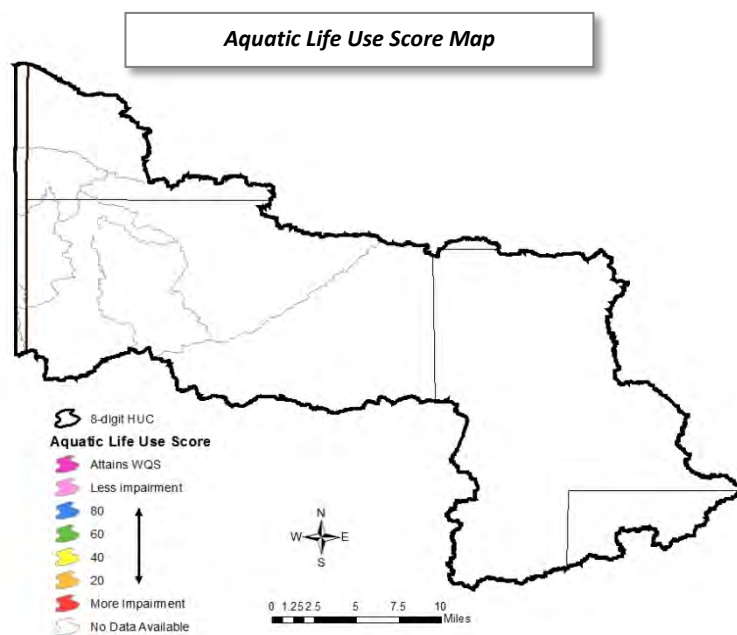


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows significant impact across the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. This watershed has had few permitted impacts to both the streams and wetlands. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 0 linear feet. And the average annual wetland mitigation (2004-2012) has been: 0 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use. The adjacent map shows that there is no data for this watershed; however, an OEPA Biological and Water Quality Report [St. Mary's River (1992)], and the St. Mary's Watershed Management Plan (2009) have identified sources of water quality threats and impacts including: direct habitat alterations, nutrients, flow alteration, metals, organic enrichment, sedimentation, and siltation.

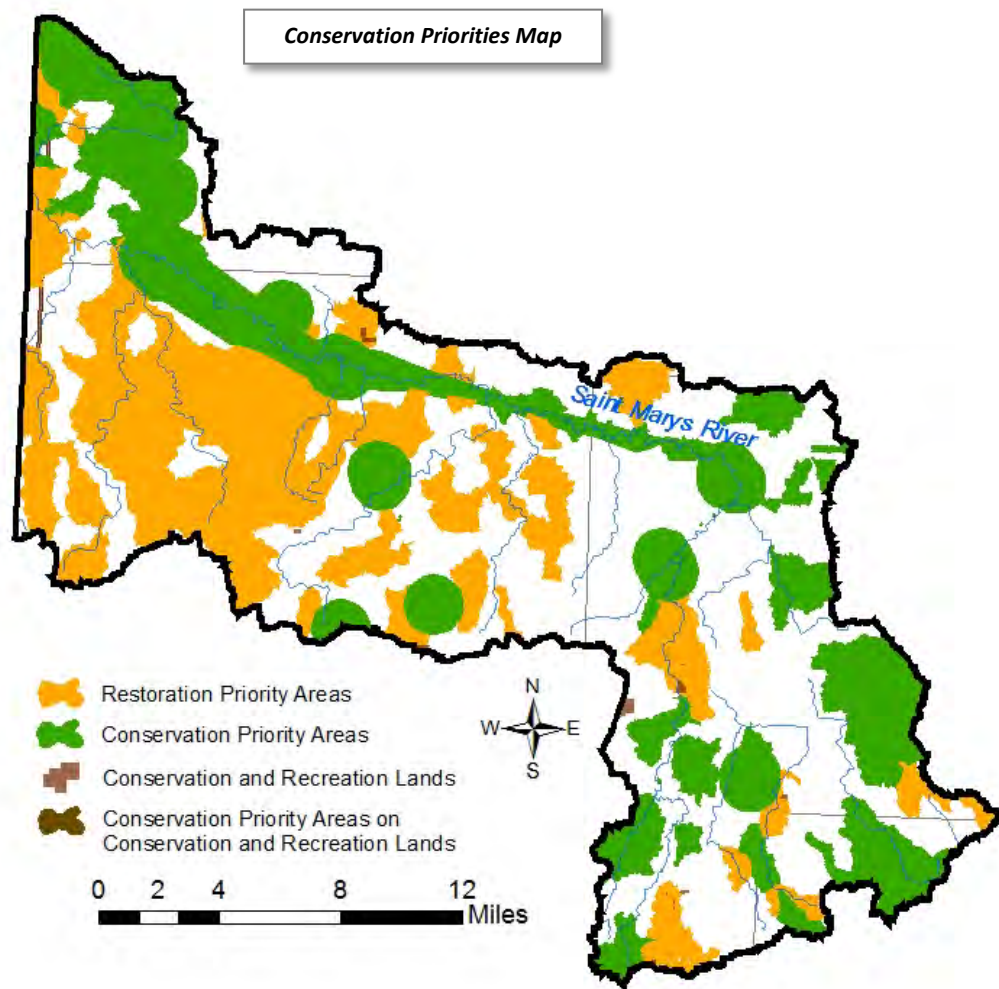


Aquatic Resource Goals

The St. Mary's River Watershed Management Plan (2009) identified several goals that the TNC In-Lieu Fee Program might support including:

- Reduce sediment loading
- Reduce stream bank erosion and destabilization
- Reduce the level of pathogens from livestock operations
- Restore wetlands that remove sediment
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



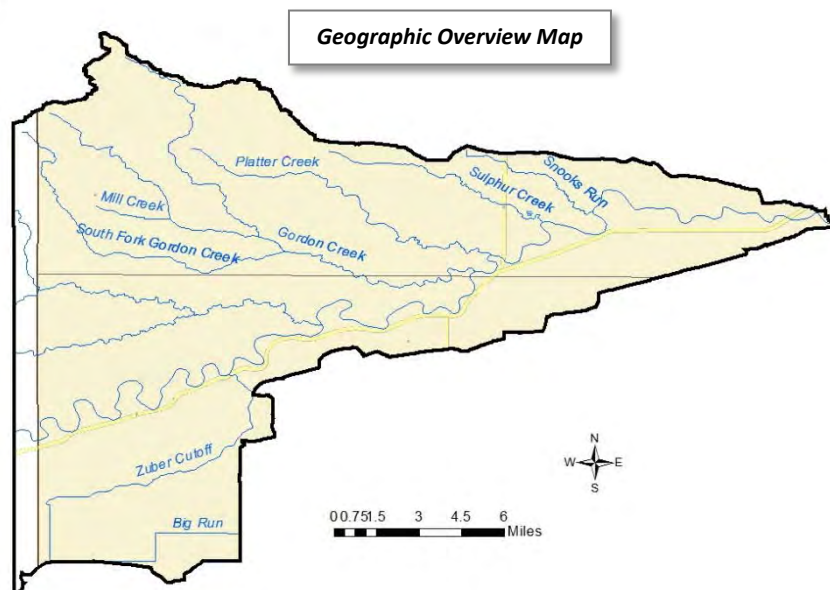
The State of Ohio has developed various standards and designations that identify priority waterways including cold water habitat, exceptional warmwater habitat, superior state waters and outstanding state waters. No streams in this primary service area have been designated in such a way.

Service Area 5

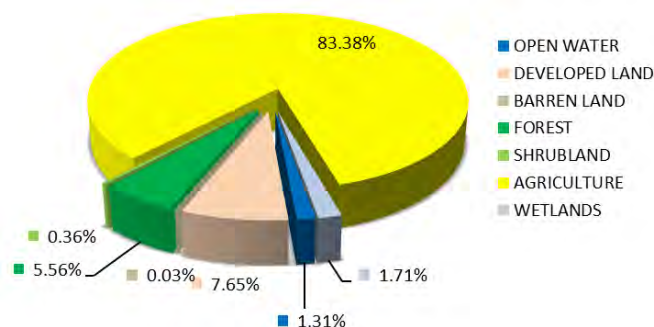
Upper Maumee River HUC 04100005

Watershed Characteristics

- 8-digit HUC size: 190 miles²
- 2-digit HUC: Lake Erie
- 6-digit HUC: Western Lake Erie
- Number of 12-digit HUCs: 12
- Corps district: Buffalo
- Approximate 2010 population: 13,200

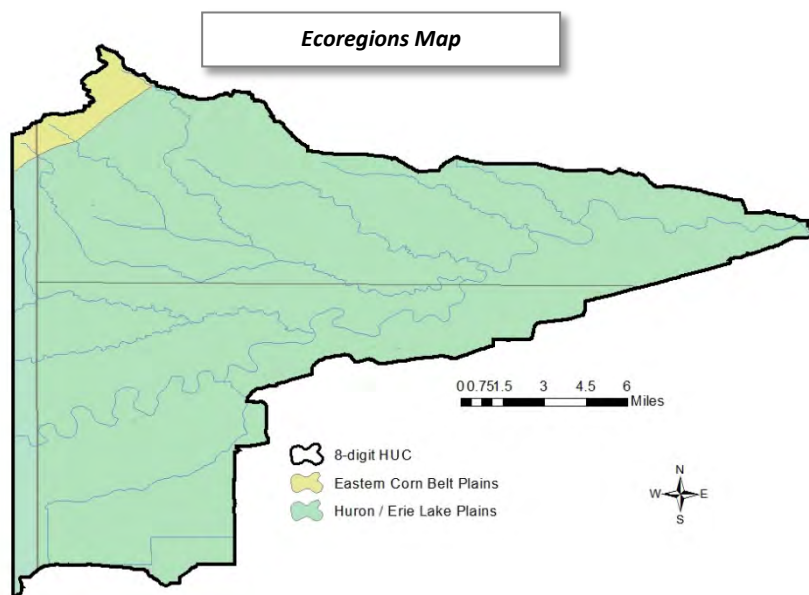


- Land Uses:



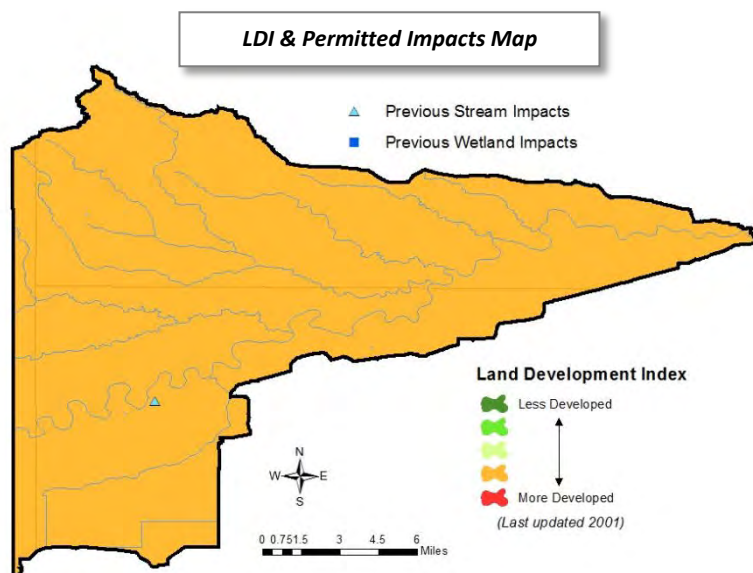
- Counties: Defiance, Paulding
- Waterbodies
 - Total open water: 0.013 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - Wetlands: 1,900 acres
 - Named Streams: 150 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), clubshell (E), northern riffleshell (E), white cat's paw pearly mussel (E), rayed bean (E), copperbelly water snake (T), bald eagle (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Eastern Corn Belt Plains (55a)
 - Huron / Erie Lake Plains (57a, 57c)

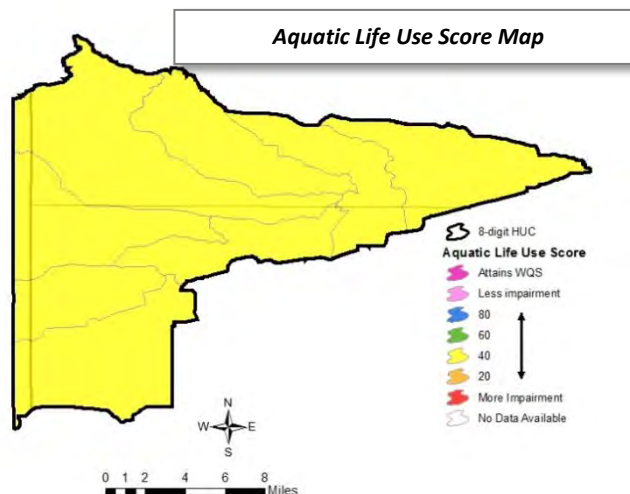


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows significant impact across the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Despite this, there have been relatively few permitted impacts. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 1700 linear feet. This average is elevated based on the greater than 11,000 feet of stream mitigation required in 2006, there was little to no mitigation in the subsequent years. The average annual wetland mitigation (2004-2012) has been: 5 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and the Upper Maumee Watershed Assessment (2009) identified sources of water quality threats and impacts including: direct habitat alterations, nutrients, flow alteration, sedimentation, total toxics, turbidity, and siltation. Sources of impairment include urban impacts such as: channelization, streambank destabilization, CSOs, and wastewater discharges.

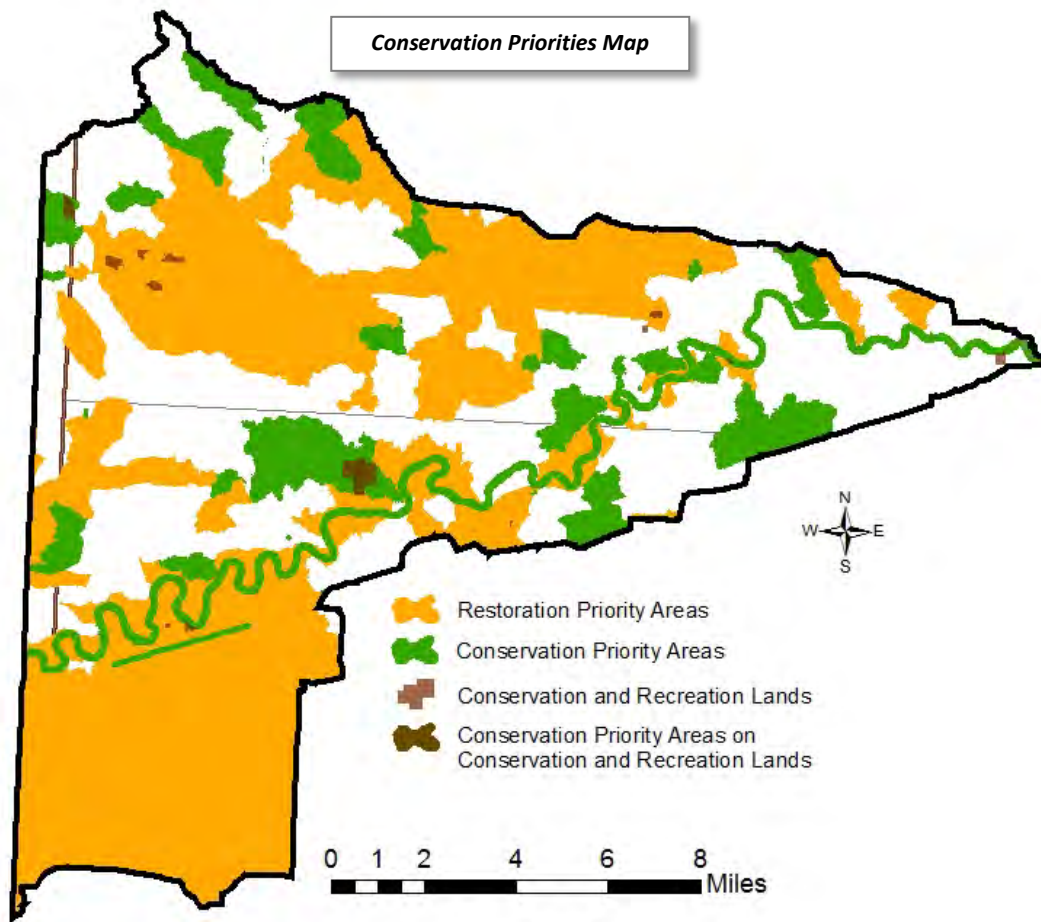


Aquatic Resource Goals

The Upper Maumee Watershed Assessment (2009) identified priority potential actions, of which the following could be supported by the TNC In-Lieu Fee Program:

- Reduce sediment loading
- Improve aquatic life habitat
- Restore and stabilize stream banks
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



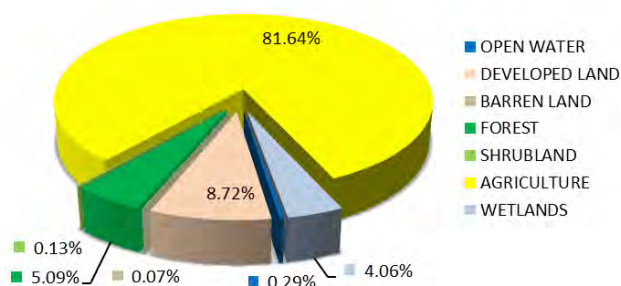
Additionally, the State of Ohio has developed various standards and designations that identify priority waterways including cold water habitat, exceptional warmwater habitat, superior state waters and outstanding state waters. No streams in this primary service area have been designated in such a way.

Service Area 6**Tiffin****HUC 04100006****Watershed Characteristics**

- 8-digit HUC size: 558 miles²
 - 2-digit HUC: Lake Erie
 - 6-digit HUC: Western Lake Erie
 - Number of 12-digit HUCs: 20
 - Corps district: Buffalo
- Approximate 2010 population:
43,300

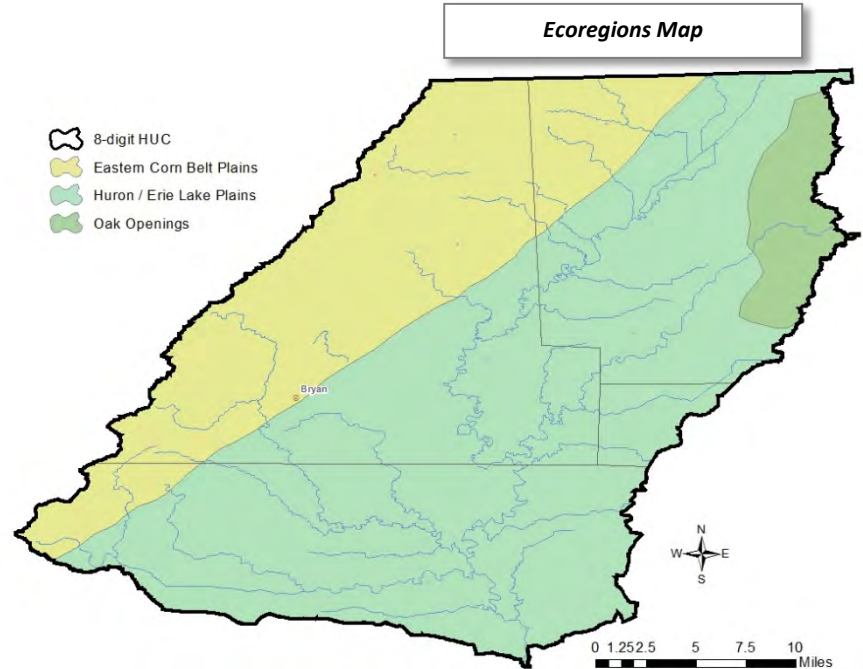
**Geographic Overview Map**

- Land Uses:



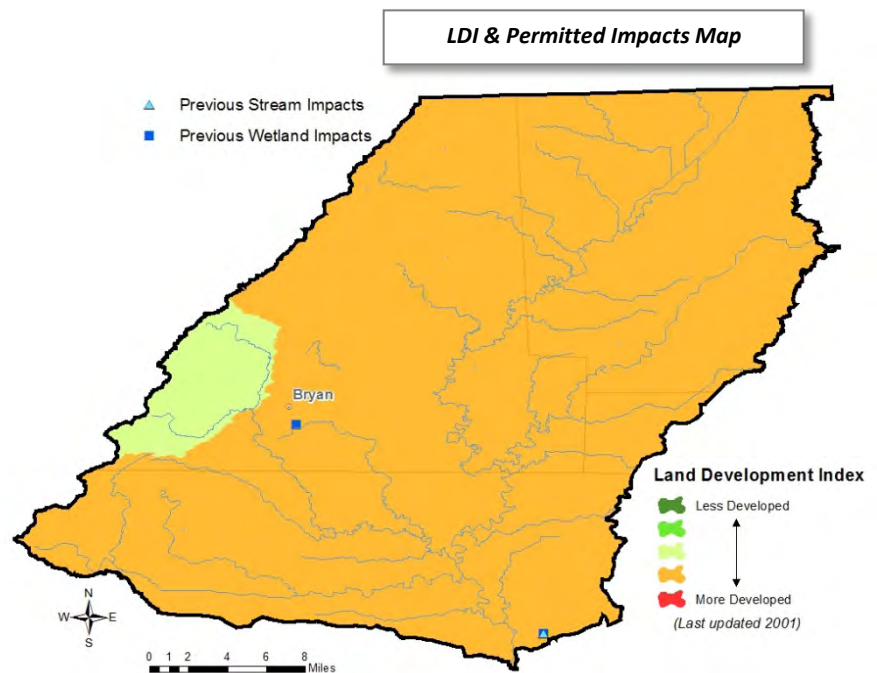
- Counties: Defiance, Fulton, Henry, Williams
- Waterbodies
 - Total open water: 0.59 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - Wetlands: 8,162 acres
 - Named Streams: 317 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), clubshell (E), northern riffleshell (E), white cat's paw pearly mussel (E), rayed bean (E), rabbitsfoot (PT/PCH), copperbelly water snake (T), bald eagle (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Eastern Corn Belt Plains (55a),
 - Huron / Erie Lake Plains (57a, 57c),
 - Oak Openings (57b)



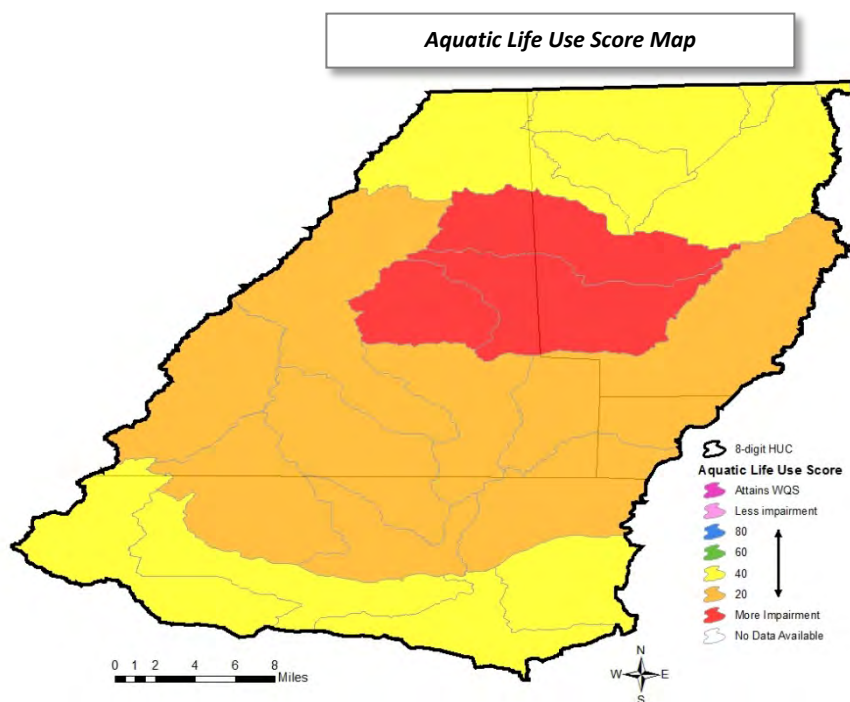
Threats and Impacts

The Landscape Development Index (LDI) for the service area shows significant impact across the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 514 linear feet. And the average annual wetland mitigation (2004-2012) has been: 3 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and an OEPA Biological and a Water Quality Report [Tiffin River and Selected Tributaries (1993)] have identified sources of water quality threats and impacts including:

direct habitat alterations, flow modification, nutrients, organic enrichment, and siltation. Sources of impairment include: channelization, CSOs, CFOs, urban runoff/storm sewers, major municipal point source, major industrial point source, and agriculture.

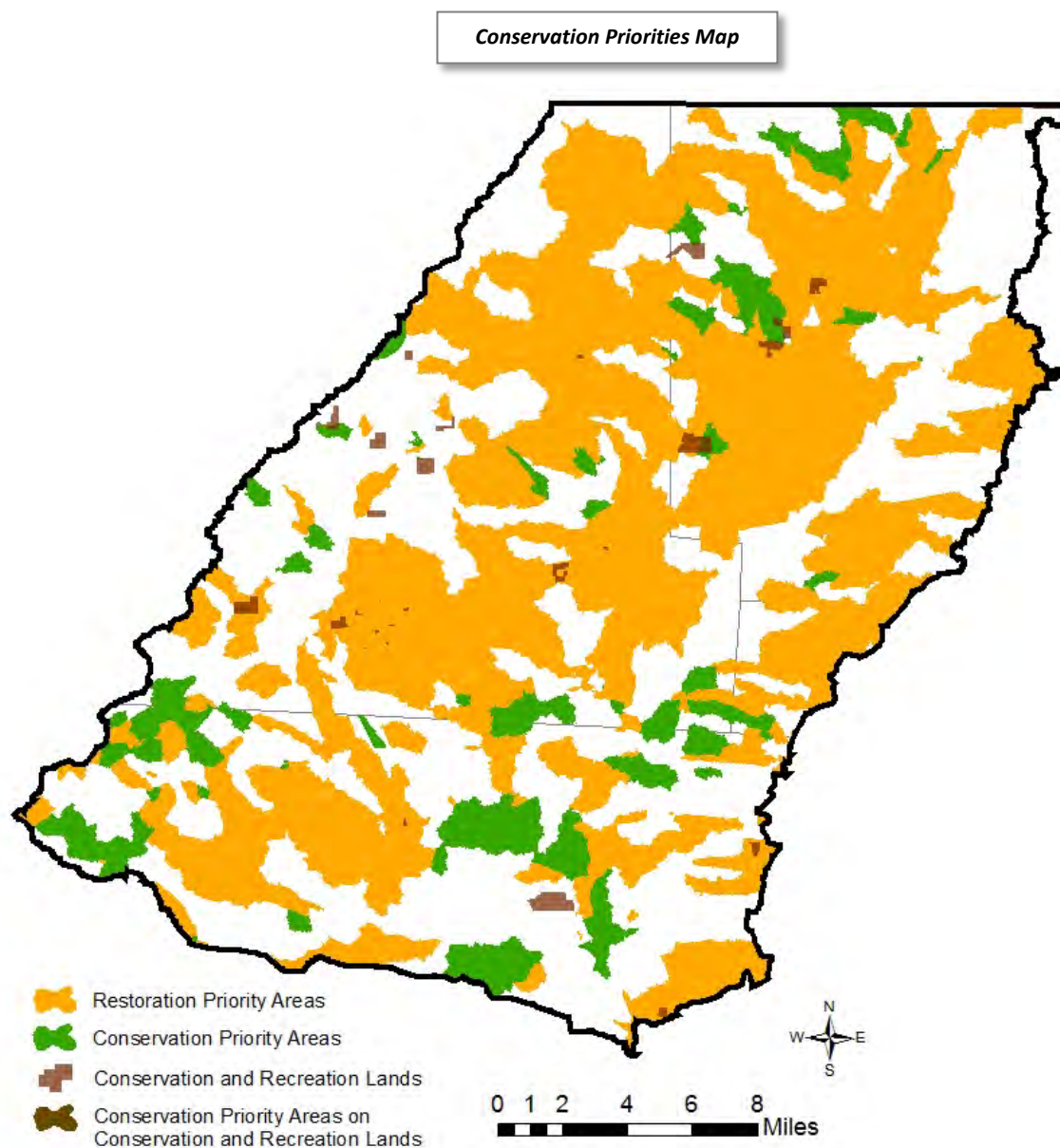


Aquatic Resource Goals

No watershed action plan has been prepared for the Tiffin watershed; however, it is possible to establish goals that would have a positive effect on the above sources of impairment. The goals that the TNC In-Lieu Fee Program might support include:

- Reduce sediment loading
- Reduce total suspended solids
- Improve and restore in-stream physical habitat
- Improve aquatic life habitat
- Improve and increase riparian habitat
- Preserve and protect riparian corridors and highly erodible land
- Educate the local community regarding water quality enhancement

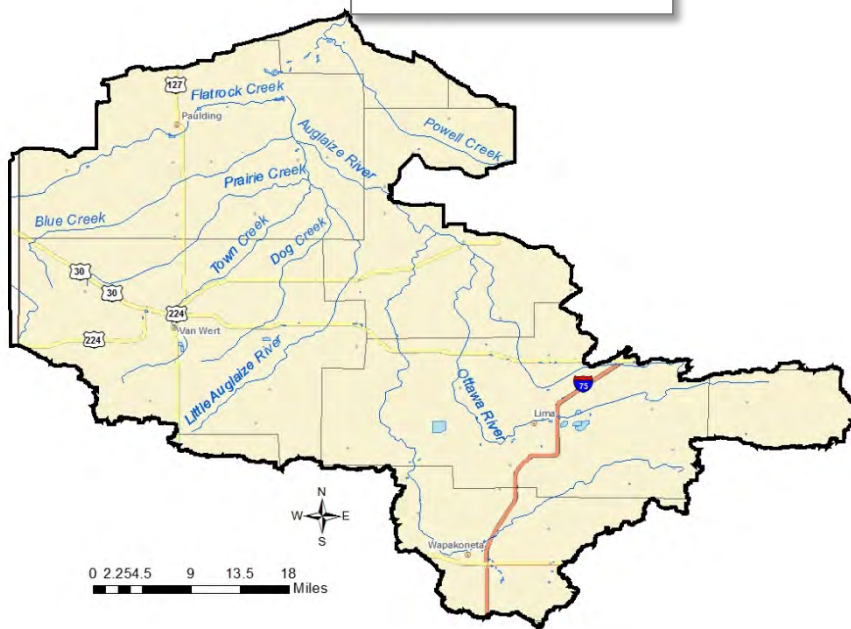
Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



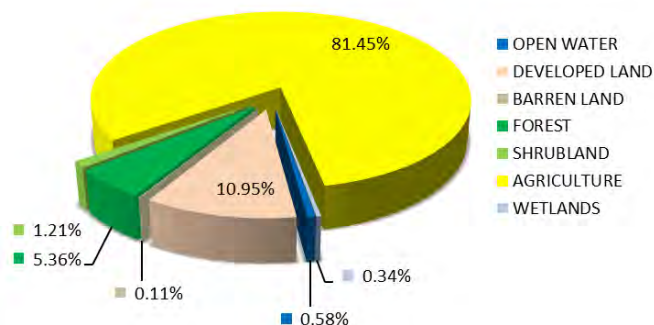
Additionally, the State of Ohio has developed various standards and designations that identify priority waterways including cold water habitat, exceptional warmwater habitat, superior state waters and outstanding state waters. No streams in this primary service area have been designated in such a way.

Service Area 7**Auglaize River
HUC 04100007****Watershed Characteristic**

- 8-digit HUC size: 1565 miles²
- 2-digit HUC: Lake Erie
- 6-digit HUC: Western Lake Erie
- Number of 12-digit HUCs: 59
- Corps district: Buffalo
- Approximate 2010 population: 196,600

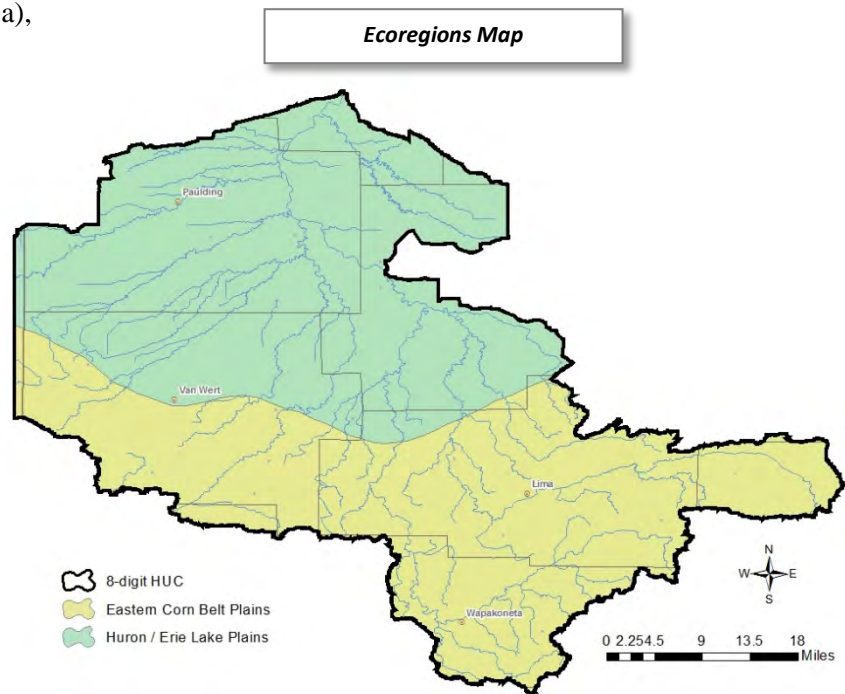
**Geographic Overview Map**

- Land Uses:



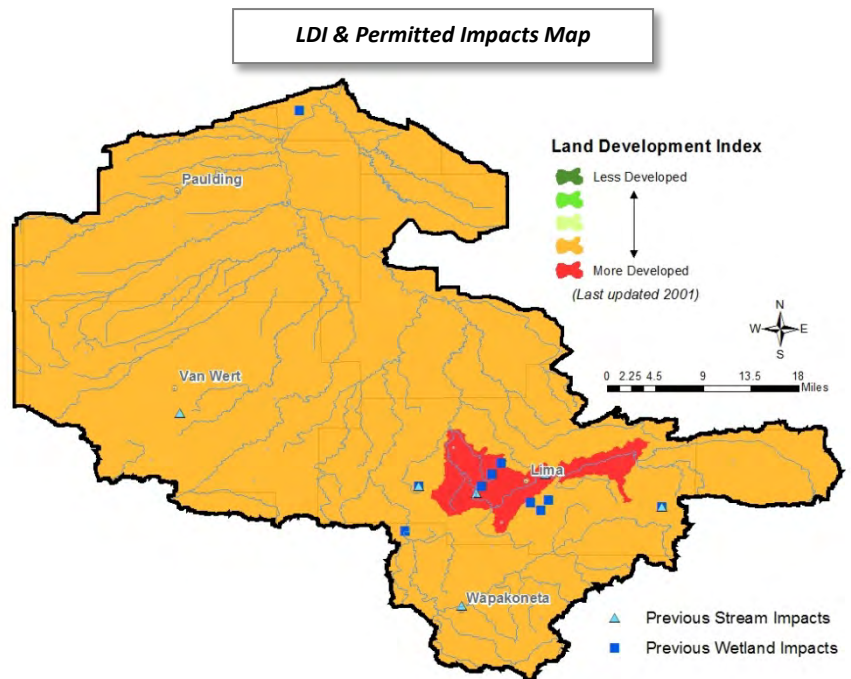
- Counties: Allen, Auglaize, Defiance, Hancock, Hardin, Henry, Mercer, Paulding, Putnam, Shelby, Van Wert
- Waterbodies
 - Total open water: 3.57 miles²
 - Number of waterbodies over 0.5 miles² in size: 1
 - Wetlands: 10,417 acres
 - Named Streams: 858 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), clubshell (E), northern riffleshell (E), white cat's paw pearly mussel (E), rayed bean (E), copperbelly water snake (T), eastern massasauga (C), bald eagle (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Eastern Corn Belt Plains (55a),
 - Huron/Erie Lake Plains (57a, 57c)

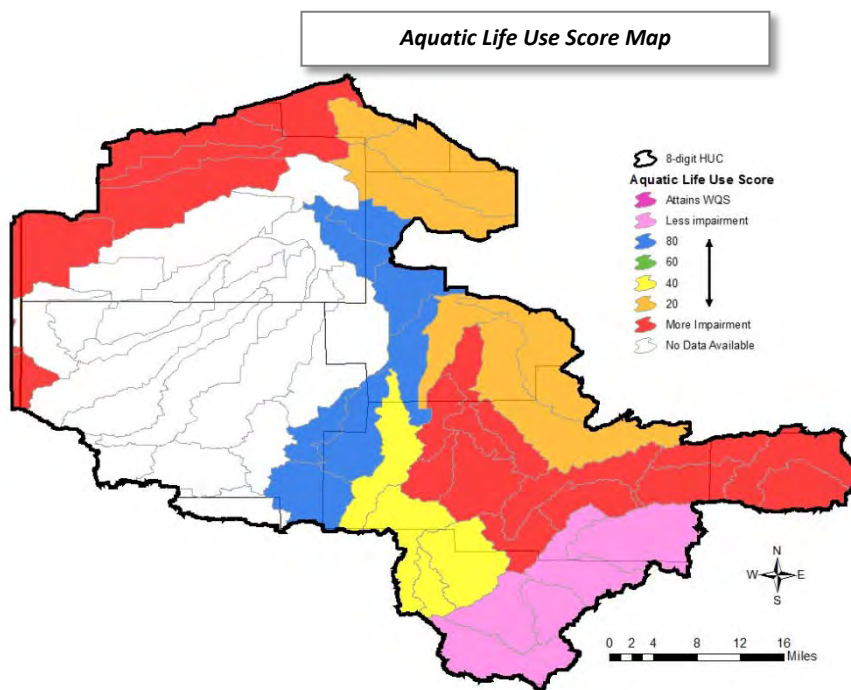


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows significant impact across the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 1,674 linear feet. And the average annual wetland mitigation (2004-2012) has been: 6 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and an OEPA Biological and a Water Quality Report [Auglaize River and Selected Tributaries (1992)] have identified sources of water quality threats and impacts including: direct habitat enrichment, nutrients, flow modifications, organic enrichment, and siltation.

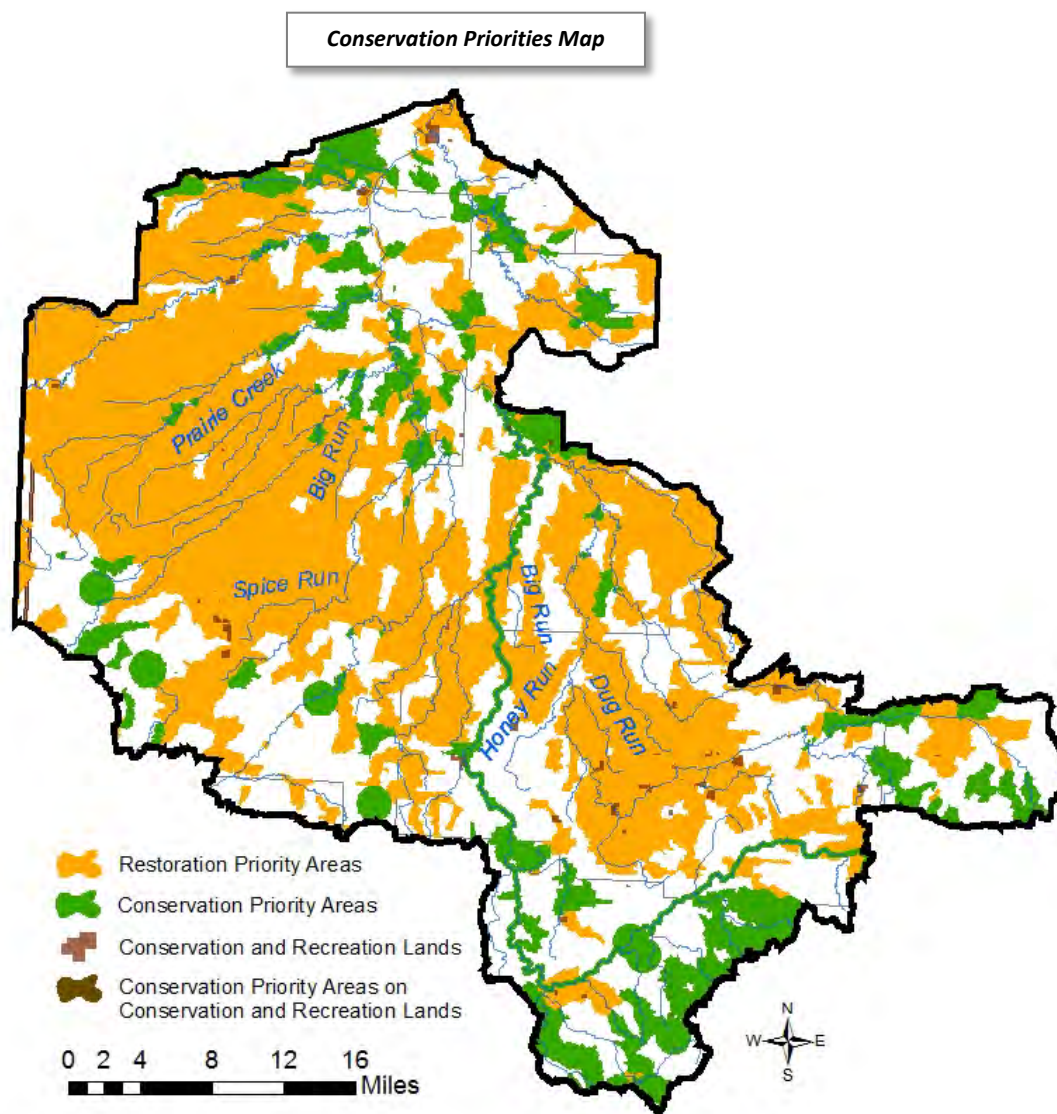


Aquatic Resource Goals

No watershed action plan has been prepared for the Auglaize watershed; however, it is possible to establish goals that would have a positive effect on the above sources of impairment. The goals that the TNC In-Lieu Fee Program might support include:

- Reduce sediment loading
- Reduce total suspended solids
- Improve and restore in-stream physical habitat
- Improve aquatic life habitat
- Improve and increase riparian habitat
- Preserve and protect riparian corridors and highly erodible land
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



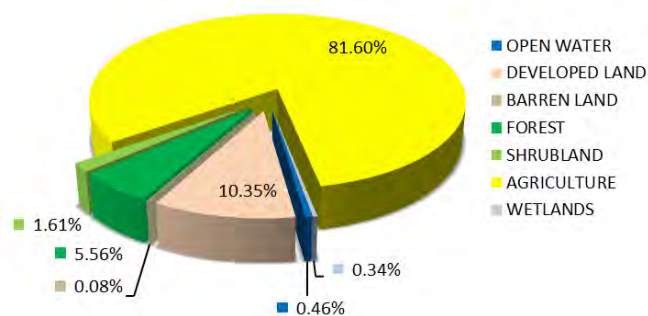
Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. While the Auglaize primary service area does not contain many of these designated priority waterways, the Auglaize River is a Superior State Water.

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|----------------|--------------------|--------------------------|-------------------------------|---|
| Auglaize River | | | | Kelly Rd. (RM 77.32) to Jennings Creek (RM 47.02) |

Service Area 8**Blanchard River
HUC 04100008****Watershed Characteristi****Geographic Overview Map**

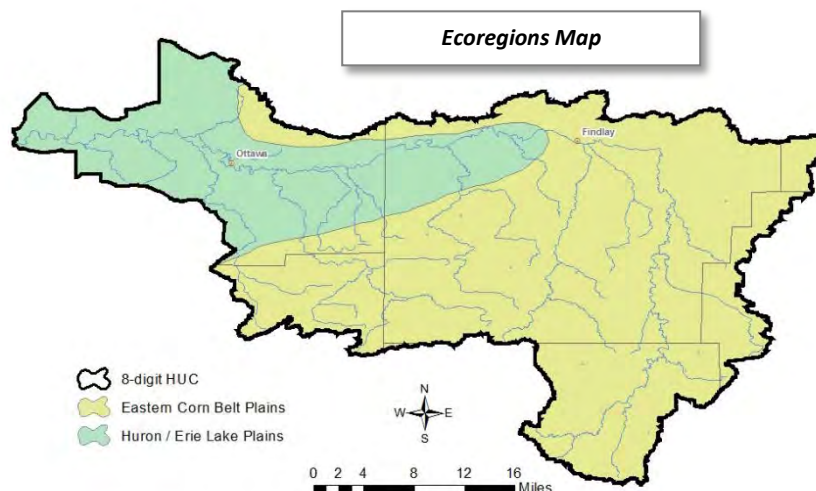
- 8-digit HUC size: 772.4 miles²
- 2-digit HUC: Lake Erie
- 6-digit HUC: Western Lake Erie
- Number of 12-digit HUCs: 30
- Corps district: Buffalo
- Approximate 2010 population: 94,800

- Land Uses:



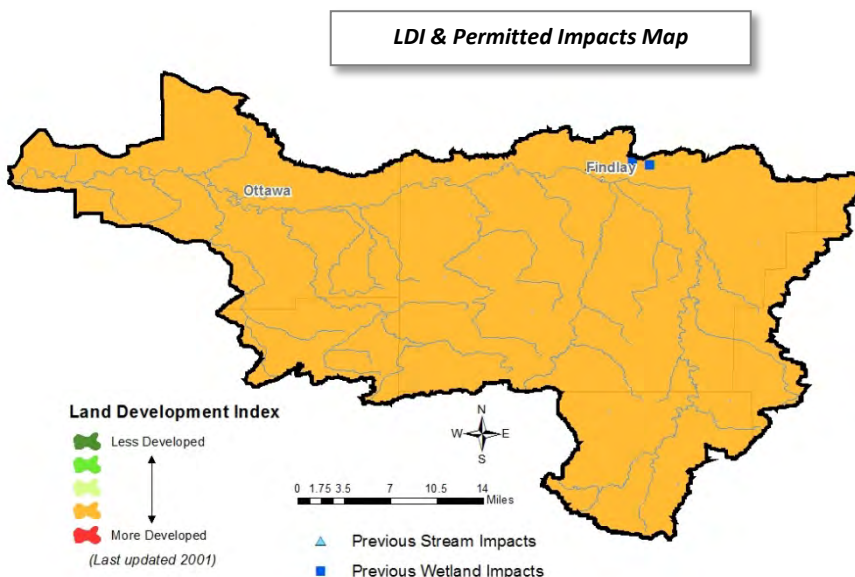
- Counties: Allen, Hancock, Hardin, Putnam, Seneca, Wyandot
- Waterbodies
 - Total open water: 1.9 miles²
 - Number of waterbodies over 0.5 miles² in size: 1
 - Wetlands: 5,671 acres
 - Named Streams: 375 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), clubshell (E), rayed bean (E), copperbelly water snake (T), eastern massasauga (C), bald eagle (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Eastern Corn Belt Plains (55a),
 - Huron / Erie Lake Plains (57a)



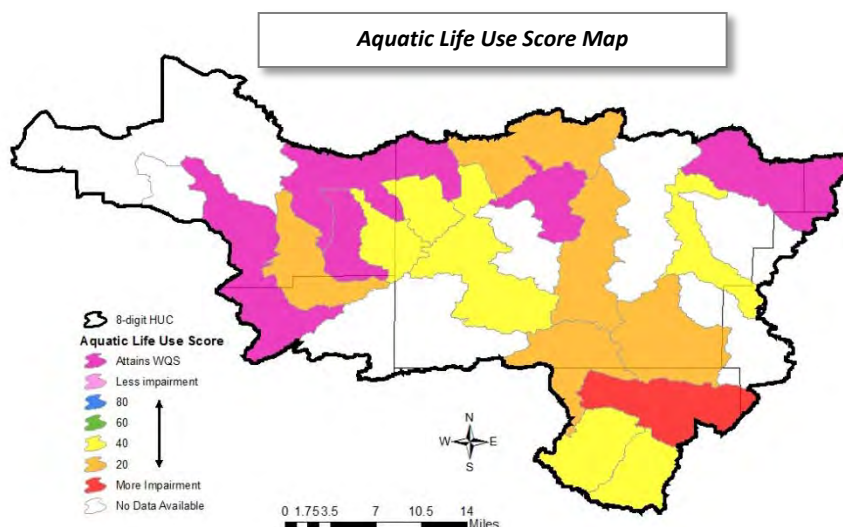
Threats and Impacts

The Landscape Development Index (LDI) for the service area shows significant impact across the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Despite this, there has been relatively little permitted impacts (see adjacent map). Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 0 linear feet. And the average annual wetland mitigation (2004-2012) has been: 0 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map).

The OEPA's 2012 Integrated Report and an OEPA Biological and a Water Quality Report [Blanchard River (2007)] have identified sources of water quality threats and impacts including: nutrients, metals, direct habitat alterations, channelization, flow alterations, organic enrichment, CSOs, streambank modifications/destabilization, sedimentation, and siltation.

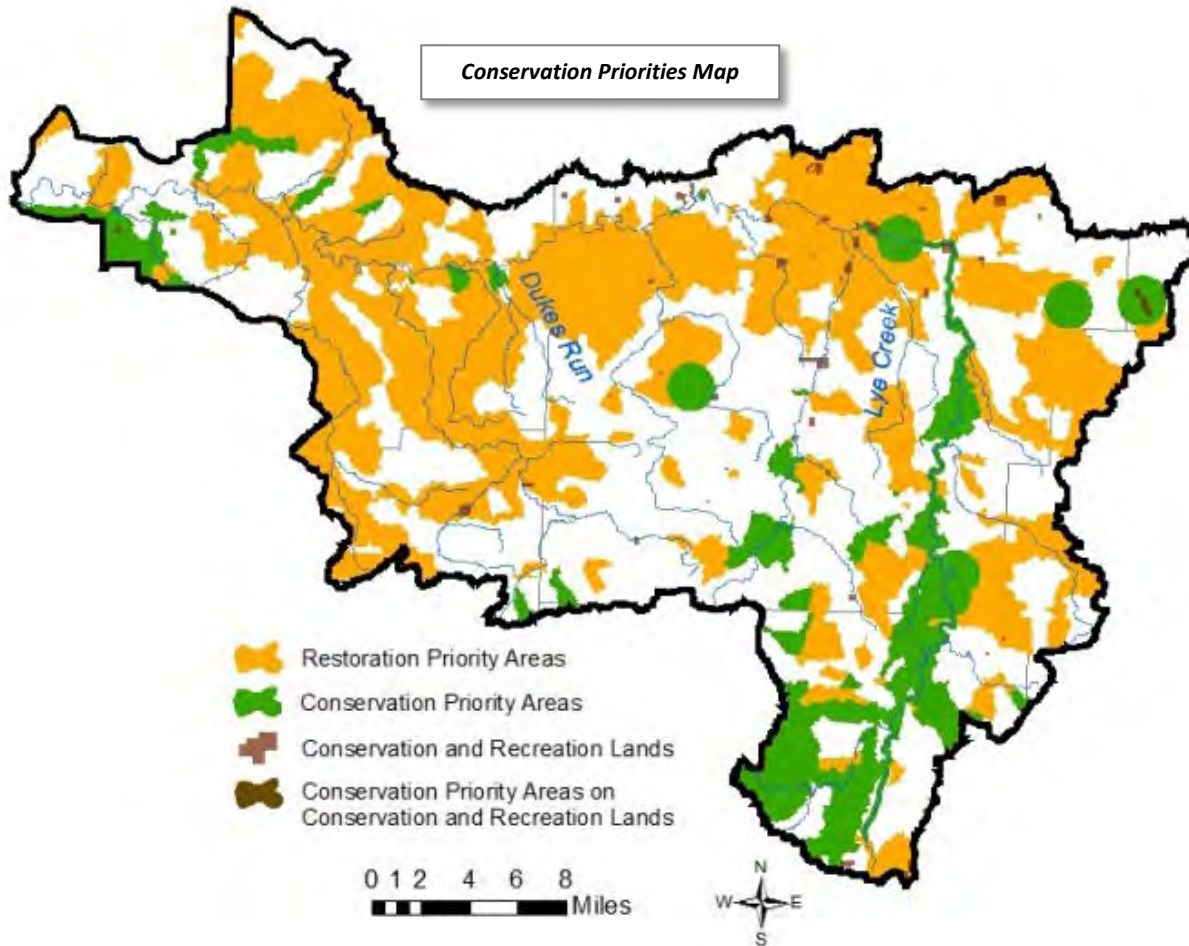


Aquatic Resource Goals

Two Watershed Action Plans (WAP) have been developed for subwatersheds within the Blanchard River primary service area. The Riley Creek WAP (2012) and the Outlet/Lye Creek WAP identify goals that might be supported by the In-Lieu Fee Program including:

- Reduce sediment loading
- Reduce total suspended solids
- Reduce the level of pathogens from livestock operations
- Improve aquatic life habitat
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Educate the local community regarding water quality enhancement

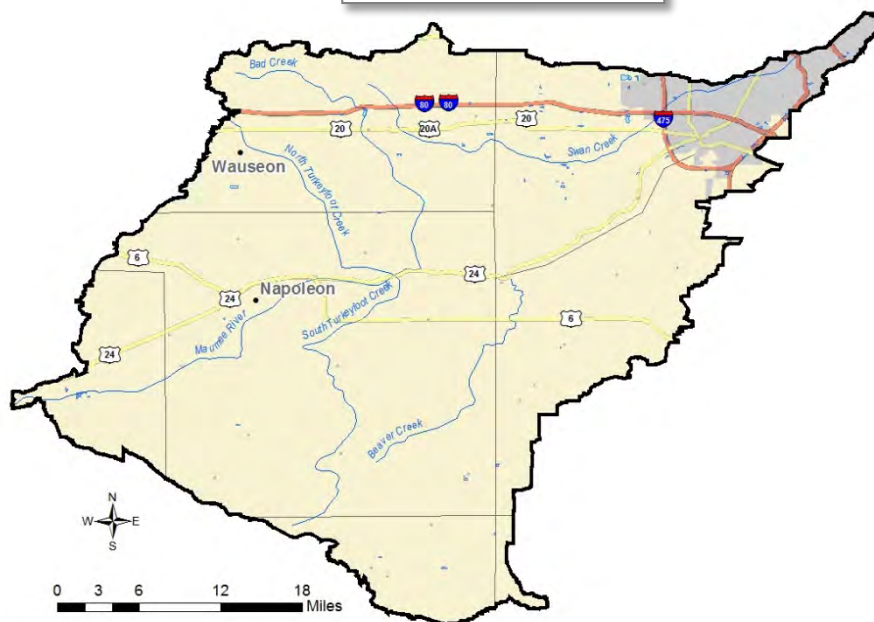
Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



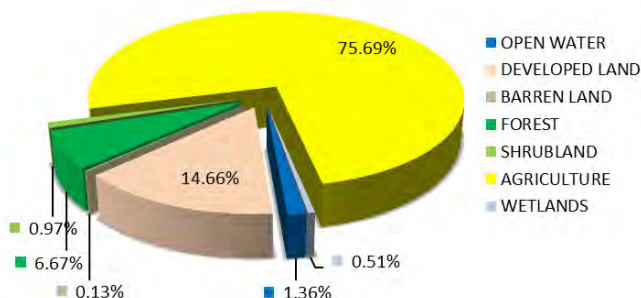
Additionally, the State of Ohio has developed various standards and designations that identify priority waterways including cold water habitat, exceptional warmwater habitat, superior state waters and outstanding state waters. No streams in this primary service area have been designated in such a way.

Service Area 9**Lower Maumee River
HUC 04100009****Watershed Characteristics**

- 8-digit HUC size: 1081 miles²
- 2-digit HUC: Lake Erie
- 6-digit HUC: Western Lake Erie
- Number of 12-digit HUCs: 42
- Corps district: Buffalo
- Approximate 2010 population: 280,800

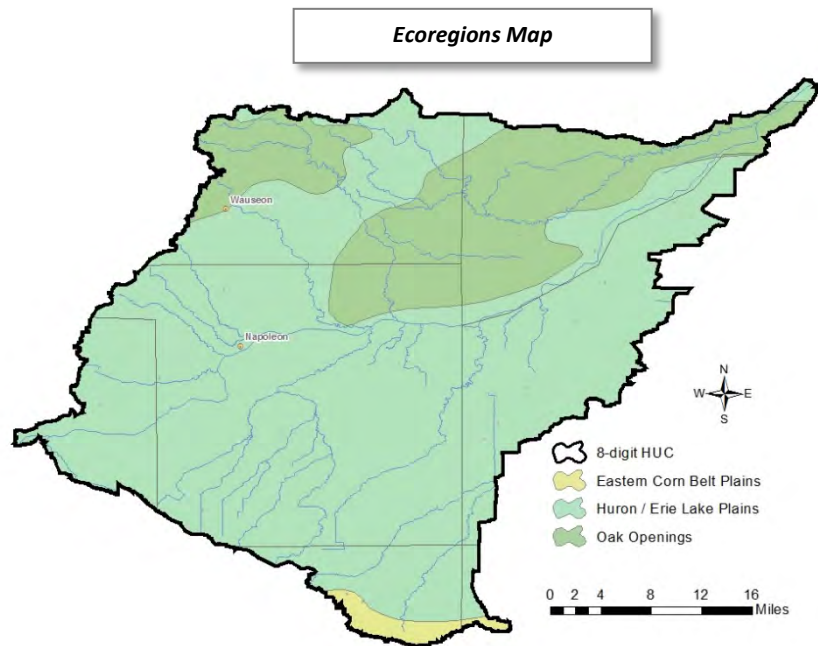
**Geographic Overview Map**

- Land Uses:



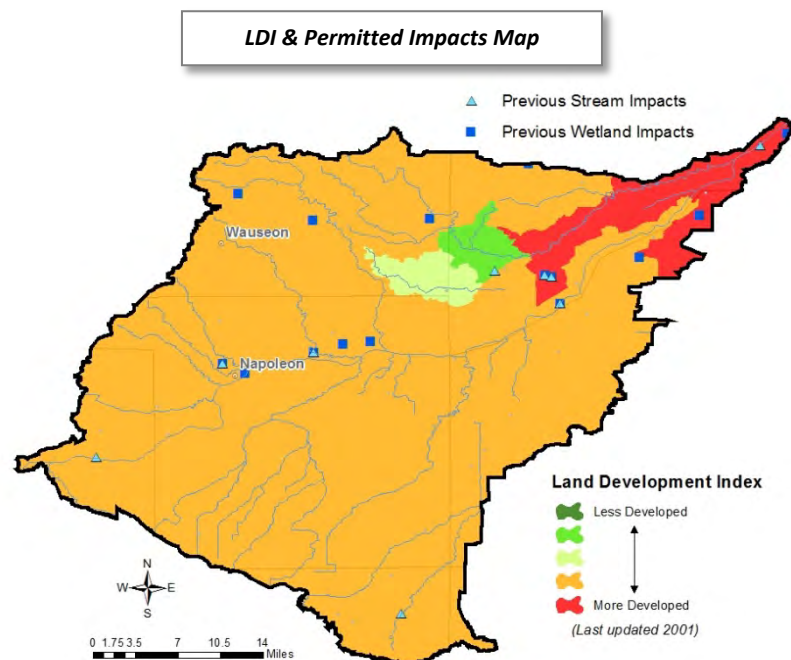
- Counties: Defiance, Fulton, Hancock, Henry, Lucas, Putnam, Wood
- Waterbodies
 - Total open water: 1.3 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - Wetlands: 10,223 acres
 - Named Streams: 462 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), clubshell (E), northern riffleshell (E), white cat's paw pearly mussel (E), rayed bean (E), Karner blue butterfly (E), Kirtland's warbler (E), piping plover (E), rayed bean (E), copperbelly water snake (T), eastern prairie fringed orchid (T), eastern massasauga (C), bald eagle (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Eastern Corn Belt Plains (55a),
 - Huron / Erie Lake Plains (57a),
 - Oak Openings (57b)

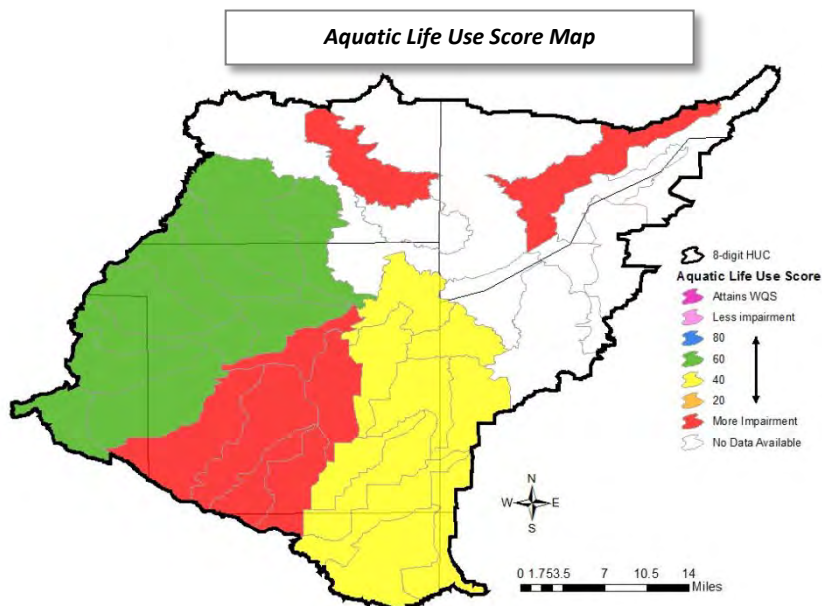


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows significant impact across the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters (see adjacent map). Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 3803 linear feet. And the average annual wetland mitigation (2004-2012) has been: 4 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and two OEPA Biological Water Quality Reports [Select Maumee River Tributaries (2010), Swan Creek and Selected Tributaries (2006)] have identified sources of water quality threats and impacts including: direct habitat alterations, nutrients, flow alteration, total toxics, organic enrichment, sedimentation, and siltation. Sources of impairment include: agriculture, channelization, CSOs, and wastewater discharges.

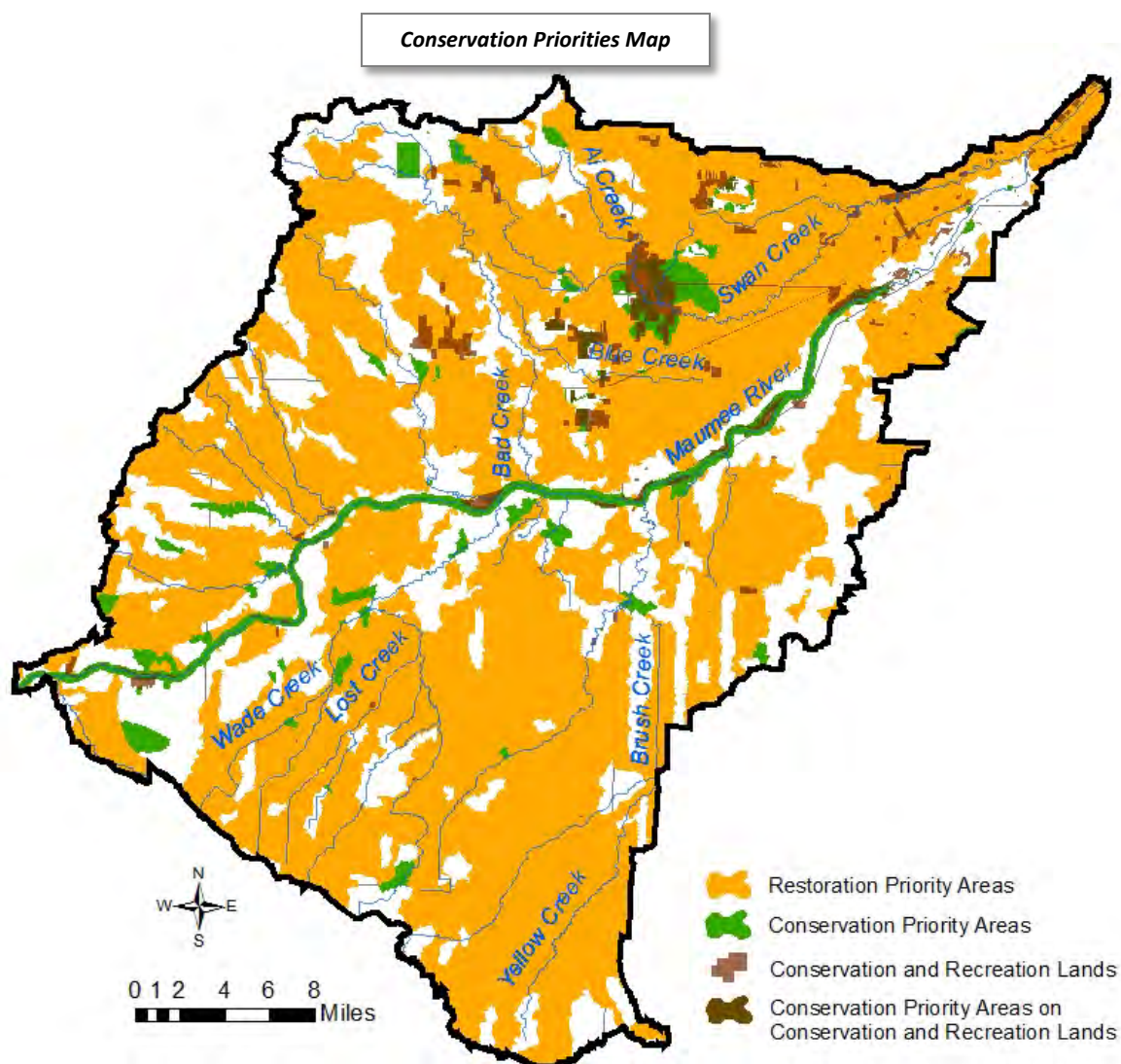


Aquatic Resource Goals

The Maumee Area of Concern Stage 2: Watershed Restoration Plan developed goals that might be supported by TNC's In-Lieu Fee Program including:

- Reduce sediment loading
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. The Maumee River is the only waterway in the primary service area that has been designated.

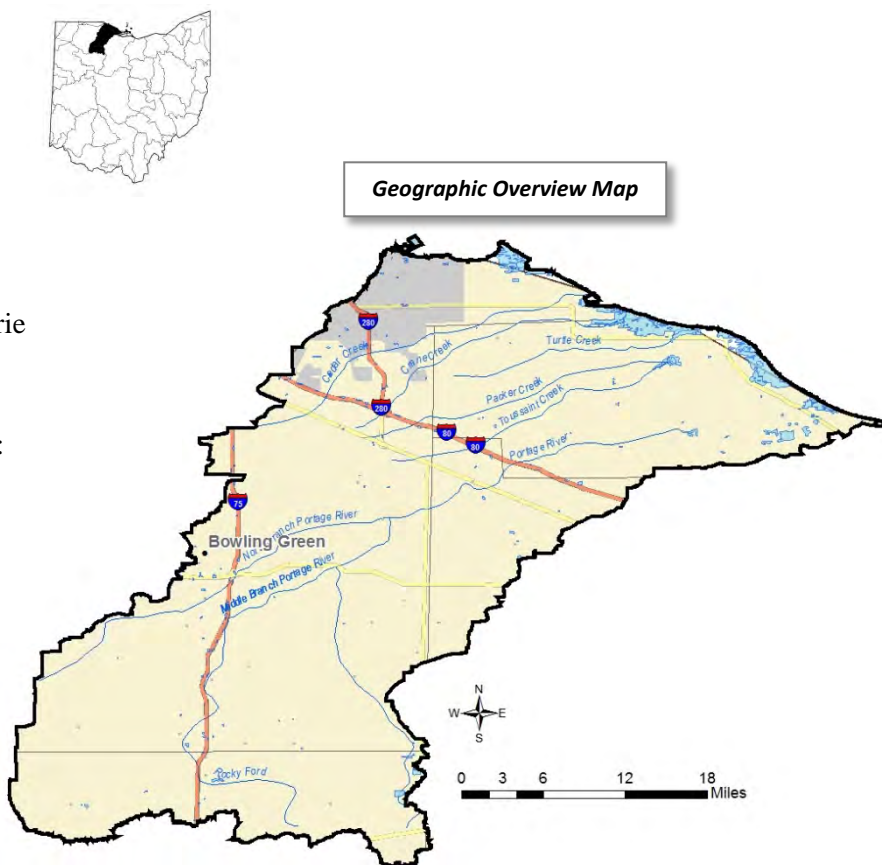
| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|--------------|--------------------|--|-------------------------------|-----------------------|
| Maumee River | | Indiana state line (RM 108.1) to the U.S. route 25 bridge (RM 15.05) | | |

Service Area 10

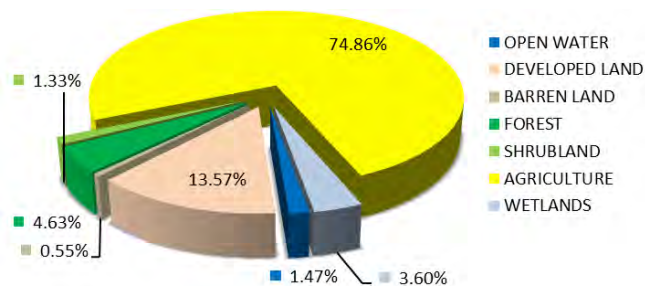
Cedar - Portage River HUC 04100010

Watershed Characteristics

- 8-digit HUC size: 968 miles²
 - 2-digit HUC: Lake Erie
 - 6-digit HUC: Western Lake Erie
 - Number of 12-digit HUCs: 32
 - Corps district: Buffalo
- Approximate 2010 population:
156,000

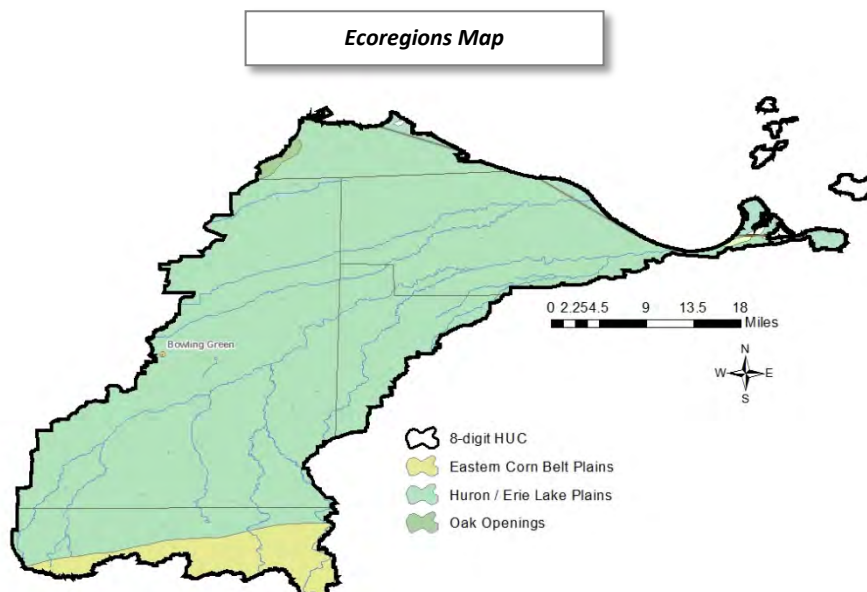


- Land Uses:



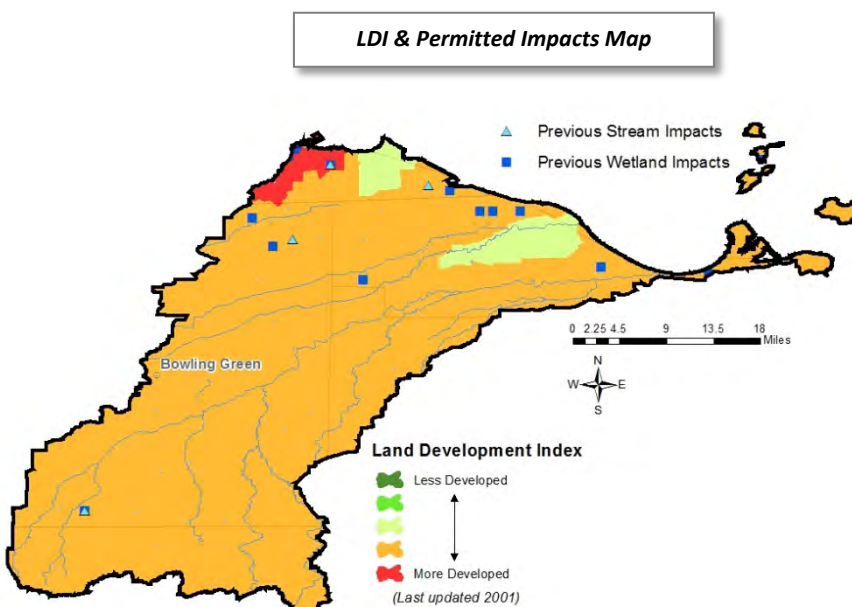
- Counties: Hancock, Lucas, Ottawa, Sandusky, Seneca, Wood
- Waterbodies
 - Total open water: 22.2 miles²
 - Number of waterbodies over 0.5 miles² in size: 9
 - Wetlands: 22,164 acres
 - Named Streams: 302 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), Karner blue butterfly (E), Kirtland's warbler (E), piping plover (E), rayed bean (E), eastern prairie fringed orchid (T), eastern massasauga (C), Lake Erie watersnake (SC), bald eagle (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Eastern Corn Belt Plains (55a),
 - Huron / Erie Lake Plains (57a, 57d),
 - Oak Openings (57b)



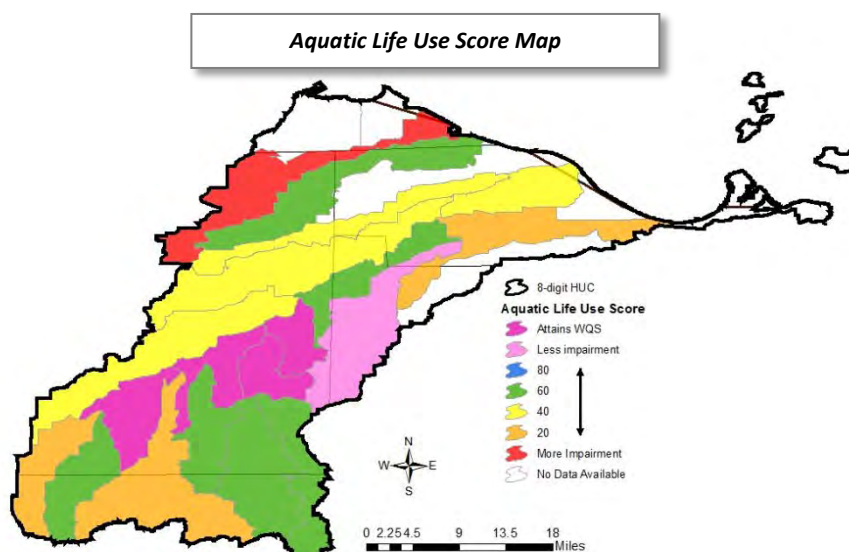
Threats and Impacts

The Landscape Development Index (LDI) for the service area shows significant impact across the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters (see adjacent map). Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 1,737 linear feet. And the average annual wetland mitigation (2004-2012) has been: 17 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The Integrated Report and two OEPA Biological and Water

Quality Reports [Portage River Basin (2010) and (1995)] have identified causes of water quality threats and impacts including: direct habitat alterations, nutrients, flow alteration, organic enrichment, sedimentation, and siltation. Sources of impairment include: channelization, agriculture, dam/impoundment, septic systems, industrial point discharge, and municipal point source discharges.

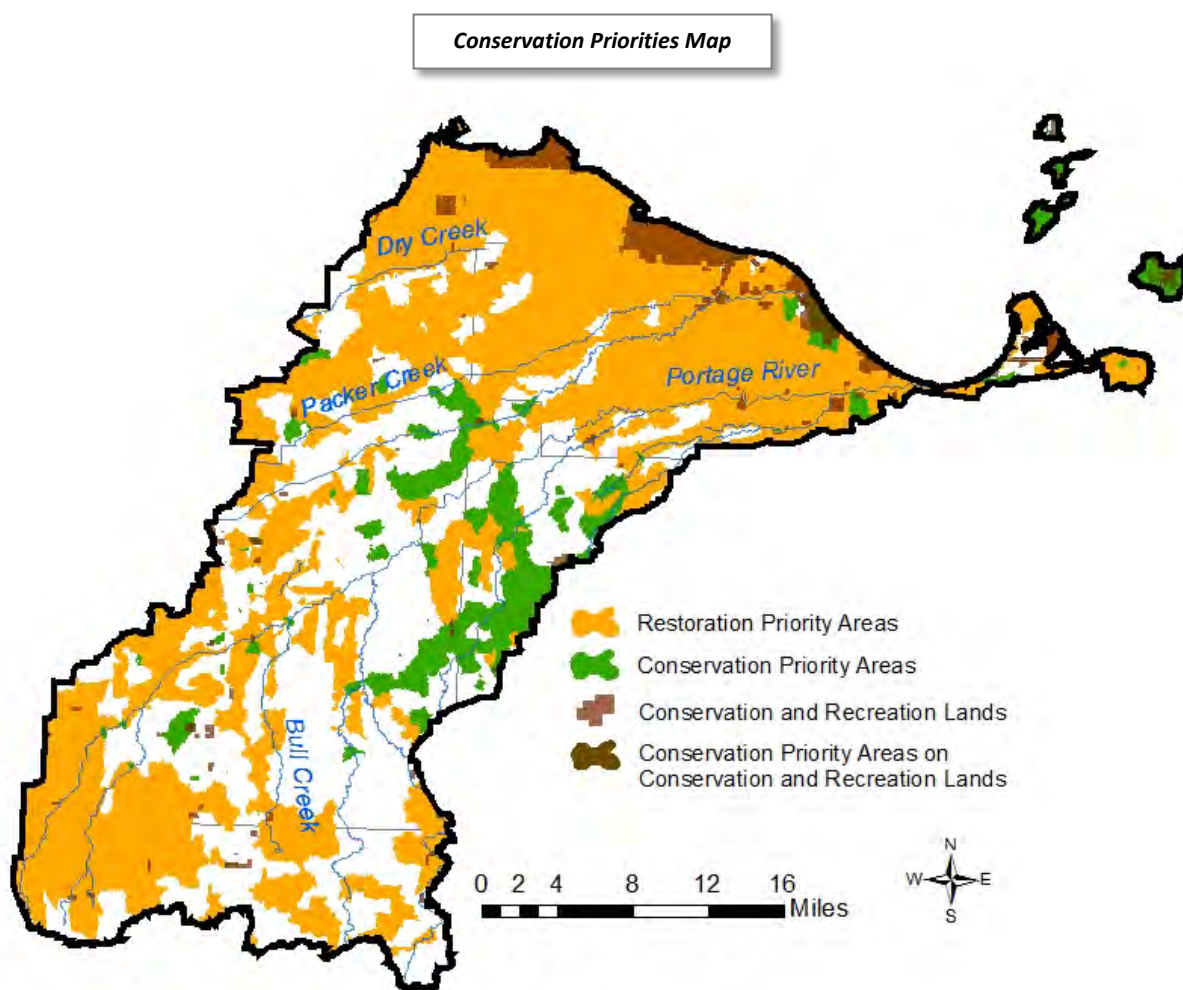


Aquatic Resource Goals

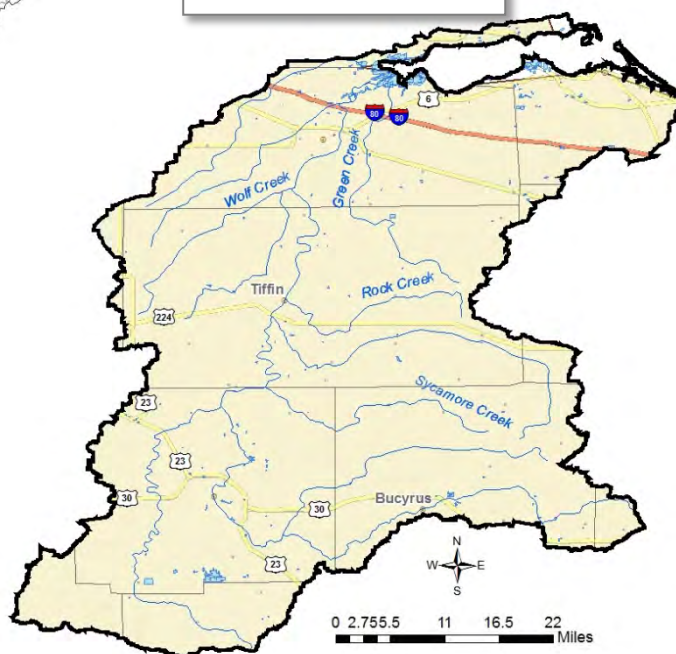
The Portage River Watershed Plan (2011) Watershed Action Plan developed goals for the watershed that the TNC In-Lieu Fee Program might support including:

- Reduce sediment loading
- Reduce the level of pathogens from livestock operations
- Improve and restore in-stream physical habitat
- Improve aquatic life habitat
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.

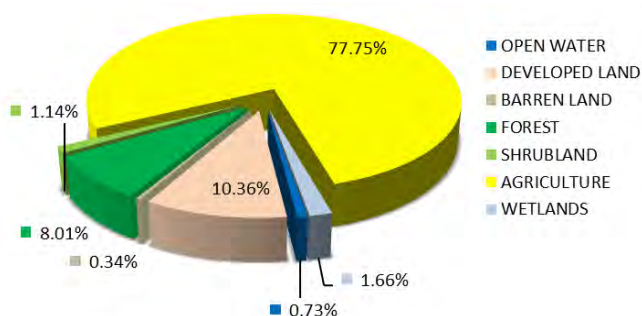


Additionally, the State of Ohio has developed various standards and designations that identify priority waterways including cold water habitat, exceptional warmwater habitat, superior state waters and outstanding state waters. No streams in this primary service area have been designated in such a way.

Service Area 11**Sandusky****HUC 04100011****Watershed Characteristics****Geographic Overview Map**

- 8-digit HUC size: 1825.5 miles²
- 2-digit HUC: Lake Erie
- 6-digit HUC: Western Lake Erie
- Number of 12-digit HUCs: 103
- Corps district: Buffalo
- Approximate 2010 population: 219,300

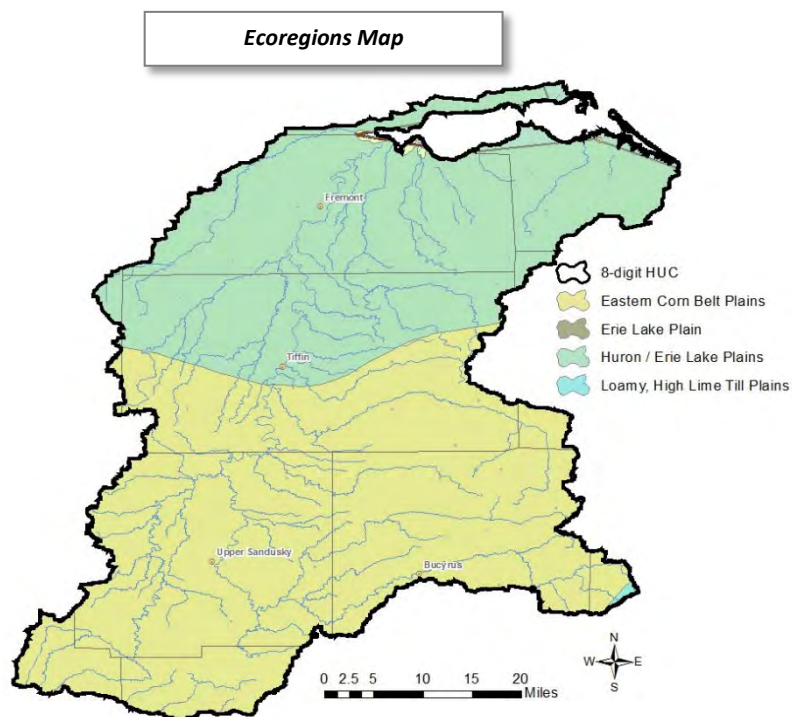
- Land Uses:



- Counties: Crawford, Erie, Hancock, Hardin, Huron, Marion, Ottawa, Richland, Sandusky, Seneca, Wood, Wyandot
- Waterbodies
 - Total open water: 11.7 miles²
 - Number of waterbodies over 0.5 miles² in size: 4
 - Wetlands: 29,914 acres
 - Named Streams: 942 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), clubshell (E), rayed bean (E), copperbelly water snake (T), Kirtland's warbler (E), piping plover (E/CH), Lakeside daisy (T), eastern massasauga (C), Lake Erie watersnake (SC), bald eagle (SC)

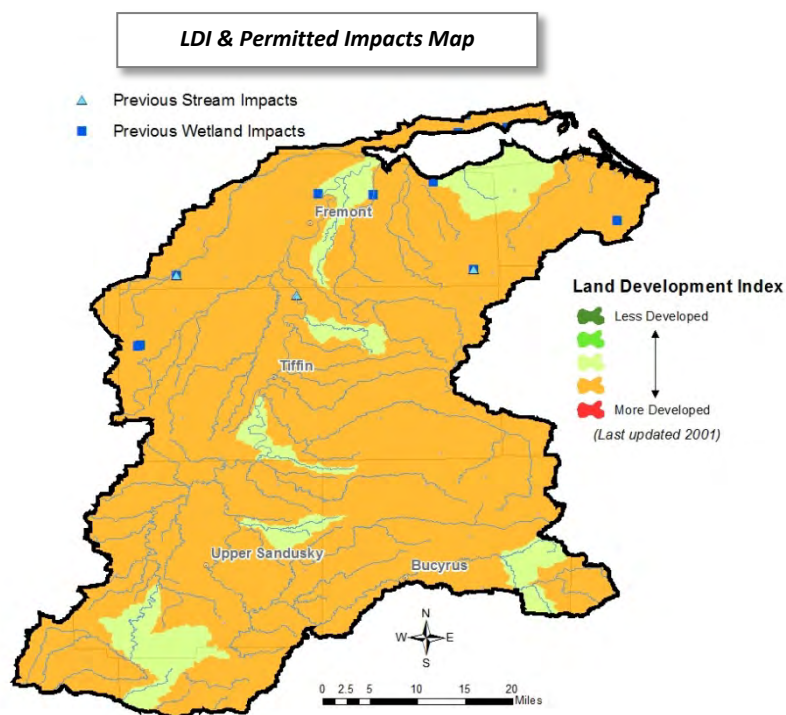
Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):

- Eastern Corn Belt Plains (55a)
- Erie Lake Plain (61c)
- Huron / Erie Lake Plains (57a, 57d)

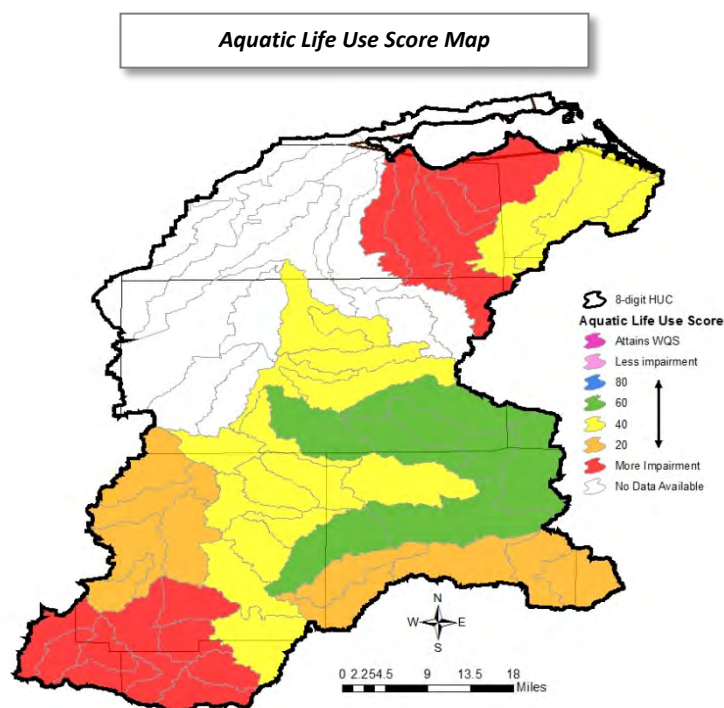


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows significant impact across the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 2,287 linear feet. And the average annual wetland mitigation (2004-2012) has been: 12 acres.



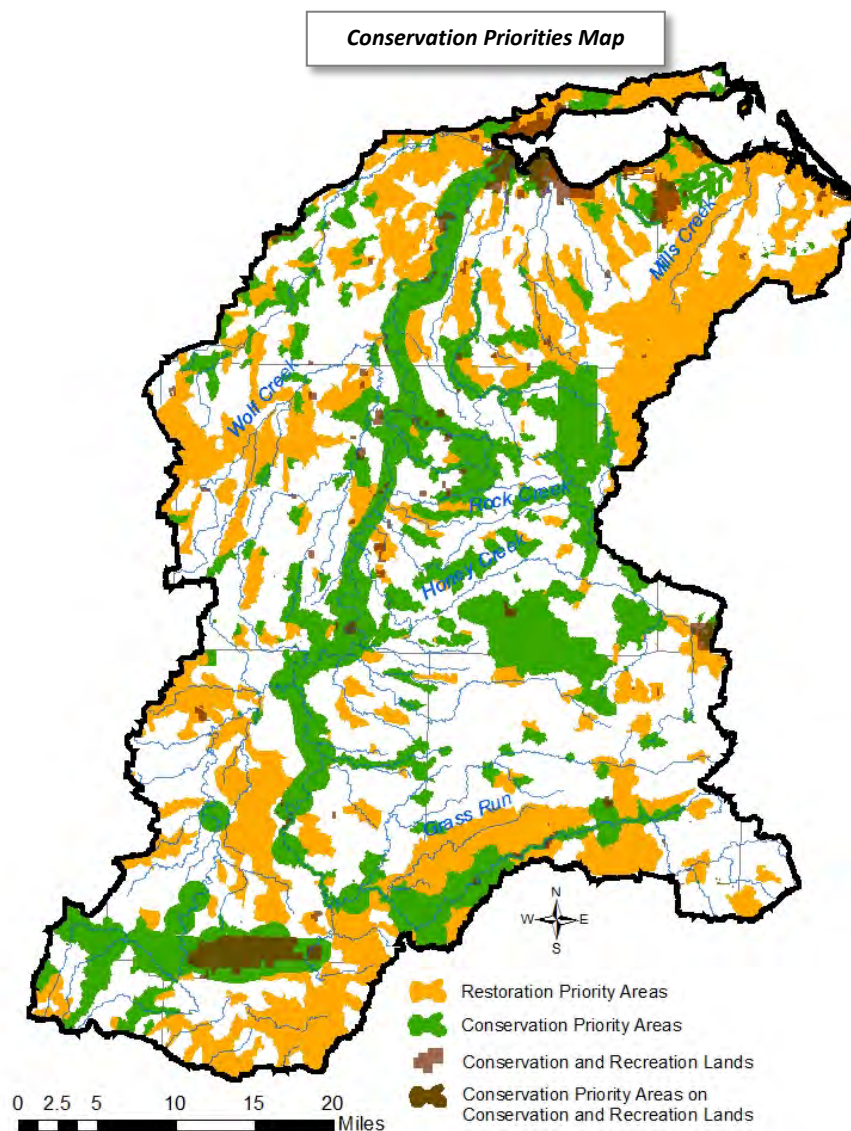
In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and an OEPA Biological and a Water Quality Report [Lower Sandusky River Basin (2009)] have identified sources of water quality threats and impacts including: direct habitat alterations, nutrients, flow alteration, sedimentation, and siltation. Sources of impairment include: channelization, CSOs, crop production with subsurface drainage and fertilizer runoff, livestock access, septic systems, urban runoff/storm sewers, municipal point source discharges, dam/ impoundment, and municipal point source discharges.



Aquatic Resource Goals

Watershed Action Plans have been developed for two of the watersheds within this Primary Service Area including: Sandusky River – Tiffin (2006) and Honey Creek (2006). Goals for these Watershed Action Plans that the TNC In-Lieu Fee Program might support include:

- Reconnect floodplains to streams
- Reduce sediment loading
- Reduce total suspended solids
- Reduce the level of pathogens from livestock operations
- Improve and restore in-stream physical habitat
- Improve aquatic life habitat
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Increase wetland development
- Remove dams and other obstructions that serve as barriers to fish movement or restrict or alter flow conditions
- Educate the local community regarding water quality enhancement



Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.

Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|----------------|--|---|-------------------------------|-----------------------|
| Green Creek | Confluence with Beaver Creek to St. Route 20 | | | |
| Beaver Creek | Confluence with Westerhouse ditch (RM 4.73) to the mouth | | | |
| Sandusky River | | US Route 30 (RM 82.1) to Roger Young Memorial park in Fremont (RM 16.6) | | |

Service Area 12

Huron and Vermilion Rivers HUC 04100012

Watershed Characteristics

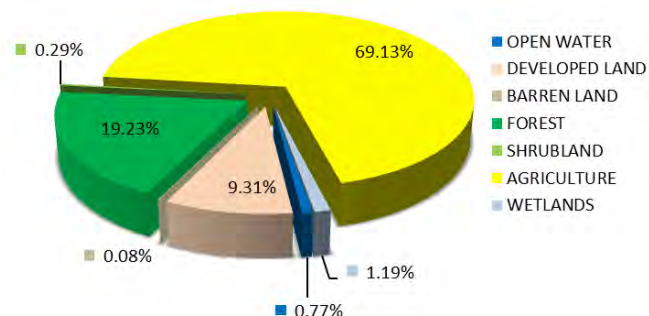
- 8-digit HUC size: 764 miles²
- 2-digit HUC: Lake Erie
- 6-digit HUC: Western Lake Erie
- Number of 12-digit HUCs: 31
- Corps district: Buffalo
- Approximate 2010 population: 95,600



Geographic Overview Map

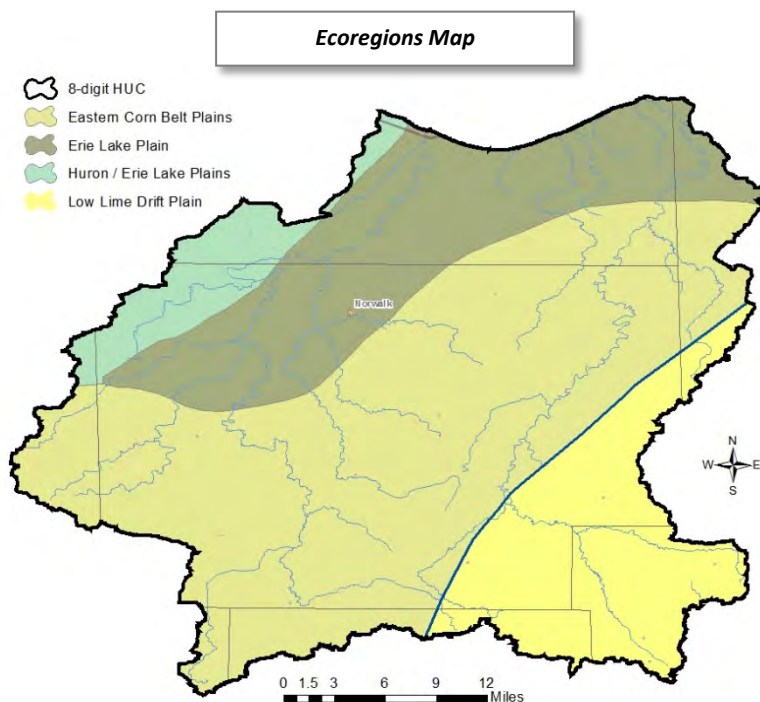


Land Uses:



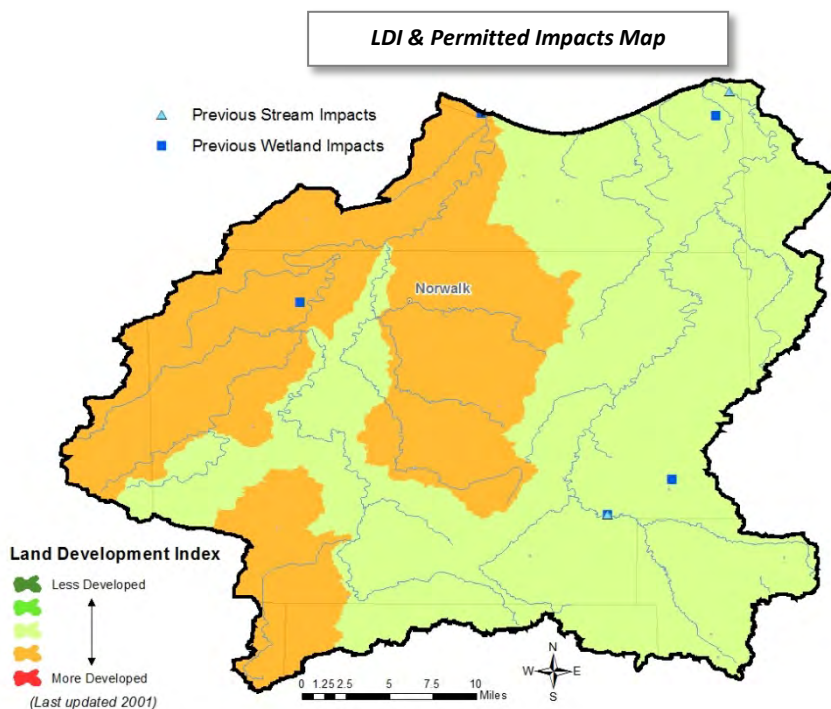
- Counties: Ashland, Crawford, Erie, Huron, Lorain, Richland, Seneca
- Waterbodies
 - Total open water: 2.2 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - Wetlands: 18,802 acres
 - Named Streams: 360 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), eastern hellbender (SC), Kirtland's warbler (E), piping plover (E/CH), Lakeside daisy (T), eastern massasauga (C), Lake Erie watersnake (SC), bald eagle (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Eastern Corn Belt Plains (55a)
 - Erie Lake Plain (61a)
 - Huron / Erie Lake Plains (57d)
 - Low Lime Drift Plain (61c)



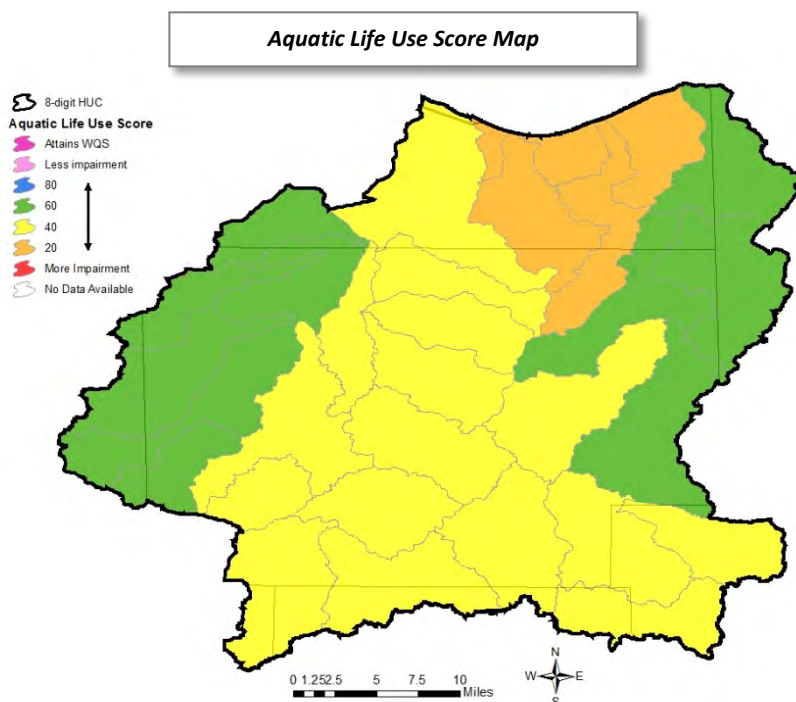
Threats and Impacts

The Landscape Development Index (LDI) for the service area shows moderate to significant impact across the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 92 linear feet. And the average annual wetland mitigation (2004-2012) has been: 2 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed

scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). OEPA Biological and Water Quality Reports [East Fork Vermilion River (2007) and (2005), Vermilion River, Old Woman Creek, Chappel Creek, Sugar Creek and Selected Lake Erie Tributaries (2003)] have identified sources of water quality threats and impacts including: nutrient enrichment, fecal coliform. Sources of impairment include: direct habitat alterations, flow alteration, nutrients, sediment/siltation, organic enrichment, agricultural activities, failing septic systems, municipal wastewater discharges, and suburban development.

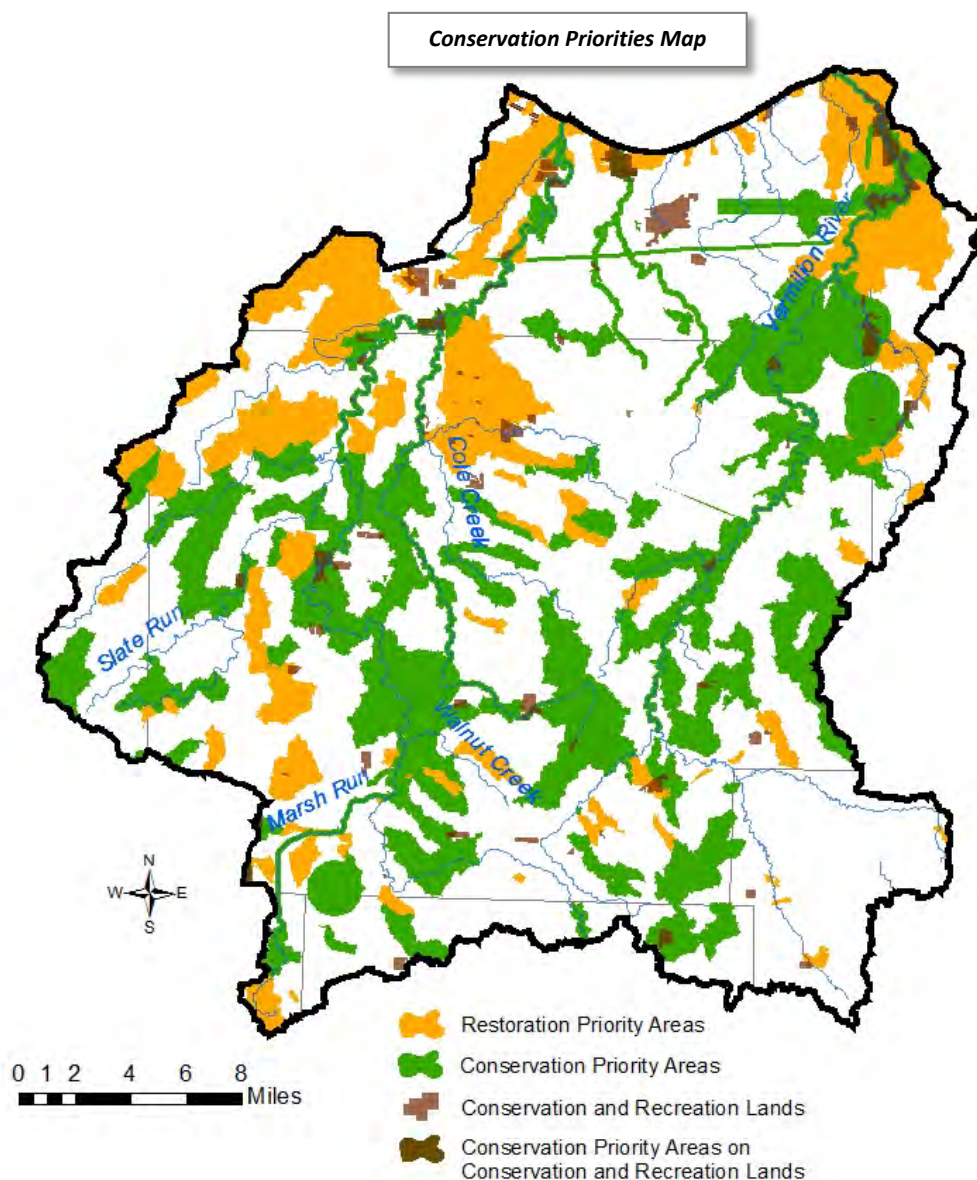


Aquatic Resource Goals

The Old Woman Creek Watershed Action Plan was developed for this Primary Service Area. Goals for this Watershed Action Plan that might be supported by the TNC In-Lieu Fee Program include:

- Reduce sediment loading
- Reduce total suspended solids
- Reduce the level of pathogens from livestock operations
- Improve and restore in-stream physical habitat
- Improve aquatic life habitat
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|-------------------------|--------------------|--|-------------------------------|---|
| Huron River | | | | East/west branch confluence (RM 14.7) to the Ohio Turnpike (RM 9.1) |
| Vermilion River | | Southwest branch (RM 47.66 to state route 2 (RM 3.15)) | | |
| West Branch Huron River | | | | Slate Run (RM 10.52) to the mouth |

Service Area 13

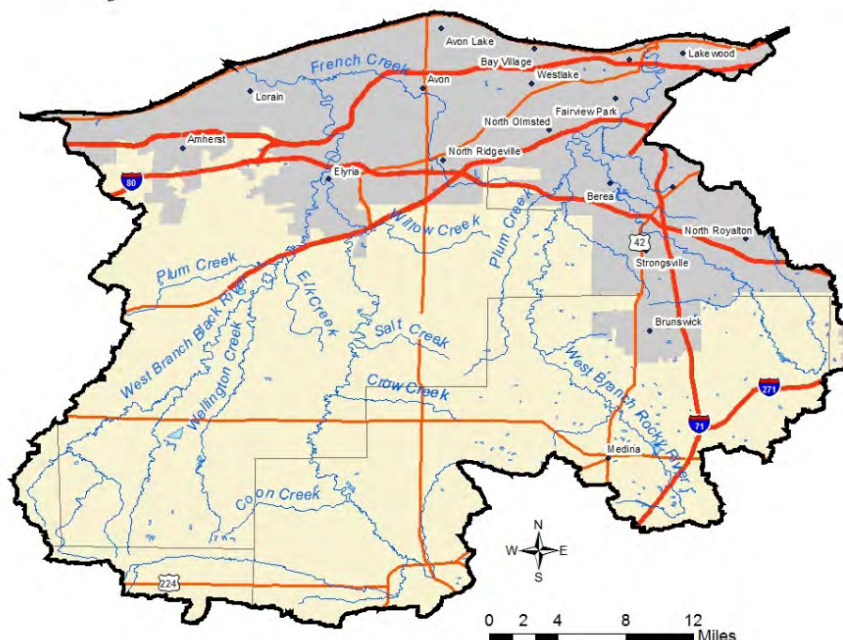
Black and Rocky Rivers HUC 04110001

Watershed Characteristics

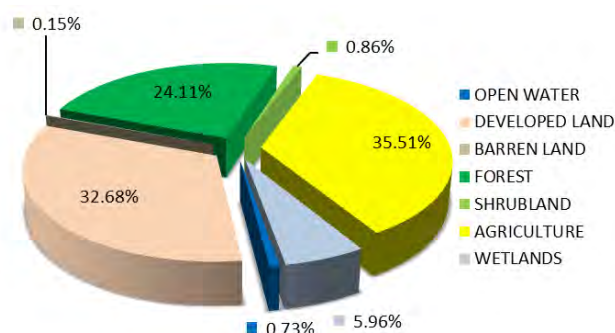
- 8-digit HUC size: 897 miles²
- 2-digit HUC: Lake Erie
- 6-digit HUC: Southern Lake Erie
- Number of 12-digit HUCs: 33
- Corps district: Buffalo
- Approximate 2010 population: 792,300



Geographic Overview Map

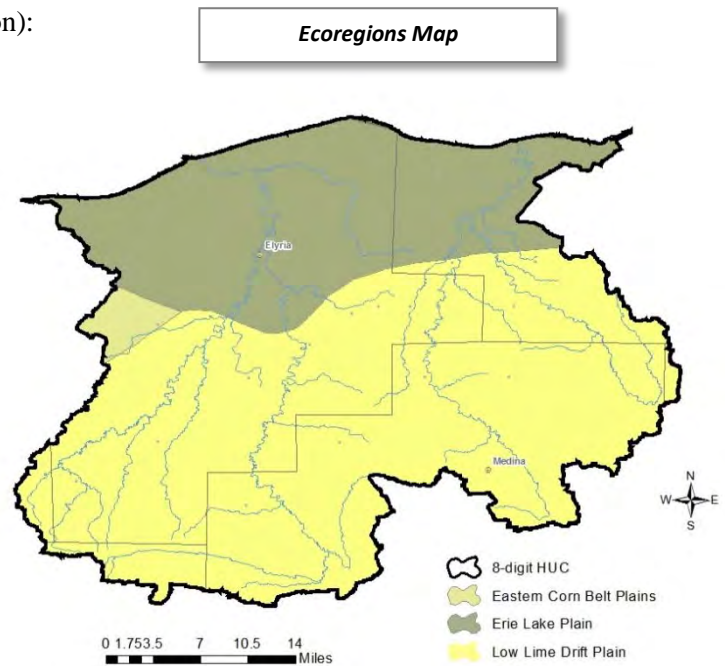


- Land Uses:



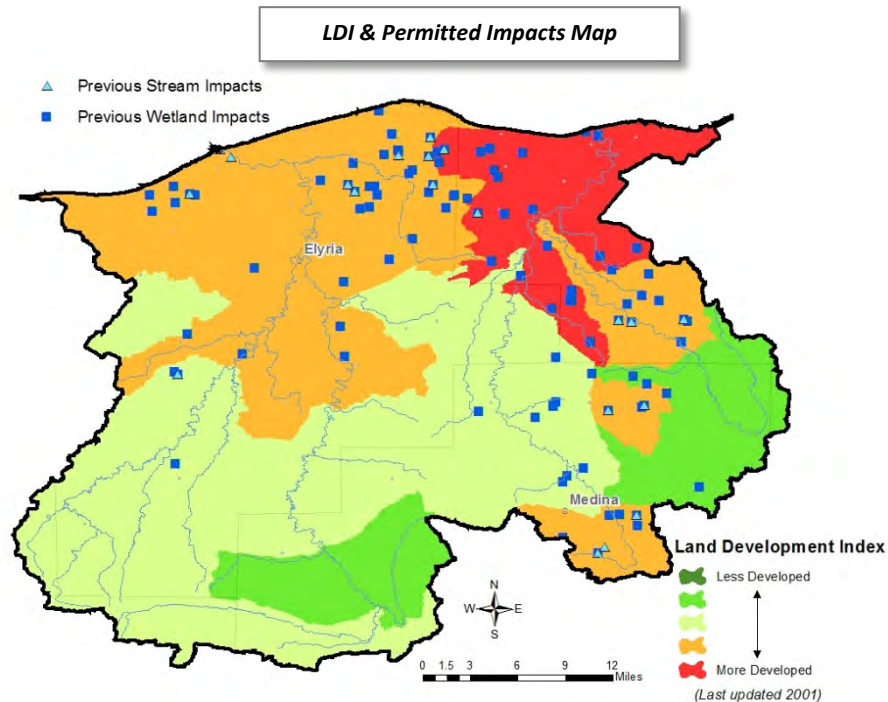
- Counties: Ashland, Cuyahoga, Erie, Huron, Lorain, Medina, Summit
- Waterbodies
 - Total open water: 2.5 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - Wetlands: 11,289 acres
 - Named Streams: 390 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), Kirtland's warbler (E), piping plover (E), bald eagle (SC), eastern hellbender (SC), Lakeside daisy (T), northern monkshood (T), eastern massasauga (C), Lake Erie watersnake (SC), bald eagle (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Eastern Corn Belt Plains (55a),
 - Erie Lake Plain (61a, 61d, 61e),
 - Low Lime Drift Plain (61c)

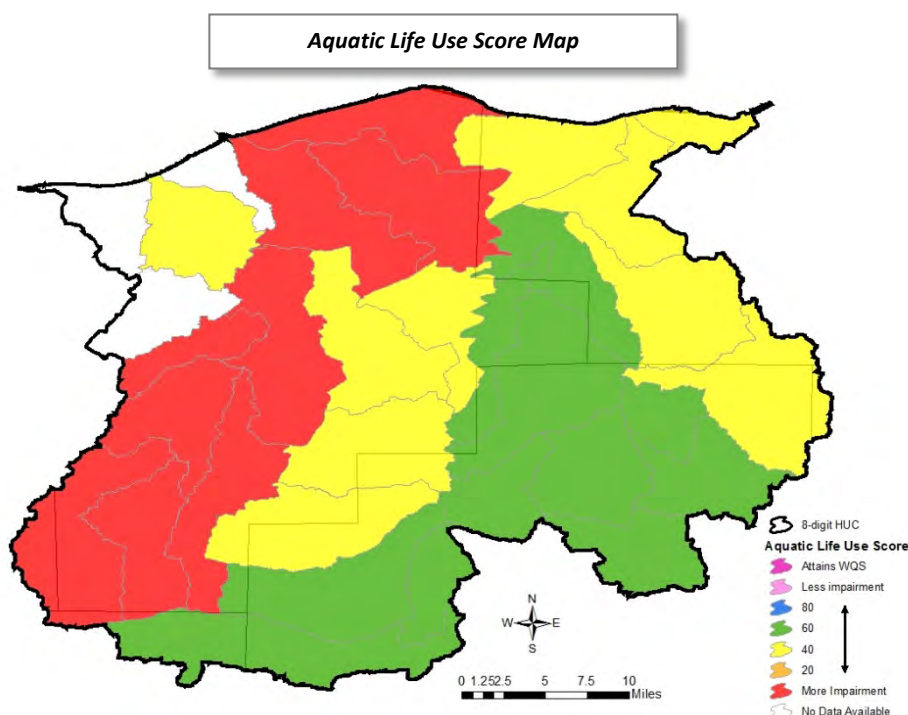


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows significant impacts especially in the north. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 3,228 linear feet. And the average annual wetland mitigation (2004-2012) has been: 4 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). OEPA Biological and Water Quality Reports [Rocky River and Selected Tributaries (1998) and (1993), Black River Basin (1998) and (1993)] have identified sources of water quality threats and impacts including: direct habitat alterations, nutrients, organic enrichment, fecal coliform, siltation, and sedimentation. Sources of impairment include: agricultural activities, combined sewer overflows, septic systems, urban runoff/storm sewers, municipal wastewater discharges, and suburban development.

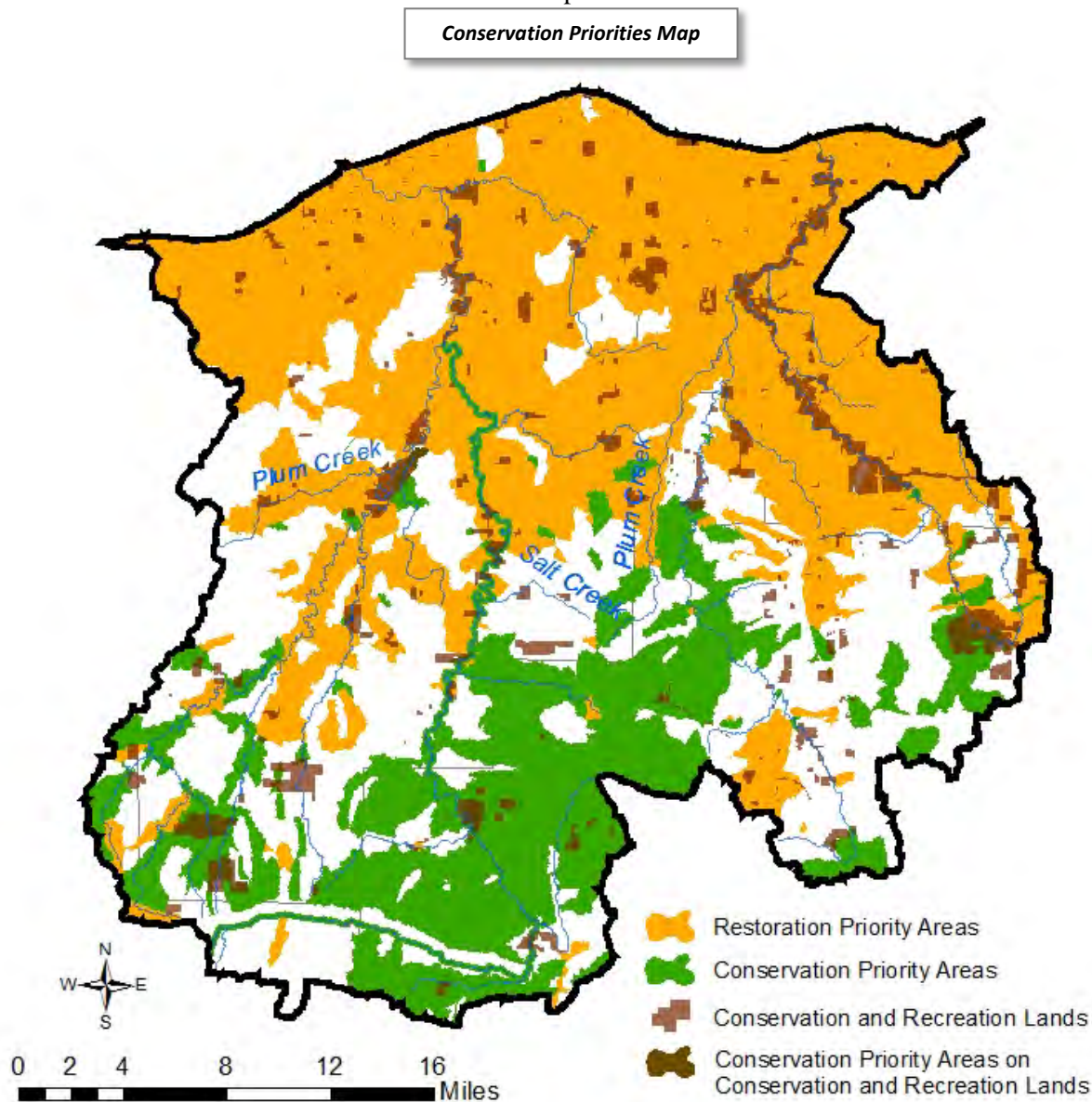


Aquatic Resource Goals

The Rocky River Watershed Action Plan (2006) and the Black River Watershed Action Plan (2011) have been developed for those watersheds within this Primary Service Area. Goals for these Watershed Action Plans that the TNC In-Lieu Fee Program might support include:

- Reduce sediment loading
- Reduce total suspended solids
- Reduce the level of pathogens from livestock operations
- Improve and restore in-stream physical habitat
- Improve aquatic life habitat
- Remove non-essential dams
- Invasive removal
- Public acquisition of streamside land
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.

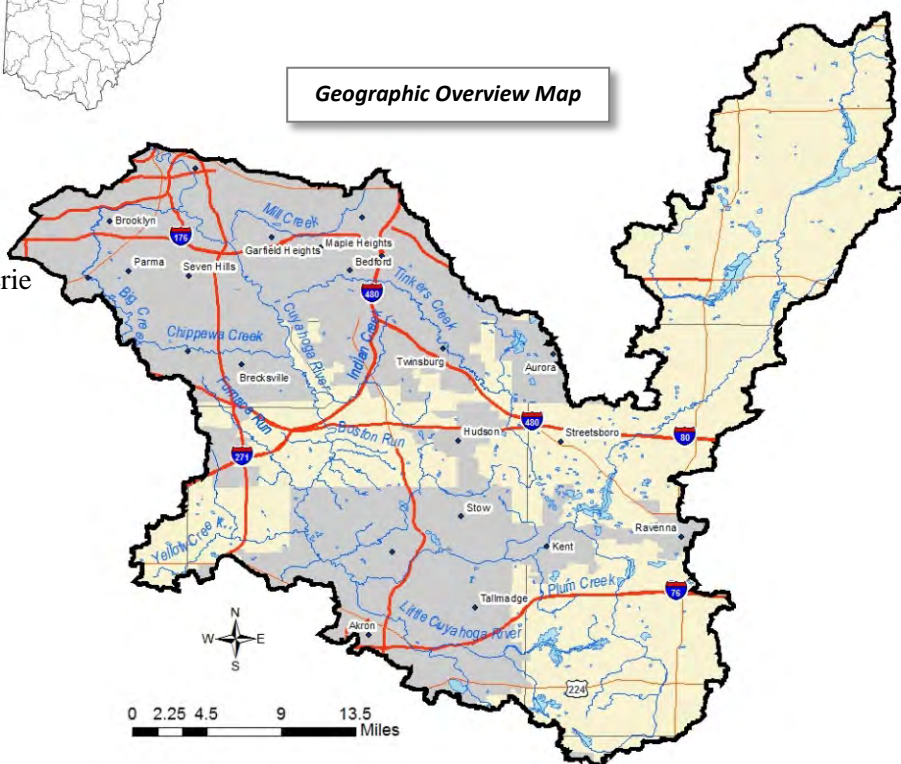


Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

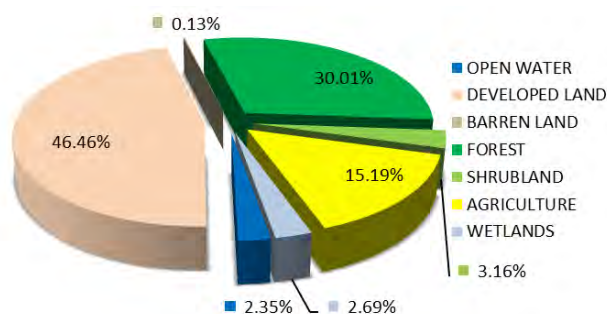
| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|-------------------|--------------------|---|-------------------------------|---|
| Unnamed tributary | | Unnamed trib to East Branch Black River at RM 39.06 | | |
| Unnamed tributary | | | | Unnamed trib to East Branch Black River at RM 41.41 |

Service Area 14**Cuyahoga River
HUC 04110002****Watershed Characteristics**

- 8-digit HUC size: 811 miles²
- 2-digit HUC: Lake Erie
- 6-digit HUC: Southern Lake Erie
- Number of 12-digit HUCs: 29
- Corps district: Buffalo
- Approximate 2010 population: 1,004,500

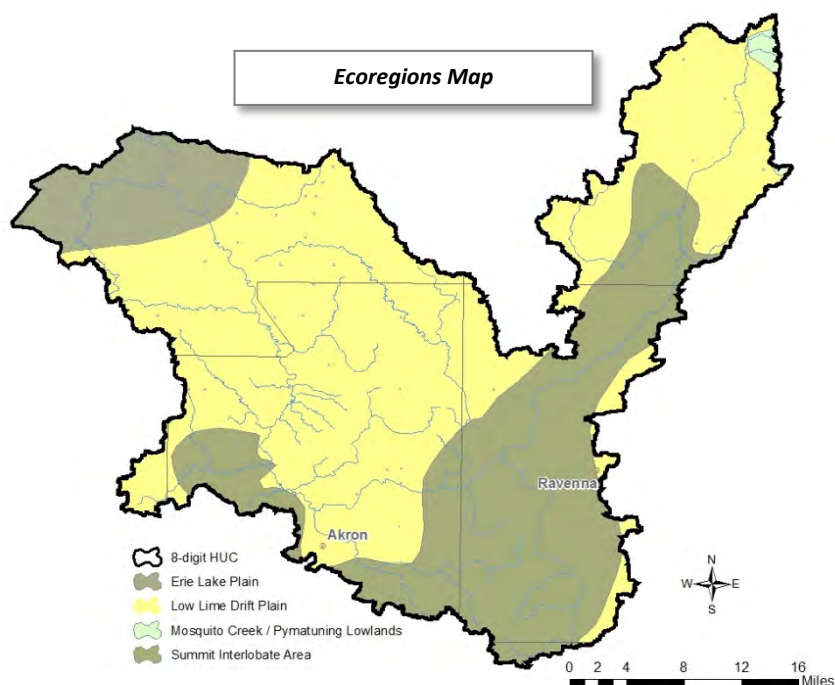
**Geographic Overview Map**

- Land Uses:



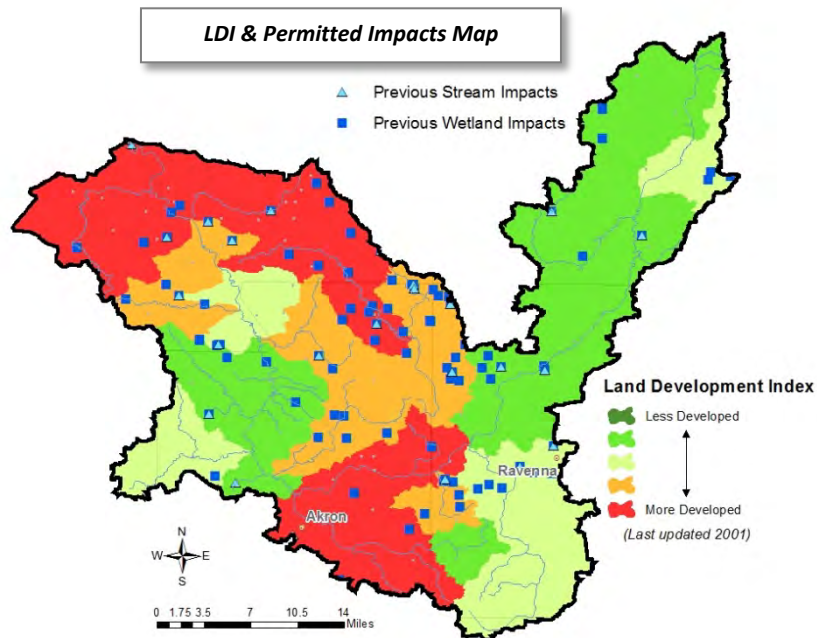
- Counties: Cuyahoga, Geauga, Portage, Summit
- Waterbodies
 - Total open water: 15 miles²
 - Number of waterbodies over 0.5 miles² in size: 6
 - Wetlands: 28,108 acres
 - Named Streams: 359 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), Kirtland's warbler (E), Mitchell's satyr (E), northern monkshood (T), eastern massasauga (C), piping plover (E), bald eagle (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Erie Lake Plain (61a),
 - Low Lime Drift Plain (61c, 61d),
 - Mosquito Creek / Pymatuning Lowlands (61b),
 - Summit Interlobate Area (61e)

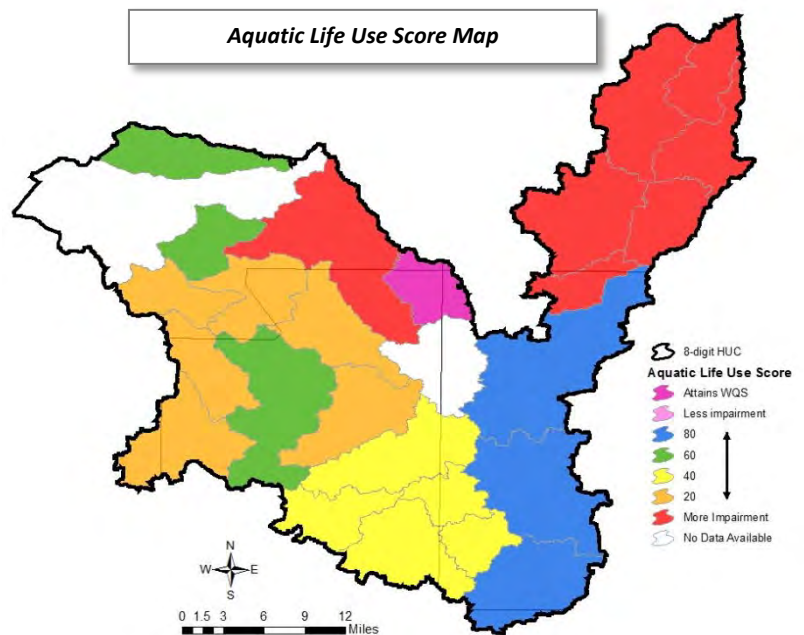


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows some areas of significant and moderate impacts in the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters (see adjacent map). Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 8,311 linear feet. And the average annual wetland mitigation (2004-2012) has been: 29 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and several OEPA Biological and Water Quality Reports [Cuyahoga River and Selected Tributaries (1999), Little Cuyahoga River and Tributaries (1997), Cuyahoga River (1992)] have identified sources of water quality threats and impacts including: direct habitat alterations, flow alteration, low dissolved oxygen, fish-passage barrier, siltation, and sedimentation. Additionally, urban and suburban development has increased impervious surfaces, nutrient enrichment through yard maintenance, CSOs, and wastewater discharges.

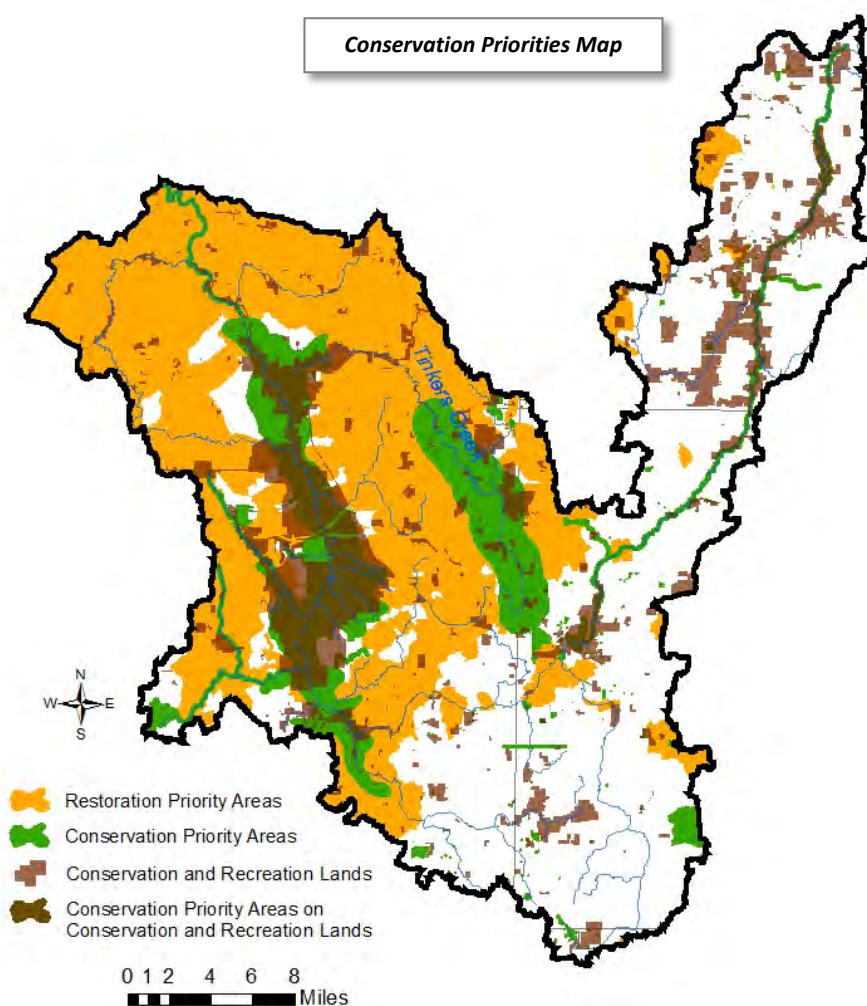


Aquatic Resource Goals

Watershed Action Plans have been developed for several of the watersheds within this Primary Service Area including: Tinkers Creek (2010) and West Creek (2008). The goals for these Watershed Action Plans that the TNC In-Lieu Fee Program might support include:

- Reduce sediment loading
- Reduce total suspended solids
- Improve and restore in-stream physical habitat
- Improve aquatic life habitat
- Stabilize stream banks
- Preserve habitat and sensitive areas
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Control invasive plant species
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

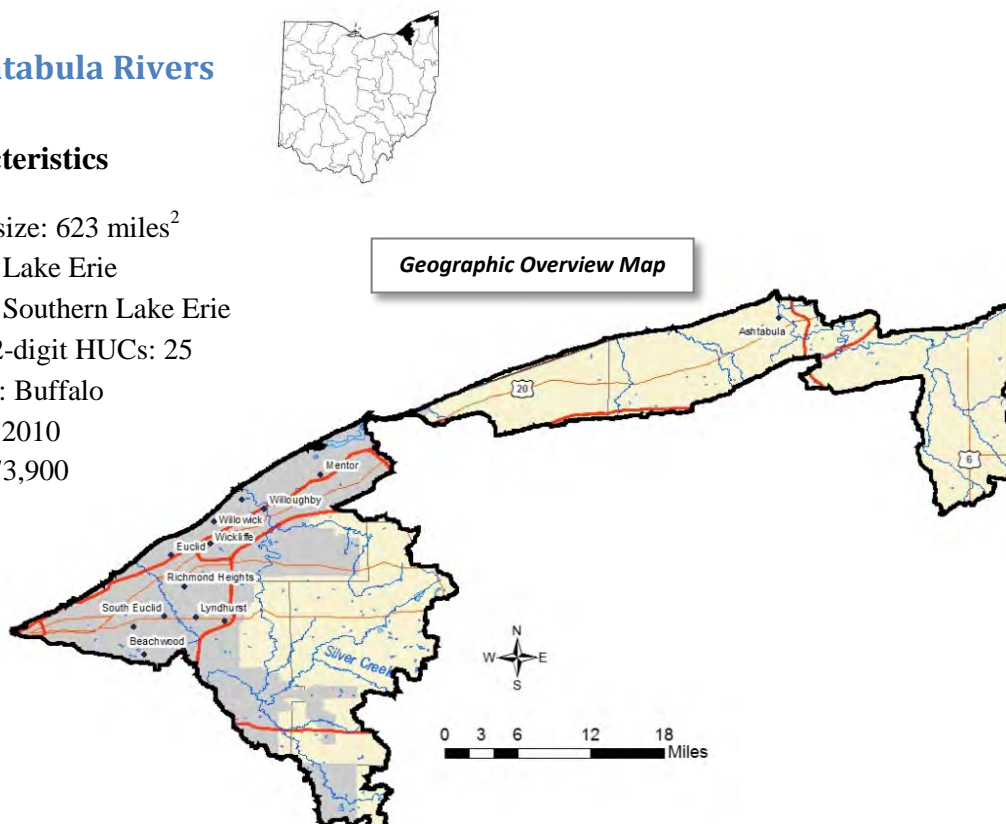
| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|---------------------------------------|--------------------|---|-------------------------------|-----------------------|
| Cuyahoga River | | Troy-Burton township line (RM 83.9) to US Route 14 (RM 60.75) | RM 62.0 to RM 57.97 | |
| Unnamed Tributary (Cuyahoga RM 63.82) | X | | | |
| Unnamed Tributary (Cuyahoga RM 84.60) | X | | | |
| Slipper Run | X | | | |
| Boston Run | X | | | |
| Salt Run | X | | | |
| Langes Run | X | | | |
| Woodward Creek | X | | | |
| Yellow Creek | | | | X |
| Furnace Run | | | | X |
| Northfork Yellow Creek | | | | X |

Service Area 14

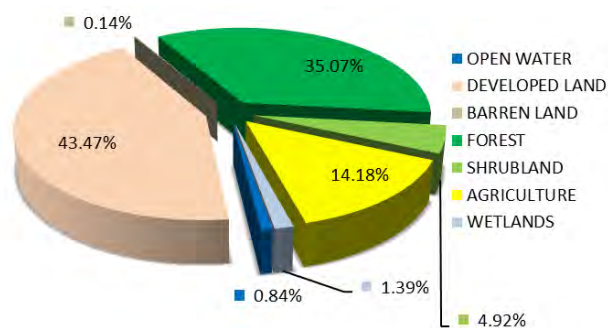
Chagrin and Ashtabula Rivers HUC 04110003

Watershed Characteristics

- 8-digit HUC size: 623 miles²
- 2-digit HUC: Lake Erie
- 6-digit HUC: Southern Lake Erie
- Number of 12-digit HUCs: 25
- Corps district: Buffalo
- Approximate 2010 population: 673,900

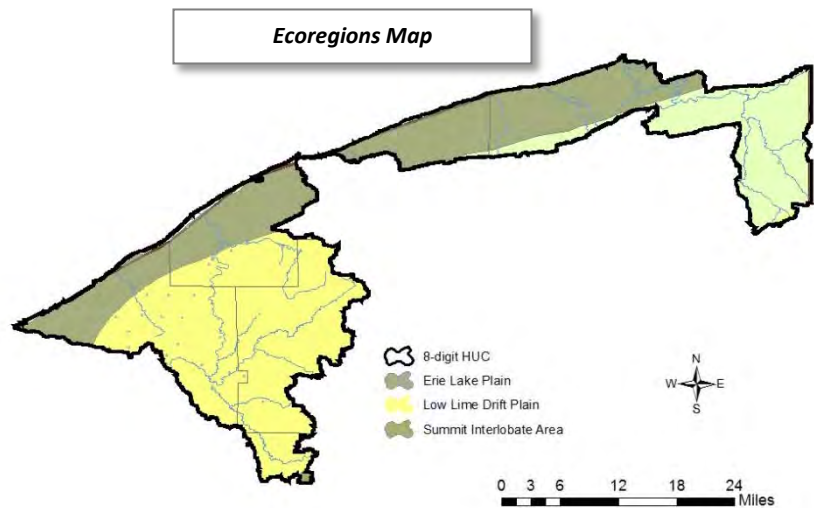


- Land Uses:



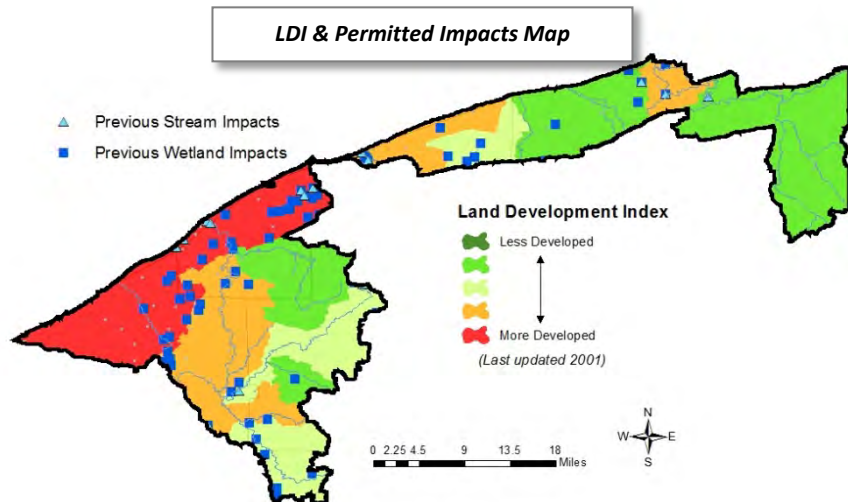
- Counties: Ashtabula, Cuyahoga, Geauga, Lake, Portage
- Waterbodies
 - Total open water: 3.2 miles²
 - Number of waterbodies over 0.5 miles² in size: 1
 - Wetlands: 21,068 acres
 - Named Streams: 234 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), Kirtland's warbler (E), piping plover (E), clubshell (E), snuffbox (E), Mitchell's satyr (E), northern monkshood (T), eastern massasauga (C), bald eagle (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Erie Lake Plain (61a, 61b),
 - Low Lime Drift Plain (61c, 61d),
 - Summit Interlobate Area (61e)



Threats and Impacts

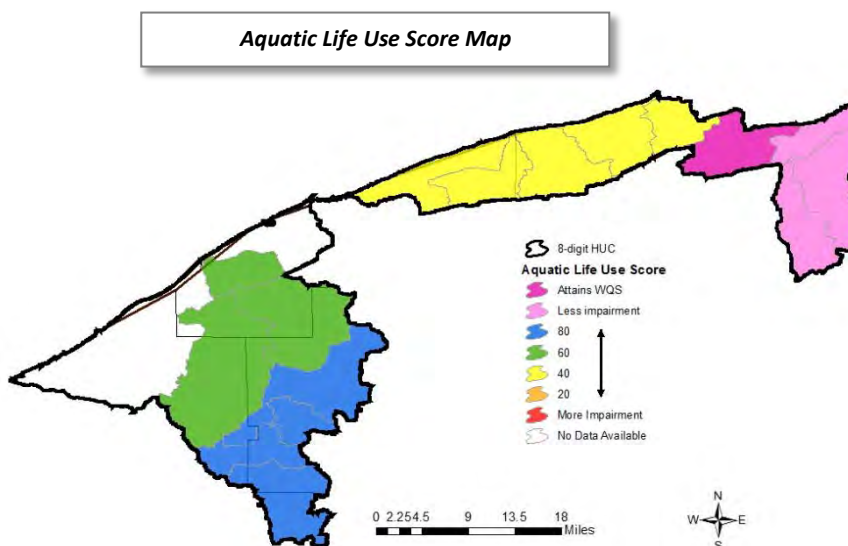
The Landscape Development Index (LDI) for the service area shows areas of significant and moderate impacts. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters (see adjacent map). Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 3,532 linear feet. And the average annual wetland mitigation (2004-2012) has been: 20 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map).

The OEPA's 2012 Integrated Report and OEPA Biological and Water Quality Reports [Lower

Ashtabula River and Conneaut Creek (2005), Chagrin River and Selected Tributaries (2003-4), Grand and Ashtabula River Basins (1997)] have identified sources of water quality threats and impacts including: direct habitat alterations, nutrients, flow alteration, metals, organic enrichment, sedimentation, and siltation. Additionally, urban and suburban development has increased impervious surfaces, nutrient enrichment through yard maintenance, CSOs, wastewater discharges, and sediment from construction.

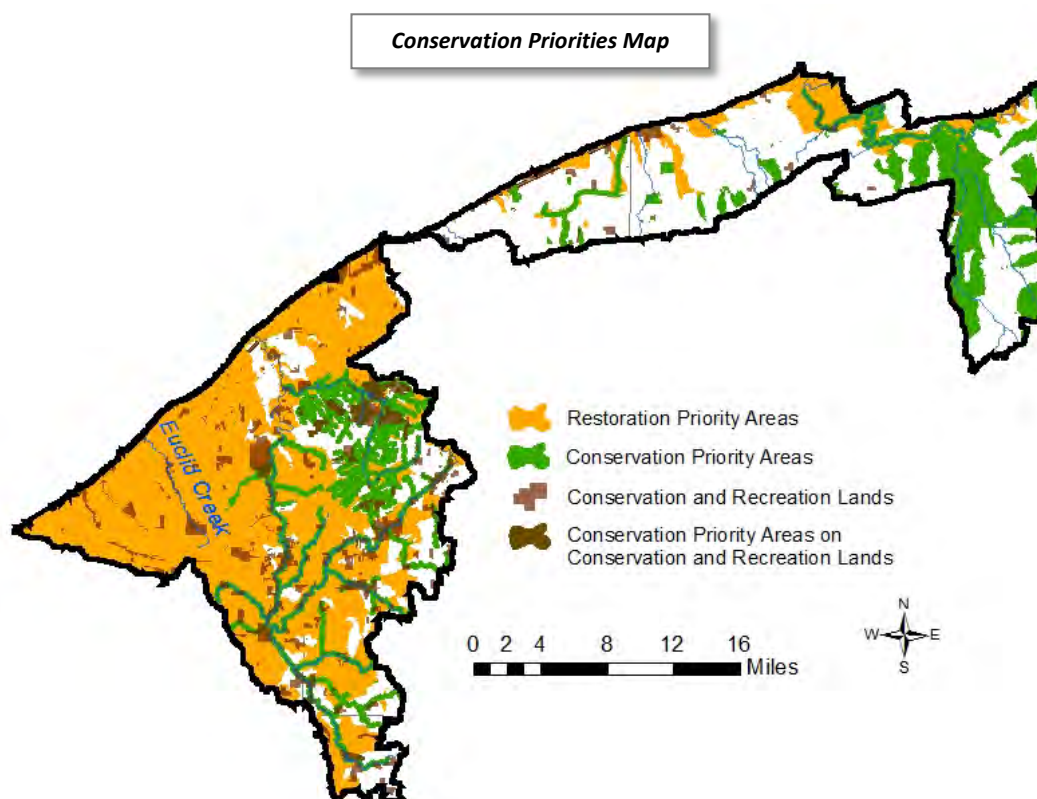


Aquatic Resource Goals

Watershed Action Plans have been developed for several of the watersheds within this Primary Service Area including: Chagrin River (), Mentor Marsh (draft), and Arcola Creek (2012). Goals for these Watershed Action Plans that the TNC In-Lieu Fee Program might support include:

- Reduce sediment loading
- Reduce total suspended solids
- Reduce the level of pathogens from livestock operations
- Improve and restore in-stream physical habitat
- Improve aquatic life habitat
- Restore wetlands
- Restore modified streams
- Reconnect streams to floodplains
- Preserve and restore riparian corridors
- Increase groundwater recharge
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

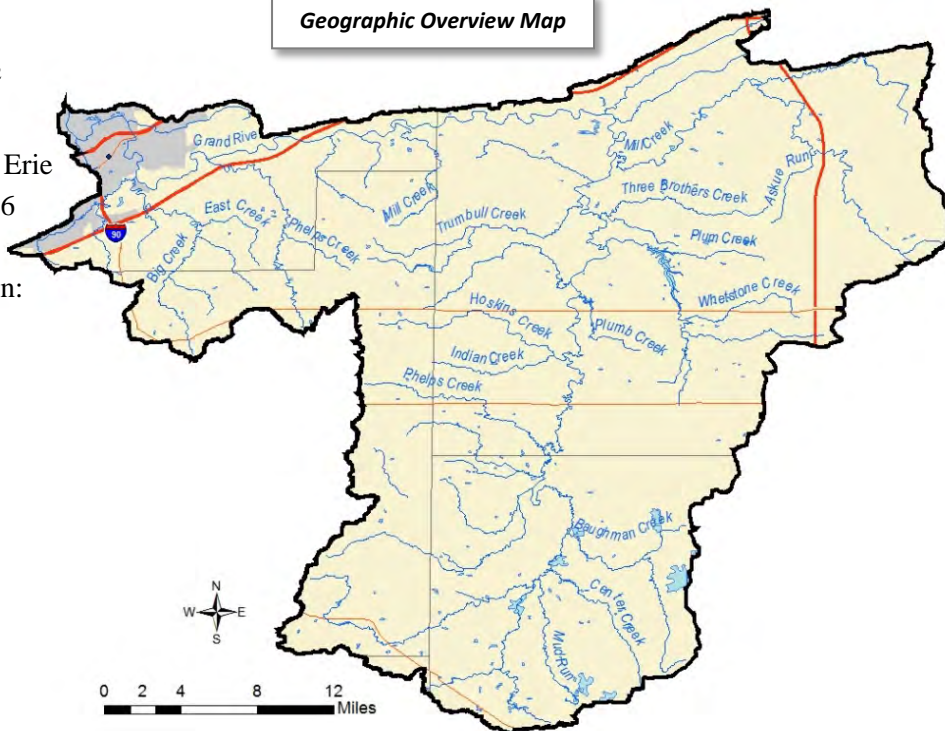
| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|---|---|--|------------------------------------|--|
| Chagrin River | | Woodiebrook Road (RM 49.14) to State Route 6 (RM 11.1) | | |
| Ashtabula River | | | | Confluence of East and West Fork (RM 27.54) to adjacent East 23 rd Street (RM 2.00) |
| Baldwin Creek | East Branch Chagrin River (RM 7.06) | | | |
| Mt. Glen Tributary | Unnamed trib (RM 0.87) | | | |
| Stebbins Gulch | East Branch Chagrin River (RM 10.6) | | | |
| Harris Creek | East Branch Chagrin River (RM 14.62) | | | |
| Unnamed Tributary East Branch Chagrin River | (RM 14.8) | | (RM 10.13), (RM 15.35), (RM 16.20) | |
| Stoney Brook | East Branch Chagrin River (RM 3.57) | | | |
| East Branch Chagrin River | Headwaters to mouth | Heath Road (RM 14.49) to mouth | | |
| Tributary to East Branch Chagrin River | All tributaries that are not explicitly listed in the rules | | | |

Table Continued

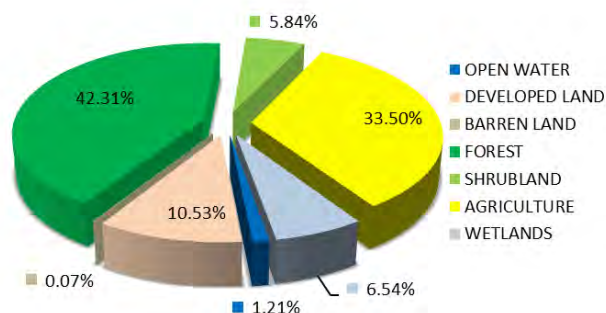
| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|------------------------------|--|--|--------------------------------------|------------------------------|
| Caves Creek | Chagrin River (RM 11.52) | | | |
| Sulphur Springs Brook | Chagrin River (RM 26.28) | | | |
| Aurora Branch | Smith Creek (RM 8.98) to McFarland Creek (RM 3.73) | State Route 82 (RM 17.08) to the mouth | | |
| North Branch Mcfarland Creek | X | | | |
| Smith Creek | Aurora Branch (RM 8.98) | | | |
| Unnamed tributary | Smith Creek (RM 2.7) | | | |
| Affelder Tributary | Silver Creek (RM 2.23) | | | |
| Pettibone Tributary | Silver Creek (RM 4.58) | | | |
| Leech Tributary | Chagrin River (RM 41.53) | | | |
| Ecklund Tributary | Chagrin River (RM 46.20) | | | |
| McFarland Creek | | | X | |
| Quarry Creek | | | East Branch Chagrin River (RM 1.85) | |
| Pierson Creek | | | East Branch Chagrin River (RM 6.73) | |

Service Area 15**Grand River
HUC 04110004****Watershed Characteristics**

- 8-digit HUC size: 705 miles²
- 2-digit HUC: Lake Erie
- 6-digit HUC: Southern Lake Erie
- Number of 12-digit HUCs: 26
- Corps district: Buffalo
- Approximate 2010 population: 116,600

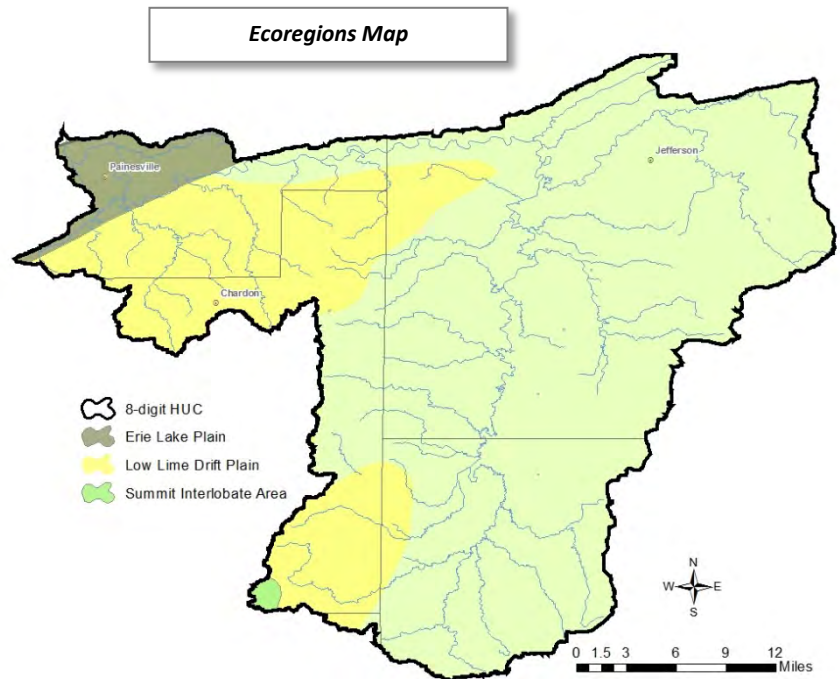
**Geographic Overview Map**

- Land Uses:



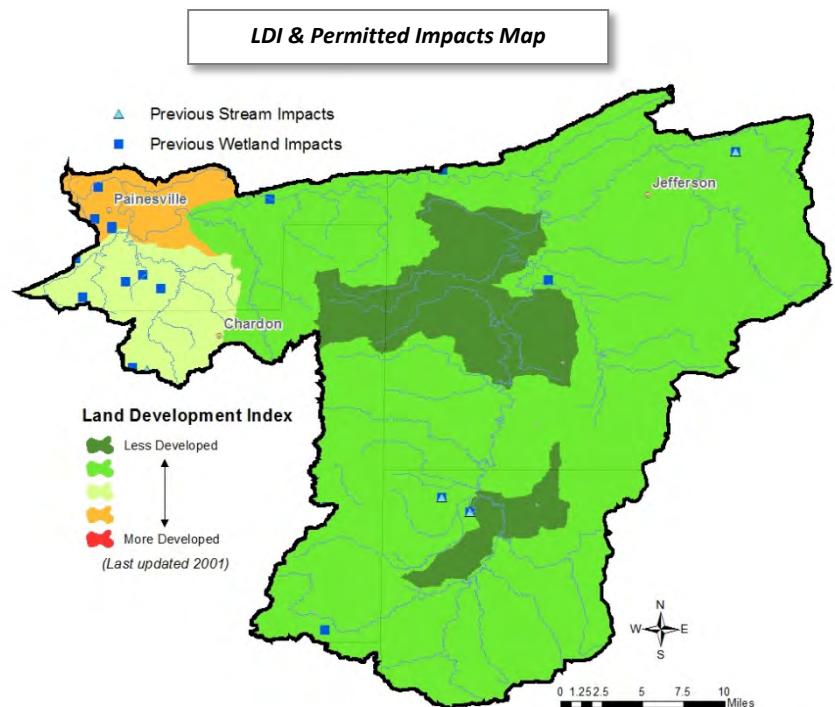
- Counties: Ashtabula, Geauga, Lake, Portage, Trumbull
- Waterbodies
 - Total open water: 6.1 miles²
 - Number of waterbodies over 0.5 miles² in size: 3
 - Wetlands: 58,060 acres
 - Named Streams: 474 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), clubshell (E), Mitchell's satyr (E), Kirtland's warbler (E), piping plover (E/CH), snuffbox (E), northern monkshood (T), eastern massasauga (C), bald eagle (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF or full descriptions of each ecoregion):
 - Erie Lake Plain (61a)
 - Low Lime Drift Plain (61c, 61d),
 - Summit Interlobate Area (61e, 61b)

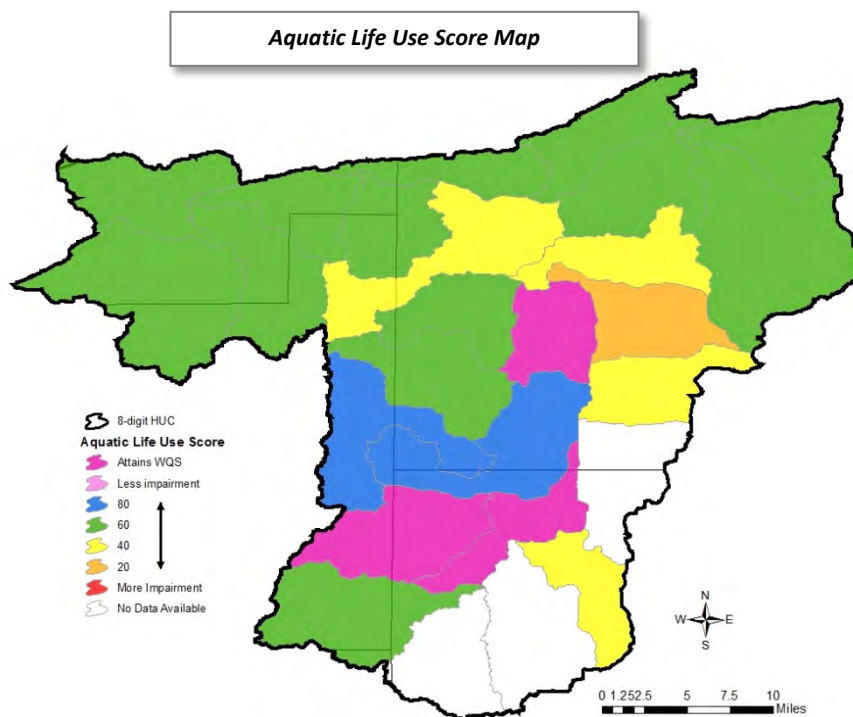


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows a lower level of development across the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 6,739 linear feet. And the average annual wetland mitigation (2004-2012) has been: 37 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and several OEPA Biological and Water Quality Reports [Upper Grand River (2007), Grand River Basin (2005), Grand River and Ashtabula River Basins (1996)] have identified sources of water quality threats and impacts including: nutrients, direct habitat alteration, suburbanization, and flow modifications.

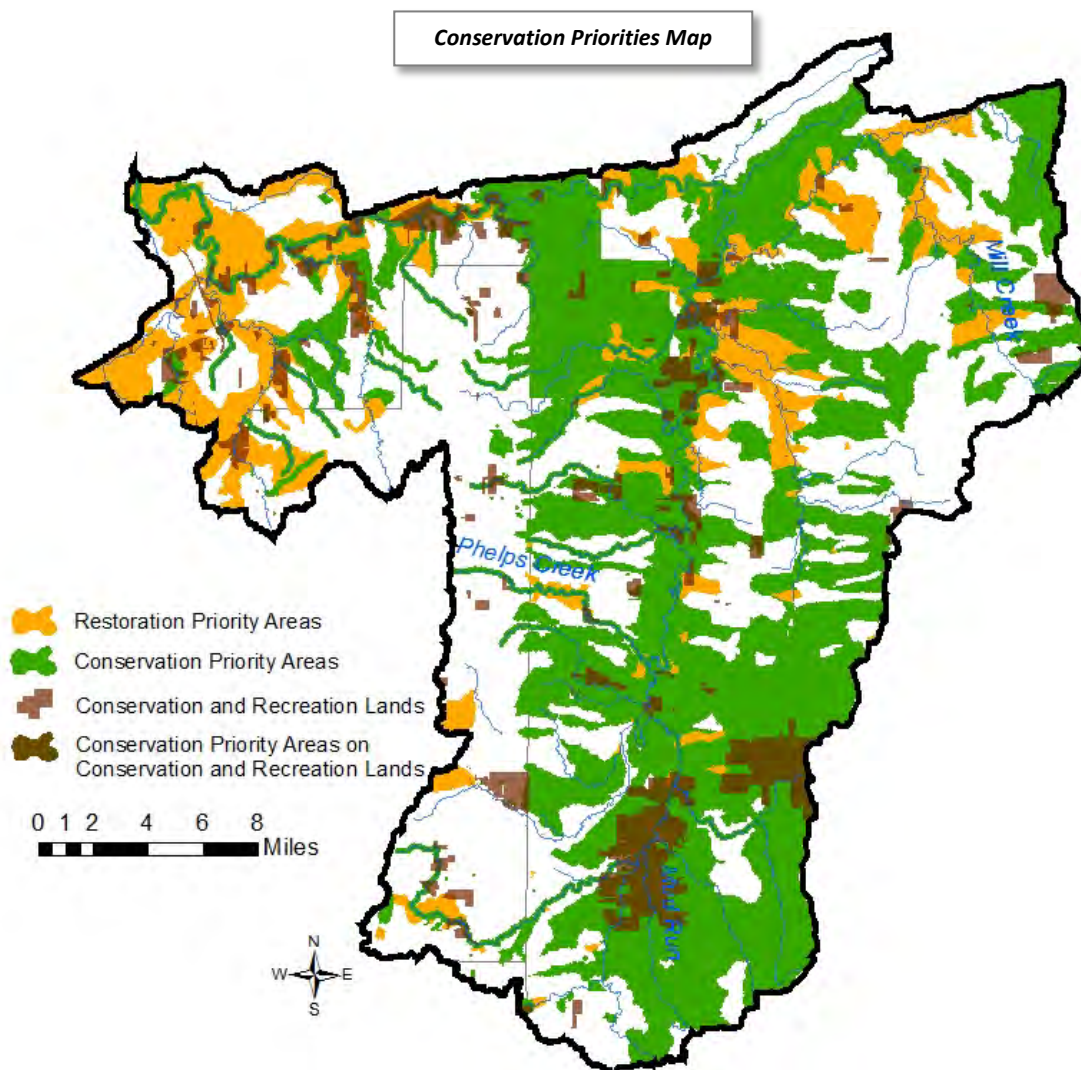


Aquatic Resource Goals

Watershed Action Plans have been developed for two of the watersheds within this Primary Service Area including: Lower Grand River (2006), Upper Grand River (2012). Goals for these Watershed Action Plans that the TNC In-Lieu Fee Program might support include:

- Reduce sediment loading
- Reduce total suspended solids
- Reduce the level of pathogens from livestock operations
- Improve and restore in-stream physical habitat
- Improve aquatic life habitat
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Maintain water quality standards in all unimpaired stream segments
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|---------------------------------|----------------------------------|---|--|-----------------------|
| Gordon Creek | X | | | |
| East Creek | X | | | |
| Aylworth Creek | X | | | |
| Jenks Creek | X | | | |
| Cutts Creek | X | | | |
| Talcott Creek | X | | | |
| Mill Creek | Headwaters to Doty Road (RM 1.5) | | X | |
| Unnamed Tributary of Mill Creek | (RM 4.3) | | | |
| Grand River | | State Route 322 (RM 67.08) to US Route 20 (RM 5.67) | US-422 to OH-608 (RM 91.8) & Fobes Road (RM 44.7) to OH-2 (RM 5.5) | |
| Baughman Creek | | | | X |

Table Continued

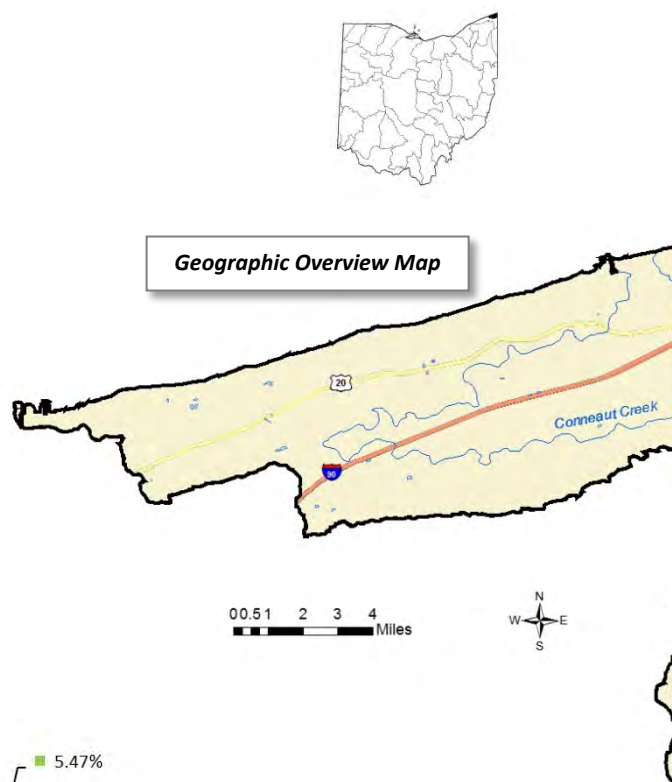
| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|----------------------------------|---------------------------|---------------------------------|--------------------------------------|------------------------------|
| Paine Creek | | | X | |
| Trumbull Creek | | | X | |
| Hoskins Creek | | | X | |
| Indian Creek | | | X | |
| Crooked Creek | | | X | |
| Phelps Creek | | | X | |
| Unnamed Tributary of Paine Creek | | | (RM 7.2) | |

Service Area 16

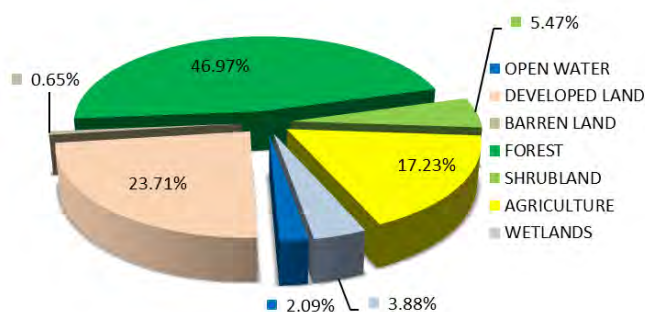
Conneaut Creek - Conneaut HUC 04120101

Watershed Characteristics

- 8-digit HUC size: 63 miles²
- 2-digit HUC: Lake Erie
- 6-digit HUC: Eastern Lake Erie
- Number of 12-digit HUCs: 4
- Corps district: Buffalo
- Approximate 2010 population: 18,800

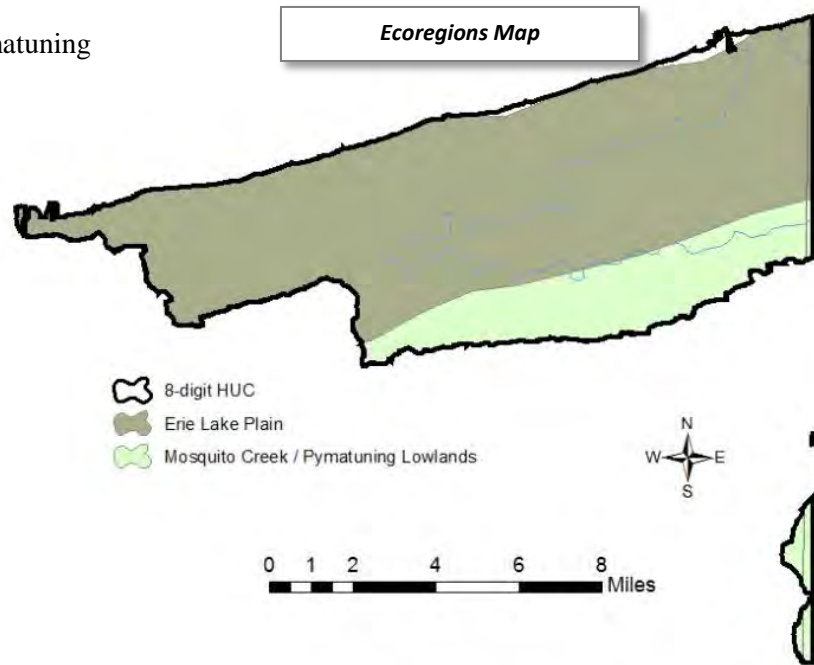


- Land Uses:



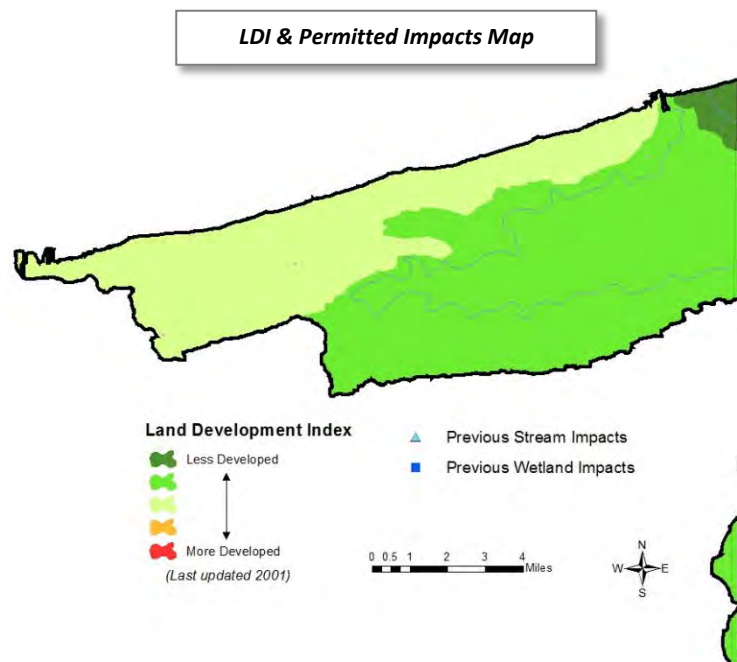
- Counties: Ashtabula
- Waterbodies
 - Total open water: 0.09 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - Wetlands: 2,874 acres
 - Named Streams: 25 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), Kirtland's warbler (E), piping plover (E), clubshell (E), snuffbox (E), eastern massasauga (C), bald eagle (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Erie Lake Plain (61a)
 - Mosquito Creek / Pymatuning Lowlands (61b, 61c)

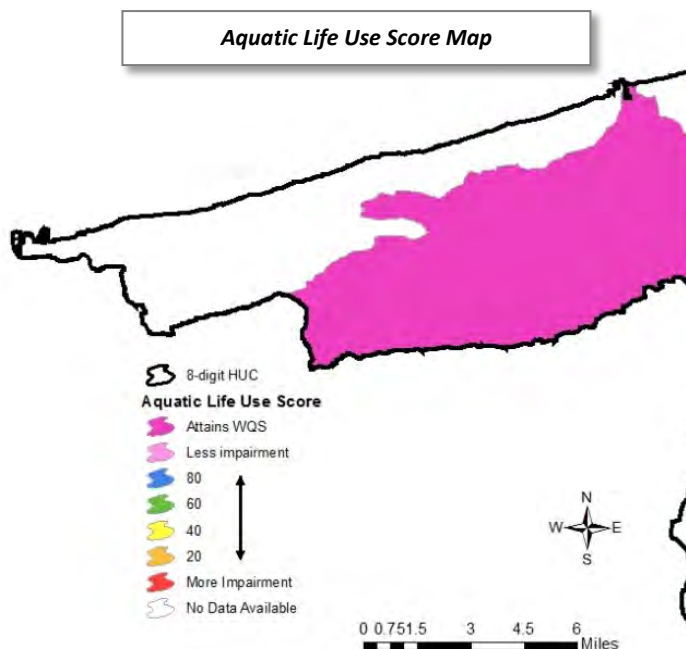


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows moderate impact in the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters (see adjacent map). Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 0 linear feet. And the average annual wetland mitigation (2004-2012) has been: 0 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and two OEPA Biological and Water Quality Reports [Lower Ashtabula and Conneaut Creek (2005), Grand and Ashtabula River Basins including Conneaut Creek (1997)] identified few existing sources of water quality threats and impacts.

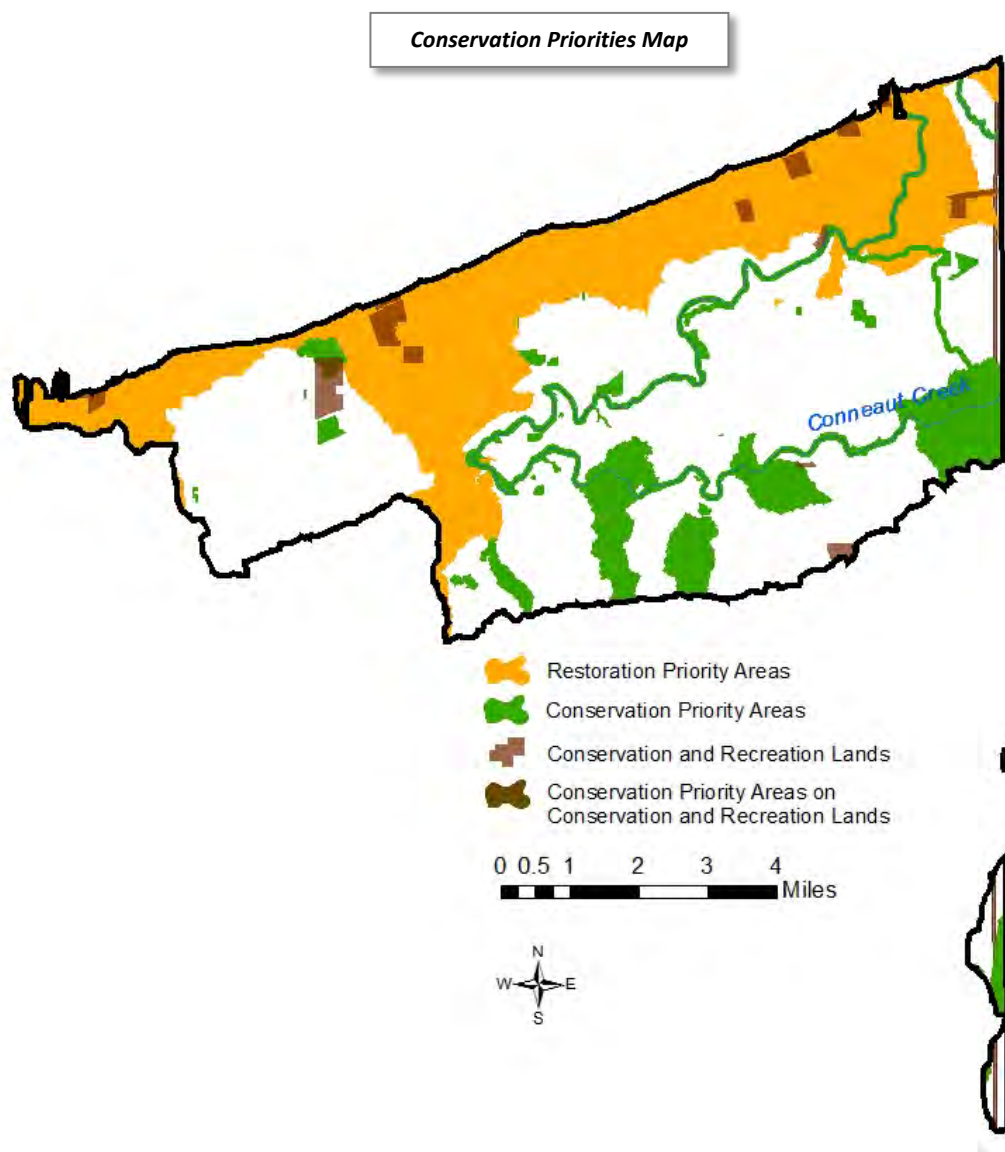


Aquatic Resource Goals

The Pennsylvania Lake Erie Watershed Conservation Plan (2008) includes Conneaut Creek in its analysis. The goals outlined in the plan that the TNC In-Lieu Fee Program might be able to help achieve include:

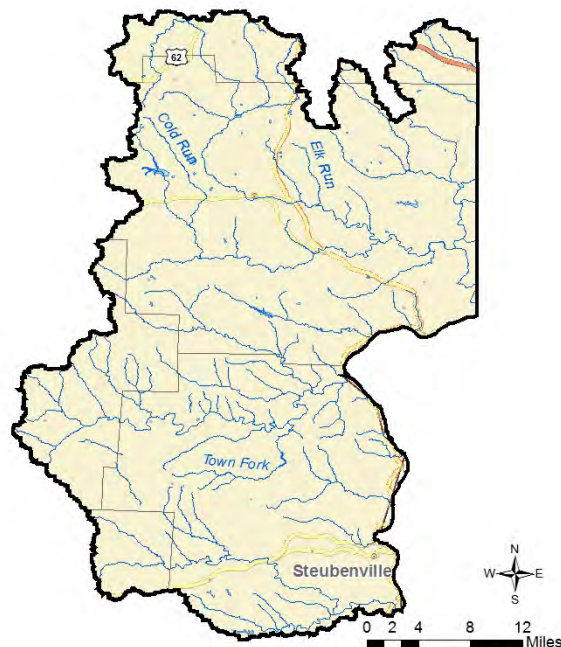
- Preserve and protect riparian corridors and highly erodible land
- Maintain water quality standards in all unimpaired stream segments
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



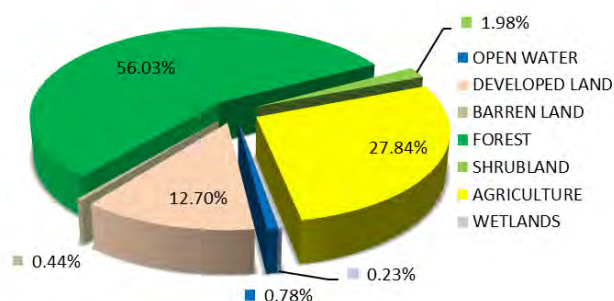
Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|----------------|--------------------|------------------------------------|-------------------------------|-----------------------|
| Conneaut Creek | | State line (RM 23.83) to the mouth | X | |

Primary Service Area 17**Upper Ohio
HUC 05030101****Watershed Characteristic****Geographic Overview Map**

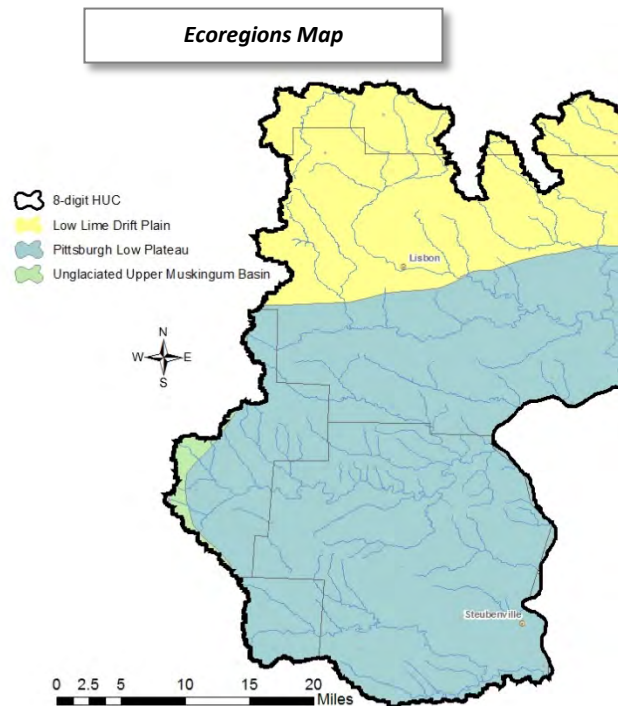
- 8-digit HUC size: 822 miles²
- 2-digit HUC: Ohio River
- 6-digit HUC: Upper Ohio – Beaver
- Number of 12-digit HUCs: 106
- Corps district: Pittsburgh
- Approximate 2010 population: 159,420

- Land Uses:



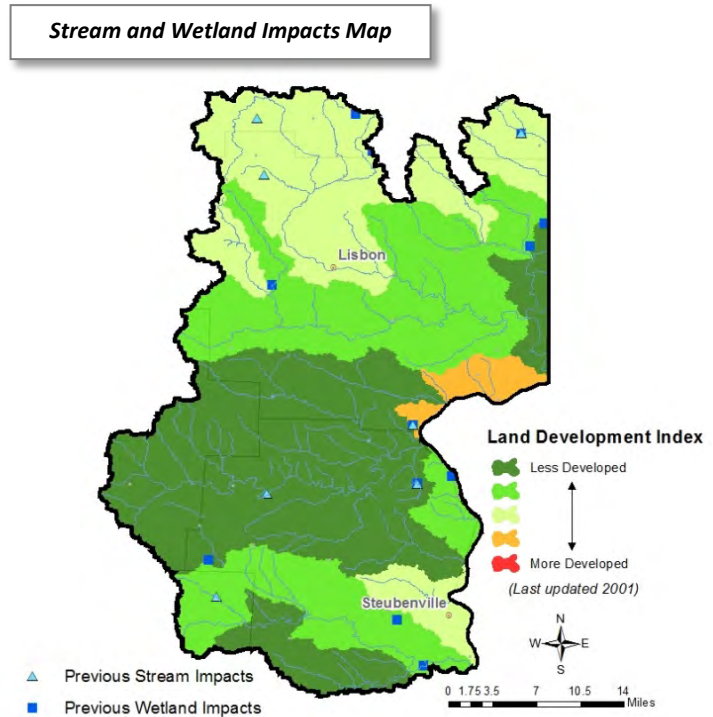
- Counties: Carroll, Columbiana, Harrison, Jefferson, Mahoning
- Waterbodies
 - Total open water: 1.68 miles²
 - Number of waterbodies over 0.5 miles² in size: 1
 - Wetlands: 7,841 acres
 - Named Streams: 1147 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), Eastern massasauga (C), bald eagle (SC), Eastern hellbender (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Low Lime Drift Plain (61c)
 - Pittsburgh Low Plateau 70c)
 - Unglaciaded Upper Muskingum Basin (70e)

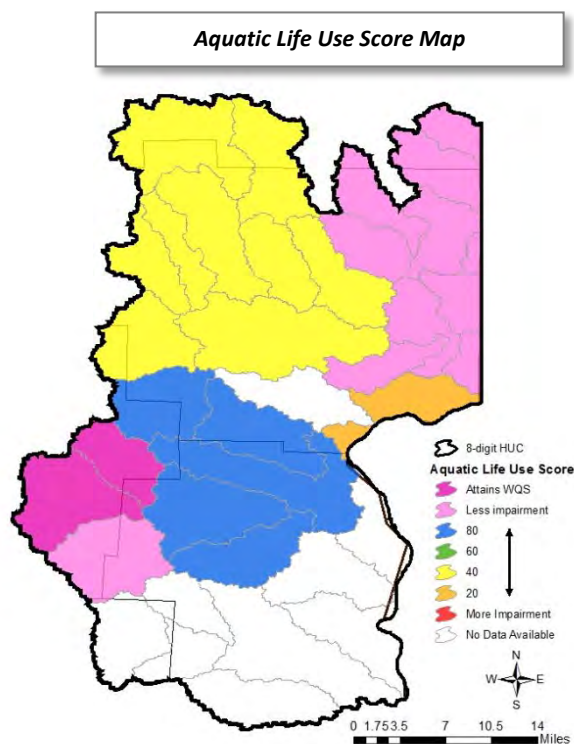


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows less impact in the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters (see adjacent map). Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 4,223 linear feet. And the average annual wetland mitigation (2004-2012) has been: 5.17 acres.



The OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report and the OEPA Biological and Water Quality Study of Yellow Creek and Selected Tributaries (2008) have identified causes of impairment including: direct habitat alterations, nutrients, excess algal growth, metals, organic enrichment, pesticides, sedimentation, and siltation. Sources of these impairments have been identified as: channelization, CFO, contaminated sediments, agriculture, septic tanks, surface mining, acid mine drainage, urban runoff/storm sewers, major municipal point source.

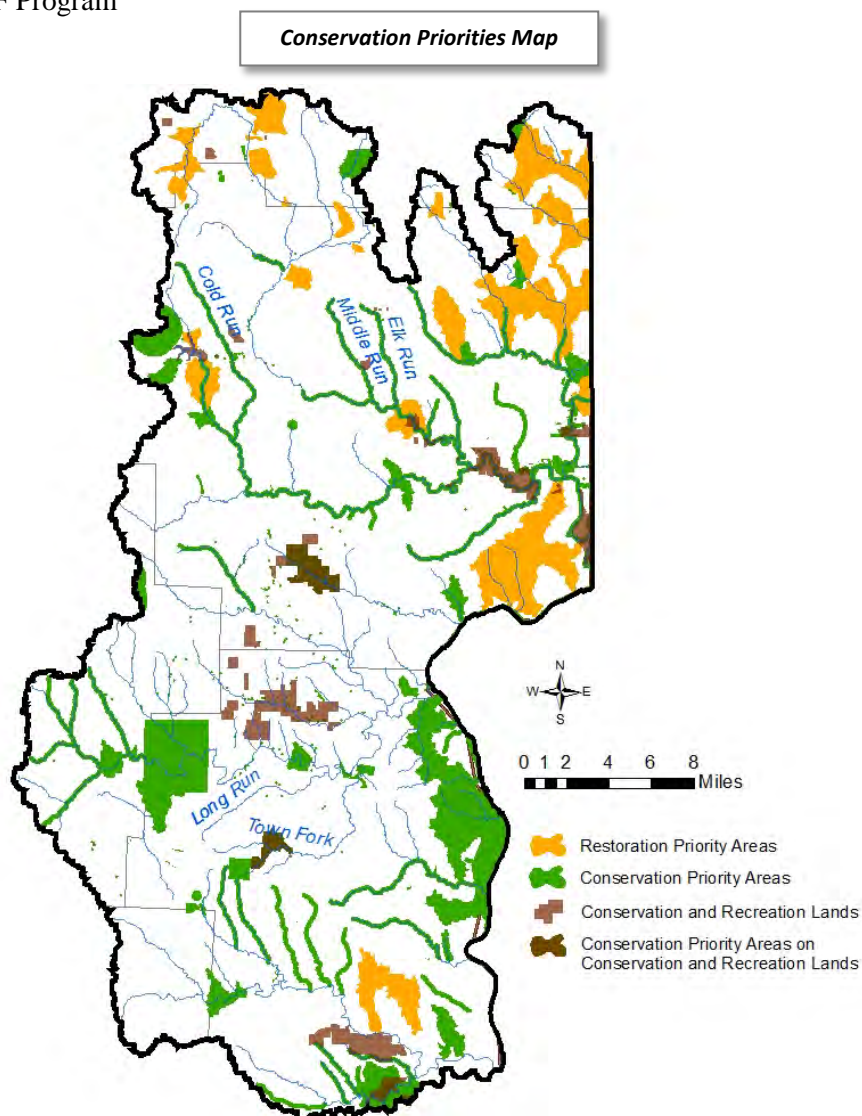


Aquatic Resource Goals

Watershed Action Plans have been developed for two of the watersheds within this Primary Service Area including: Little Beaver (2012) and Yellow Creek (2009). Goals for these Watershed Action Plans that the TNC In-Lieu Fee Program might support include:

- Reduce sediment loading
- Reduce total suspended solids
- Reduce the level of pathogens from livestock operations
- Stabilize streambanks
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|---------------------------|--------------------|--------------------------|-------------------------------------|-----------------------|
| Bieler Run | | | X | |
| Brush Run | | | X | |
| Bull Creek | | | St. Rte. 558 (RM 6.02) to the mouth | |
| Cedar Lick Run | X | | | X |
| Center Fork Elkhorn Creek | X | | | X |
| Clay Lick Creek | X | | | |
| Cold Run | | | All other segments | |
| East Fork Stateline Creek | | | X | |
| Elk Run | | | X | |
| Elkhorn | | | X | X |
| Frog Run | | | X | |
| Goose Run | X | | | |

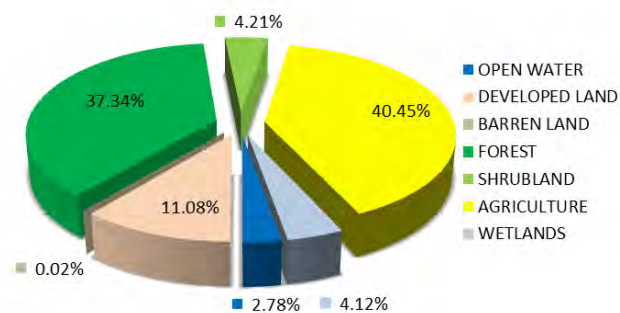
Continued

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|---------------------------------|--|--------------------------|--|-----------------------|
| Grassy Run | X | | | |
| Island Creek | X | | | |
| Jeddo Run | X | | | |
| Lea Branch | X | | | |
| Leslie Run | Adjacent to St. Rte. 170 (RM 1.9) to the mouth | | | |
| Little Beaver Creek | | X | X | |
| Little Bull Creek | | | X | |
| Little McIntyre Creek | X | | | |
| Longs Run | X | | | |
| Longs Run | | | X | |
| McCormick Run | | | X | |
| Middle Fork Little Beaver Creek | | X | Spillway at Lisbon (RM 12.5) to the mouth | |
| Middle Run | X | | | |
| Nancy Run | X | | | X |
| North Fork Little Beaver Creek | | X | Ohio-Penn. State Line (RM 7.75) to the mouth | |
| North Fork Wills Creek | X | | | |
| Permars Run | X | | | |
| Peters Run | X | | | |
| Pine Run | | | X | |
| Polecat Hollow | X | | | |
| Rough Run | X | | | |
| Slab Run | X | | | |
| Slabcamp Creek | X | | | |
| Stone Mill Run | Cunningham Rd. (RM 2.0) to the mouth | | | |
| Strawcamp Run | | | X | X |
| Strawcamp Run | | | X | |
| Trail Run | X | | | X |
| Turkeyfoot Run | | | X | |
| West Fork Little Beaver Creek | | X | Brush Creek (RM 15.99) to the mouth | |

Primary Service Area 18**Shenango****HUC 05030102****Watershed Characteristic****Geographic Overview Map**

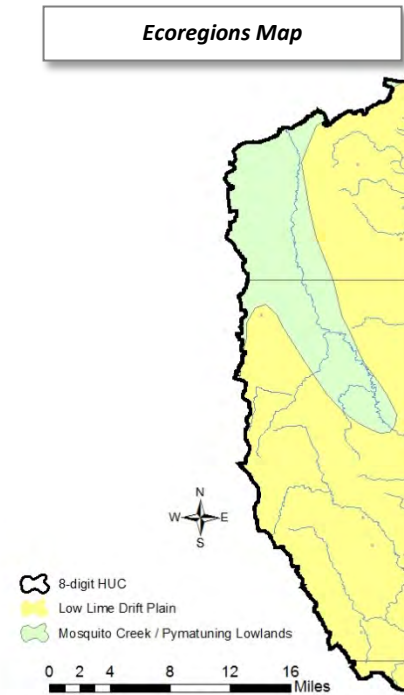
- 8-digit HUC size: 284 miles²
- 2-digit HUC: Ohio River
- 6-digit HUC: Upper Ohio – Beaver
- Number of 12-digit HUCs: 106
- Corps district: Pittsburgh
- Approximate 2010 population: 37,920

- Land Uses:



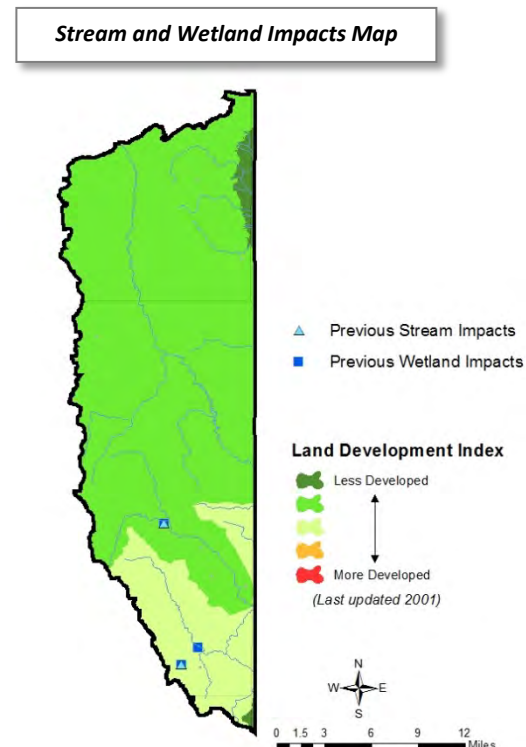
- Counties: Ashtabula, Mahoning, Trumbull
- Waterbodies
 - Total open water: 39.8 miles²
 - Number of waterbodies over 0.5 miles² in size: 4
 - Wetlands: 17,651 acres
 - Named Streams: 148 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), Kirtland's warbler (E), piping plover (E), clubshell (E), snuffbox (E), Eastern massasauga (C), bald eagle (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Low Lime Drift Plain (61c)
 - Mosquito Creek / Pymatuning Lowlands (61b)

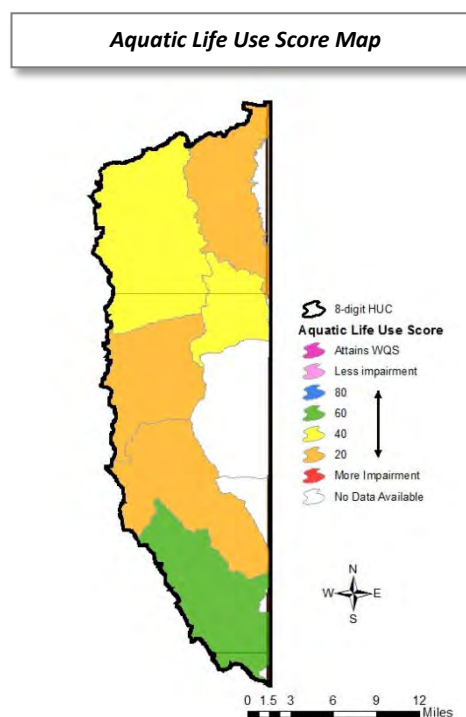


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows fewer impacts in the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters (see adjacent map). Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 0 linear feet. And the average annual wetland mitigation (2004-2012) has been: 0.58 acres.



The OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report and the OEPA Biological and Water Quality Report for the Ohio Tributaries to the Shenango River (2008) have identified causes of impairment including: direct habitat alterations, flow alterations, nutrients, organic enrichment, sedimentation, and siltation. Sources of these impairments have been identified as: urban runoff, agriculture, failing septic systems, channelization.

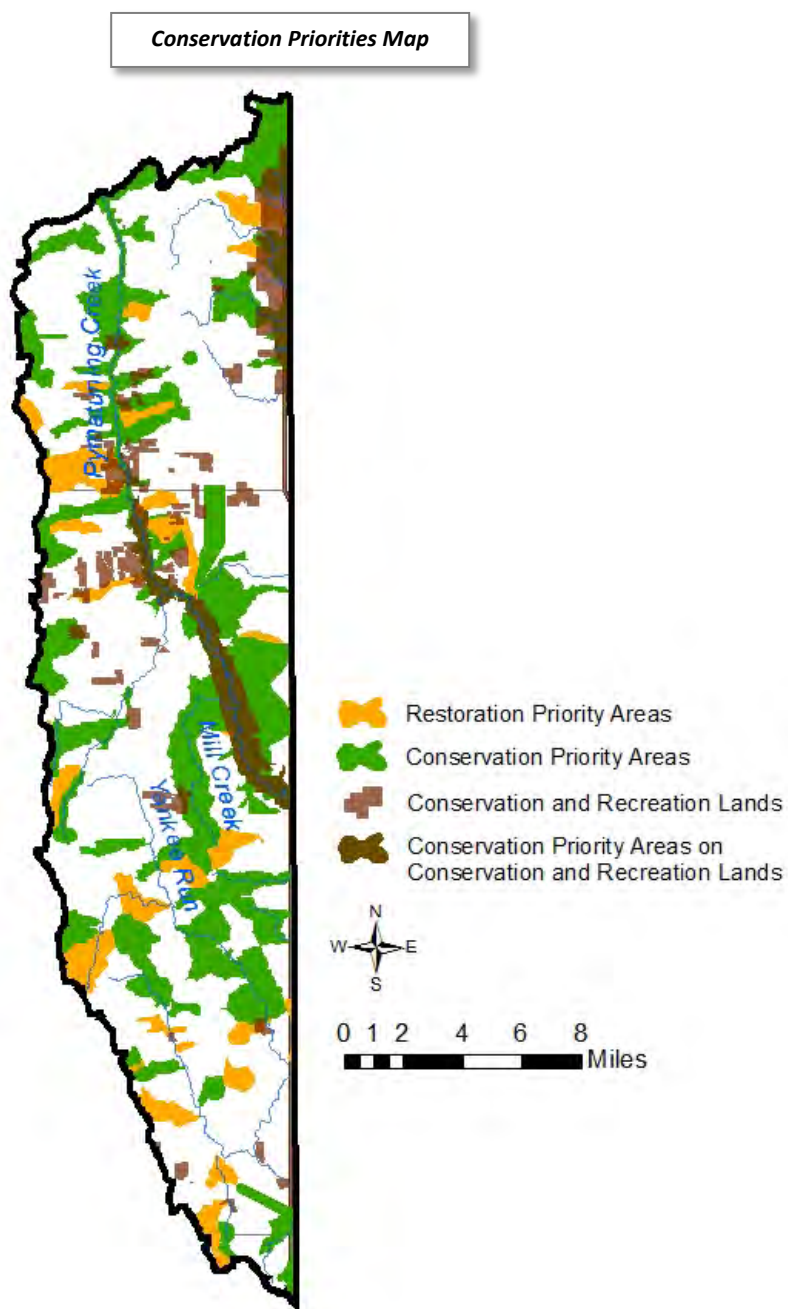


Aquatic Resource Goals

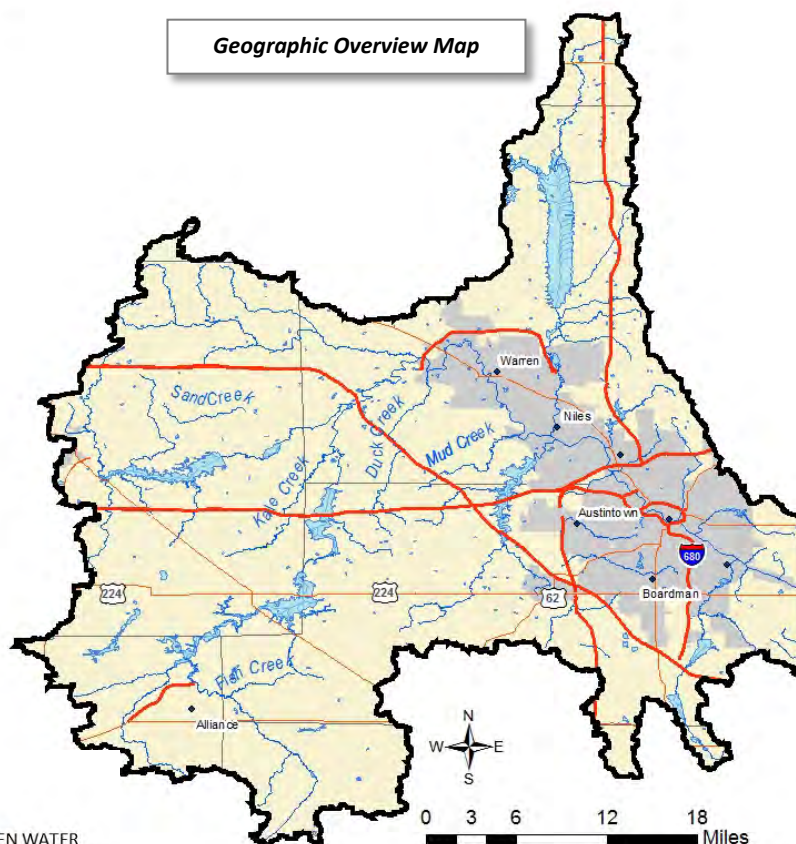
A Watershed Action Plan has been developed for this Primary Service Area by the Western Pennsylvania Conservancy (2005). The TNC In-Lieu Fee Program might support some of the goals of the plan including:

- Reduce sediment loading
- Reduce total suspended solids
- Improve and restore in-stream physical habitat
- Improve aquatic life habitat
- Identify and protect environmentally sensitive areas and areas of high biodiversity
- Identify and eradicate invasive species
- Perform streambank restoration
- Establish and protect riparian corridors
- Increase groundwater recharge
- Protect and restore wetland habitats
- Establish greenway corridors and trails along waterways
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.

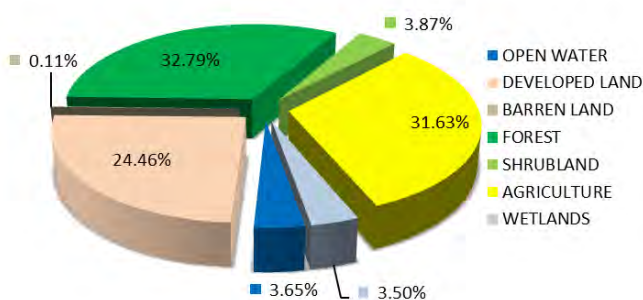


Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. No waterways in this Primary Service Area have been designated as Cold Water Habitat, Exceptional Warmwater Habitat, Outstanding State Waters, or Superior State Waters.

Primary Service Area 19**Mahoning**
HUC 05030103**Watershed Characteristic****Geographic Overview Map**

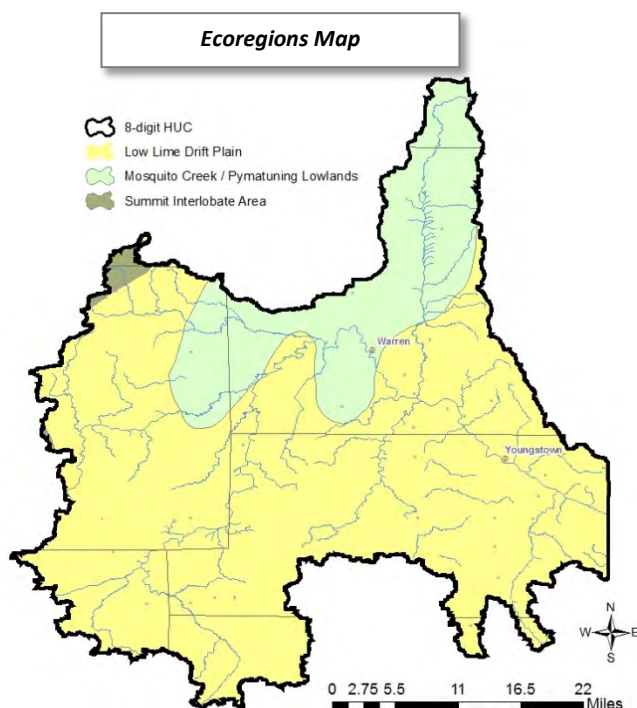
- 8-digit HUC size: 1083 miles²
- 2-digit HUC: Ohio River
- 6-digit HUC: Upper Ohio – Beaver
- Number of 12-digit HUCs: 106
- Corps district: Pittsburgh
- Approximate 2010 population: 85,409

• Land Uses:



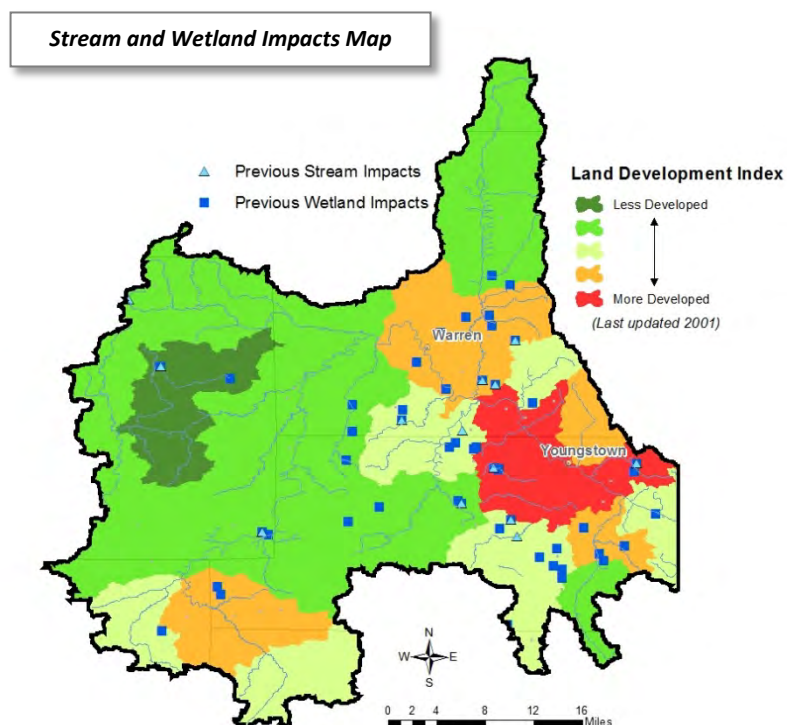
- Counties: Belmont, Guernsey, Harrison, Jefferson, Monroe, Noble
- Waterbodies
 - Total open water: 60 miles²
 - Number of waterbodies over 0.5 miles² in size: 14
 - Wetlands: 41,773 acres
 - Named Streams: 522 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), bald eagle (SC), Eastern hellbender (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Low Lime Drift Plain (61c)
 - Mosquito Creek / Pymatuning Lowlands (61b)
 - Summit Interlobate Area (61e)

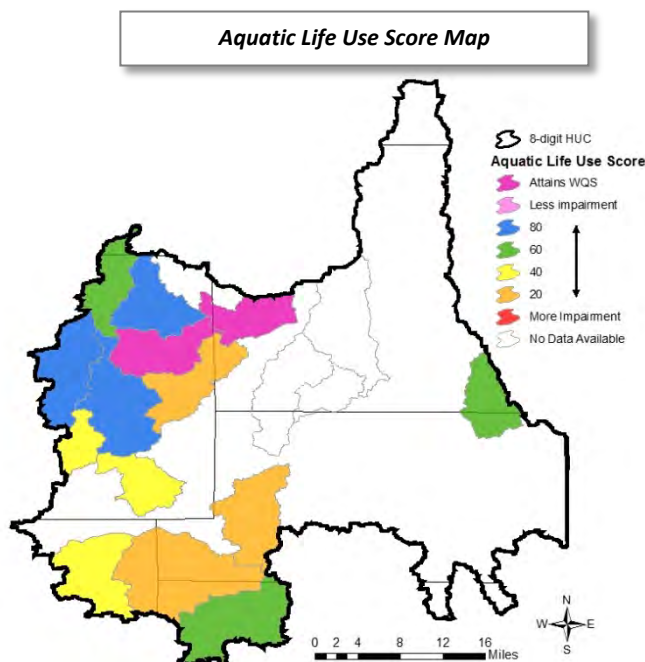


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows moderate impact in the watershed except for around Youngstown. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters (see adjacent map). Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 1,576 linear feet. And the average annual wetland mitigation (2004-2012) has been: 14.72 acres.



The OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report and several OEPA Biological and Water Quality Reports [Upper Scioto River Watershed (2009 & 2011), Middle Scioto (2010), Little Scioto (2008), Walnut Creek (2005), Olentangy River (2003), Big Walnut Creek (2000)] have identified causes of impairment including: direct habitat alterations, abnormal fish deformities, nutrients, flow modification, metals, organic enrichment, polycyclic aromatic hydrocarbons, thermal modifications, sedimentation, and siltation. Sources of these impairments have been identified as: bank erosion, agriculture, unrestricted cattle access, dams/impoundments, channelization, hazardous wastes, major municipal point source, urban high density area, spills, combined sewer overflows, urban runoff/storm sewers.

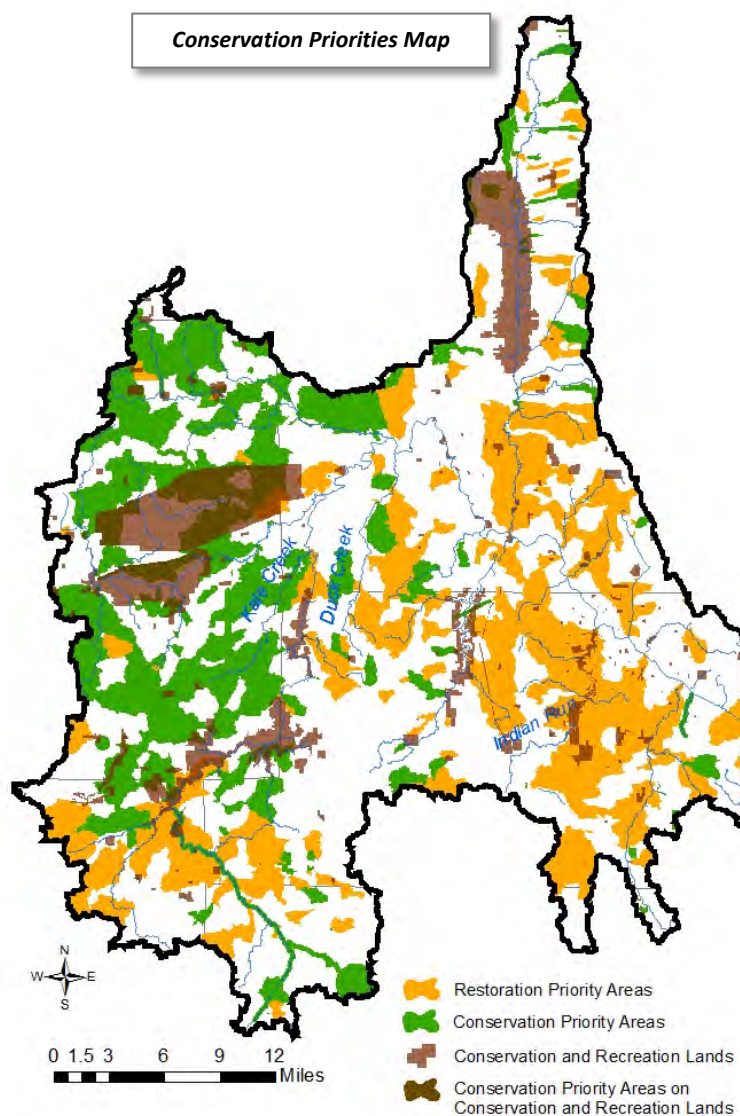


Aquatic Resource Goals

Watershed Action Plans have been developed for watersheds within this Primary Service Area: Mill Creek (2007) and Mahoning River (2004). Goals for these Watershed Action Plans that the TNC In-Lieu Fee Program might support include:

- Remove dams and other obstructions that serve as barriers to fish movement or restrict or alter flow conditions
- Reduce sediment loading
- Reduce total suspended solids
- Reduce the level of pathogens from livestock operations
- Improve and restore in-stream physical habitat through natural channel design
- Enhance the aesthetic quality, wildlife habitat, and sustainability of river corridor
- Establish passive recreation facilities
- Improve flood plain connectivity and sinuosity
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Establish wetlands
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

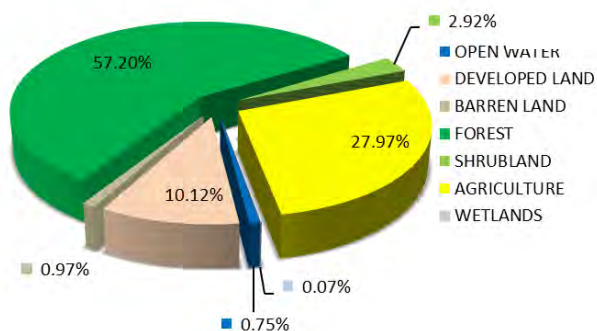
| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|------------------------|---------------------------------------|--------------------------|-------------------------------|-----------------------|
| Hines Run | X | | | |
| Camp Creek | X | | | |
| Silver Creek | X | | | |
| Mahoning River | Headwaters to King Rd. (RM 102.41) | | | |
| South Fork Eagle Creek | | | | X |

Primary Service Area 20**Upper Ohio - Wheeling
HUC 05030106****Watershed Characteristics**

- 8-digit HUC size: 638 miles²
- 2-digit HUC: Ohio River
- 6-digit HUC: Pittsburgh
- Number of 12-digit HUCs: 106
- Corps district: Pittsburgh
- Approximate 2010 population: 38,185

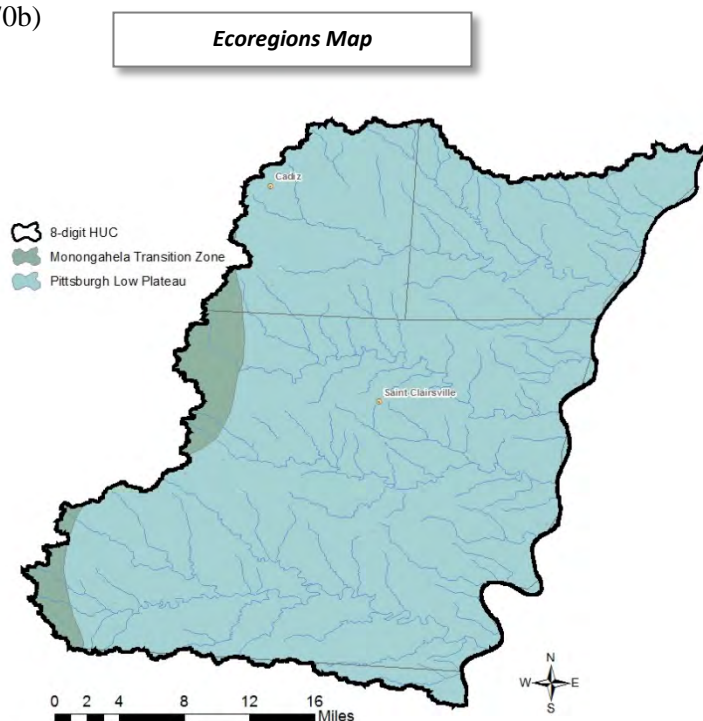
**Geographic Overview Map**

- Land Uses:



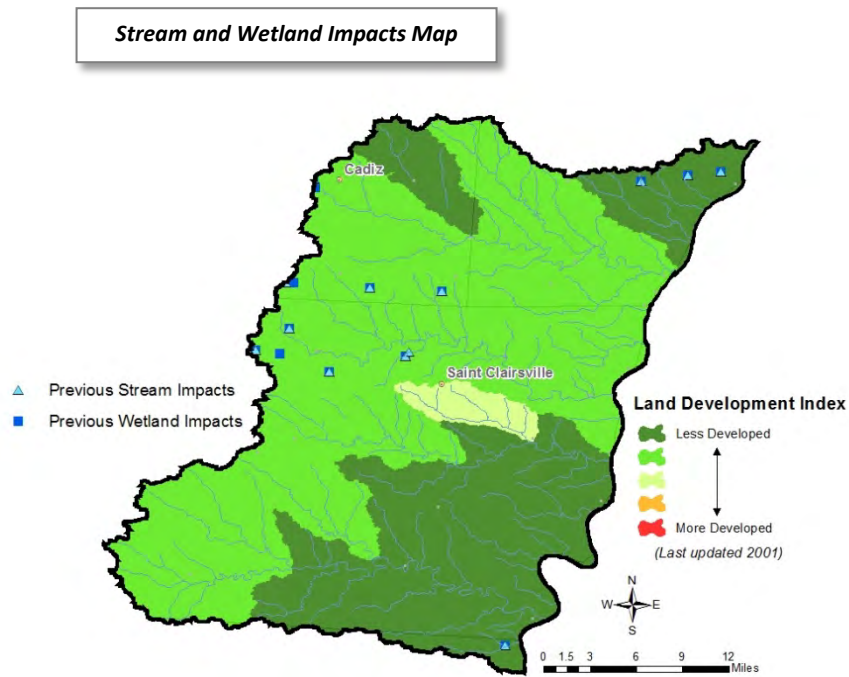
- Counties: Belmont, Guernsey, Harrison, Jefferson, Monroe, Noble
- Waterbodies
 - Total open water: 2.6 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - Wetlands: 2,640 acres
 - Named Streams: 225 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), bald eagle (SC), Eastern hellbender (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Monongahela Transition Zone (70b)
 - Pittsburgh Low Plateau (70c)

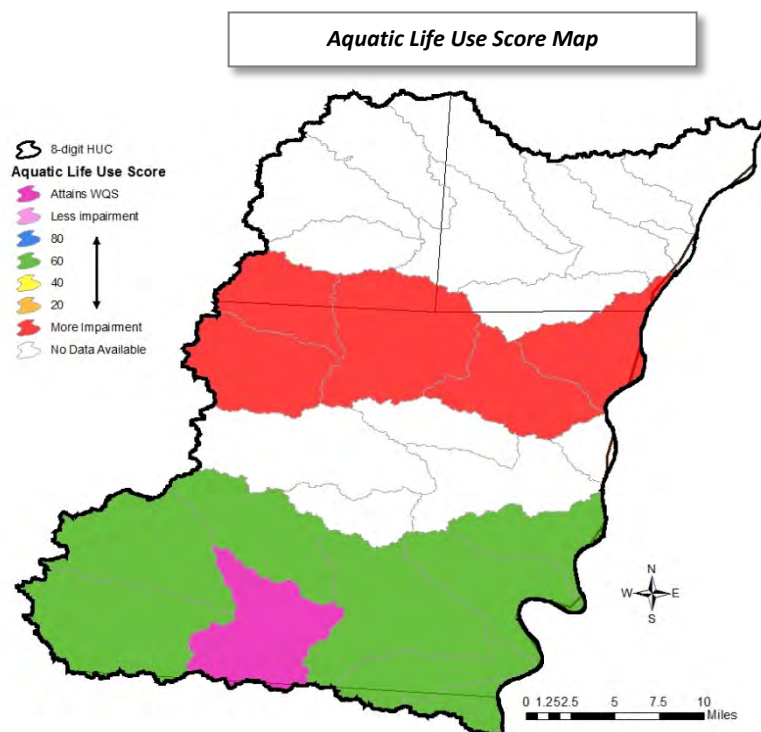


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows less development in the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters (see adjacent map). Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 14,786 linear feet. And the average annual wetland mitigation (2004-2012) has been: 10.62 acres.



The OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report and several OEPA Biological and Water Quality Reports [McMahon (2009), Captina (2010), & Fall Run (2002)] have identified causes of impairment including: metals, organic enrichment, sedimentation, and siltation. Sources of these impairments have been identified as: unrestricted cattle access, mining, septic systems, acid mine drainage, inappropriate waste disposal, dams/impoundments, and municipal source discharges.

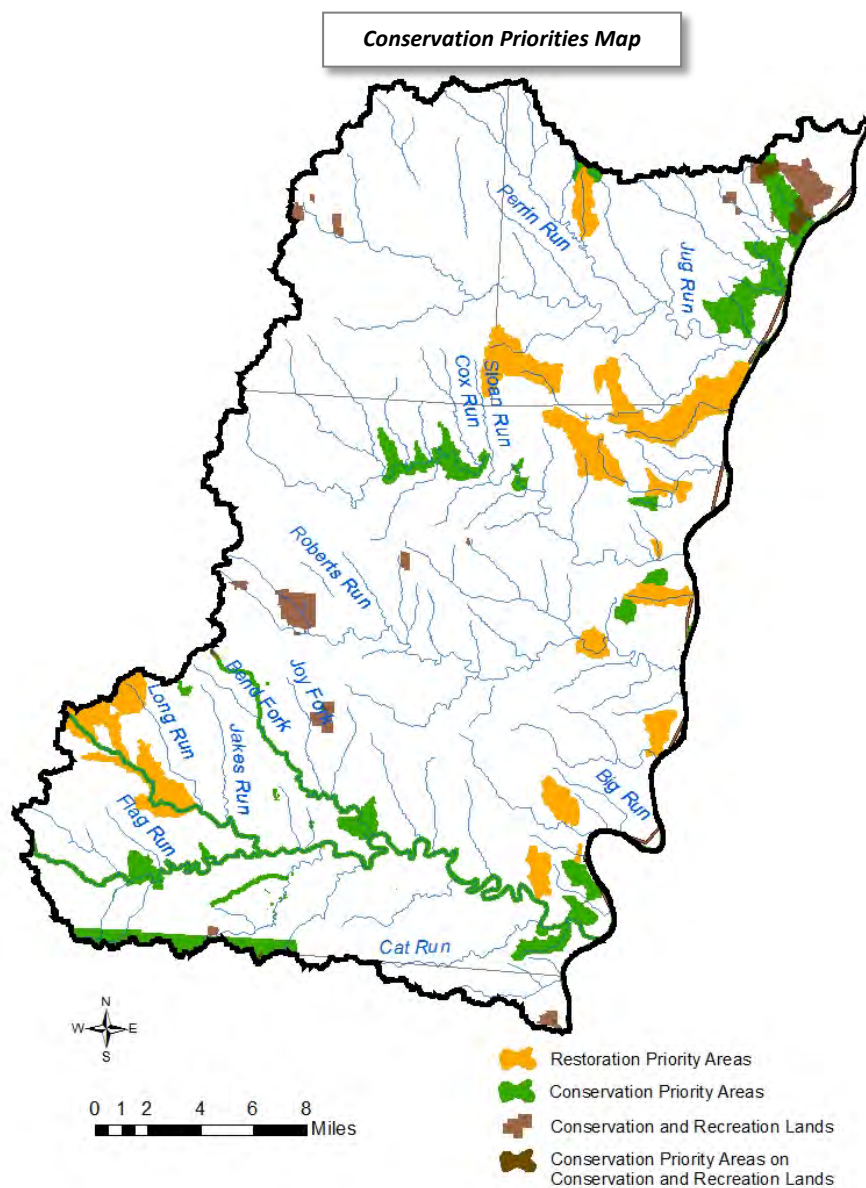


Aquatic Resource Goals

A Watershed Action Plan has been developed for a subwatershed within this Primary Service Area. The goals for the Captina Creek Watershed Action Plan that the TNC In-Lieu Fee Program might support include:

- Reduce sediment loading
- Reduce total suspended solids
- Reduce the level of pathogens from livestock operations
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Remove dams and other obstructions that serve as barriers to fish movement or restrict or alter flow conditions

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



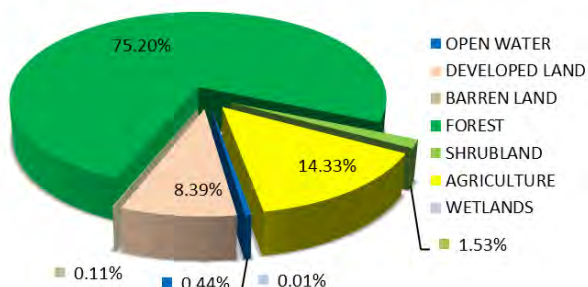
Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|--------------------------|--------------------|--|--|--------------------------------|
| Captina Creek | | North/South forks (RM 25.42) to St. Rte. 7 (RM 0.07) | Confluence with North and South forks to St. Rte. 7 (RM 0.8) | |
| Bend Fork | | | Joy fork to mouth | Joy Fork (RM 4.0) to the mouth |
| Long Run | | | X | |
| North Fork Captina Creek | | | Long run to the mouth | Long run (RM 4.0) to the mouth |
| South Fork Captina Creek | | | | X |

Primary Service Area 21**Little Muskingum****HUC 05030201****Watershed Characteristic****Geographic Overview Map**

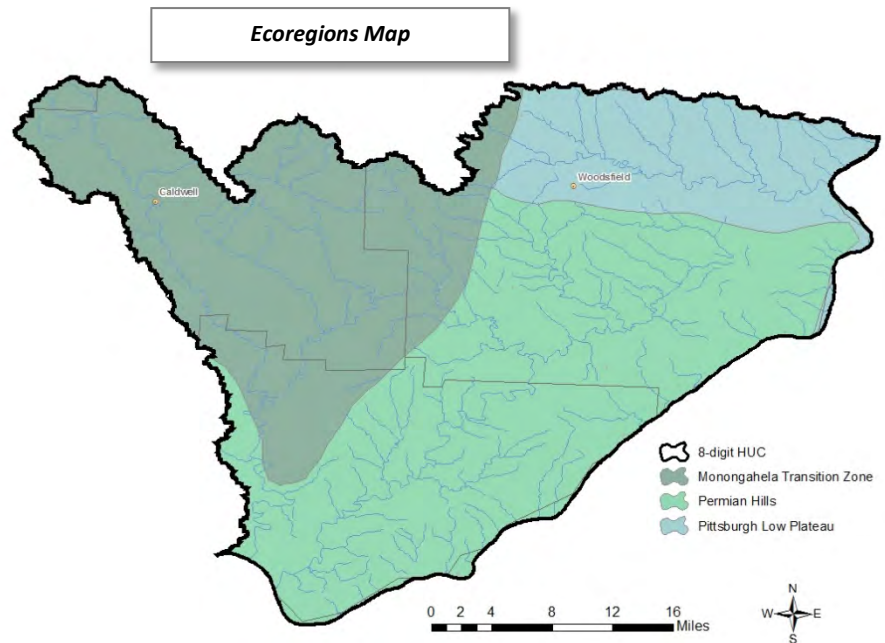
- 8-digit HUC size: 861 miles²
- 2-digit HUC: Ohio River
- 6-digit HUC: Upper Ohio - Beaver
- Number of 12-digit HUCs: 106
- Corps district: Huntington
- Approximate 2010 population: 51,555

- Land Uses:



- Counties: Belmont, Guernsey, Monroe, Noble, Washington
- Waterbodies
 - Total open water: 1.9 miles²
 - Number of waterbodies over 0.5 miles² in size: 1
 - Wetlands: 1,867 acres
 - Named Streams: 665 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), fanshell (E), pink mucket pearly mussel (E), sheepsnose (E), clubshell (E), snuffbox (E), bald eagle (SC), timber rattlesnake (SC), Eastern hellbender (SC)

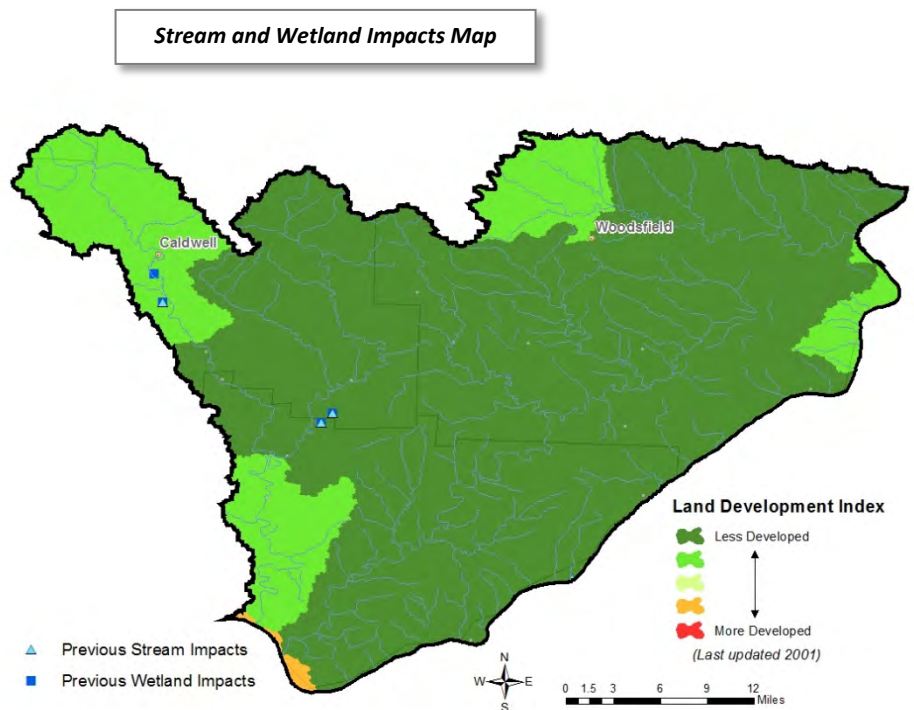
- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Monongahela Transition Zone (70b)
 - Permian Hills (70a)
 - Pittsburgh Low Plateau (70c)



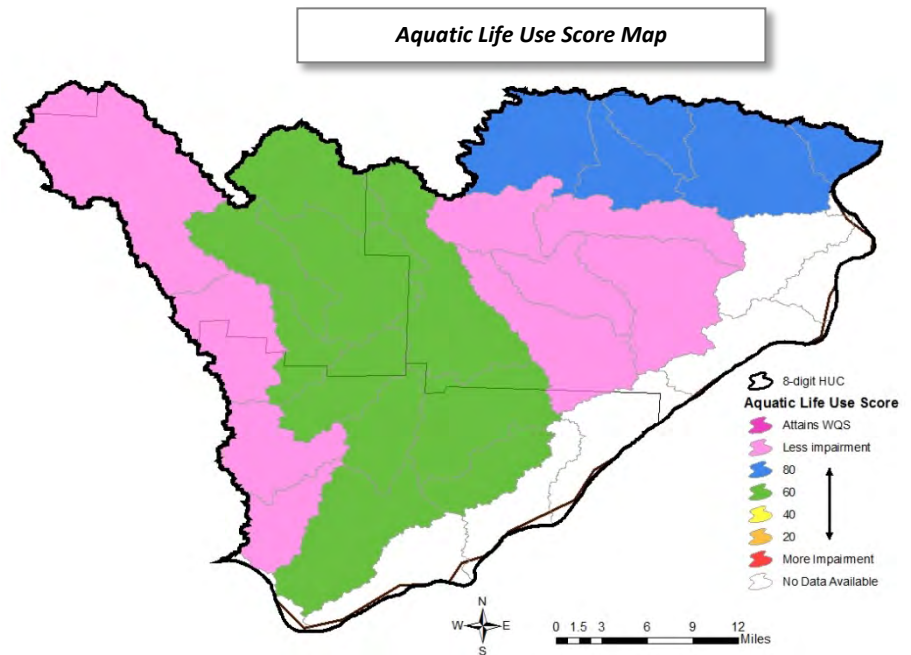
Threats and Impacts

The Landscape Development Index (LDI) for the service area shows less development in the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters (see adjacent map).

Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 2,726 linear feet. And the average annual wetland mitigation (2004-2012) has been: 0.13 acres.



The OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report and the OEPA Biological and Water Quality Report on Sunfish Creek (2010) have identified causes of impairment including: flow alteration, direct habitat alterations, nutrients, metals, organic enrichment, sedimentation, and siltation. Sources of these impairments have been identified as: impoundments, spills, agriculture, septic tanks, surface mining, acid mine drainage, and urban runoff/storm sewers.

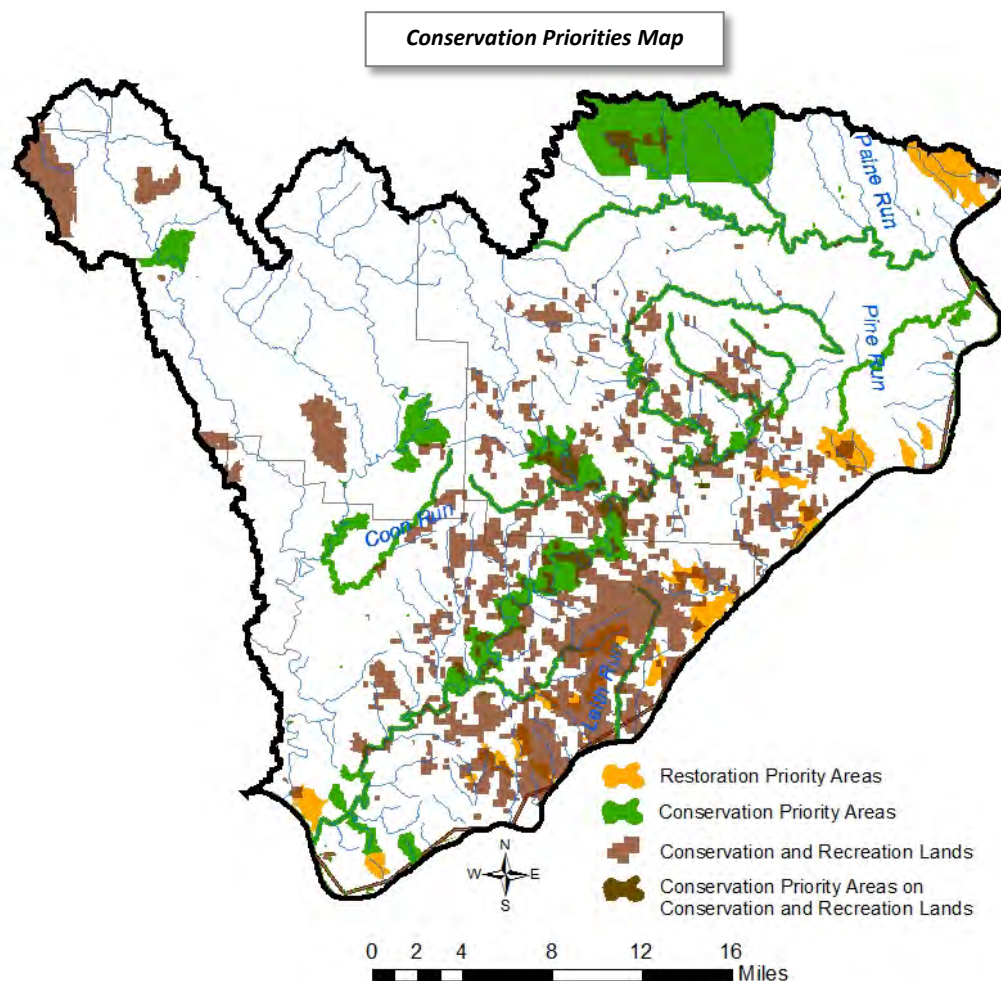


Aquatic Resource Goals

A Watershed Action Plan has been developed for this Primary Service Area. The goals of the Duck Creek Watershed Management Plan that the TNC In-Lieu Fee Program might support include:

- Reduce sediment loading
- Reduce total suspended solids
- Reduce the level of pathogens from livestock operations
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

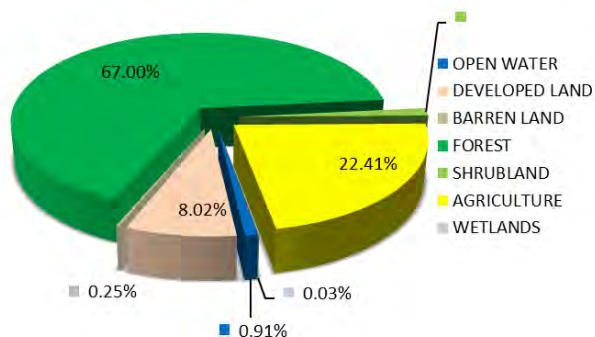
| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|------------------------|--------------------|--------------------------|-----------------------------------|---|
| Little Muskingum River | | | Cranenest Fork (RM 58.3) to mouth | Witten fork (RM 46.44) to Fifteen Mile creek (RM 14.75) |
| Witten Run | | | X | X |
| Leith Run | | | X | X |
| Sunfish Creek | | | Paine Run to Salem Run | |
| Standingstone Run | | | RM 0.5 to the mouth | |
| Pawpaw Creek | | | X | |
| Witten Fork | | | | X |
| Archers Fork | | | | X |
| Dismal Creek | | | | X |
| Opossum Creek | | | | X |
| Piney Fork | | | | X |

Primary Service Area 22**Upper Ohio - Shade
HUC 05030202****Watershed Characteristic**

- 8-digit HUC size: 711 miles²
- 2-digit HUC: Ohio River
- 6-digit HUC: Upper Ohio – Little Kanawha
- Number of 12-digit HUCs: 106
- Corps district: Huntington
- Approximate 2010 population: 170,940

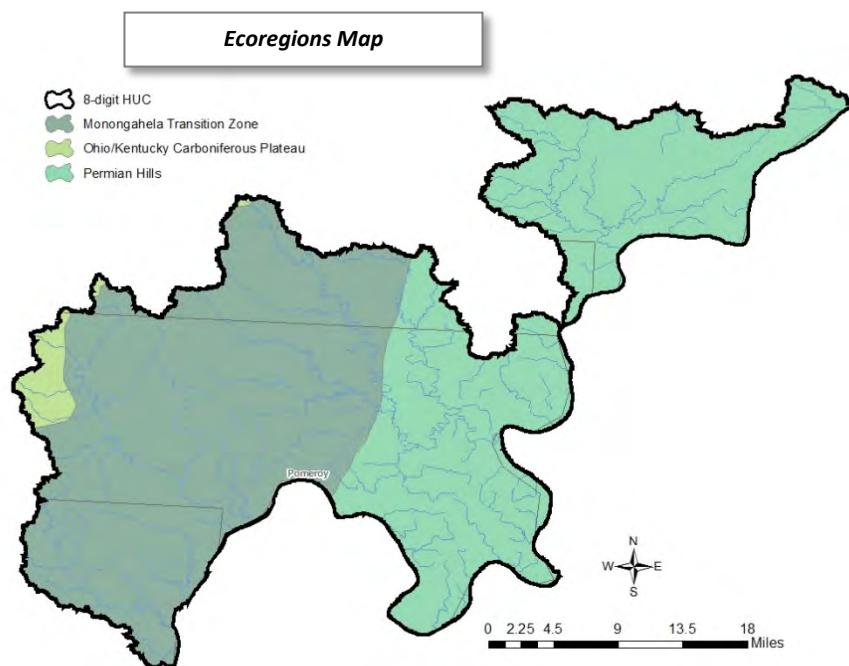
**Geographic Overview Map**

- Land Uses:



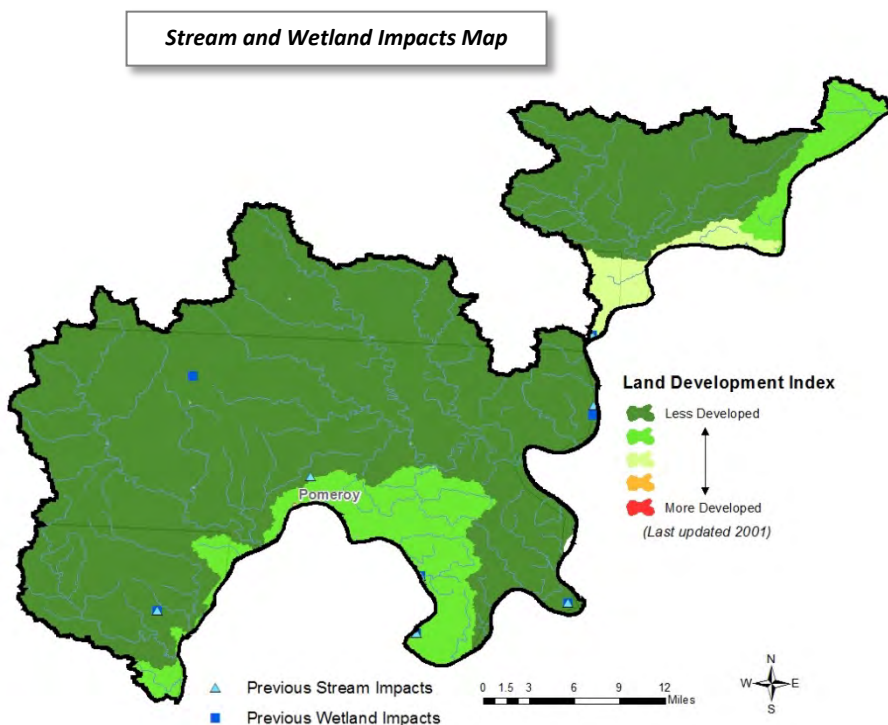
- Counties: Athens, Gallia, Meigs, Vinton, Washington
- Waterbodies
 - Total open water: 1.9 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - Wetlands: 1,990 acres
 - Named Streams: 544 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), fanshell (E), pink mucket pearly mussel (E), rayed bean (E), sheepsnose (E), snuffbox (E), American burying beetle (E), timber rattlesnake (SC), bald eagle (SC), Eastern hellbender (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Monongahela Transition Zone (70b)
 - Ohio/Kentucky Carboniferous Plateau (70f)
 - Permian Hills (70a)

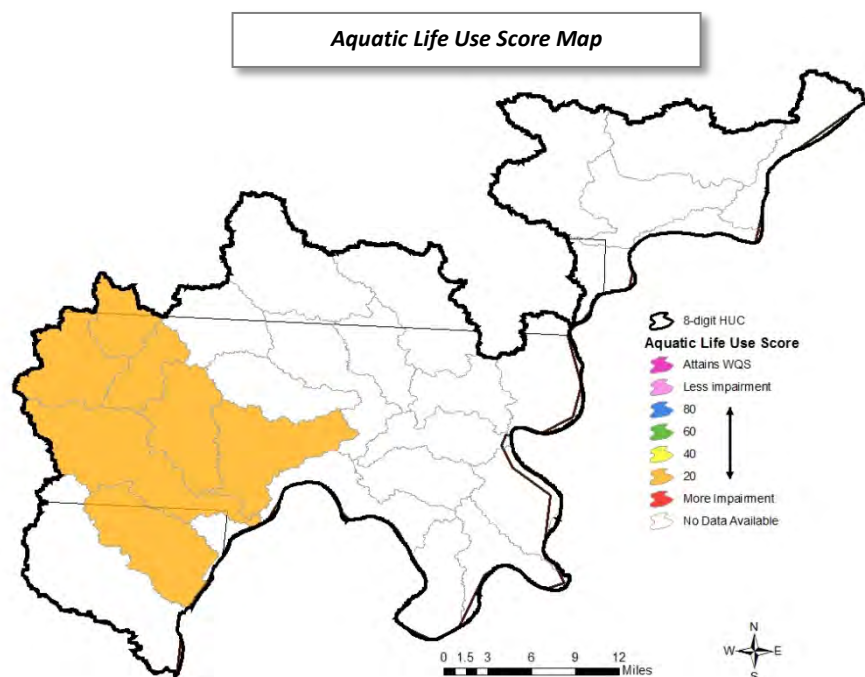


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows less development in the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters (see adjacent map). Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 8,793 linear feet. And the average annual wetland mitigation (2004-2012) has been: 1.54 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and the OEPA Biological and Water Quality Reports on Kyger Creek (2008), and the Southeast Ohio Tributaries (1991) have identified causes of impairment including: direct habitat alterations, metals, sedimentation, and siltation. Sources of these impairments have been identified as: channelization, agriculture, unrestricted cattle access, landfills, industrial point source discharge, surface mining, subsurface mining, and acid mine drainage.

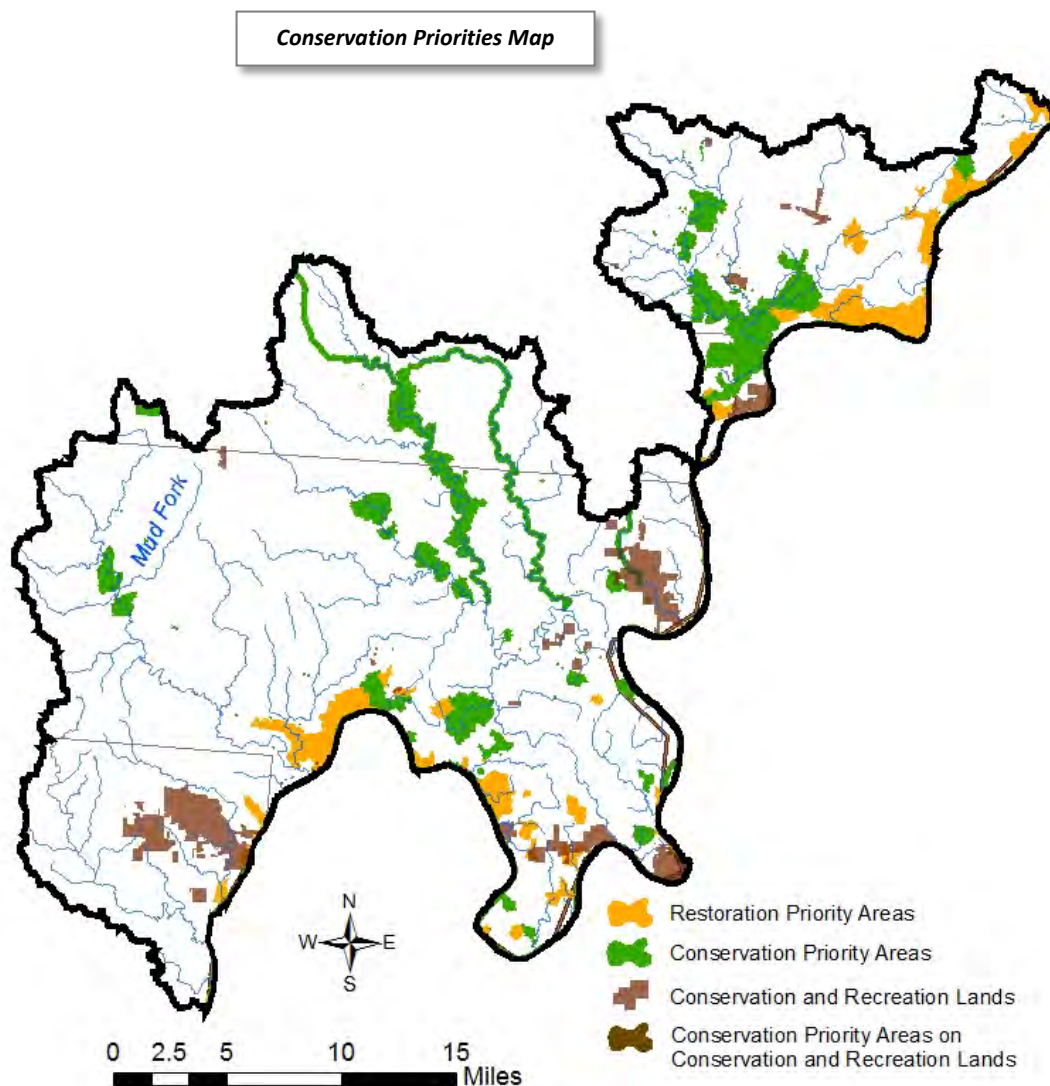


Aquatic Resource Goals

A Watershed Action Plan has been developed for the Leading Creek subwatershed within this Primary Service Area. Goals for this Watershed Action Plan that the TNC In-Lieu Fee Program might support include:

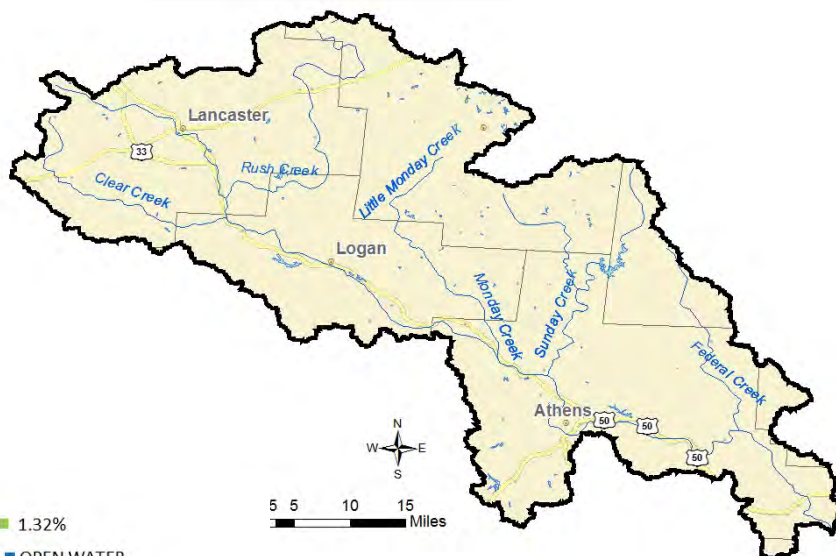
- Reduce sediment loading
- Reduce total suspended solids
- Reduce the level of pathogens from livestock operations
- Improve and restore in-stream physical habitat
- Improve aquatic life habitat
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Preserve and enhance wetlands
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



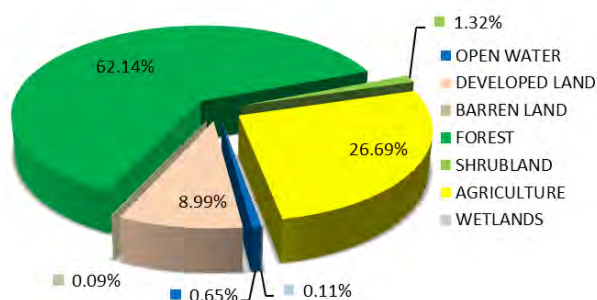
Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|---------------------------|--------------------|--------------------------|------------------------------------|-----------------------|
| East Branch Shade River | | | X | |
| Middle Branch Shade River | | | X | |
| Forked Run | | | headwaters to Forked Run reservoir | |

Primary Service Area 23**Hocking****HUC 05030204****Watershed Characteristic****Geographic Overview Map**

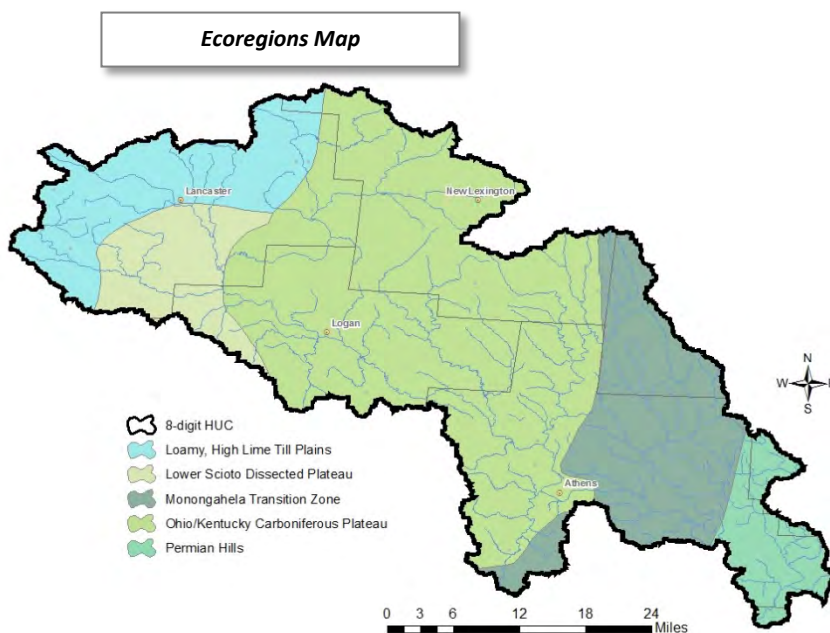
- 8-digit HUC size: 1196 miles²
- 2-digit HUC: Ohio River
- 6-digit HUC: Upper Ohio – Little Kanawha
- Number of 12-digit HUCs: 106
- Corps district: Huntington
- Approximate 2010 population: 170,940

• Land Uses:



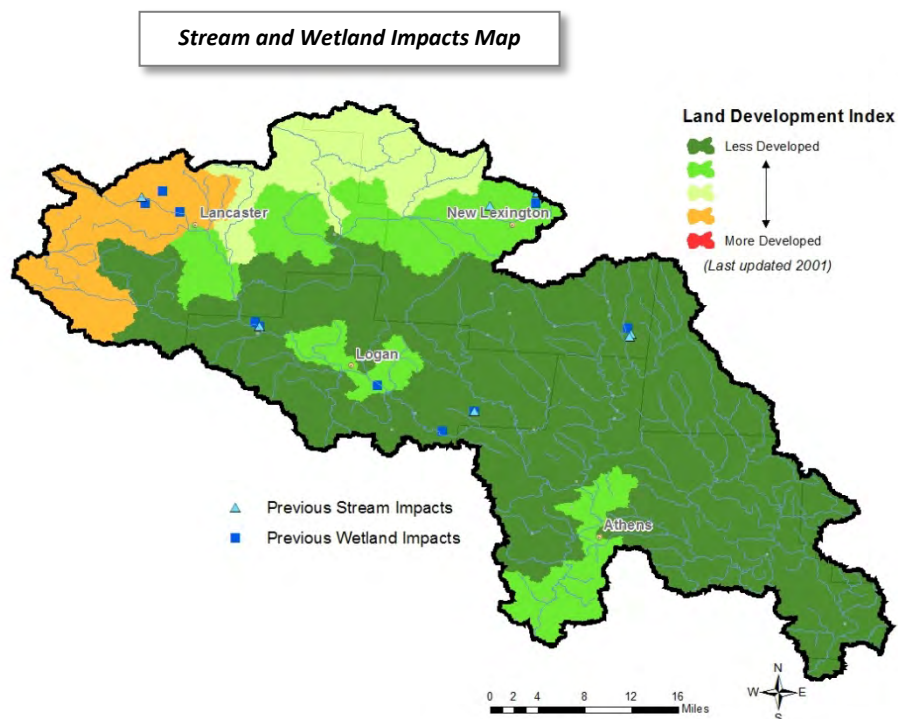
- Counties: Athens, Fairfield, Hocking, Meigs, Morgan, Perry, Pickaway, Washington
- Waterbodies
 - Total open water: 6.1 miles²
 - Number of waterbodies over 0.5 miles² in size: 2
 - Wetlands: 5,859 acres
 - Named Streams: 804 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), fanshell (E), pink mucket pearly mussel (E), rayed bean (E), sheepsnose (E), snuffbox (E), Scioto madtom (E), clubshell (E), northern riffleshell (E), American burying beetle (E), running buffalo clover (E), northern monkshood (T), small whorled pagonia (T), Eastern massasauga (C), rabbitsfoot (PT), Eastern hellbender (SC), timber rattlesnake (SC), bald eagle (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Loamy, High Lime Till Plains (55b)
 - Lower Scioto Dissected Plateau (70d)
 - Monongahela Transition Zone (70b)
 - Ohio/Kentucky Carboniferous Plateau (70f)
 - Permian Hills (70a)



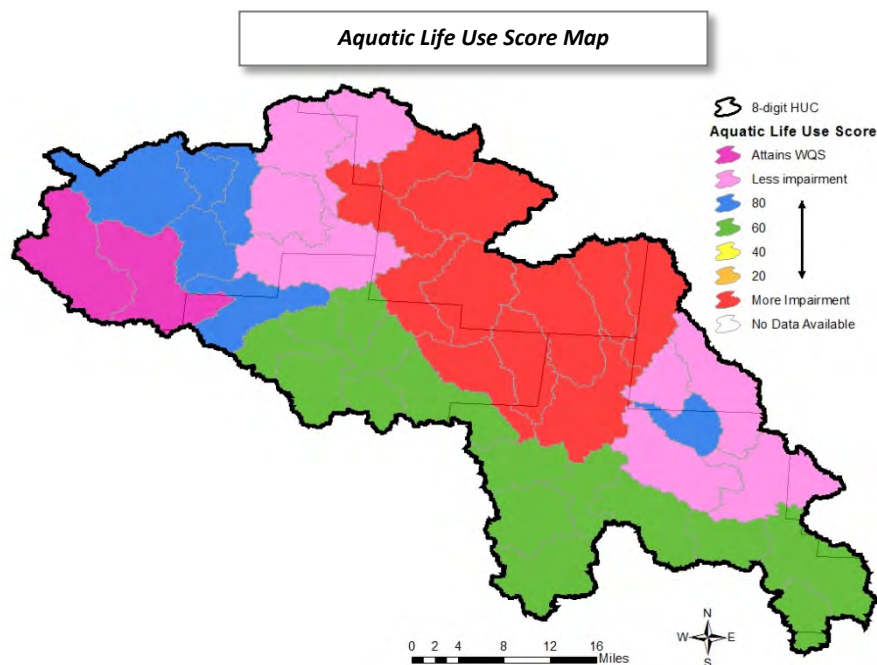
Threats and Impacts

The Landscape Development Index (LDI) for the service area shows less development in the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters (see adjacent map). Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 23,318 linear feet. And the average annual wetland mitigation (2004-2012) has been: 3.75 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Water Report and two OEPA Biological and Water Quality Reports [Upper Hocking River and Selected Tributaries (1997), and Hocking River

Mainstem and Selected Tributaries (1991)] have identified causes of impairment including: direct habitat alterations, flow alteration, nutrients, metals, organic enrichment, sedimentation, and siltation. Sources of these impairments have been identified as: streambank modification (agriculture and development), impoundment, channelization, agriculture, septic tanks, surface mining, acid mine drainage, urban runoff/storm sewers, major municipal point source.

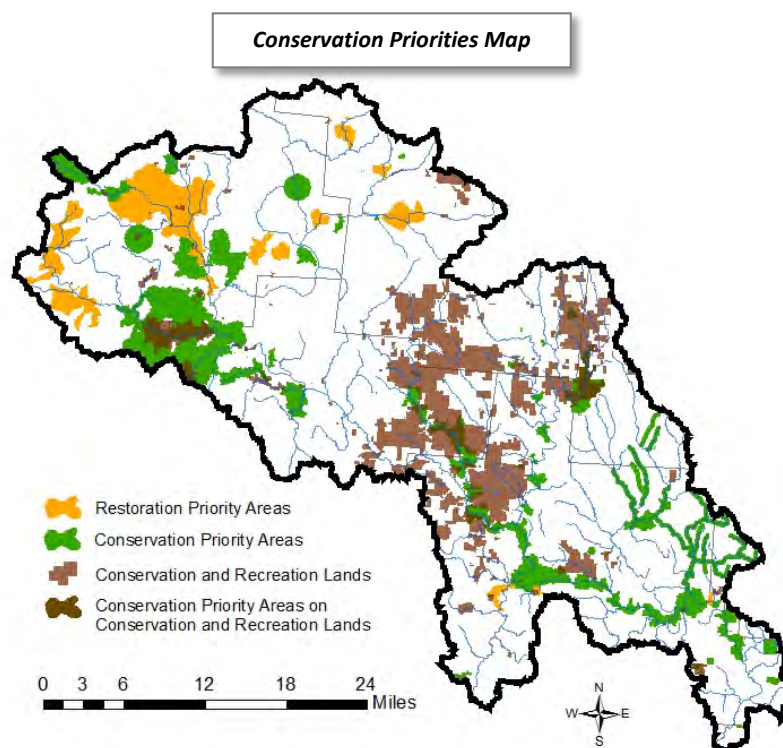


Aquatic Resource Goals

Watershed Action Plans have been developed for several of the watersheds within this Primary Service Area including: Monday Creek, Sunday Creek, and Federal Valley. Goals for these Watershed Action Plans that the TNC In-Lieu Fee Program might support include:

- Reduce sediment loading
- Reduce total suspended solids
- Reduce the level of pathogens from livestock operations
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



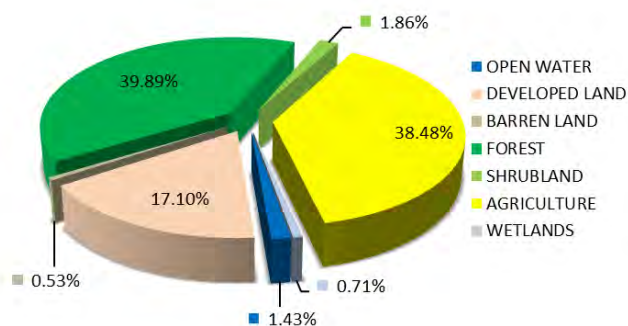
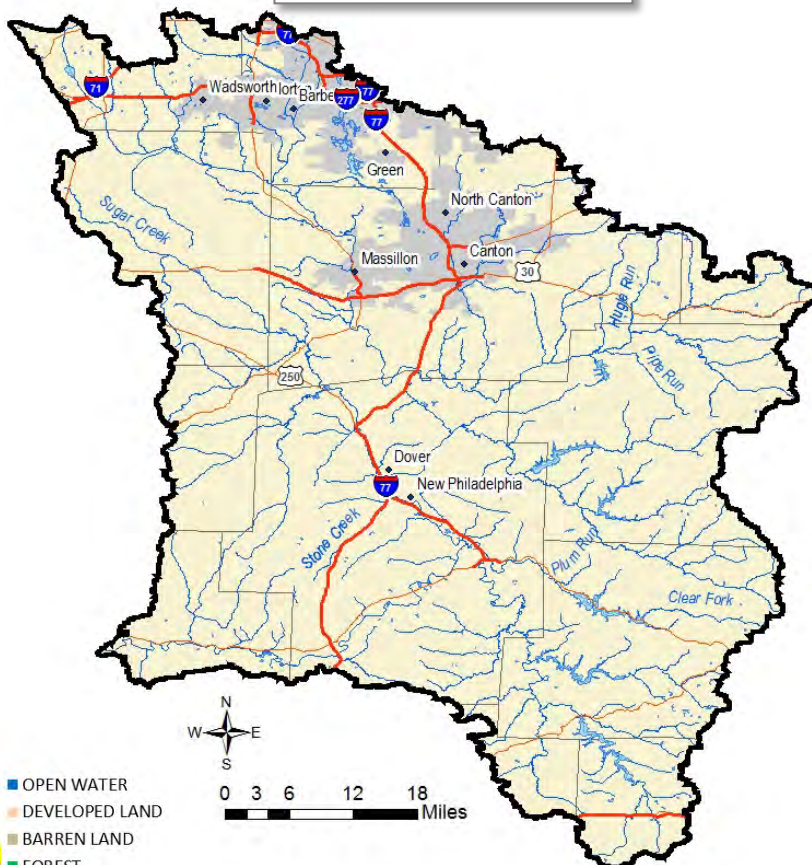
Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|----------------------------------|-----------------------|--------------------------|-------------------------------|--------------------------------------|
| Unnamed Tributary of Clear Creek | Clear Creek (RM 4.93) | | | |
| Unnamed Tributary of Clear Creek | Clear Creek (RM 6.80) | | | |
| Unnamed Tributary of Rush Cree | Rush Creek (RM 2.06) | | | |
| Federal Creek | | | X | Hyde Fork (RM 16.21) to the mouth |
| Joes Run | | | X | X |
| Ellis Run | | | X | |
| Wildcat Run | | | X | X |
| Spring Run | | | X | X |
| Brill Run | | | X | X |
| Joy Run | | | X | |
| McElfresh Run | | | X | |
| Ewing Run | | | X | |
| Linscott Run | | | Headwaters to RM 0.8 | |
| Somerset Reservoir | | | (RM 0.89 to RM 1.15) | |
| Arney Run | | | | Black Run (RM 2.2) to the mouth |
| Big Run | | | | X |
| Clear Creek | | | | Cattail Creek (RM 9.52) to the mouth |
| Marietta Run | | | | X |
| Nellis Run | | | | X |
| Spring Run | | | | X |

Primary Service Area 24**Tuscarawas
HUC 05040001****Watershed Characteristics**

- 8-digit HUC size: 2593 miles²
- 2-digit HUC: Ohio River
- 6-digit HUC: Muskingum
- Number of 12-digit HUCs: 106
- Corps district: Huntington
- Approximate 2010 population: 797,908

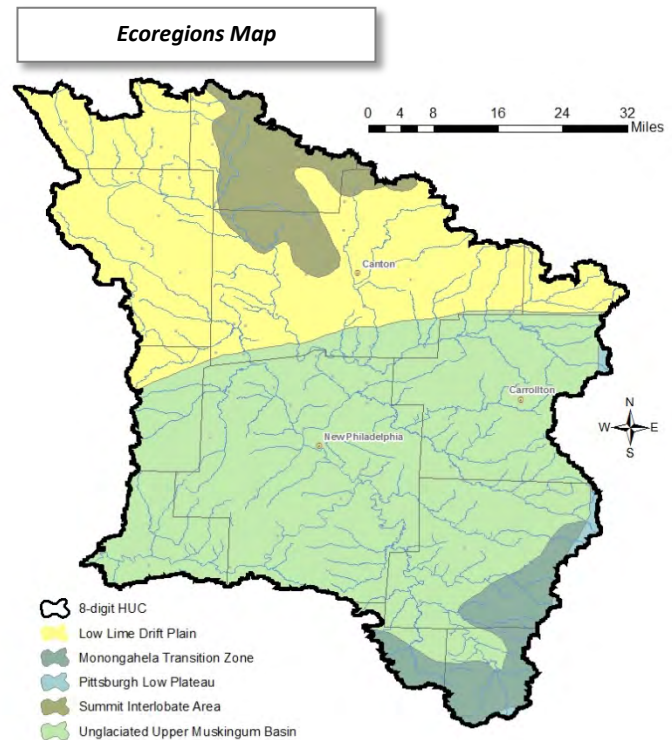
- Land Uses:

**Geographic Overview Map**

- Counties: Belmont, Carroll, Columbiana, Coshocton, Guernsey, Harrison, Holmes, Jefferson, Medina, Portage, Stark, Summit, Tuscarawas, Wayne
- Waterbodies
 - Total open water: 37.1 miles²
 - Number of waterbodies over 0.5 miles² in size: 11
 - Wetlands: 40,403 acres
 - Named Streams: 1255 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), fanshell (E), rayed bean (E), sheepnose (E), clubshell (E), purple cat's paw pearly mussel

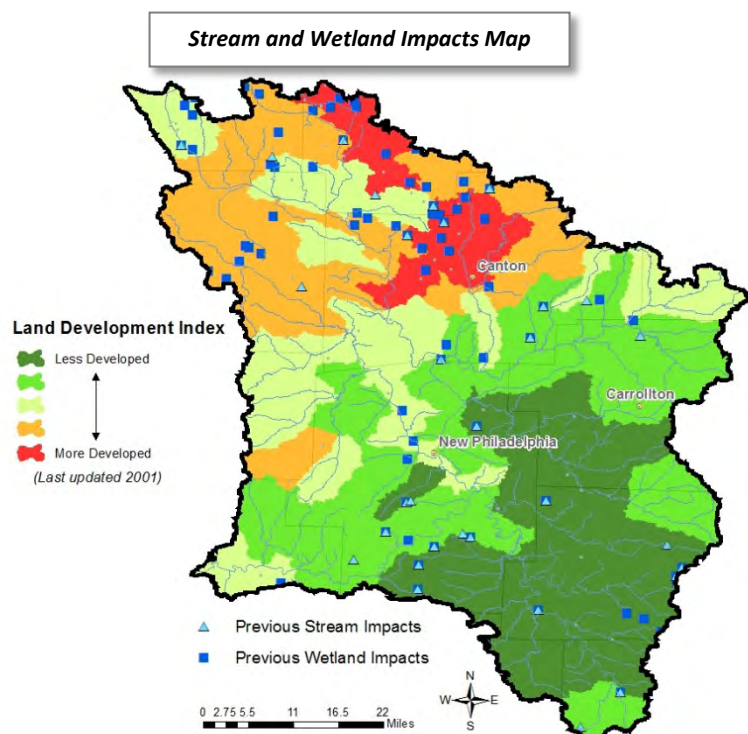
(E), Mitchell's satyr (E), eastern prairie fringed orchid (T), northern monkshood (T), Eastern massasauga (C), rabbitsfoot (PT), Eastern hellbender (SC), bald eagle (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Low Lime Drift Plain (61c)
 - Monongahela Transition Plain (70b)
 - Pittsburgh Low Plateau (70c)
 - Summit Interlobate Area (61e)
 - Unglaciated Upper Muskingum Basin (70e)



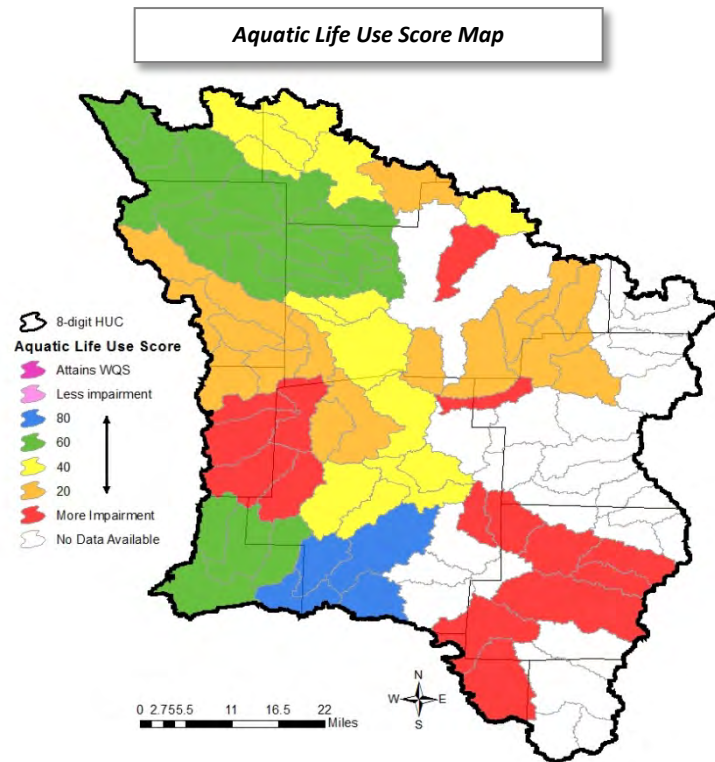
Threats and Impacts

The Landscape Development Index (LDI) for the service area shows higher impacts in the north of the watershed and less development in the south. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters (see adjacent map). Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has



been: 21,603 linear feet. And the average annual wetland mitigation (2004-2012) has been: 69.96 acres.

In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and two OEPA Biological and Water Quality Reports [Sandy Creek (2010), Sugar Creek (1998)] have identified causes of impairment including: flow alterations, nutrients, metals, organic enrichment, sedimentation, and siltation. Sources of these impairments have been identified as: channelization, livestock access, agriculture, mining, major industrial point source, major municipal point source.

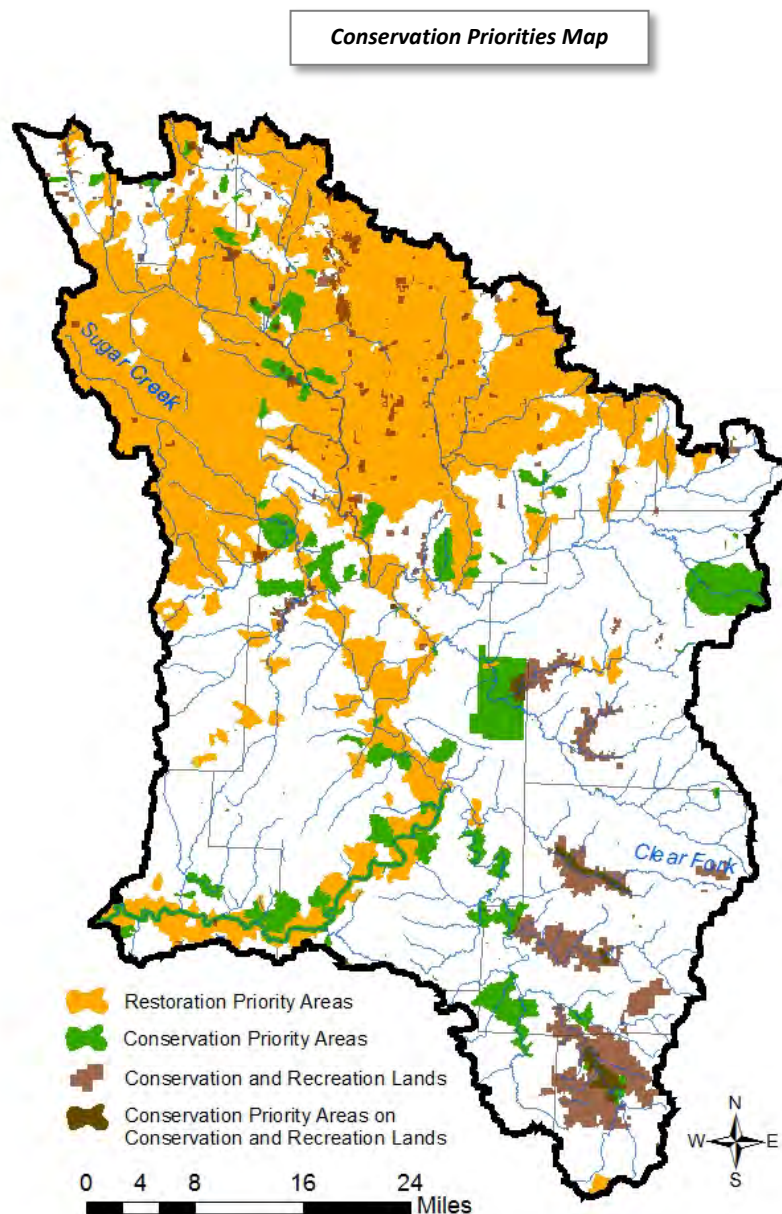


Aquatic Resource Goals

Watershed Action Plans have been developed for two of the watersheds within this Primary Service Area including: Nimishillen Creek and Huff Run. Goals for these Watershed Action Plans that the TNC In-Lieu Fee Program might support include:

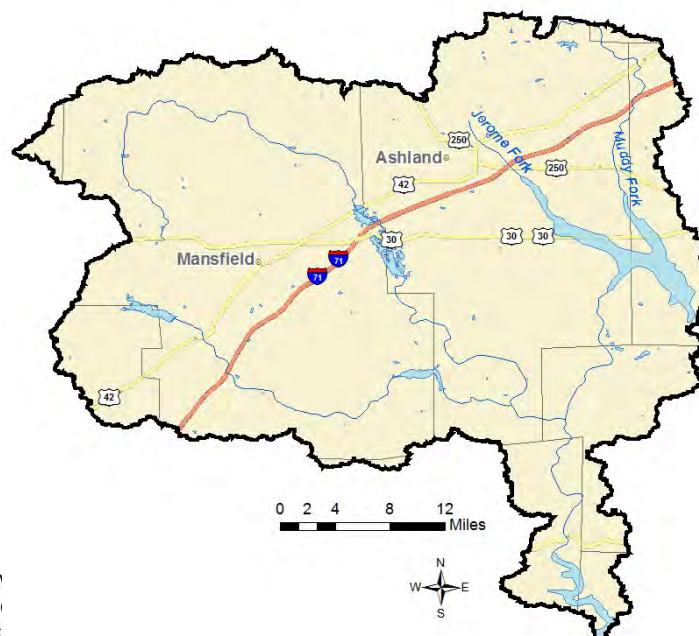
- Reduce sediment loading
- Reduce total suspended solids
- Reduce the level of pathogens from livestock operations
- Improve and restore in-stream physical habitat
- Improve aquatic life habitat
- Improve and increase riparian habitat
- Preserve and enhance wetland habitat
- Preserve and protect riparian corridors and highly erodible land
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



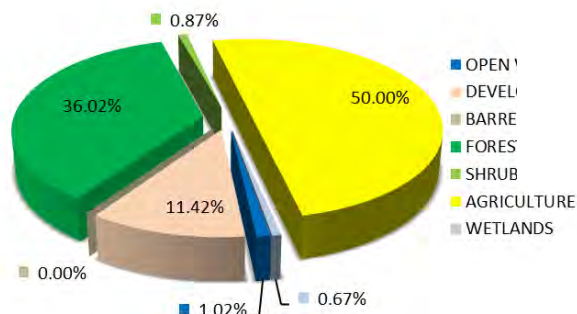
Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|------------------|--------------------|--------------------------|---|-----------------------|
| Tuscarawas River | | | Stillwater Creek (RM 47.0) to the mouth | |

Primary Service Area 25**Mohican****HUC 05040002****Watershed Characteristic****Geographic Overview Map**

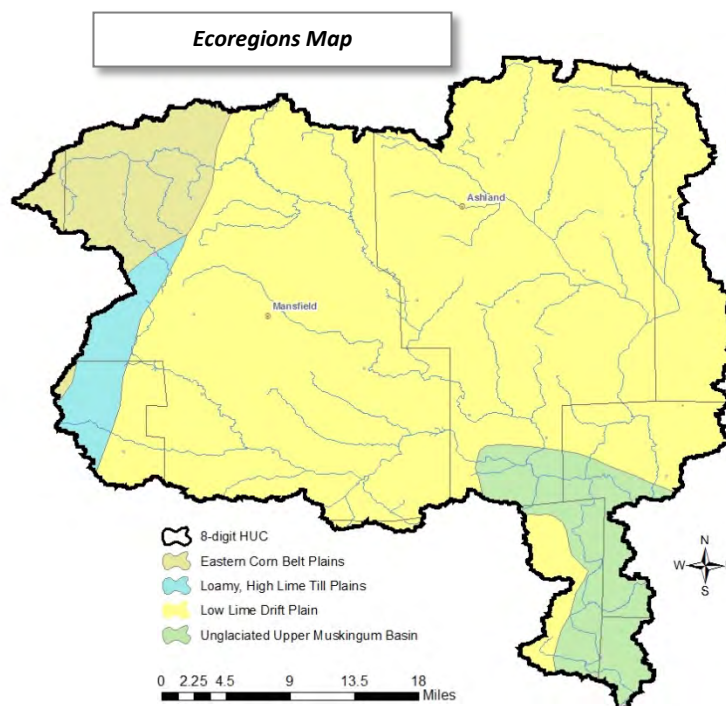
- 8-digit HUC size: 1005 miles²
- 2-digit HUC: Ohio River
- 6-digit HUC: Muskingum
- Number of 12-digit HUCs: 106
- Corps district: Huntington
- Approximate 2010 population: 181,486

- Land Uses:



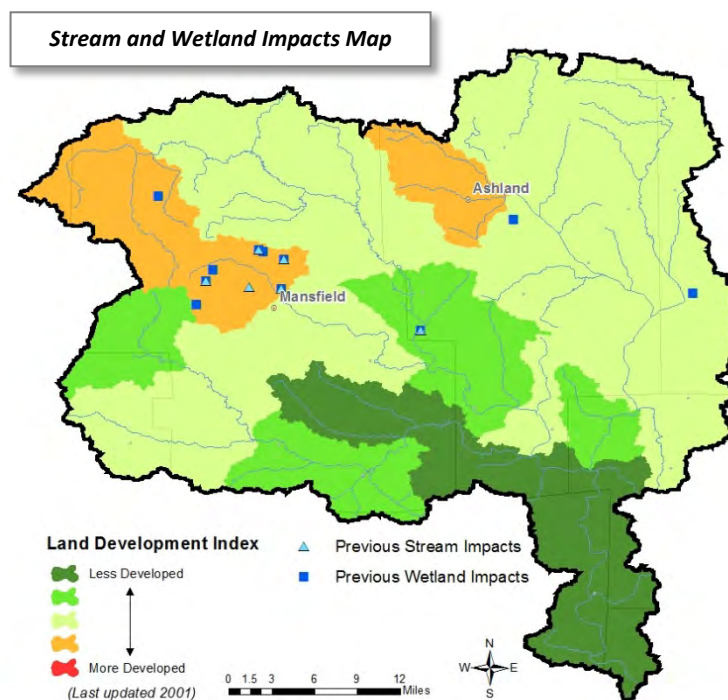
- Counties: Ashland, Coshocton, Crawford, Holmes, Huron, Knox, Medina, Morrow, Richland, Wayne
- Waterbodies
 - Total open water: 101 miles²
 - Number of waterbodies over 0.5 miles² in size: 8
 - Wetlands: 13,226 acres
 - Named Streams: 447 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), rayed bean (E), clubshell (E), fanshell (E), purple cat's paw, pearl mussel (E), sheepsnout (E), Eastern prairie fringed orchid (T), Eastern massasauga (C), bald eagle (SC), Eastern hellbender (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Eastern Corn Belt Plains (55a)
 - Loamy High Lime Till Plains (55b)
 - Loam Lime Drift Plain (61c)
 - Unglaciaded Upper Muskingum Basin (70e)

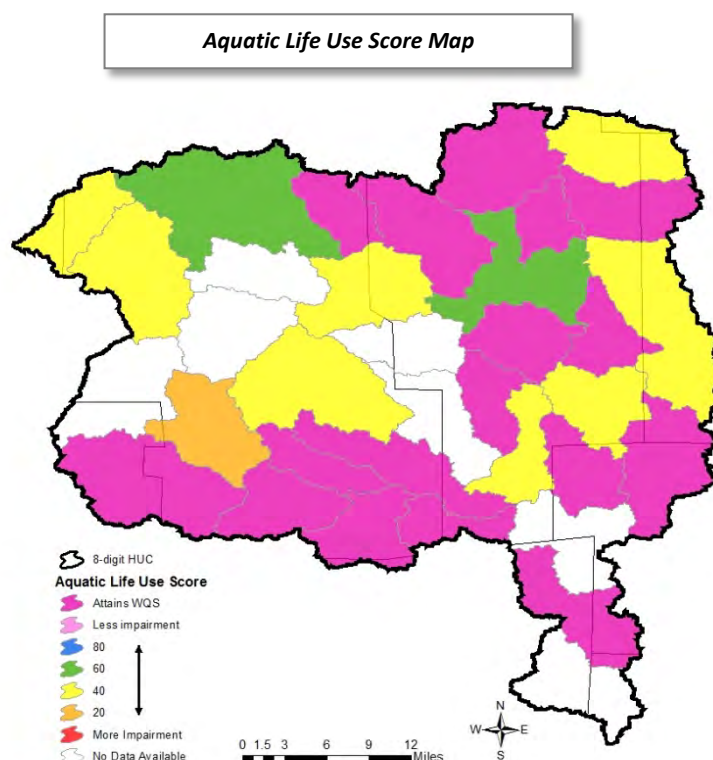


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows moderate impact in the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters (see adjacent map). Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 1,334 linear feet. And the average annual wetland mitigation (2004-2012) has been: 0.99 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and the OEPA Biological and Water Quality Report on the Mohican and Selected Tributaries (2007) have identified causes of impairment including: direct habitat alterations, flow alterations, nutrients, metals, organic enrichment, sedimentation, and siltation. Sources of these impairments have been identified as: channelization, dams/impoundments, livestock access, agriculture, urban runoff/storm sewers, and municipal point source.

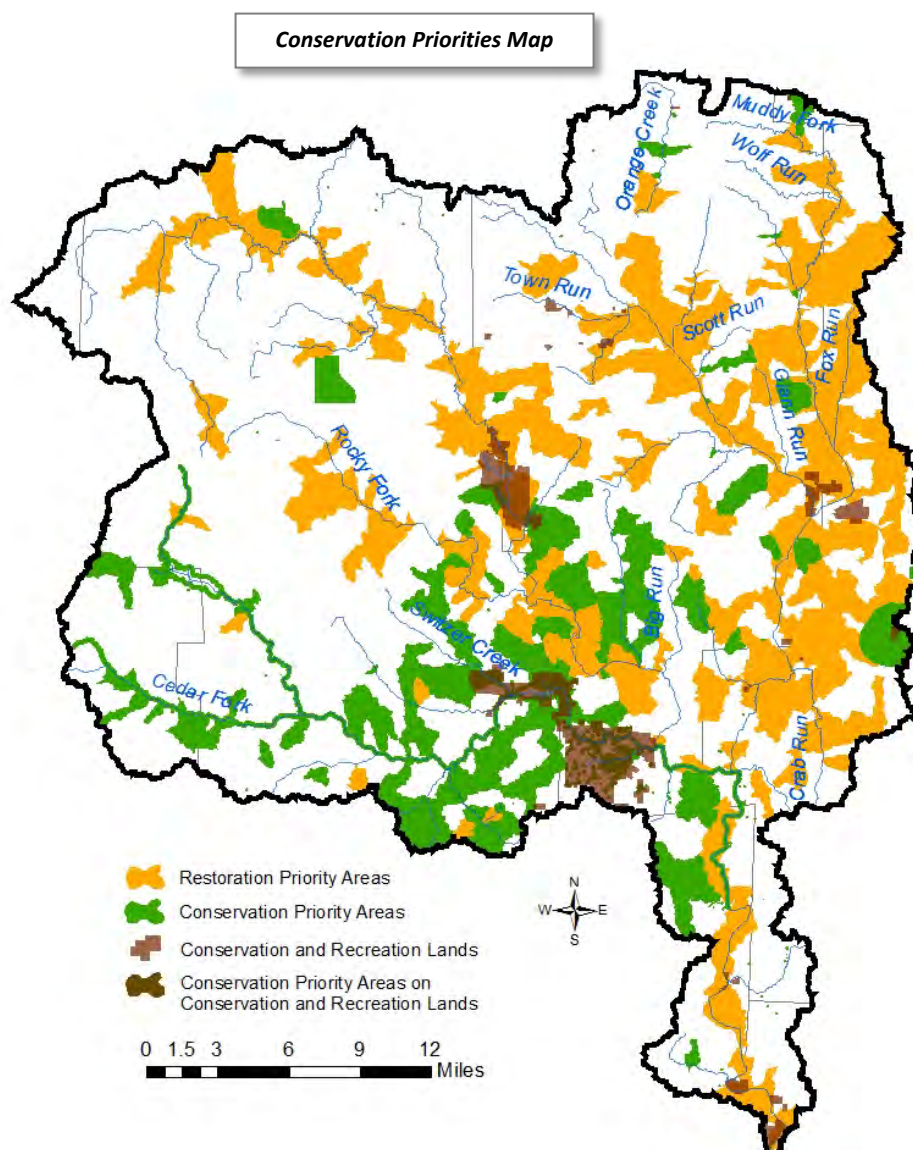


Aquatic Resource Goals

No Watershed Action Plans have been developed for this Primary Service Area; however, it is possible to establish goals that would have a positive effect on the above sources of impairment. The goals that the TNC In-Lieu Fee Program might support include:

- Reduce sediment loading
- Reduce total suspended solids
- Livestock exclusion fencing
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Remove dams and other obstructions that serve as barriers to fish movement or restrict or alter flow conditions
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

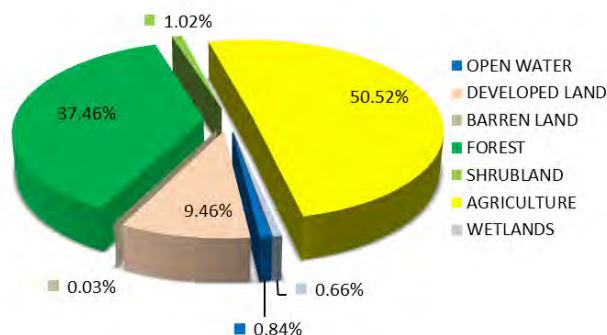
| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|---------------|--------------------|--------------------------|-------------------------------|--|
| Cedar Fork | | | | X |
| Mohican River | | | | Rocky Fork (RM 27.60) to an unnamed tributary (RM 16.10) |

Primary Service Area 26**Walhonding
HUC 05040003****Watershed Characteristic**

- 8-digit HUC size: 1250 miles²
- 2-digit HUC: Ohio River
- 6-digit HUC: Muskingum
- Number of 12-digit HUCs: 106
- Corps district: Huntington
- Approximate 2010 population: 153,082



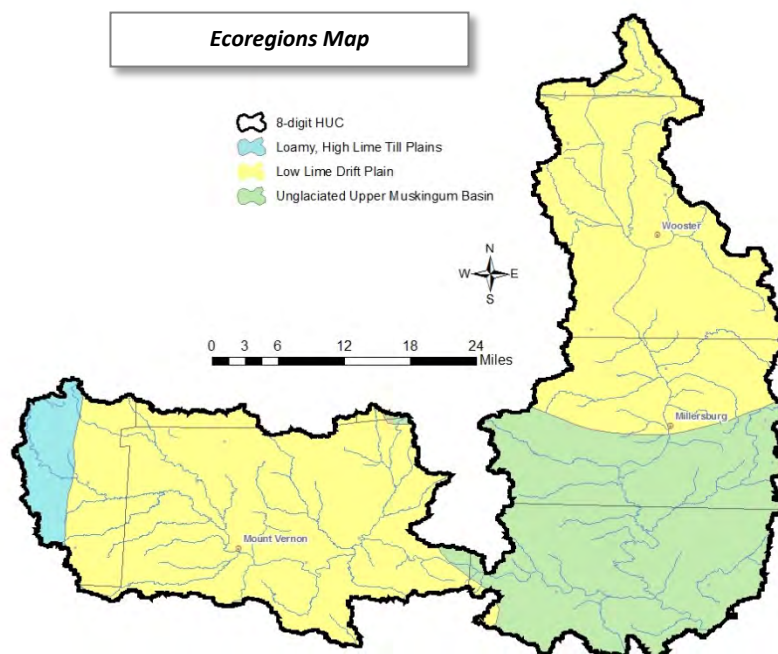
- Land Uses:



- Counties: Ashland, Coshocton, Holmes, Knox, Medina, Morrow, Richland, Wayne
- Waterbodies
 - Total open water: 12.2 miles²
 - Number of waterbodies over 0.5 miles² in size: 8
 - Wetlands: 19,238 acres
 - Named Streams: 624 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), rayed bean (E), clubshell (E), sheepsnose (E), fanshell (E), purple cat's paw pearly mussel (E), snuffbox (E), Eastern prairie fringed orchid (T), Eastern massasauga (C), bald eagle (SC), Eastern hellbender (SC), rabbitsfoot (PT)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):

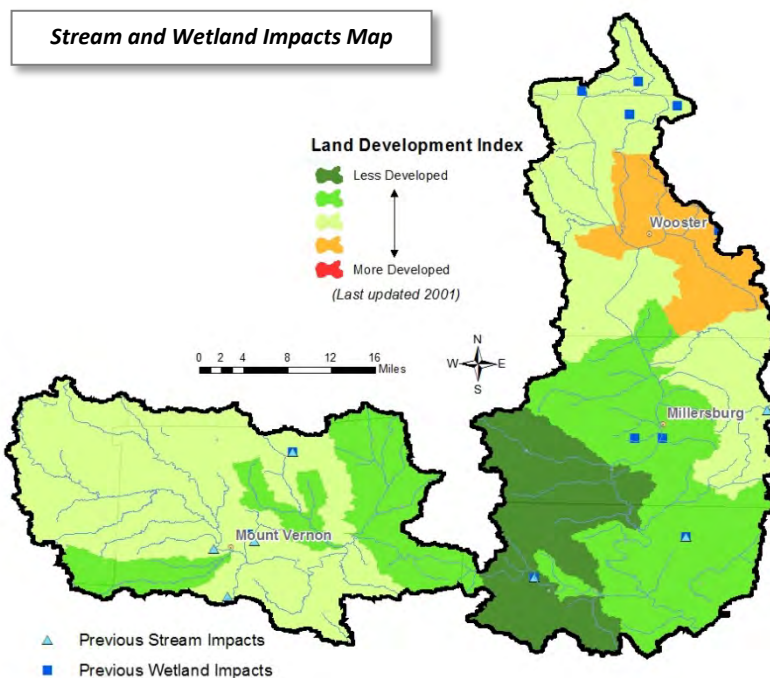
- Loamy, High Lime Till Plains (55b)
- Low Lime Drift Plain (61c)
- Unglaciaded Upper Muskingum Basin (70e)



Threats and Impacts

The intended use of the Landscape Development Index (LDI) is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters (see adjacent map).

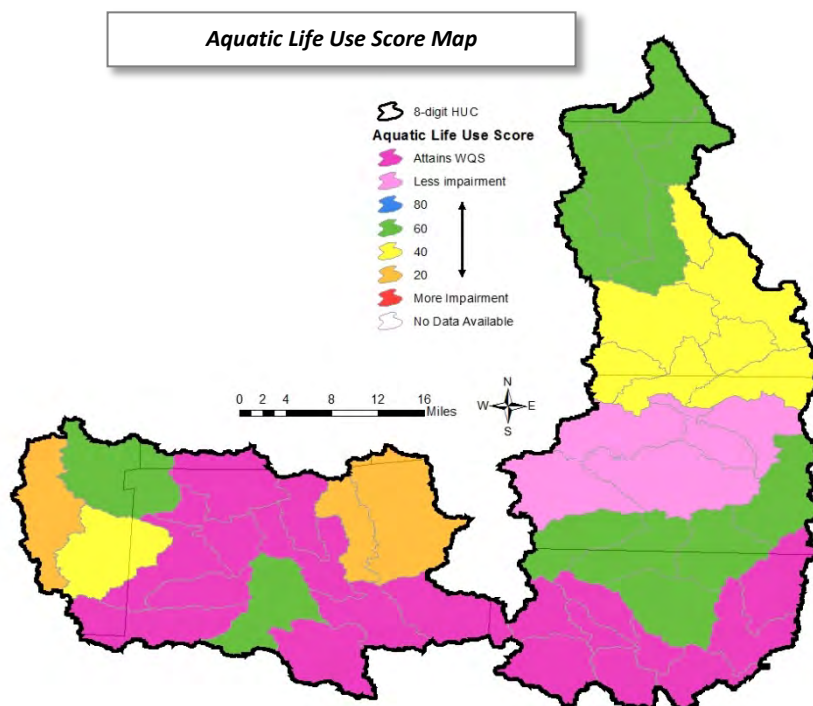
Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 514 linear feet. And the average annual wetland mitigation (2004-2012) has been: 1.25 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling.

Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and the OEPA Biological and Water Quality Report on the Walhonding and Muskingum River Tributaries (2010) have identified causes of

impairment including: direct habitat alterations, flow alterations, nutrients, organic enrichment, sedimentation, and siltation. Sources of these impairments have been identified as: channelization, dams/impoundments, livestock access, agriculture, septic systems, municipal point source, and industrial point source.

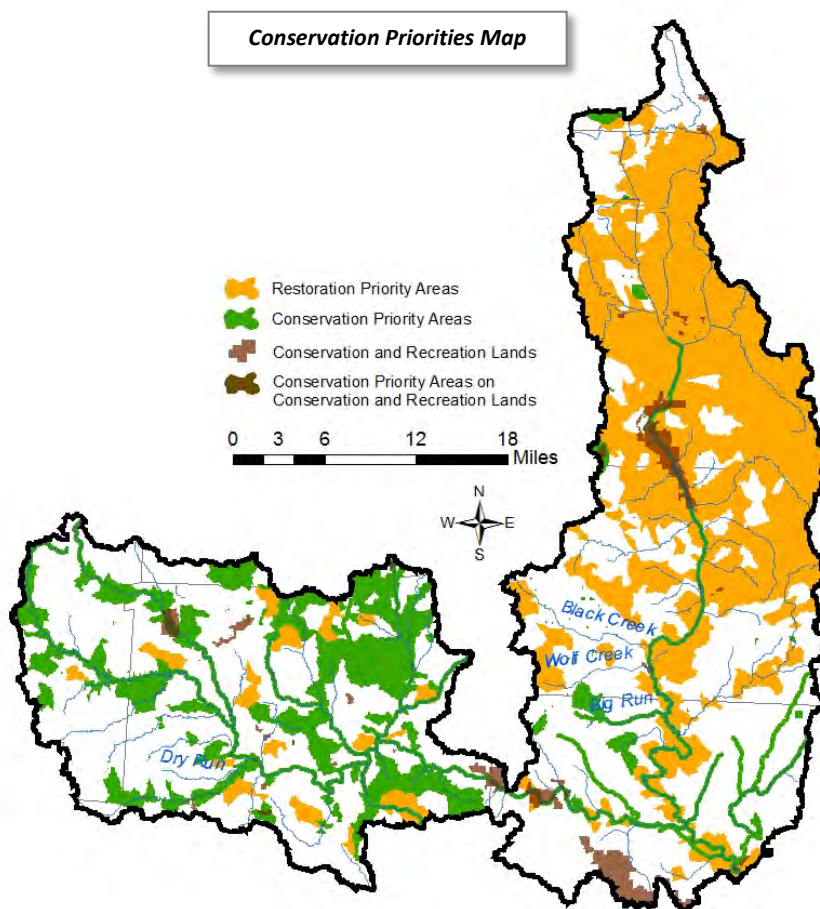


Aquatic Resource Goals

A Watershed Action Plan has been developed for Kokosing River, a subwatershed within this Primary Service Area. The goals for this Watershed Action Plan that the TNC In-Lieu Fee Program might support include:

- Reduce sediment loading
- livestock exclusion fencing along streams
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Protect and restore wetland habitats
- Provide outdoor recreation opportunities to waterways
- Increase groundwater recharge
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



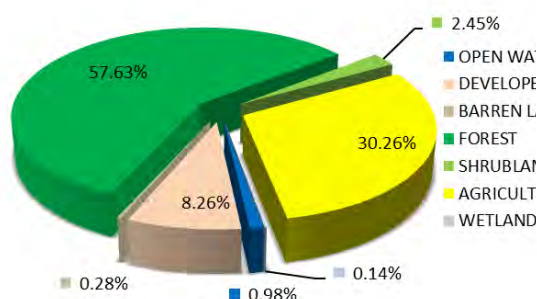
Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|-----------------------------|--------------------|--------------------------|--|-----------------------|
| Bucklew Run | | | X | |
| Big Run | | | X | |
| Beaver Run | | | X | |
| Jelloway Creek | | | X | X |
| Little Jelloway Creek | | | X | |
| East Branch Jelloway Creek | | | X | X |
| Schenck Creek | | | X | X |
| Turkey Run | | | X | |
| Little Mill Creek | | | X | |
| Mill Creek | | | X | |
| Kokosing River | | X | North Branch Kokosing River (RM 29.7) to the mouth | |
| North Branch Kokosing River | | X | | |
| Walhonding River | | X | | |
| Indianfield Run | | | | X |

Primary Service Area 27**Muskingum****HUC 05040004****Watershed Characteristic**

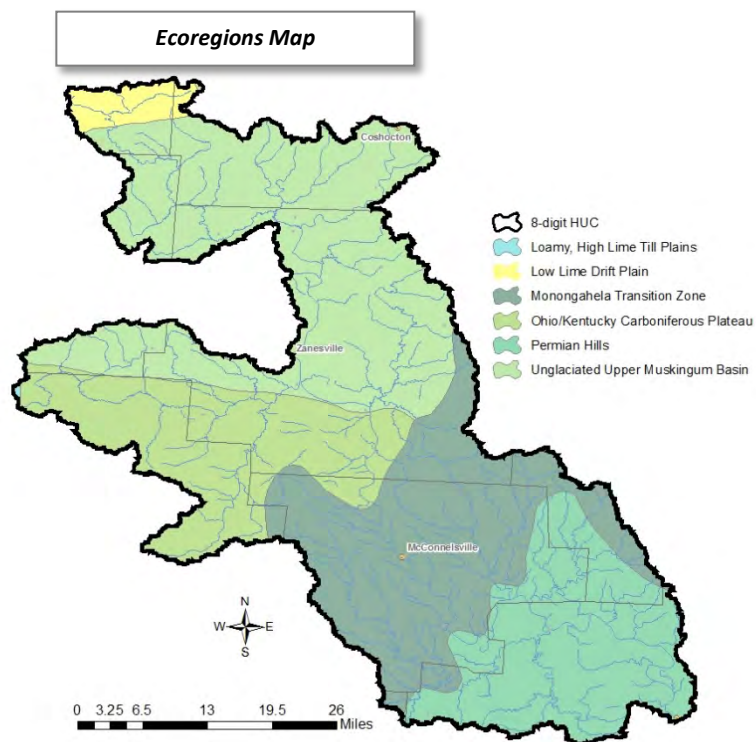
- 8-digit HUC size: 1565 miles²
- 2-digit HUC: Ohio River
- 6-digit HUC: Muskingum
- Number of 12-digit HUCs: 106
- Corps district: Huntington
- Approximate 2010 population: 128,868

- Land Uses:

**Geographic Overview Map**

- Counties: Athens, Coshocton, Guernsey, Knox, Licking, Morgan, Muskingum, Noble, Perry, Washington
- Waterbodies
 - Total open water: 8.57 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - Wetlands: 8,154 acres
 - Named Streams: 1103 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), American burying beetle (E), fanshell (E), pink mucket pearly mussel (E), rayed bean (E), clubshell (E), fanshell (E), purple cat's paw pearly mussel (E), sheepsnose (E), snuffbox (E), Eastern massasauga (C), bald eagle (SC), Eastern hellbender (SC), timber rattlesnake (SC), rabbitsfoot (PT)

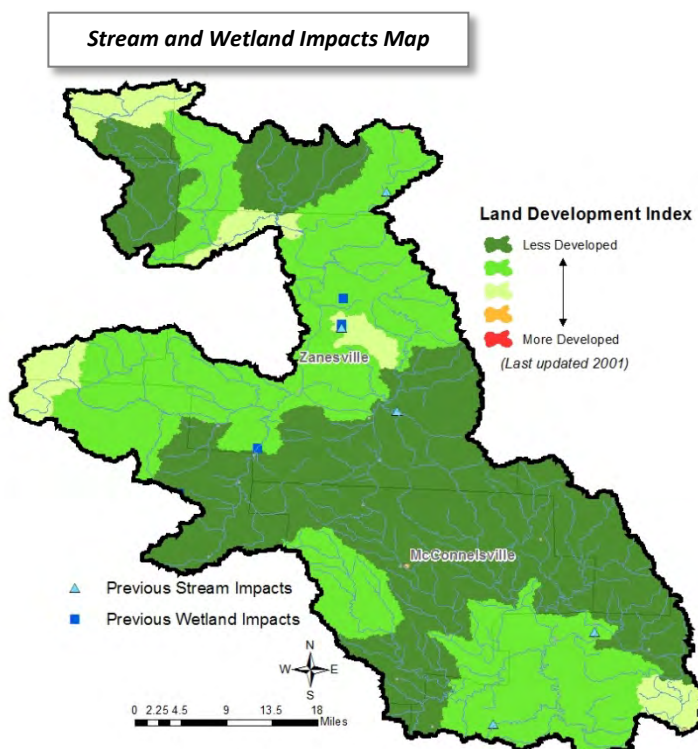
- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Loamy High Lime Till Plains (55b)
 - Low Lime Drift Plain (61c)
 - Monongahela Transition Zone (70b)
 - Ohio/Kentucky Carboniferous Plateau (70f)
 - Permian Hills (70a)
 - Unglaciaded Upper Muskingum Basin (70e)



Threats and Impacts

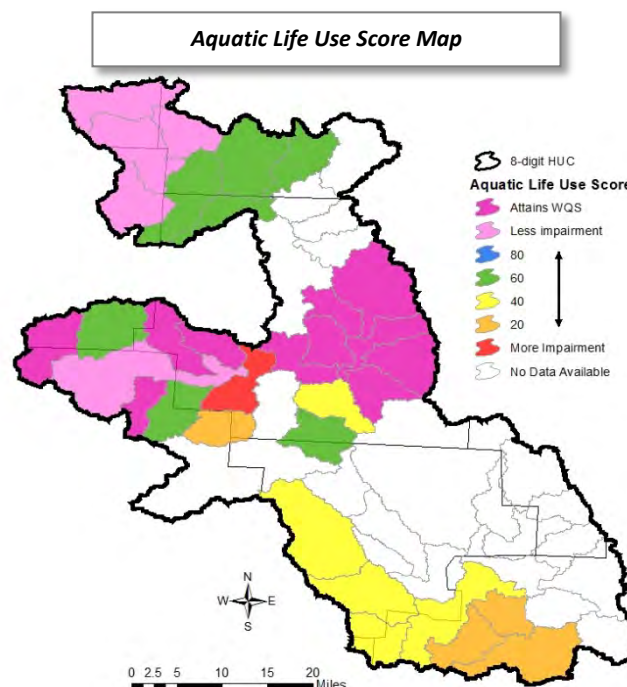
The Landscape Development Index (LDI) for the service area shows less development in the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters (see adjacent map). Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 3,560 linear feet. And the average annual wetland mitigation (2004-2012) has been: 2.88 acres.

In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment



Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling.

Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and several OEPA Biological and Water Quality Reports [Walhonding and Muskingum River Tributaries (2010), Muskingum River Tributaries (2008), Salt Creek (2008)] have identified causes of impairment including: direct habitat alterations, flow alterations, nutrients, metals, sedimentation, and siltation. Sources of these impairments have been identified as: channelization, dams/impoundments, livestock access, septic systems, agriculture, mining, and acid mine drainage.

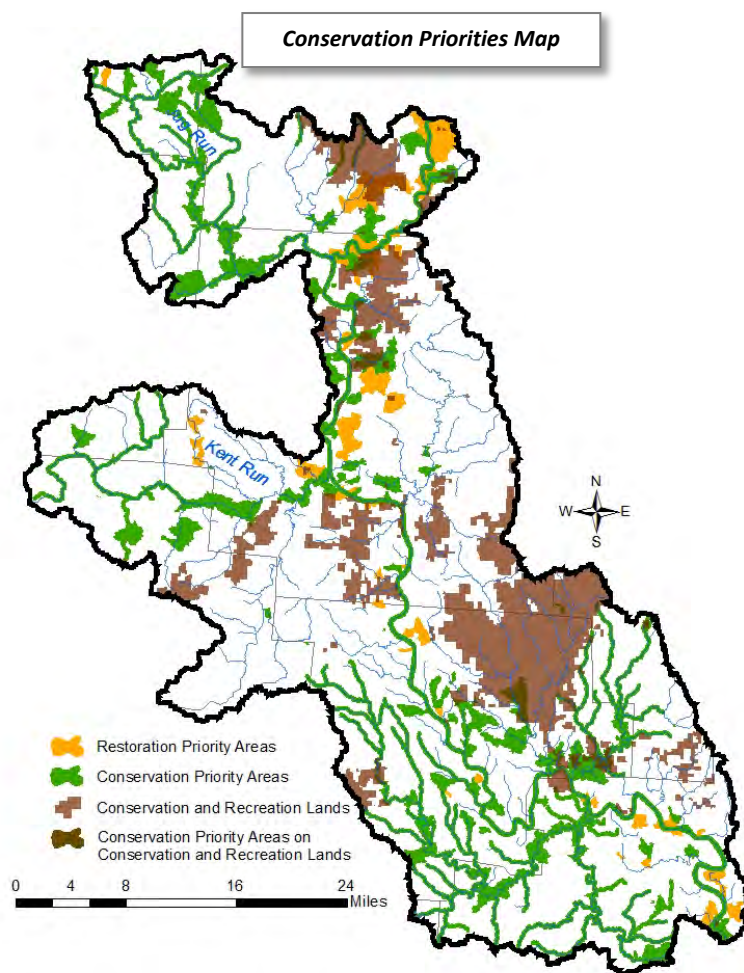


Aquatic Resource Goals

Watershed Action Plans have been developed for several of the watersheds within this Primary Service Area including: Wolf Creek, Meigs Creek, and Salt Creek. Goals for these Watershed Action Plans that the TNC In-Lieu Fee Program might support include:

- Reduce sediment loading
- Provide livestock exclusion fencing along streams
- Improve aquatic life habitat
- Perform streambank stabilization
- Improve and increase riparian habitat
- Preserve and protect riparian corridors and highly erodible land
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|-----------------|--------------------|--------------------------|-------------------------------|-----------------------|
| Aldridge Run | | | X | |
| Allen Run | | | X | |
| Bald Eagle Run | | | X | |
| Berry Run | | | X | |
| Bosman Run | | | X | |
| Browns Run | | | X | |
| Brushy Fork | | | RM 3.7 to the mouth | |
| Buck Run | | | X | |
| Buckeye Run | | | X | |
| Chainey Run | | | X | |
| Chaneyville Run | | | X | |
| Coal Run | | | X | |
| Cow Run | | | X | |
| Dinner Fork | | | X | |
| Duck Creek | | | X | |

Continued

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|---------------------------------------|--|--------------------------|--|---|
| Elk Run | | | X | |
| Fivemile Run | | | Twp. Rd. 4 (R 2.08) to the mouth | |
| Flint Run | | | X | |
| Goshen Creek | | | X | |
| Halfway Run | | | X | |
| Harrod Run | | | X | |
| Hayward Run | | | X | |
| Hedgehog Creek | | | X | |
| Horse Run | | | X | |
| Jonathan Creek | | | Headwaters to confluence with Turkey Run | |
| Jug Run | X | | X | |
| Unnamed Tributary | Jug Run (RM 1.69) | | X | |
| Keith Fork | | | X | |
| Kickapoo Creek | | | X | |
| Lick Run | | | X | |
| Limestone Run | | | X | |
| Little Olive Green Creek | | | X | |
| Little Wakatomika Creek | Headwaters to St. Rte. 60 (RM 9.5) | | | |
| Little Wolf Creek | | | X | |
| Lucas Run | | | X | |
| Mcpherson Run | | | X | |
| Mile Run | | | X | |
| Moscow Brook | Headwaters to Twp. Rte. 70 off Co. Rd. 297 (RM 2.63) | | | |
| Muskingum River | | | | (RM 111.13 to RM 92.0) (RM 76.20 to RM 73.50) (RM 67.03 to 52.58) (RM 49.0 to RM 34.4) (RM 24.9 to RM 18.77) (RM 14.1 to RM 7.7) (RM 5.77 to mouth) |
| Nickel Valley Run | | | X | |
| North Branch Coal Run | | | X | |
| Olive Green Creek | | | X | |
| Painter Run | | | X | |
| Peeper Run | | | X | |
| Pleasant Run | | | X | |
| Priests Run | X | | X | |
| Reasoners Run | | | X | |
| Sand Fork | Headwaters to Unnamed Tributary at RM 4.65 | | | |
| Scott Run | | | X | |
| Sharon Fork | | | X | |
| Shrader Run | | | X | |
| South Branch Wolf Creek | | | X | |
| South Fork South Branch Wolf Creek | | | X | |
| Southwest Fork SouthBranch Wolf Creek | | | X | |

Continued

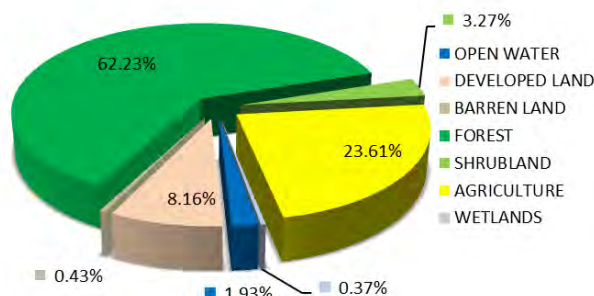
| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|------------------------|--|---------------------------------|---|------------------------------|
| Stoney Creek | | | X | |
| Turkeyhen Run | | | X | |
| Tuscarawas River | | | Stillwater Creek (RM 47.0) to the mouth | |
| Valley Run | | | X | |
| Wakatomika Creek | X | X | Front Royal Rd. (RM 41.2) to the mouth | |
| Unnamed Tributary | Wakatomika Creek (RM 40.93) | | X | |
| West Branch Wolf Creek | | | X | |
| Winding Fork | Headwaters upstream St. Rte. 79 (RM 4.1) | | RM 4.1 to the mouth | X |
| Wolf Creek | | | X | |

Primary Service Area 28**Wills****HUC 05040005****Watershed Characteristics**

- 8-digit HUC size: 853 miles²
- 2-digit HUC: Ohio River
- 6-digit HUC: Muskingum
- Number of 12-digit HUCs: 106
- Corps district: Huntington
- Approximate 2010 population: 51,815

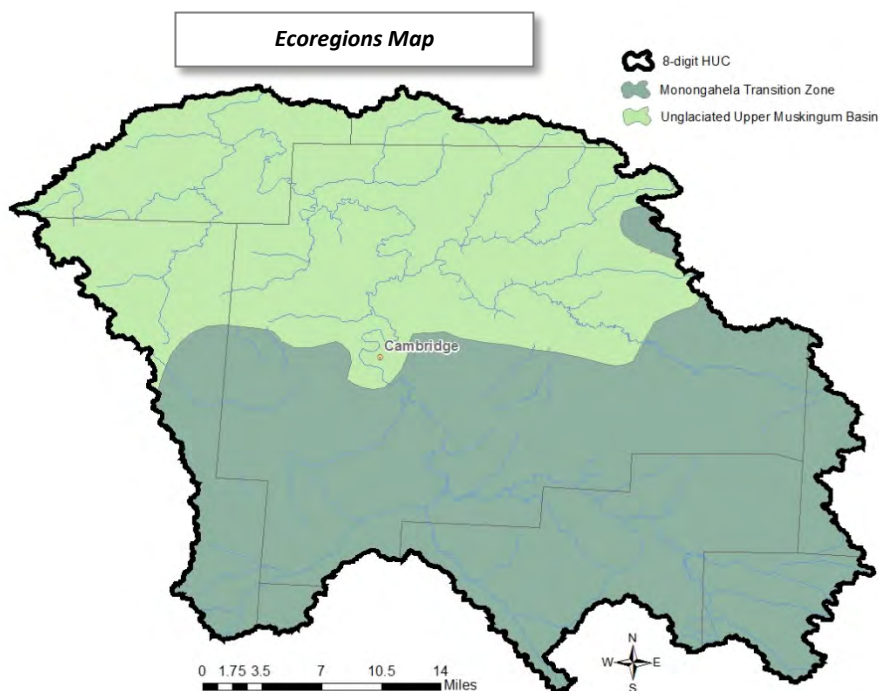
**Geographic Overview Map**

- Land Uses:



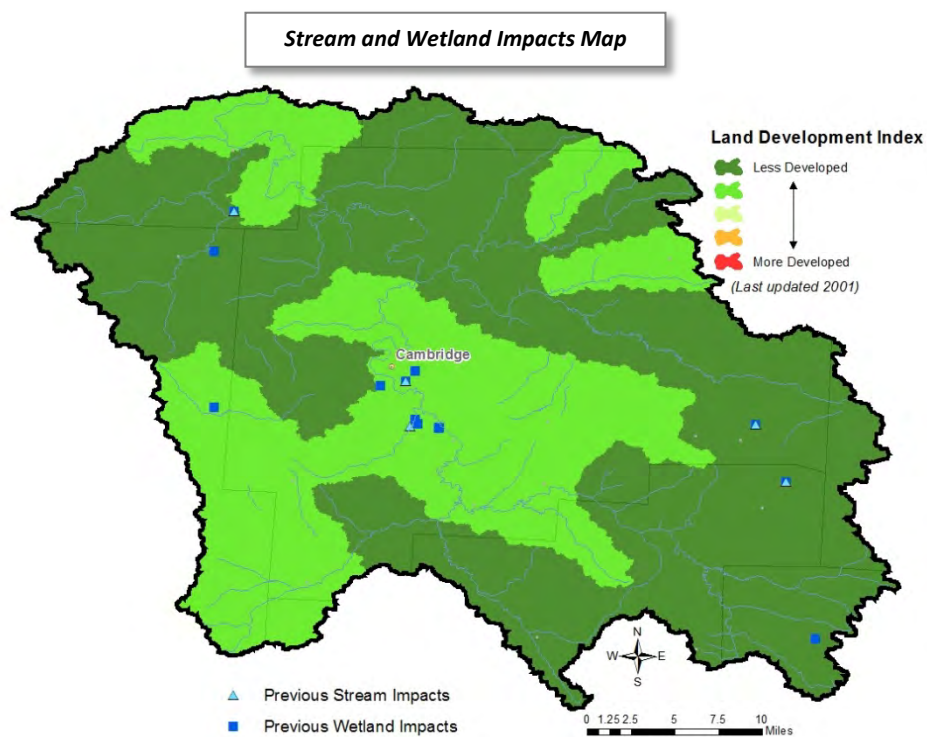
- Counties: Belmont, Coshocton, Guernsey, Harrison, Monroe, Muskingum, Noble, Tuscarawas
- Waterbodies
 - Total open water: 20.1 miles²
 - Number of waterbodies over 0.5 miles² in size: 3
 - Wetlands: 13,781 acres
 - Named Streams: 425 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), rayed bean (E), clubshell (E), fanshell (E), purple cat's paw pearly mussel (E), sheepsnose (E), snuffbox (E), bald eagle (SC), Eastern hellbender (SC), rabbitsfoot (PT)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Monongahela Transition Zone (70b)
 - Pittsburgh Low Plateau (70c)
 - Unglaciaded Upper Muskingum Basin (70e)

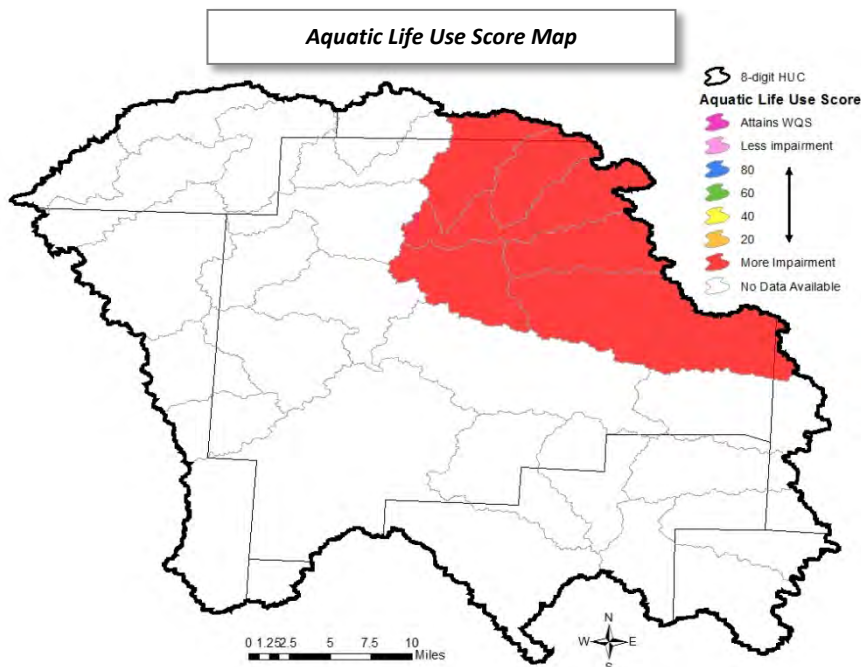


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows less development in the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters (see adjacent map). Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 7,541 linear feet. And the average annual wetland mitigation (2004-2012) has been: 2.58 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and the OEPA Biological and Water Quality Report of Wills Creek and Selected Tributaries (1995) have identified causes of impairment including: direct habitat alterations, metals, sedimentation, and siltation. Sources of these impairments have been identified as: hazardous waste, septic systems, surface mining, livestock access, and agriculture.

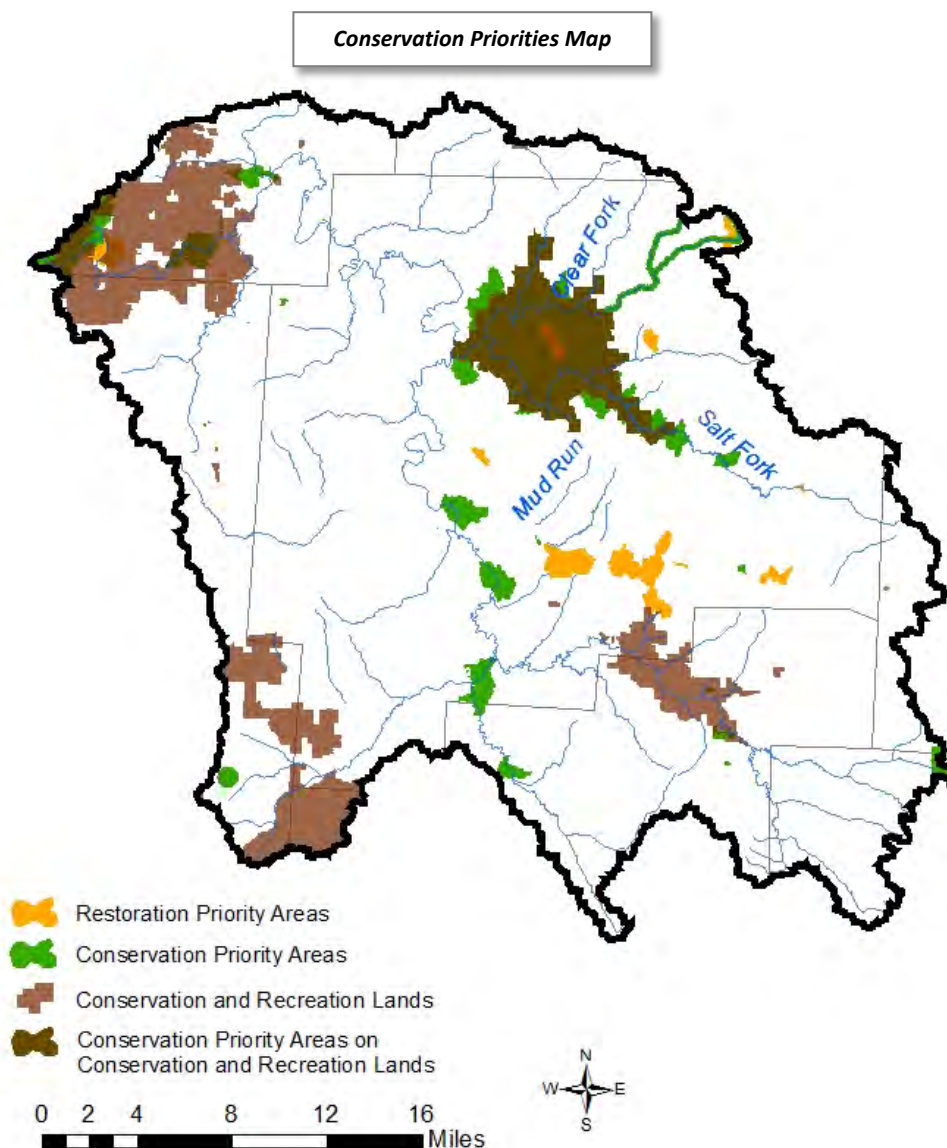


Aquatic Resource Goals

No Watershed Action Plans have been developed for this Primary Service Area; however, it is possible to establish goals that would have a positive effect on the above sources of impairment. The goals that the TNC In-Lieu Fee Program might support include:

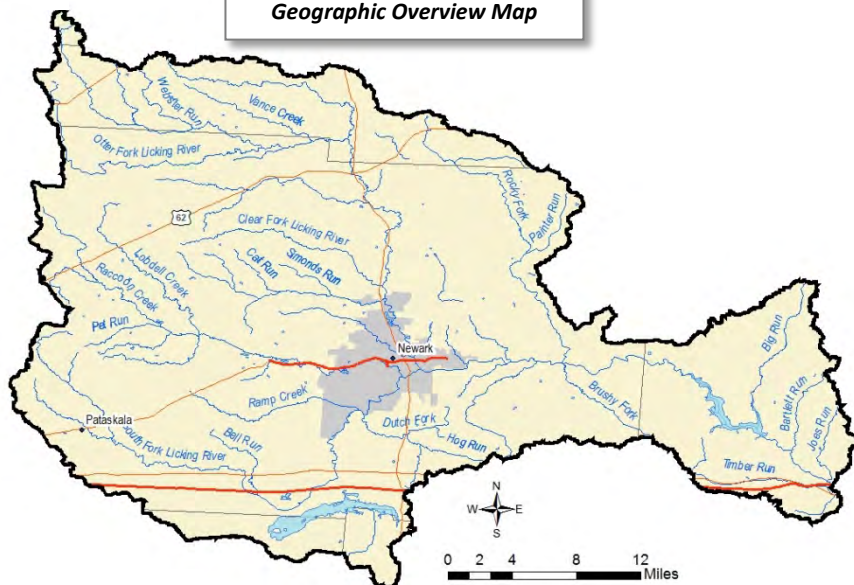
- Reduce sediment loading
- Reduce total suspended solids
- Exclusion fencing for livestock operations
- Improve and restore in-stream physical habitat
- Improve aquatic life habitat
- Improve and increase riparian habitat
- Preserve and protect riparian corridors and highly erodible land
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



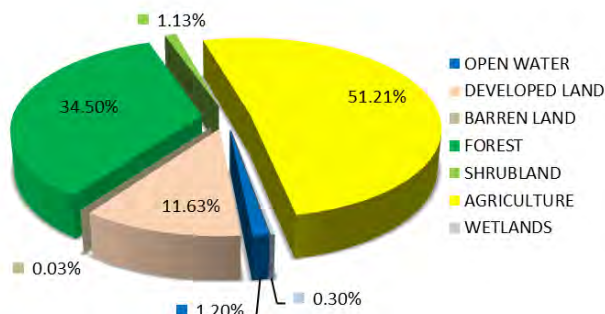
Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|-------------|--------------------|--------------------------|-------------------------------|-----------------------|
| Turkey Run | | | | X |

Primary Service Area 29**Licking****HUC 05040006****Watershed Characteristics****Geographic Overview Map**

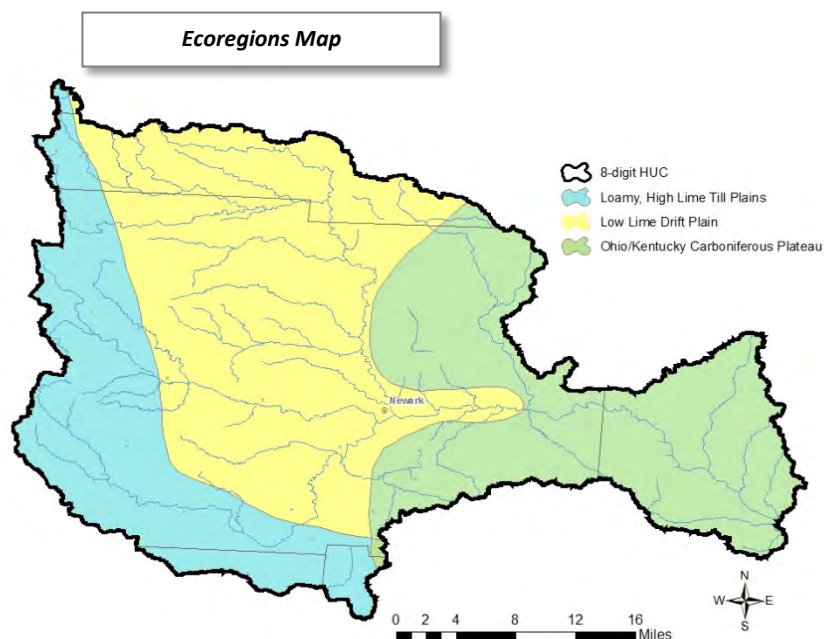
- 8-digit HUC size: 780 miles²
- 2-digit HUC: Ohio River
- 6-digit HUC: Muskingum
- Number of 12-digit HUCs: 106
- Corps district: Huntington
- Approximate 2010 population: 184,489

• Land Uses:



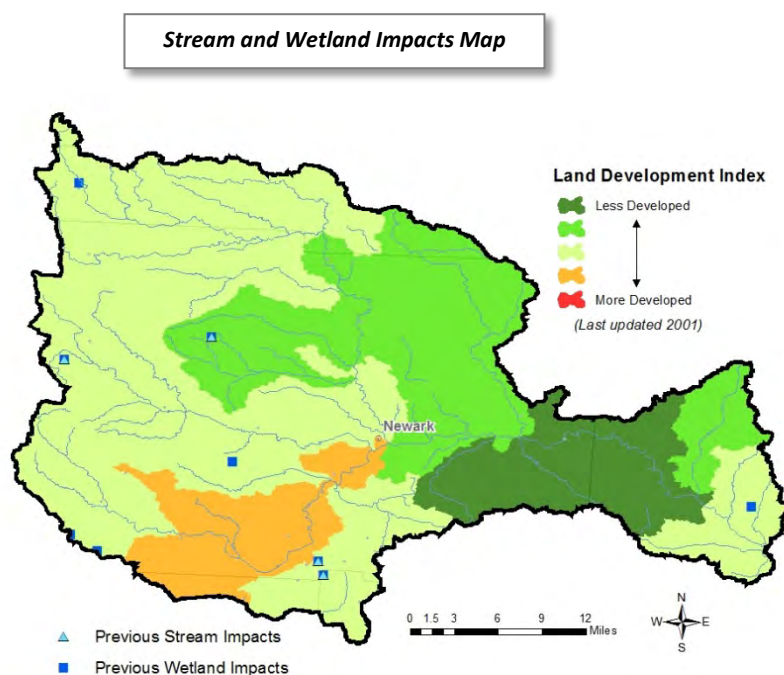
- Counties: Delaware, Fairfield, Franklin, Knox, Licking, Morrow, Muskingum, Perry
- Waterbodies
 - Total open water: 11.8 miles²
 - Number of waterbodies over 0.5 miles² in size: 2
 - Wetlands: 7,548 acres
 - Named Streams: 454 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), rayed bean (E), Scioto madtom (E), clubshell (E), northern riffleshell (E), fanshell (E), sheepsnose (E), snuffbox (E), American burying beetle (E), Eastern massasauga (C), bald eagle (SC), Eastern hellbender (SC), rabbitsfoot (PT)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Loamy High Lime Till Plains (55b)
 - Low Lime Drift Plain (61c)
 - Ohio/Kentucky Carboniferous Plateau (70f)
 - Unglaciated Upper Muskingum Basin (70e)



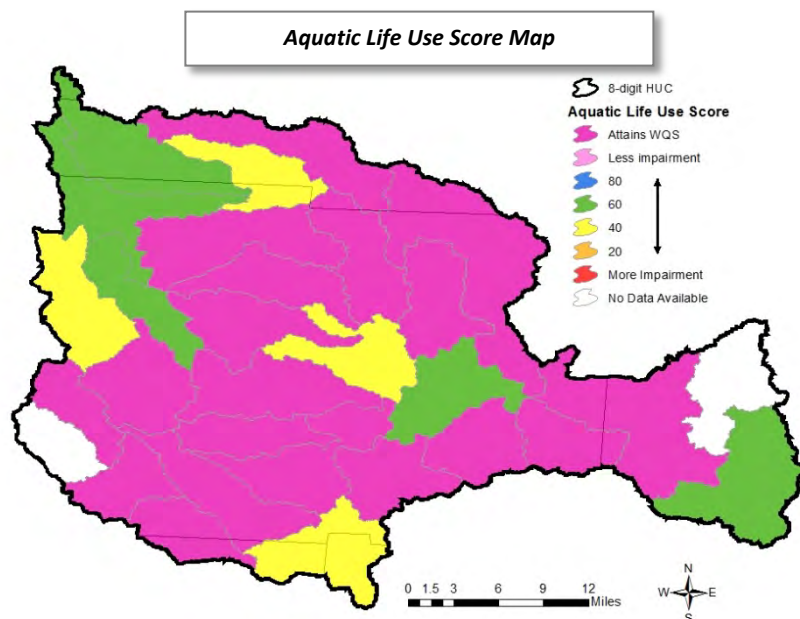
Threats and Impacts

The Landscape Development Index (LDI) for the service area shows moderate impact in the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters (see adjacent map). Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 1,799 linear feet. And the average annual wetland mitigation (2004-2012) has been: 2.63 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and the OEPA Biological and Water Quality Report on the Licking River and Selected Tributaries (2012) have identified causes of impairment including: nutrients,

direct habitat alterations, sedimentation, and siltation. Sources of these impairments have been identified as: dams/impoundments, channelization, CFOs, agriculture, urban runoff/storm sewers, municipal point sources, land development, yard maintenance, and, septic systems.

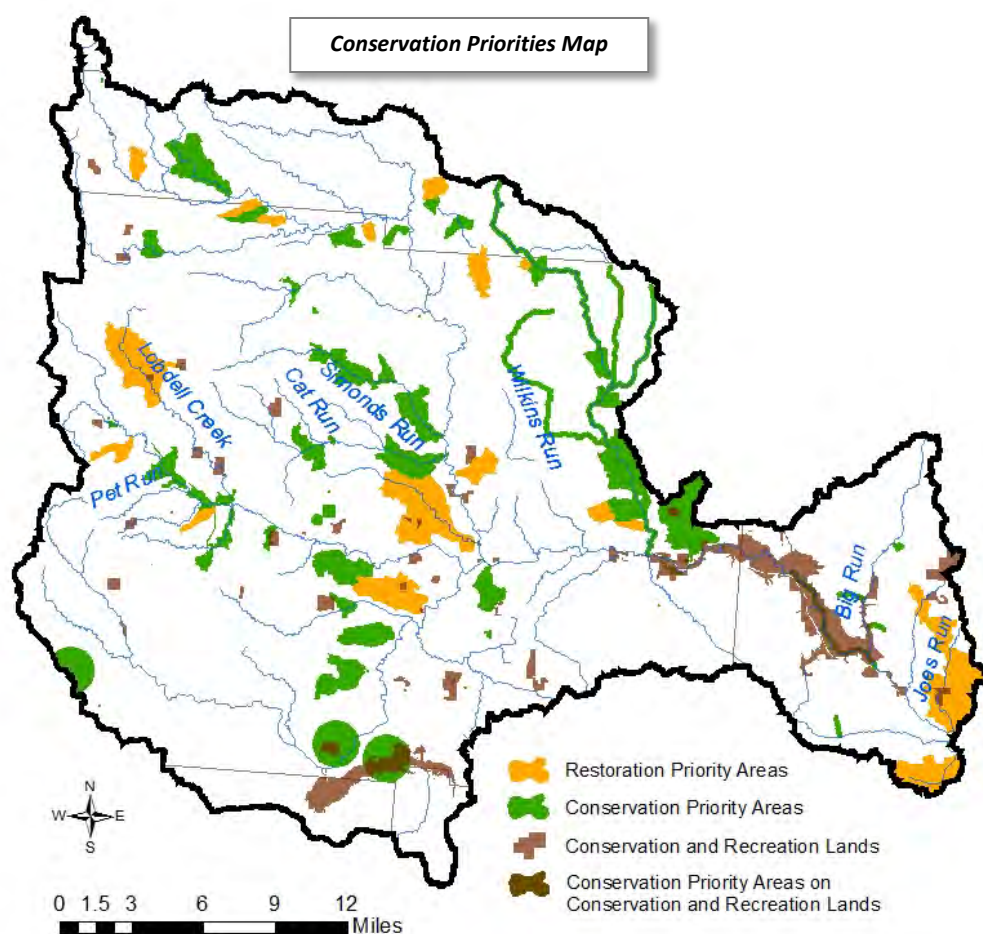


Aquatic Resource Goals

No Watershed Action Plans have been developed for this Primary Service Area; however, it is possible to establish goals that would have a positive effect on the above sources of impairment. The goals that the TNC In-Lieu Fee Program might support include:

- Reduce sediment loading
- Reduce total suspended solids
- Exclusion fencing for livestock operations
- Improve and restore in-stream physical habitat
- Improve aquatic life habitat
- Improve and increase riparian habitat
- Preserve and protect riparian corridors and highly erodible land
- Maintain water quality standards in all unimpaired stream segments
- Remove dams and other obstructions that serve as barriers to fish movement or restrict or alter flow conditions
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.

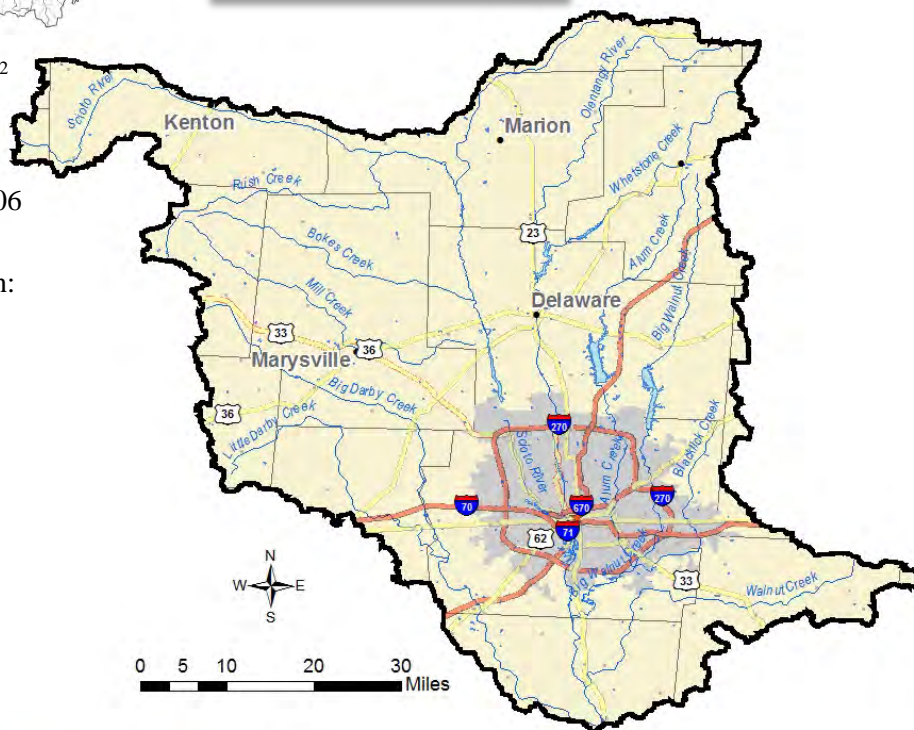


Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

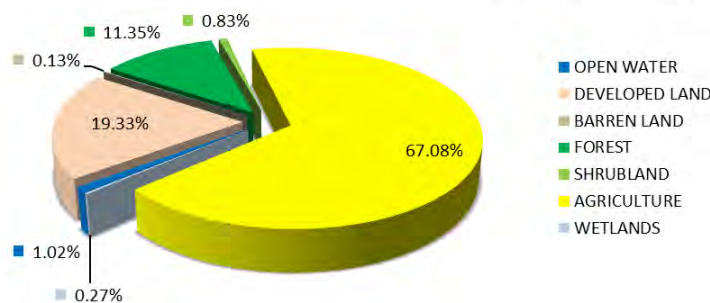
| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|--|--------------------|--------------------------|-------------------------------|-----------------------|
| Unnamed Tributary Timber Run (RM 5.02) | X | | | |
| Unnamed Tributary Big Run (RM 1.30) | X | | | |
| Unnamed Tributary Big Run (RM 2.63) | X | | | |
| Licking River | | | Dillon Lake (RM 12.7 to 6.2) | |
| Rocky Fork | | X | East Branch to mouth | |
| Long Run | | | | X |
| Lost Run | | | | X |
| Painter Run | | | | X |

Primary Service Area 30**Upper Scioto River
HUC 05060001****Watershed Characteristic**

- 8-digit HUC size: 3196 miles²
- 2-digit HUC: Ohio River
- 6-digit HUC: Scioto
- Number of 12-digit HUCs: 106
- Corps district: Huntington
- Approximate 2010 population: 1.66 million

**Geographic Overview Map**

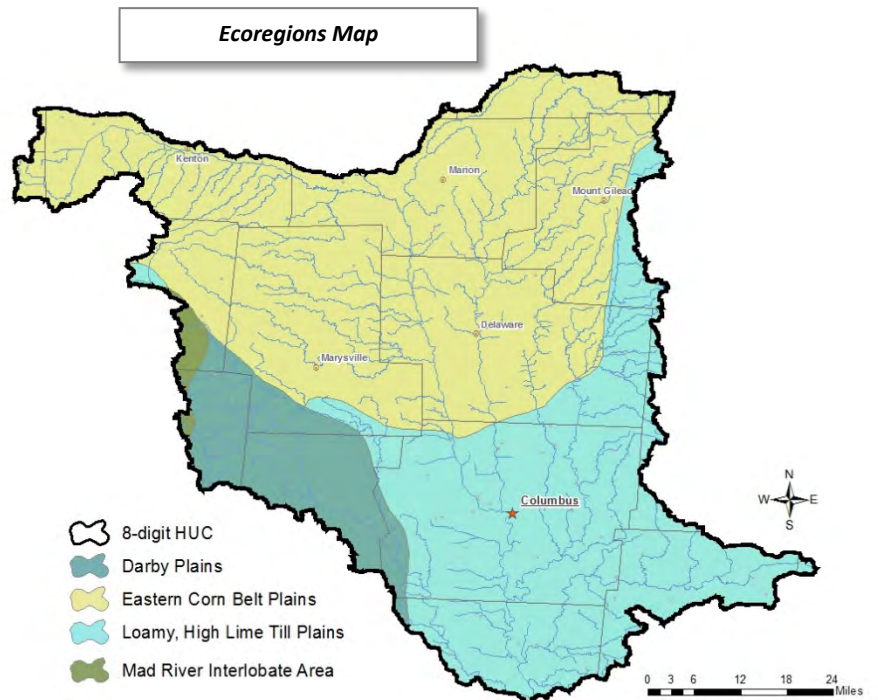
- Land Uses:



- Counties: Allen, Auglaize, Champaign, Clark, Crawford, Delaware, Fairfield, Franklin, Hardin, Knox, Licking, Logan, Madison, Marion, Morrow, Perry, Pickaway, Richland, Union, Wyandot
- Waterbodies
 - Total open water: 28 miles²
 - Number of waterbodies over 0.5 miles² in size: 5
 - Wetlands: 24,570 acres
 - Named Streams: 1791 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), rayed bean (E), Scioto madtom (E), clubshell (E), Northern riffleshell (E), snuffbox (E), American

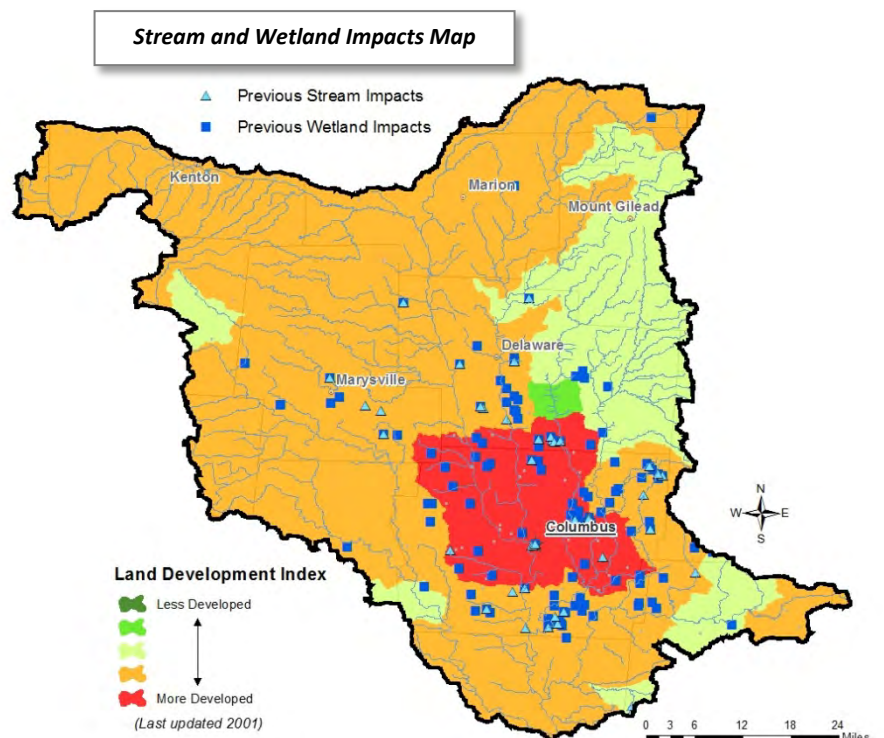
burying beetle (E), Eastern prairie fringed orchid (T), copperybelly water snake (T), Eastern massasauga (C), bald eagle (SC), Eastern hellbender (SC), rabbitsfoot (PT)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Darby Plains (55e)
 - Eastern Corn Belt Plains (55a)
 - Loamy High Lime Till Plains (55b)
 - Mad River Interlobate Area (55c)



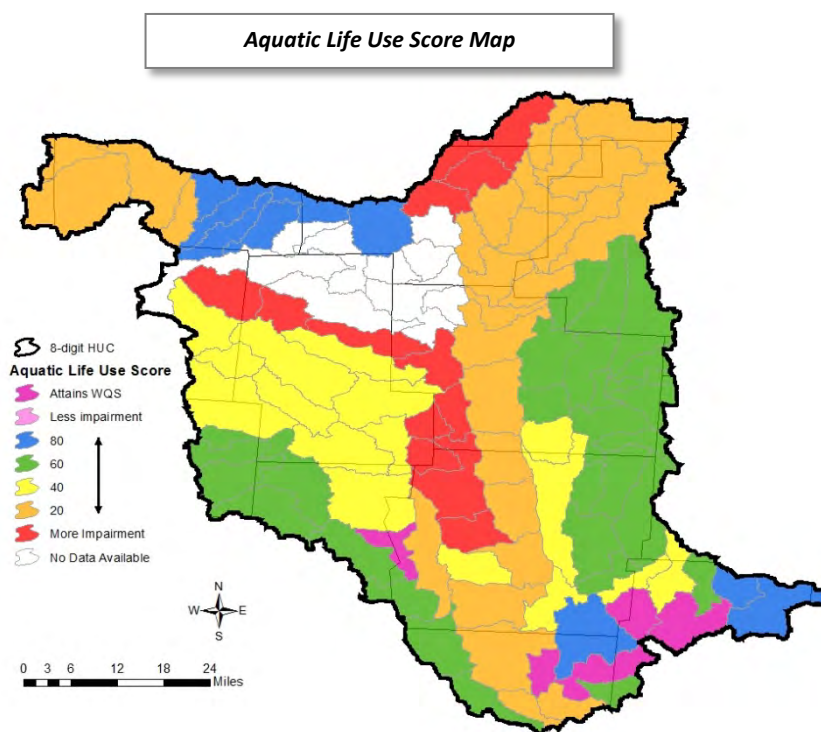
Threats and Impacts

The Landscape Development Index (LDI) for the service area shows heavy impact in the watershed especially in the Columbus area. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters (see adjacent map). Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 19,973 linear feet. And the average annual wetland



mitigation (2004-2012) has been: 37 acres.

In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and several OEPA Biological and Water Quality Reports [Upper Scioto River Watershed (2012), Middle Scioto (2010), Little Scioto (2008), Walnut Creek (2005), Olentangy River (2005), Big Walnut Creek (2000)] have identified sources of water quality threats and impacts including: direct habitat alterations, nutrients, flow alteration, metals, organic enrichment, sedimentation, and siltation. Additionally, urban and suburban development has increased impervious surfaces, nutrient enrichment through yard maintenance, CSOs, wastewater discharges, and sediment from construction.



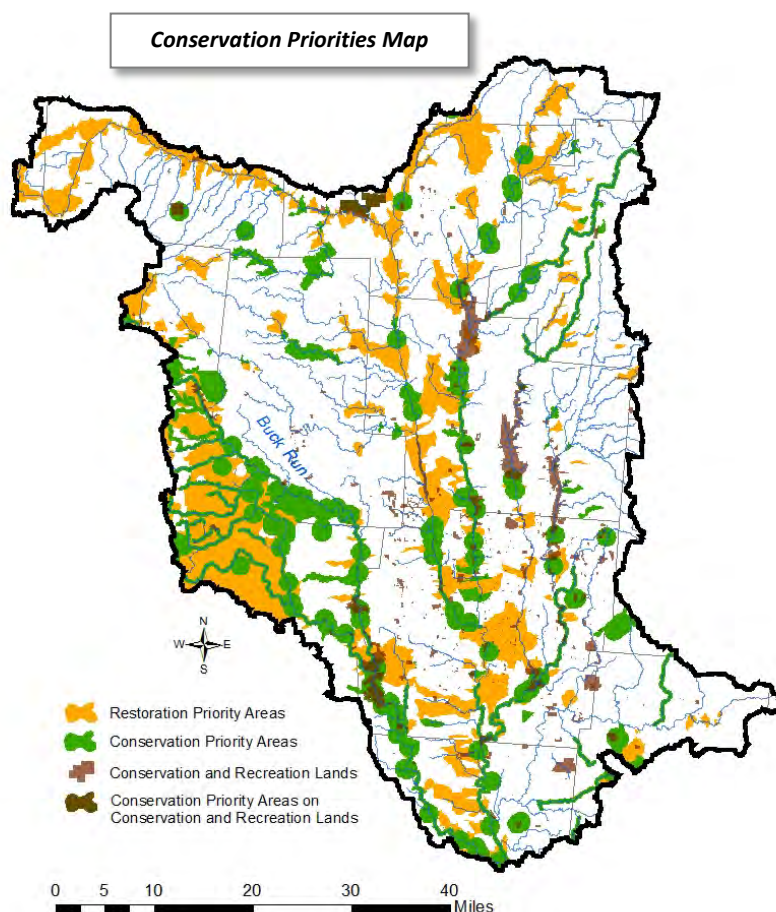
Aquatic Resource Goals

Watershed Action Plans have been developed for several of the watersheds within this Primary Service Area including: Upper Scioto, Upper Olentangy, Upper Big Walnut Creek, Bokes Creek, Mill Creek (Scioto River), Lower Olentangy, Lower Alum Creek, Rocky Fork, Blacklick Creek, and Lower Big Walnut. Goals for these Watershed Action Plans that the TNC In-Lieu Fee Program might support include:

- Reduce sediment loading
- Reduce total suspended solids
- Reduce the level of pathogens from livestock operations
- Improve and restore in-stream physical habitat
- Improve aquatic life habitat
- Improve and increase riparian habitat
- Preserve and protect riparian corridors and highly erodible land
- Increase groundwater recharge
- Maintain water quality standards in all unimpaired stream segments

- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|------------------|--------------------------|--------------------------|--|---------------------------|
| Alum Creek | | | | headwaters to West Branch |
| Baron Creek | | | headwaters to Rosedale-Plain City Road | |
| Big Darby Creek | X | X | X | |
| Big Run | headwaters to Elder Road | | | |
| Big Walnut Creek | | | Williams Road to mouth | Rocky Fork to the mouth |
| Hay Run | | | RM 0.5 to the mouth | |
| Hellbranch Run | | | Kropp Road to the mouth | Kropp Road to the mouth |
| Howard Run | | | X | |
| Jumping Run | | | Headwaters to Bullard-Rutan Road | |

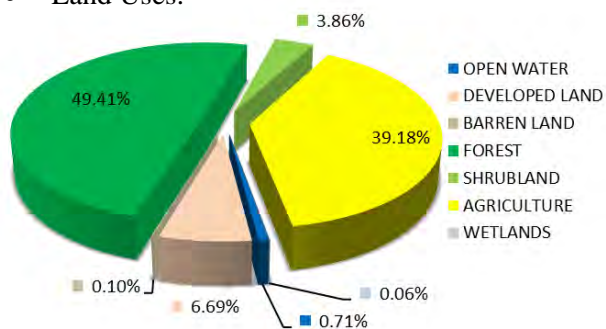
Continued

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|---------------------|--------------------------------------|---------------------------------|--------------------------------------|------------------------------|
| Lake Run | | | X | |
| Little Darby Creek | | X | X | X |
| Little Walnut Creek | headwaters to Ringgold Northern Road | | Ringgold Northern Road to Turkey Run | |

Service Area 31**Lower Scioto
HUC 05060002****Watershed Characteristics**

- 8-digit HUC size: 2175 miles²
- 2-digit HUC: Ohio
- 6-digit HUC: Scioto
- Number of 12-digit HUCs: 103
- Corps district: Huntington
- Approximate 2010 population: 181,836

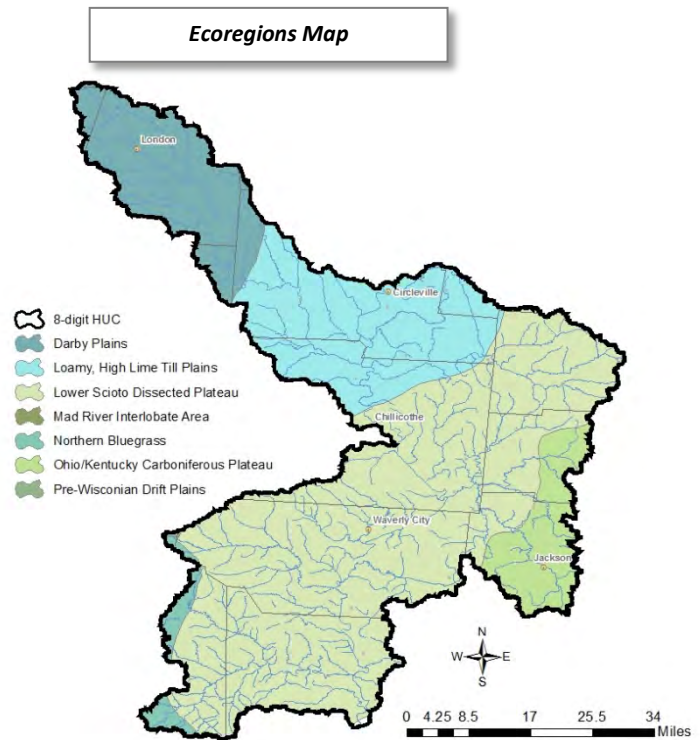
- Land Uses:



- Counties: Clark, Clinton, Fayette, Greene, Highland, Madison, Pickaway, Pike, Ross
- Waterbodies
 - Total open water: 8.7 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - Wetlands: 27,613 acres
 - Named Streams: 1456 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), Scioto madtom (E), clubshell (E), rayed bean (E), snuffbox (E), northern riffleshell (E), eastern prairie fringed orchid (T), rabbitsfoot (PT), eastern massasauga (C), eastern hellbender (SC), timber rattlesnake (SC), bald eagle (SC)

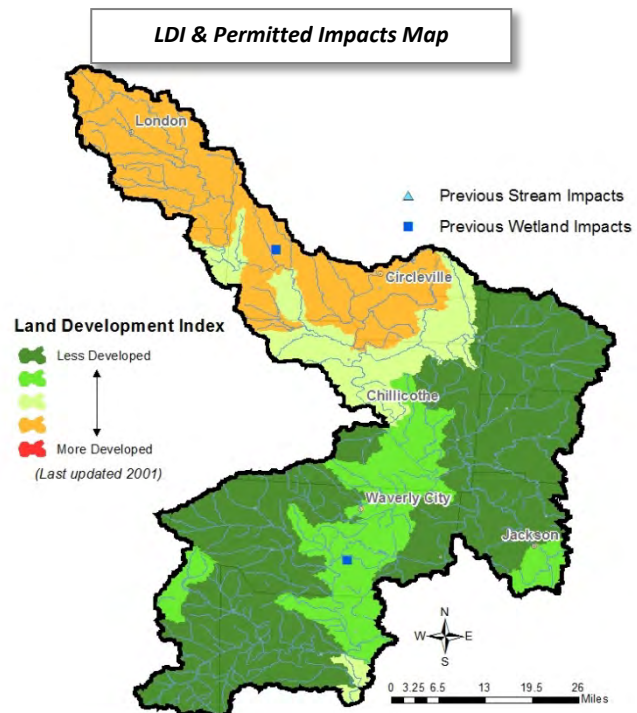
Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):

- o Eastern Corn Belt Plains (55a)
- o Erie Lake Plain (61c)
- o Huron / Erie Lake Plains (57a, 57d)



Threats and Impacts

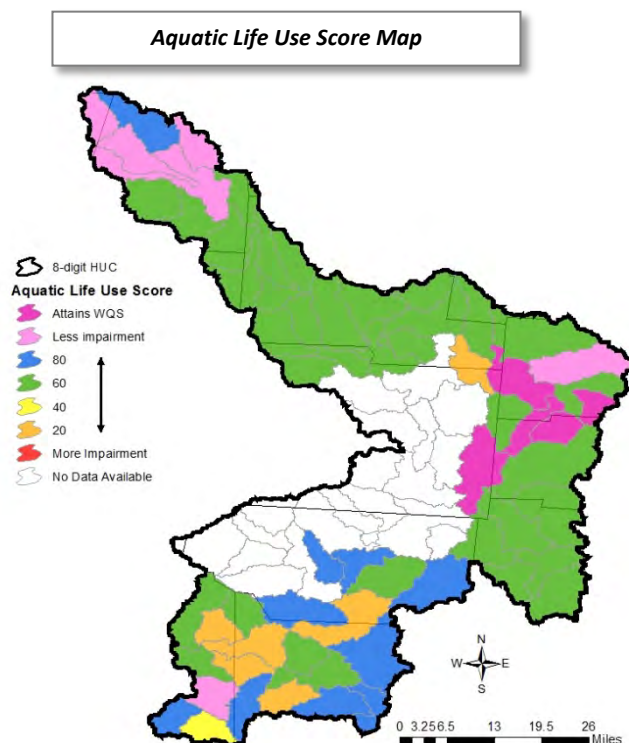
The Landscape Development Index (LDI) for the service area shows significant development in the north of the watershed and less in the south. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 0 linear feet. And the average annual wetland mitigation (2004-2012) has been: 0.3 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling.

Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and the OEPA Biological and Water Quality Report on the Salt Creek (2005) have identified causes of impairment including: nutrients, flow alteration, organic enrichment, direct habitat

alterations, flow modification, metals, priority organics, sedimentation, and siltation. Sources of these impairments have been identified as: aquaculture, channelization, major municipal point source, urban runoff/storm sewers, package plants, urban development, dam/impoundment, agriculture, major industrial point source, septic systems, streambank destabilization, quarries, livestock access, and CFOs.

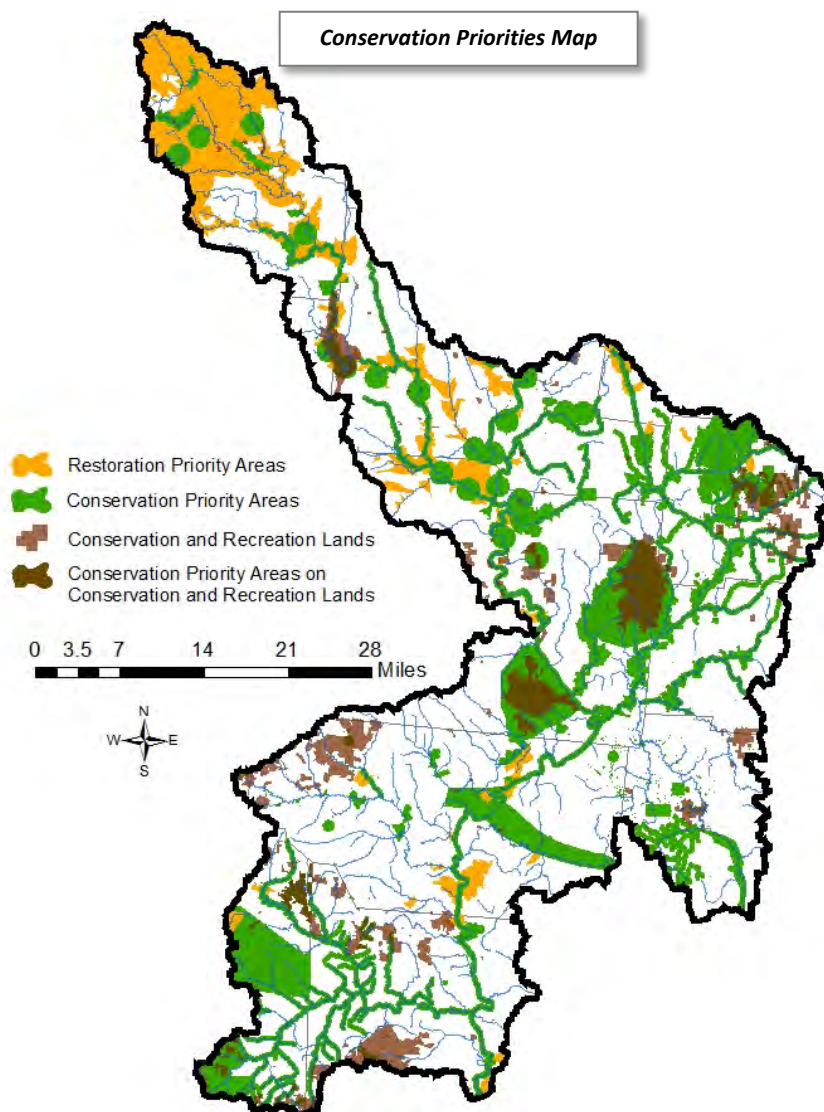


Aquatic Resource Goals

No Watershed Action Plans have been developed for this Primary Service Area; however, it is possible to establish goals that would have a positive effect on the above sources of impairment. The goals that the TNC In-Lieu Fee Program might support include:

- Reconnect floodplains to streams
- Reduce sediment loading
- Reduce total suspended solids
- Expand exclusion fencing for livestock operations
- Improve and restore in-stream physical habitat
- Improve aquatic life habitat
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Increase wetland development Remove dams and other obstructions that serve as barriers to fish movement or restrict or alter flow conditions
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|---------------------------------|--------------------|--------------------------|-------------------------------|-----------------------|
| Abe Run | | | X | |
| Beech Fork | | | X | X |
| Beech Fork Salt Creek (RM 34.1) | | | X | |
| Bloody Run | | | X | |
| Blue Creek | | | | X |

Continued

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|---------------------------|--------------------------|--------------------------|---|---|
| Bolander Run | | | X | |
| Bradford Creek | | | RM 6.1 to the mouth | |
| Buckeye Creek Tributaries | | | X | |
| Bushkirk Creek | | | RM 2.7 to the mouth | X |
| Buttermilk Run | | | X | |
| Canada Run | | | X | |
| Carter Run | | | X | |
| Cassel Run | | | X | |
| Chambers Run | | | X | |
| Coffer Run | | | X | |
| Cola Creek | | | X | |
| Congo Creek | | | X | X |
| Davis Run | | | X | |
| Deep Run | | | X | |
| Deer Creek | | | Sugar Run (RM 41.22) to the Deer Creek Reservoir (RM 29.40) | Bradford/Sugar Creek confluence (RM 41.22) to Deer Creek Reservoir (RM 29.40) |
| Deer Creek | | X | Deer Creek dam (RM 23.89) to the mouth | |
| Dry Fork | | | X | |
| Early Run | | | X | X |
| East Fork Queer Creek | X | | X | |
| Glen Run | | | X | |
| Goose Creek | X | | X | |
| Hay Run | | | | X |
| Hog Run | | | X | |
| Hollow Fork | | | X | |
| Jessie Run | | | X | |
| Jisco Lake Tributaries | | | X | |
| Johnson Run | | | X | |
| Kelly Branch | X | | X | |
| Kinnikinnick Creek | | | X | |
| Laurel Run | Toad Hollow to the mouth | | Toad Hollow to the mouth | X |
| Left Fork Bear Creek | | | X | |
| Liston Run | | | X | |
| Little Pine Creek | | | Headwaters to Wagner Rd. (RM 1.4) | |
| Little Spruce Run | | | X | |
| McCullough Creek | | | | X |
| Middle Fork Laurel Run | | | X | X |
| Middle Fork Salt Creek | | | | X |
| Mill Creek | | | X | X |
| Minque Run | | | X | |
| Moccasin Creek | | | X | |
| Moon Run | | | X | |
| Morgan Fork | | | | X |
| Mullen Run | | | X | |
| North Branch Pretty Run | | | X | |
| Pike Run | | | X | |

Continued

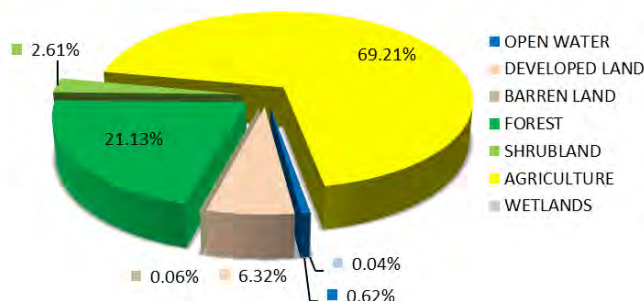
| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|---|-----------------------------------|--|---|---|
| Pine Creek | | | X | X |
| Plum Run | | | X | |
| Poe Run | | | X | |
| Pretty Run | Headwaters to Dry Branch (RM 9.0) | | X | X |
| Queer Creek | X | | X | X |
| Randall Run | | | X | X |
| Rarden Creek | | | | X |
| Rocky Fork | | | X | |
| Salome Run | | | X | |
| Salt Creek | | X | X | |
| Sams Creek | | | X | |
| Scioto Brush Creek | | McCullough Creek (RM 10.20) to the mouth | St. Rte. 32 to the mouth | X |
| | | | | (headwaters to RM 10.2) (RM 124.40 to RM 89.61) (RM 63.50 to RM 51.18) (RM 9.2 to the mouth) |
| Scippo Creek | | | Old Tarlton Pike (RM 14.8) to the mouth | Old Tarlton Pike (RM 14.80) to the mouth |
| Slate Fork Churn Run | | | X | |
| Slate Run | | | X | |
| South Fork Scioto Brush Creek | | Shawnee Creek (RM 8.30) to the mouth | X | Shawnee Creek (RM 8.3) to the mouth |
| Spruce Run | | | X | |
| Staley Run | | | X | |
| Stony Run | | | X | |
| Sugar Run | | | X | |
| Sugarcamp Run | | | X | |
| Sugarcamp Run | | | X | |
| Sweeney Run | | | X | |
| Turkey Creek | | | X | |
| Unnamed Tributary East Fork Queer Creek (RM 4.24) | | | X | |
| Unnamed Tributary Hickman Run (RM 1.14) | | | X | |
| Unnamed Tributary Mill Creek (RM 3.93) | | | X | |
| Up Run | | | X | |
| Walker Run | | | X | |
| Walnut Creek | | | X | |
| Watts Run | | | X | |
| Whites Run | | | X | |
| Winterstein Run | | | X | X |
| Yellowbud Creek | | | Upstream Ebenhack Rd. (RM 3.0) to the mouth | |

Service Area 32**Paint****HUC 05060003****Watershed Characteristics**

- 8-digit HUC size: 1142 miles²
- 2-digit HUC: Ohio
- 6-digit HUC: Scioto
- Number of 12-digit HUCs: 103
- Corps district: Huntington
- Approximate 2010 population: 219,300

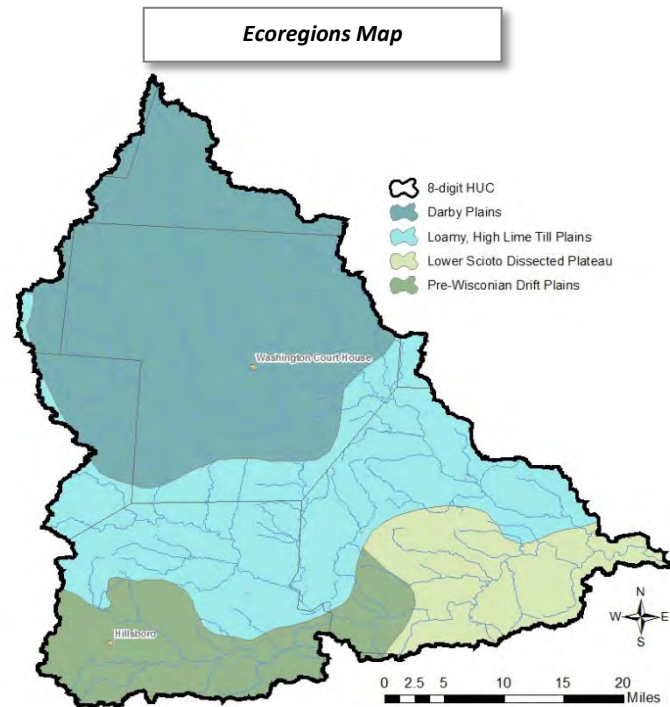


- Land Uses:



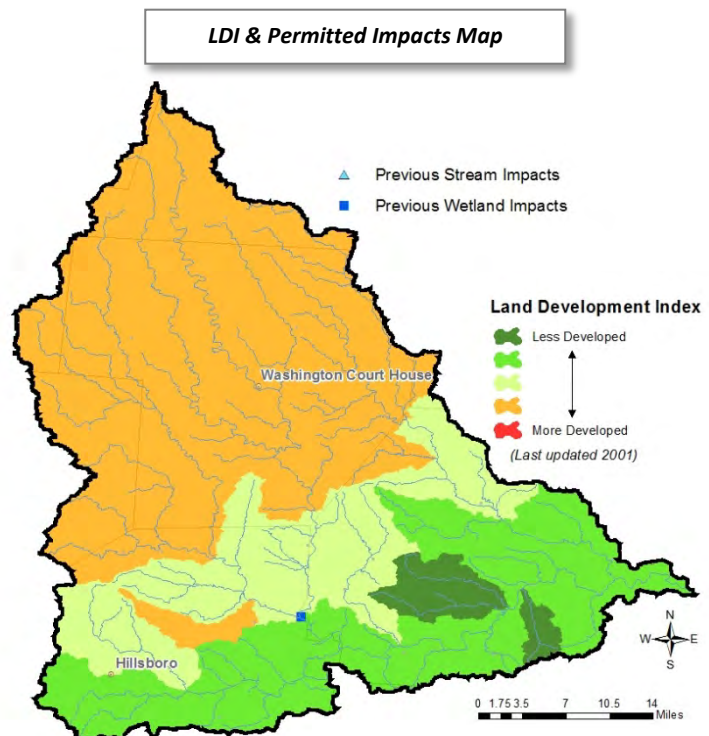
- Counties: Clark, Clinton, Fayette, Greene, Highland, Madison, Pickaway, Pike, Ross
- Waterbodies
 - Total open water: 9 miles²
 - Number of waterbodies over 0.5 miles² in size: 4
 - Wetlands: 3,280 acres
 - Named Streams: 735 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), Scioto madtom (E), clubshell (E), northern riffleshell (E), rayed bean (E), snuffbox (E), rabbitsfoot (PT), eastern prairie fringed orchid (T), eastern massasauga (C), timber rattlesnake (SC), eastern helbender (SC), bald eagle (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Darby Plains (55e)
 - Loamy, High Lime Till Plains (55b)
 - Lower Scioto Dissected Plateau (70d)
 - Pre-Wisconsinan Drift Plains (55d)

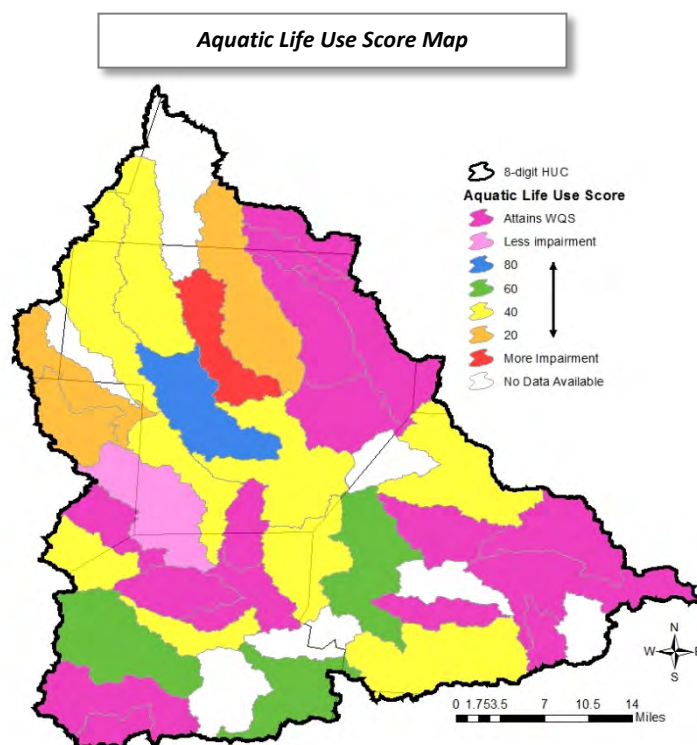


Threats and Impacts

The intended use of the Landscape Development Index (LDI) is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 0 linear feet. And the average annual wetland mitigation (2004-2012) has been: 0.7 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and an OEPA Biological and Water Quality Report [Paint Creek Watershed (2008)] have identified causes of impairment including: nutrients, direct habitat alterations, flow modification, sedimentation, and siltation. Sources of these impairments have been identified as: channelization, municipal point source, urban runoff/storm sewers, dam/impoundment, septic systems, livestock access, and agriculture.

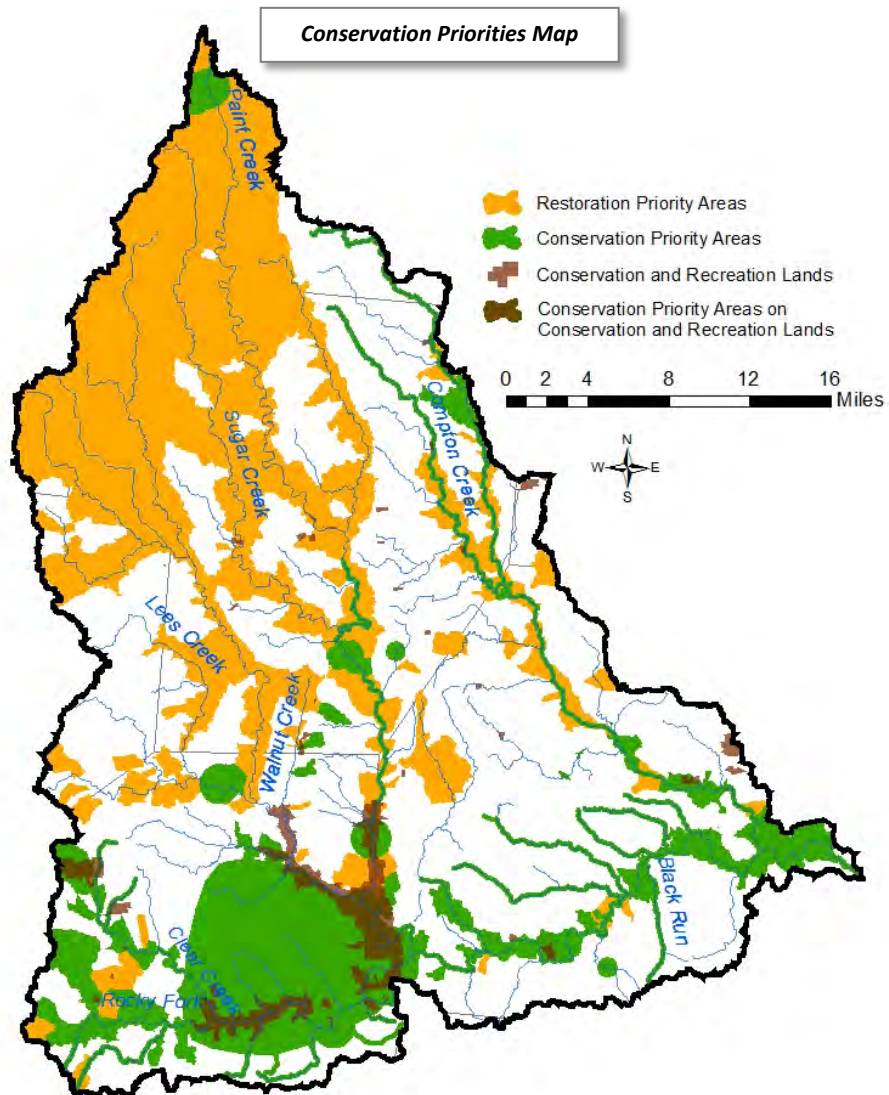


Aquatic Resource Goals

A Watershed Action Plan has been developed for this Primary Service Area. The goals of the Paint Watershed Action Plan (2002) that the TNC In-Lieu Fee Program might support include:

- Reconnect floodplains to streams
- Reduce sediment loading
- Reduce total suspended solids
- Provide increased recreational access to the streams
- Implement ecological flow restoration
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

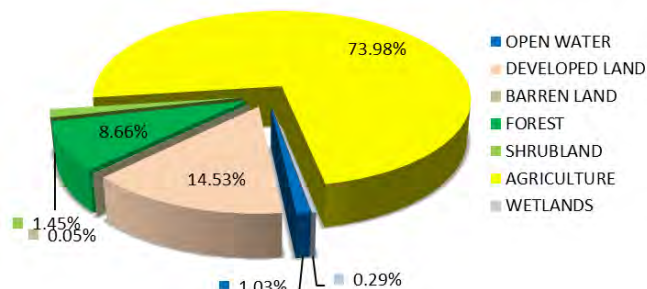
| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|------------------------|--|---|---|--|
| Cattail Run | X | | | |
| Owl Creek | X | | | |
| Plug Run | X | | | |
| Pickett Run | X | | | |
| Black Run | Headwaters to Spruce Hill Rd. (RM 1.0) | | | |
| North Fork Paint Creek | | | Headwaters to Compton Creek (RM 25.57) | |
| Lower Twin Creek | | | X | |
| Upper Twin Creek | | | Headwaters to Rocky Fork Lake | |
| Factory Branch | | | X | |
| Heads Branch | | | X | |
| Puncheon Run | | | X | |
| Franklin Branch | | | X | |
| Plum Run | | | X | |
| Blinco Branch | | | X | |
| Churn Creek | | | X | |
| Smith Branch | | | X | |
| Clear Creek | | | X | X |
| Hussey Run | | | X | |
| South Fork Rocky Fork | | | X | |
| Rocky Fork | | | Rocky Fork Lake dam (RM 9.23) to the mouth | Headwaters to Rocky Fork Lake (RM 16.88) |
| North Fork Paint Creek | | Compton Creek (RM 24.57) to the mouth | Compton Creek (RM 24.57) to the mouth | |
| Paint Creek | | Rocky Fork (RM 37.12) to North Fork (RM 3.80) | US Rte. 35 (RM 67.4) to St. Rte. 772 (RM 3.8) | |
| Compton Creek | | | Dews Run to the mouth | X |
| Buckskin Creek | | | Cliff Run Rd. to the mouth | |

Service Area 33**Upper Great Miami
HUC 05080001****Watershed Characteristics**

- 8-digit HUC size: 2482 miles²
- 2-digit HUC: Ohio
- 6-digit HUC: Great Miami
- Number of 12-digit HUCs: 103
- Corps district: Buffalo
- Approximate 2010 population: 613,997

**Geographic Overview Map**

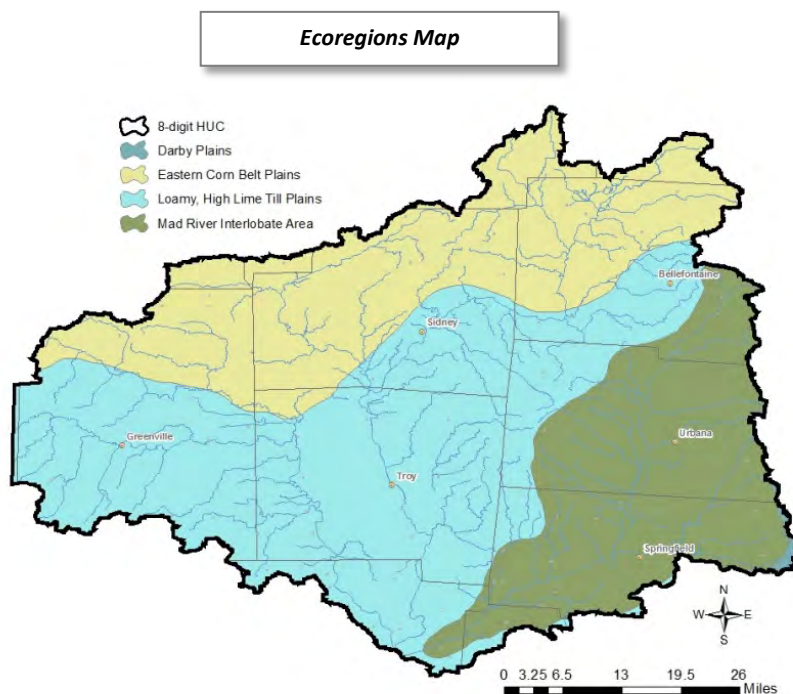
- Land Uses:



- Counties: Allen, Auglaize, Champaign, Clark, Darke, Greene, Hardin, Logan, Madison, Mercer, Miami, Montgomery, Preble, Shelby
- Waterbodies
 - Total open water: 28.3 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - Wetlands: 23,697 acres
 - Named Streams: 1300 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), Scioto madtom (E), clubshell (E), northern riffleshell (E), rayed bean (E), snuffbox (E), eastern prairie fringed orchid (T), copperbelly water snake (T), eastern massasauga (C), rabbitsfoot (PT), bald eagle (SC)

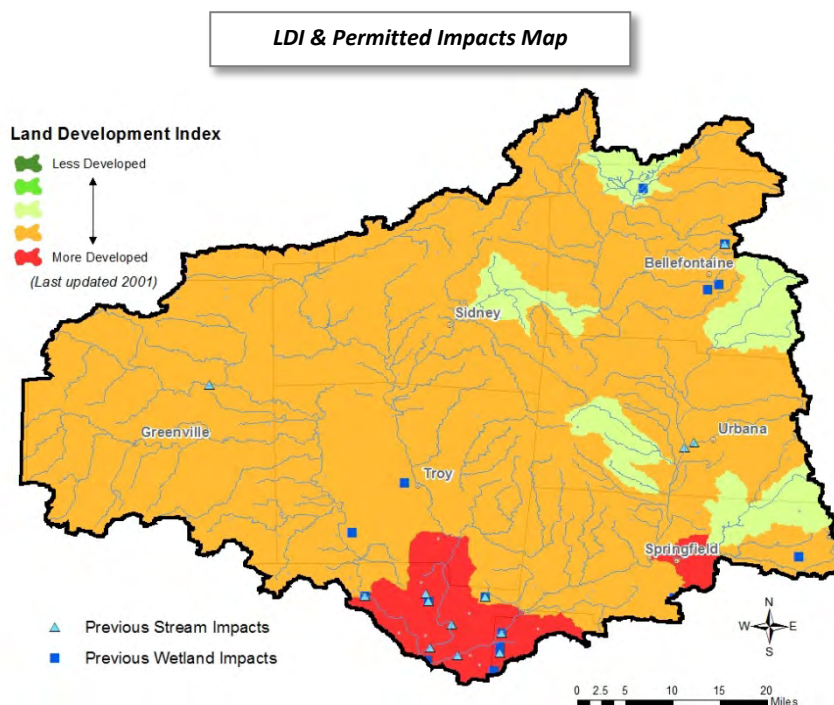
Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):

- Darby Plains (55e)
- Eastern Corn Belt Plains (61c)
- Loamy, High Lime Till Plains (55b)
- Mad River Interlobate Area (55c)



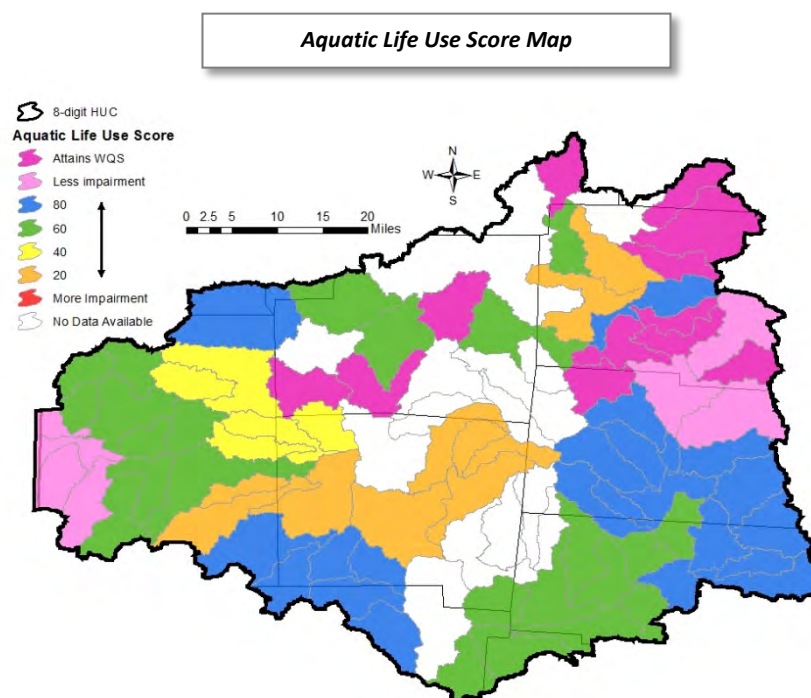
Threats and Impacts

The Landscape Development Index (LDI) for the service area shows significant impact across the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 3,590 linear feet. And the average annual wetland mitigation (2004-2012) has been: 2.43 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and two OEPA Biological and Water Quality Reports [Upper Great Miami (2008) and Middle Great Miami (2009)] have identified causes of impairment including:

nutrients, temperature, flow alteration, organic enrichment, direct habitat alterations, metals, sedimentation, and siltation. Sources of these impairments have been identified as: industrial thermal discharges, channelization, major municipal point source, urban runoff/storm sewers, spills, development, dam/impoundment, major industrial point source, contaminated sediment re-suspension, CFOs, septic systems, livestock access, and agriculture.

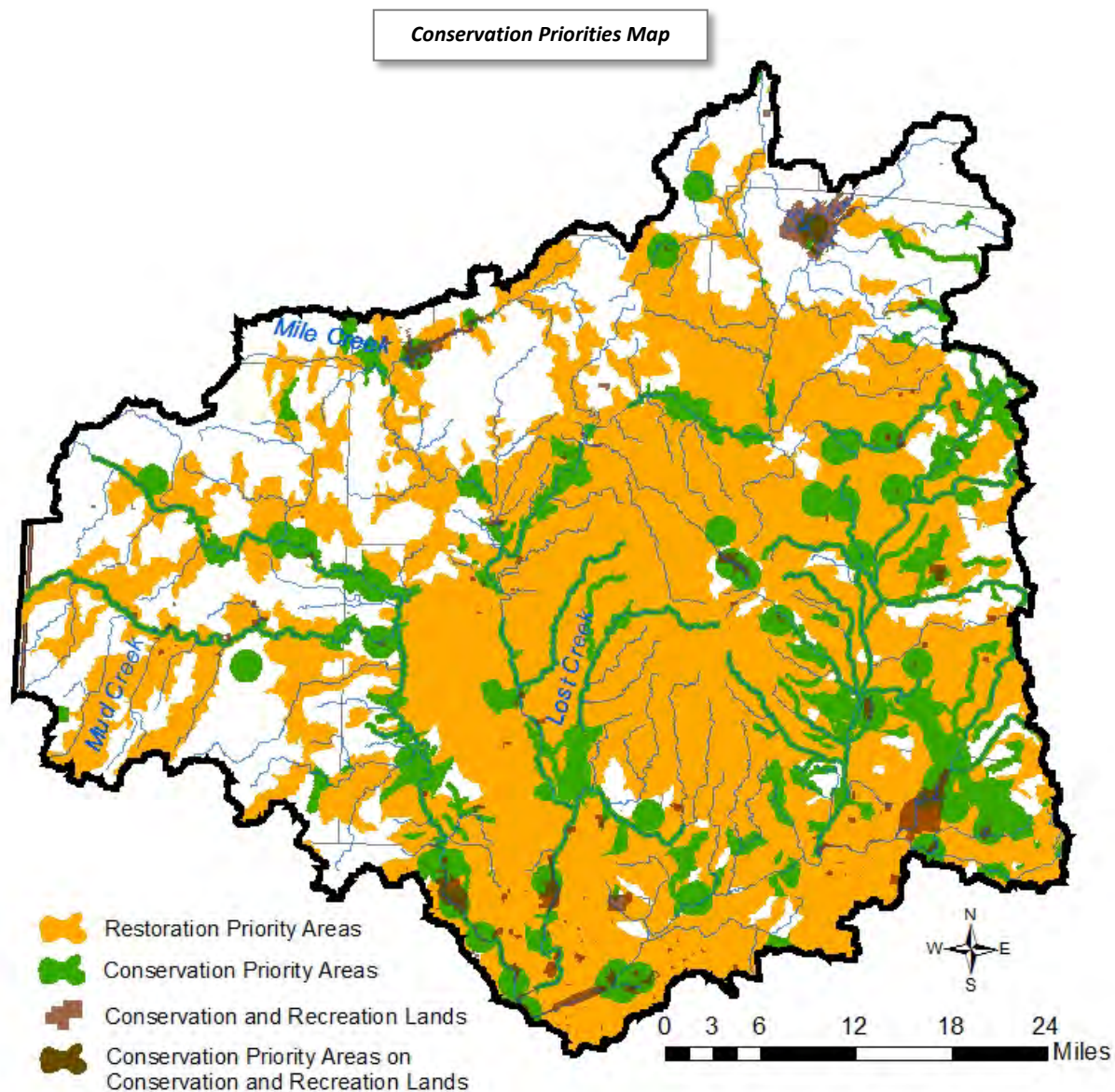


Aquatic Resource Goals

Watershed Action Plans have been developed for two of the watersheds within this Primary Service Area including: Mad River, Lower Mad River, Honey Creek, and Stillwater. Goals for these Watershed Action Plans that the TNC In-Lieu Fee Program might support include:

- Reconnect floodplains to streams
- Reduce sediment loading
- Reduce total suspended solids
- Reduce the level of pathogens from livestock operations
- Improve and restore in-stream physical habitat
- Improve aquatic life habitat
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Increase wetland development
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|----------------|------------------------------------|--------------------------|-------------------------------|-----------------------|
| Anderson Creek | X | | | |
| Bogles Run | X | | | |
| Buck Creek | Headwaters to C.J. Brown Reservoir | | | |
| Bull Branch | X | | | |
| Cedar Run | X | | | |

Continued

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|--|--|---|---|---|
| Chapman Creek | | | | X |
| Dugan Ditch | X | | | |
| East Branch Cedar Run | X | | | |
| East Branch Lost Creek | | | X | |
| East Fork Buck Creek | X | | | |
| Glady Creek | X | | | |
| Great Miami River | | | CSX RR bridge (RM 84.5) to the Troy Dam (RM 107.7), RM 108.0 to downstream of Piqua dam (RM 114.0), St. Rte. 66 (RM 116.7) to Loramie Creek (119.9), Pasco-Montra Rd. (RM 134.8) to the Quincy dam (RM 143.4) | Quincy Dam (RM 143.4) to Pasco-Montra Rd. (RM 134.8), Sidney water works dam (RM 130.2) to Loramie Creek (RM 119.9), Lost Creek (RM 100.0) to the CSX RR bridge (RM 84.5) |
| Greenville Creek | | Indiana state line (RM 34.48) to the mouth | X | |
| Harban Creek | X | | | |
| Hefflefinger Ditch (Mad River RM 52.23) | X | | | |
| Honey Creek | | | X | X |
| Kings Creek | X | | | |
| Lost Creek | | | X | X |
| Mac-a-cheek Ditch | X | | | |
| Mac-o-chee Creek | X | | | X |
| Mad River | Headwaters to Mac-o-chee Creek (RM 51.75) | | | Headwaters to Mac-o-chee Creek (RM 51.75) |
| Mckee Creek | | | X | X |
| Medway Creek (Mad River RM 14.29) | X | | | |
| Muddy Creek | X | | | |
| Nettle Creek | X | | | |
| New Richland Tributary | | | X | |
| Opossum Run | | | X | |
| Panther Creek | X | | | |
| Peters Ditch (Mad River RM 58.82) | X | | | |
| Rubsam Ditch (Mad River RM 13.33) | X | | | |
| Spring Creek | | | X | |
| Stillwater River | | Rifle Rd. (RM 55.90) to the Englewood Dam (RM 9.01) | Steffen Rd. (RM 52.36) to the mouth | Englewood dam (RM 9.0) to the mouth |
| Stony Creek | X | | | |
| Storms Creek | X | | | |
| Sugar Creek | Mac-o-chee Creek (RM 51.75) to Buck Creek (RM 26.15) | | | |
| Unnamed Tributaries of Brush Creek | | | X | |
| Unnamed Tributary (RM 3.18) | X | | | |
| Unnamed Tributary of Kings Creek (RM 0.46) | X | | | |

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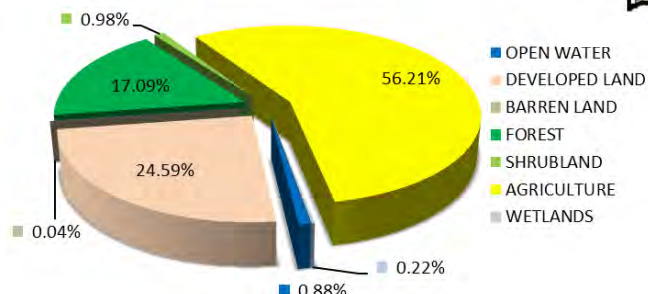
| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|--|---------------------------|---------------------------------|--------------------------------------|------------------------------|
| West Branch Cedar Run | X | | | |
| West Liberty Tributary of Mad River (RM 51.06) | X | | | |

Service Area 34**Lower Great Miami
HUC 05080002****Watershed Characteristics**

- 8-digit HUC size: 1320 miles²
- 2-digit HUC: Ohio
- 6-digit HUC: Great Miami
- Number of 12-digit HUCs: 103
- Corps district: Huntington
- Approximate 2010 population: 741,677

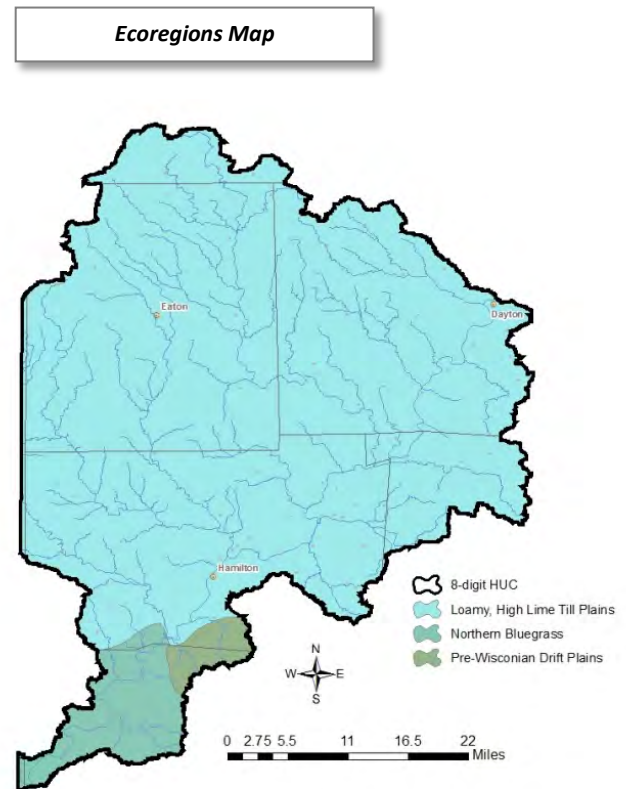
**Geographic Overview Map**

- Land Uses:



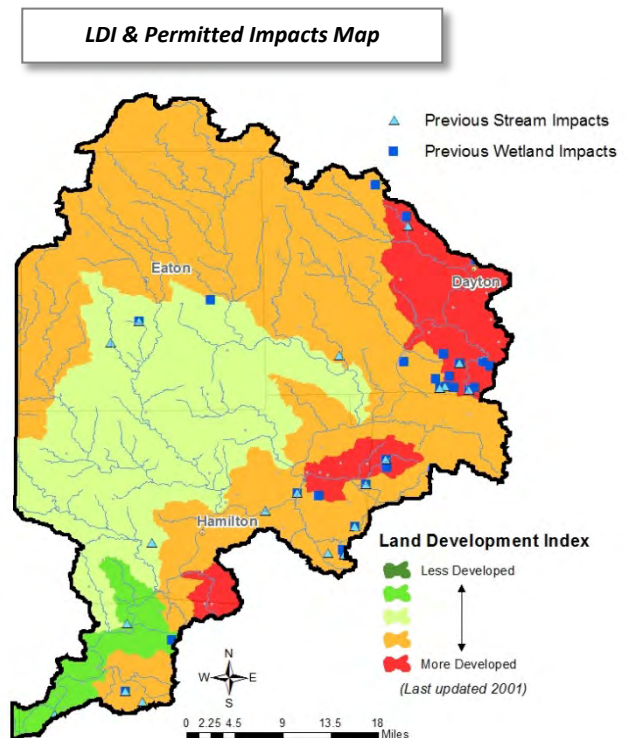
- Counties: Butler, Darke, Hamilton, Montgomery, Preble, Warren
- Waterbodies
 - Total open water: 6.5 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - Wetlands: 10,869 acres
 - Named Streams: 782 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), running buffalo clover (E), fanshell (E), pink mucket pearly mussel (E), sheepsnose (E), rayed bean (E), snuffbox (E), eastern massasauga (C), bald eagle (SC)

- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Loamy, High Lime Till Plains (55b)
 - Northern Bluegrass (71d)
 - Pre-Wisconsinan Drift Plains (55d)



Threats and Impacts

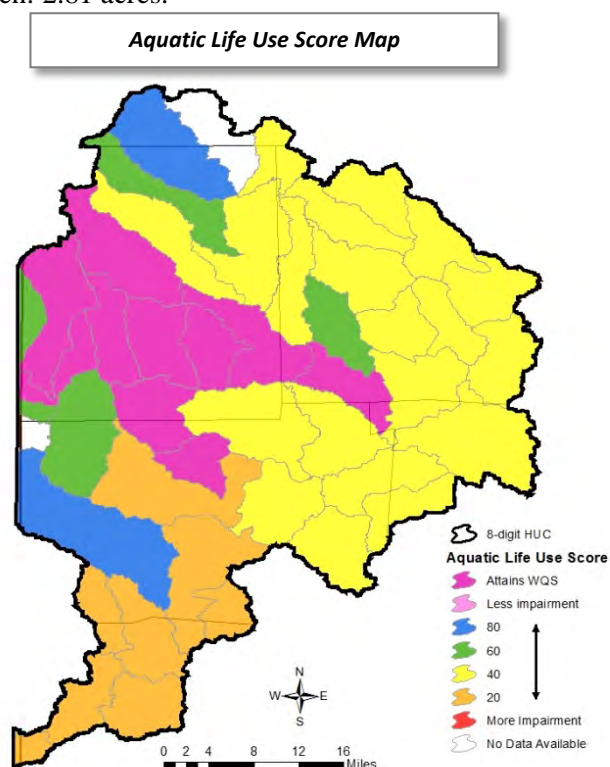
The Landscape Development Index (LDI) for the service area shows significant impact across the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 16,172 linear feet. And the



average annual wetland mitigation (2004-2012) has been: 2.81 acres.

In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and an OEPA Biological and Water Quality Report [Lower Great Miami (2012)] have identified sources of water quality threats and impacts including: temperature, nutrients, sedimentation, and

siltation. Sources of impairment include: industrial thermal discharges, industrial point source, agriculture, livestock access, urban runoff/storm sewers, and municipal point source discharges.

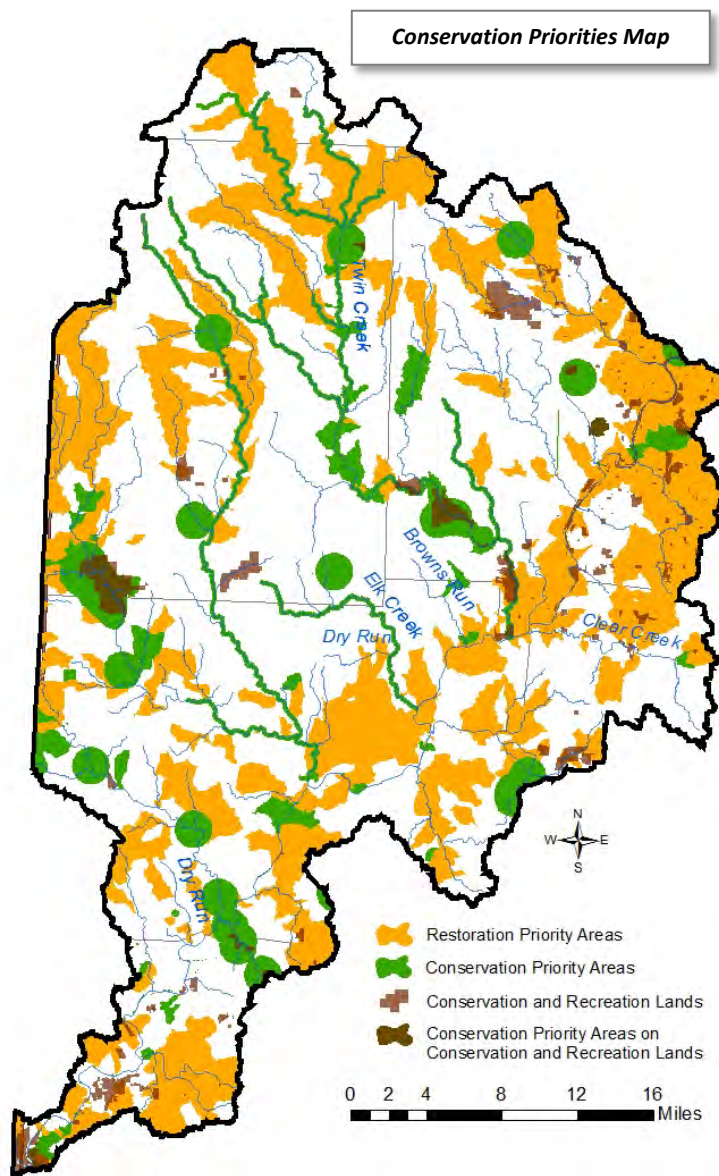


Aquatic Resource Goals

A Watershed Action Plan has been developed for one of the watersheds within this Primary Service Area. The goals for the Twin Creek (2010) Watershed Action Plan that might be supported by the TNC In-Lieu Fee Program include:

- Reconnect floodplains to streams
- Reduce sediment loading
- Reduce total suspended solids
- Increase livestock exclusion fencing along streams
- Improve and restore in-stream natural channels
- Improve aquatic life habitat and QHEI scores
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Increase wetland development
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|----------------|--------------------|--------------------------|---|---|
| Bantas Fork | | X | | |
| Elk Creek | | | | |
| Fourmile Creek | | | Darrtown Rd. (RM 13.0) to Sevenmile Ave. (RM 0.4) | |
| Goose Creek | | | Downstream Winnerline Rd. (RM 3.0) to the mouth | Downstream Winnerline Rd. (RM 3.0) to the mouth |

Continued

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|--------------------|---------------------------|---------------------------------|---|---|
| Little Twin Creek | | | | |
| Millers Fork | | | Otterbein Ithica Rd. (RM 9.65) to the mouth | |
| Price Creek | | | Brennersville Pymont Rd. (RM 2.88) to the mouth | |
| Sevenmile Creek | | | Paint Creek (RM 15.2) to the mouth | X |
| Swamp Creek | | | Downstream Sonora Rd. (RM 4.0) to the mouth | |
| Twin Creek | | X | | |
| Whitewater River | | | X | Indiana State line (RM 8.26) to the mouth |

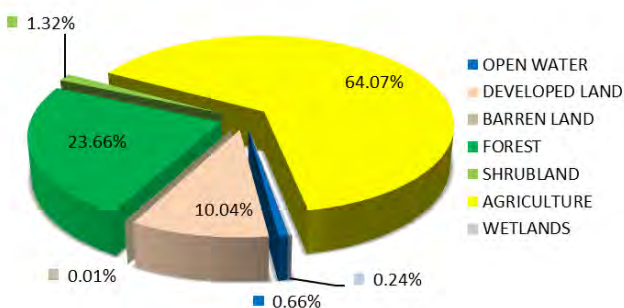
Service Area 35**Whitewater
HUC 05080003****Geographic Overview Map**

0 3 6 12 18
Miles

Watershed Characteristics

- 8-digit HUC size: 144 miles²
- 2-digit HUC: Ohio
- 6-digit HUC: Great Miami
- Number of 12-digit HUCs: 103
- Corps district: Huntington
- Approximate 2010 population: 27,206

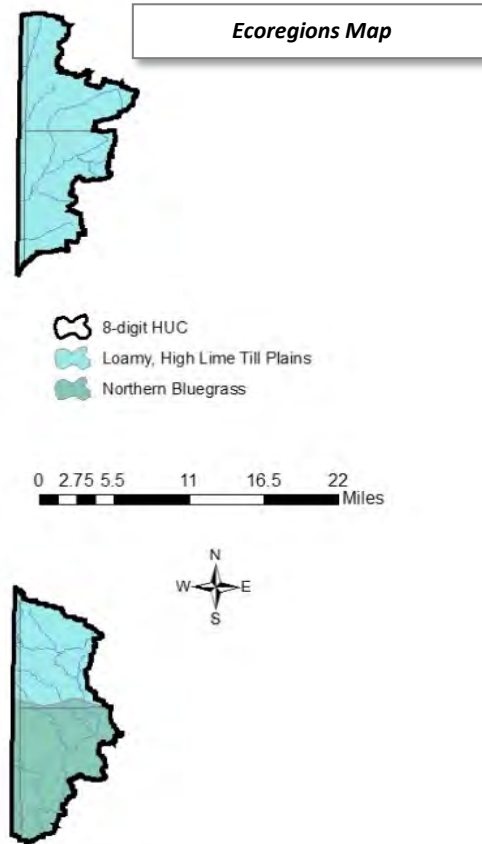
- Land Uses:



- Counties: Butler, Darke, Hamilton, Preble
- Waterbodies
 - Total open water: 0.5 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - Wetlands: 663 acres
 - Named Streams: 119 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), running buffalo clover (E), rayed bean (E), fanshell (E), pink mucket pearly mussel (E), sheepsnose (E), snuffbox (E), eastern massasauga (C), bald eagle (SC)

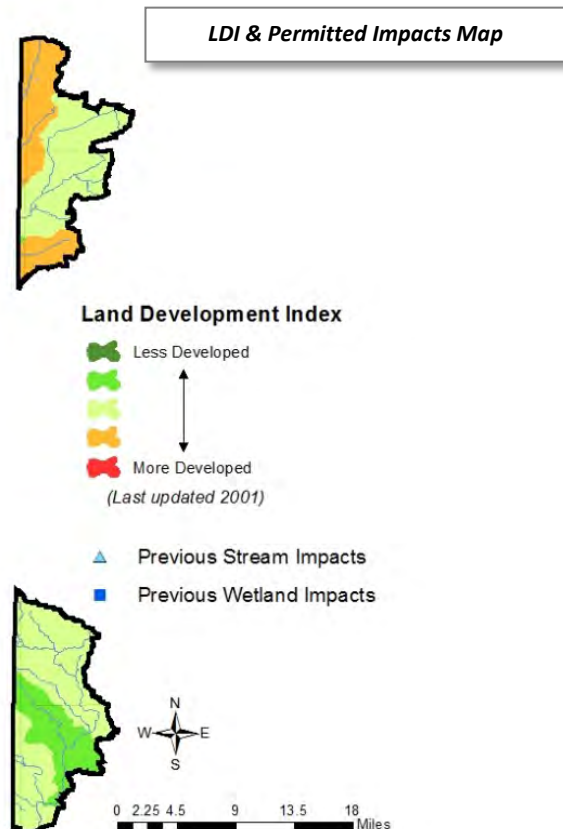
Level IV Terrestrial Ecoregions
(see Appendix 1 of the CPF for
full descriptions of each
ecoregion):

- o Loamy, High Lime Till Plains (55b)
- o Northern Bluegrass (71d)

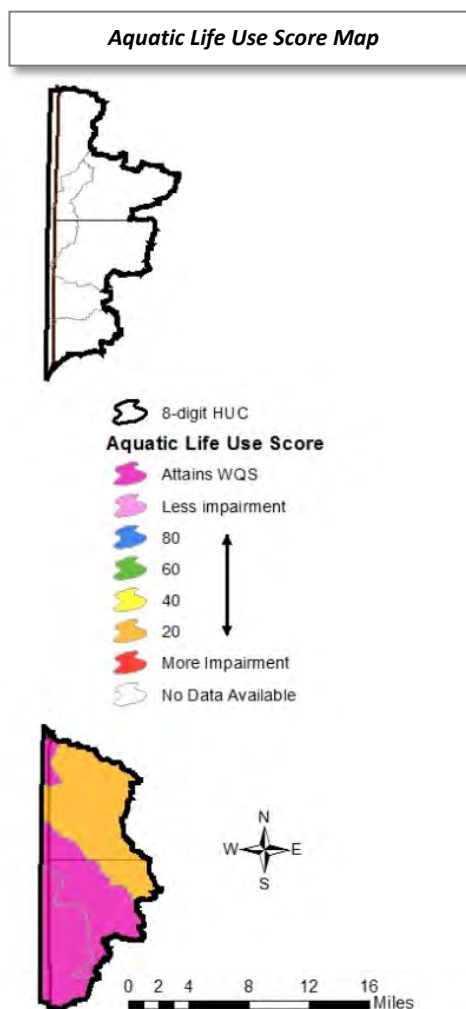


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows significant to moderate impact across the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 0 linear feet. And the average annual wetland mitigation (2004-2012) has been: 0 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and an OEPA Biological and Water Quality Report [Dry Fork Whitewater River (2006)] did not identify any sources of water quality threats or sources of impairment.

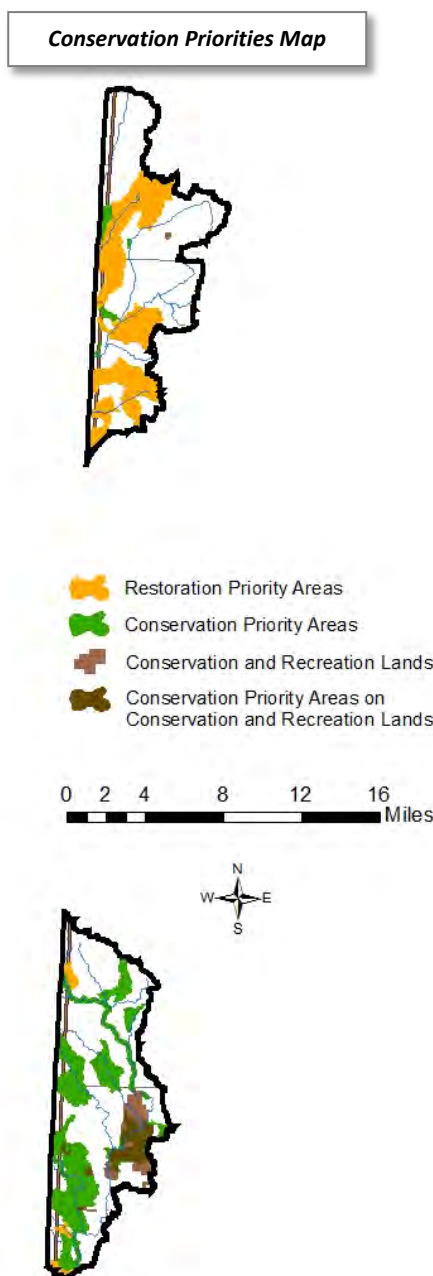


Aquatic Resource Goals

A Watershed Management Plan has been developed for the Indiana portion of the Whitewater River. The plan identifies several goals that the TNC In-Lieu Fee Program might support including:

- Reduce sediment loading
- Reduce total suspended solids
- Increase livestock exclusion fencing for streams
- Provide streambank stabilization
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Increase forest cover in the watershed
- Increase wetland development
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



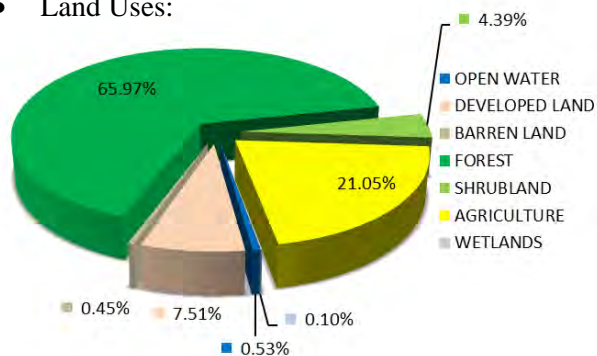
Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|------------------|--------------------|--------------------------|---|---|
| Dry Fork | | | Indiana state line (RM 20.66) to Atherton Rd. (RM 10.2) | |
| Whitewater River | | | X | Indiana state line (RM 8.26) to the mouth |

Service Area 36**Raccoon-Symmes
HUC 05090101****Watershed Characteristics**

- 8-digit HUC size: 1237 miles²
- 2-digit HUC: Ohio
- 6-digit HUC: Middle Ohio – Raccoon
- Number of 12-digit HUCs: 103
- Corps district: Huntington
- Approximate 2010 population: 87,634

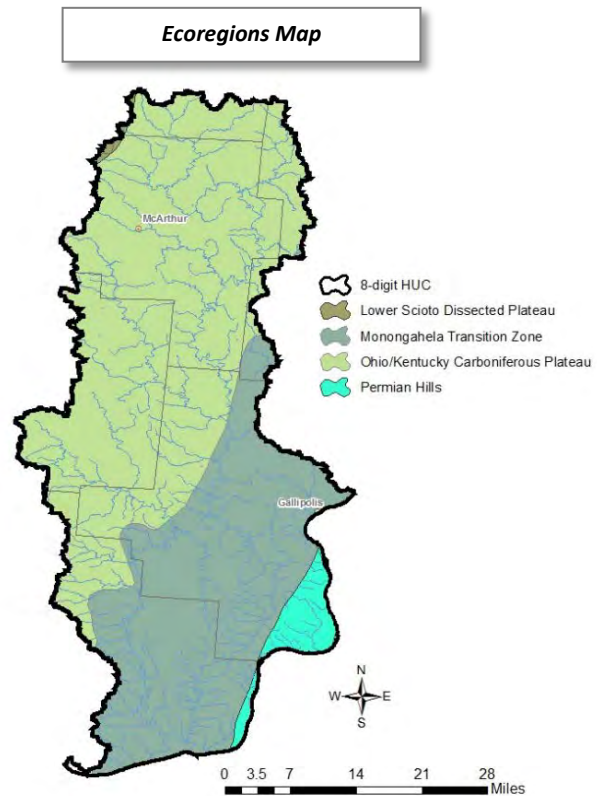
- Land Uses:



- Counties: Athens, Gallia, Hocking, Jackson, Lawrence, Meigs, Vinton
- Waterbodies
 - Total open water: 5.7 miles²
 - Number of waterbodies over 0.5 miles² in size: 2
 - Wetlands: 14,612 acres
 - Named Streams: 970 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), American burying beetle (E), running buffalo clover (E), fanshell (E), pink mucket pearly mussel (E), sheepnose (E), snuffbox (E), northern monkshood (T), small whorled pogonia (T), timber rattlesnake (SC), eastern hellbender (SC), bald eagle (SC)

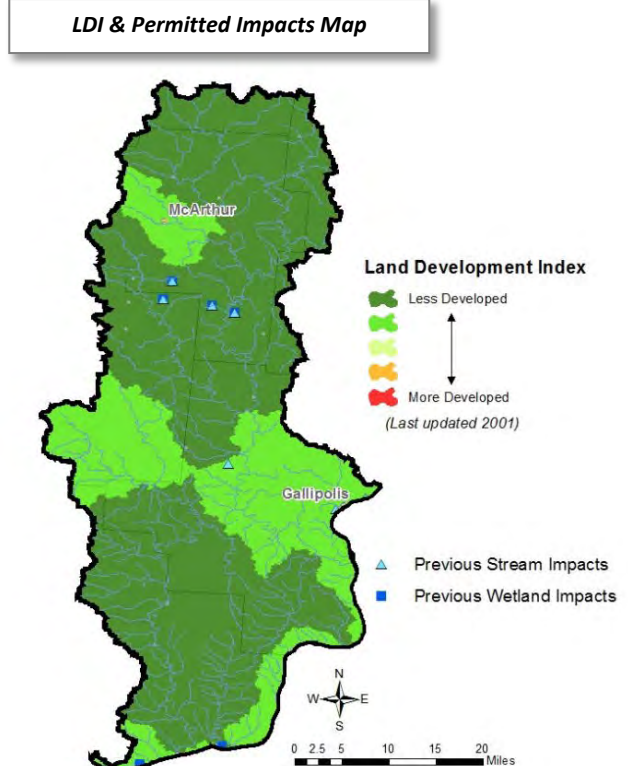
Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):

- Lower Scioto Dissected Plateau (70d)
- Monongahela Transition Zone (70b)
- Ohio/Kentucky Carboniferous Plateau ((70f)
- Permian Hills (70a)



Threats and Impacts

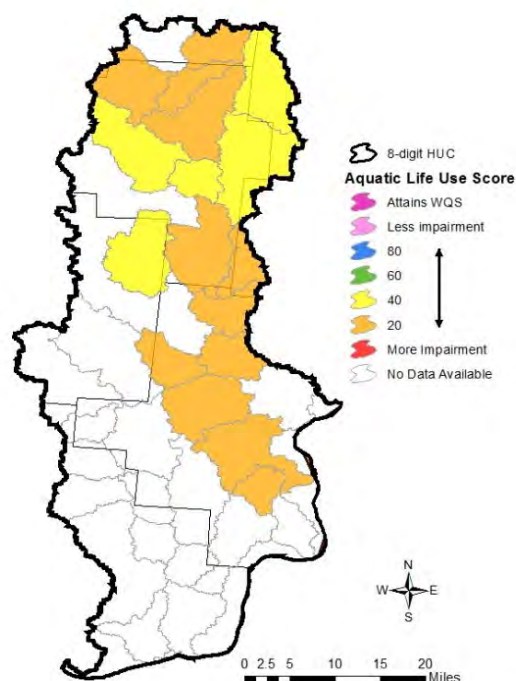
The Landscape Development Index (LDI) for the service area shows less development in the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 9,549 linear feet. And the average annual wetland mitigation (2004-2012) has been: 2.87 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and an OEPA Biological and Water Quality Report [Raccoon Creek Basin (1995)] have identified causes of impairment including: nutrients, flow alteration, organic enrichment, direct habitat alterations, thermal modifications, metals, oil and grease, sedimentation, and siltation. Sources of these impairments have been identified as:

channelization, CFOs, major municipal point source, sewer overflows, acid mine drainage, mine tailings, mining, petroleum activities, minor industrial point source, and agriculture.

Aquatic Life Use Score Map

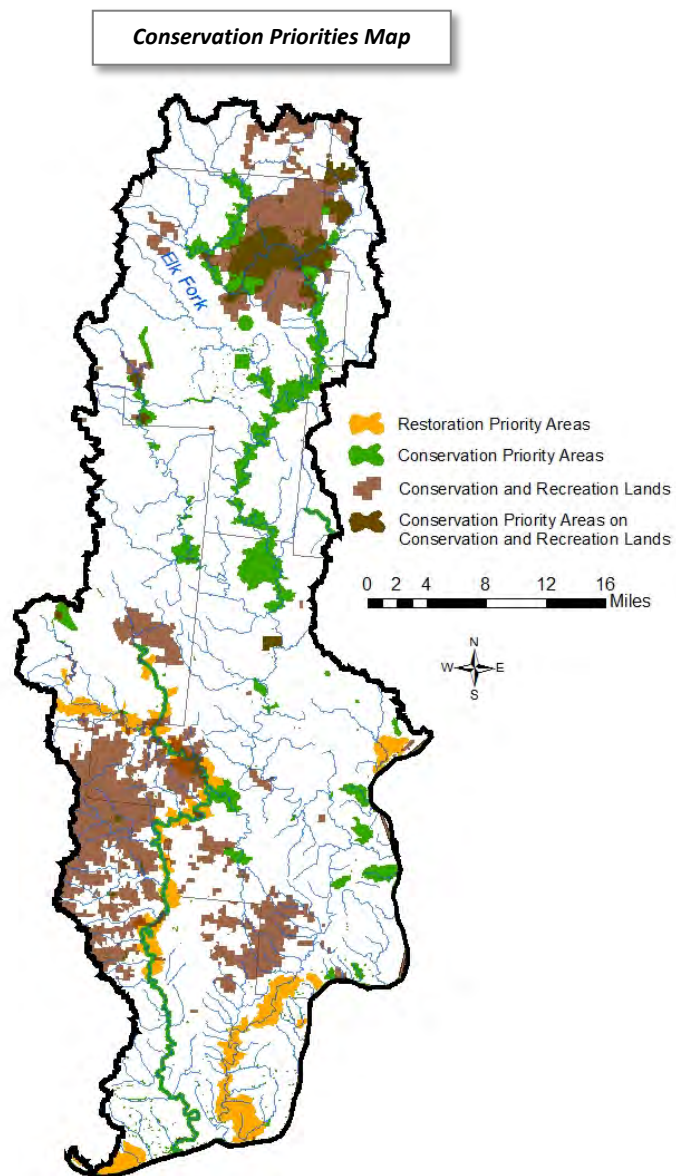


Aquatic Resource Goals

Watershed Action Plans have been developed for two of the watersheds within this Primary Service Area including: Raccoon Creek (2003) and Raccoon Creek Headwaters (2007). Goals for these Watershed Action Plans that the TNC In-Lieu Fee Program might support include:

- Reconnect floodplains to streams
- Reduce sediment loading
- Reduce total suspended solids
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Stabilize streambanks
- Increase wetland development
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

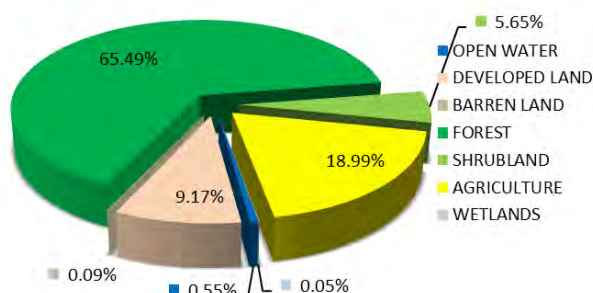
| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|--------------|--------------------|--------------------------|-------------------------------|-----------------------|
| McConnel Run | | | X | |
| Williams Run | | | X | |

Service Area 37**Little Scioto-Tygarts
HUC 05090103****Watershed Characteristics**

- 8-digit HUC size: 574 miles²
- 2-digit HUC: Ohio
- 6-digit HUC: Middle Ohio - Raccoon
- Number of 12-digit HUCs: 103
- Corps district: Huntington
- Approximate 2010 population: 87,472

Geographic Overview Map

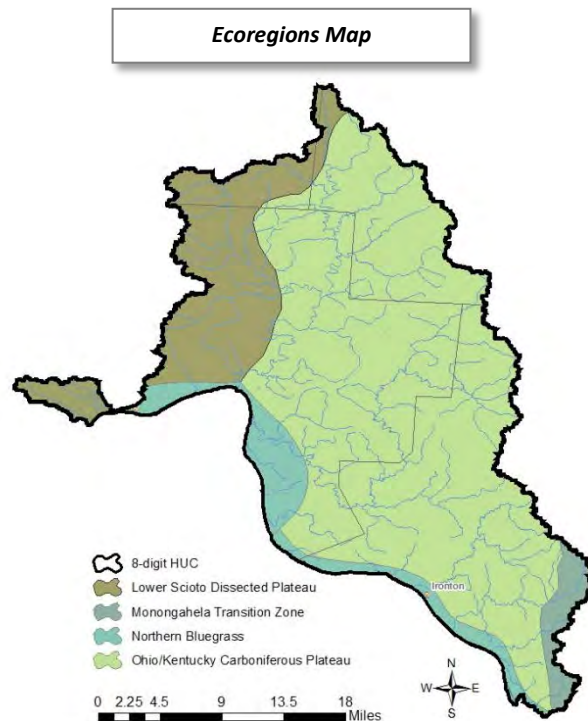
- Land Uses:



- Counties: Gallia, Jackson, Lawrence, Pike, Scioto
- Waterbodies
 - Total open water: 1.4 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - Wetlands: 1,517 acres
 - Named Streams: 509 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), running buffalo clover (E), fanshell (E), pink mucket pearly mussel (E), sheepsnose (E), northern riffleshell (E), snuffbox (E), clubshell (E), rayed bean (E), small whorled pogonia (T), Virginia spiraea (T), eastern hellbender (SC), timber rattlesnake (SC), bald eagle (SC)

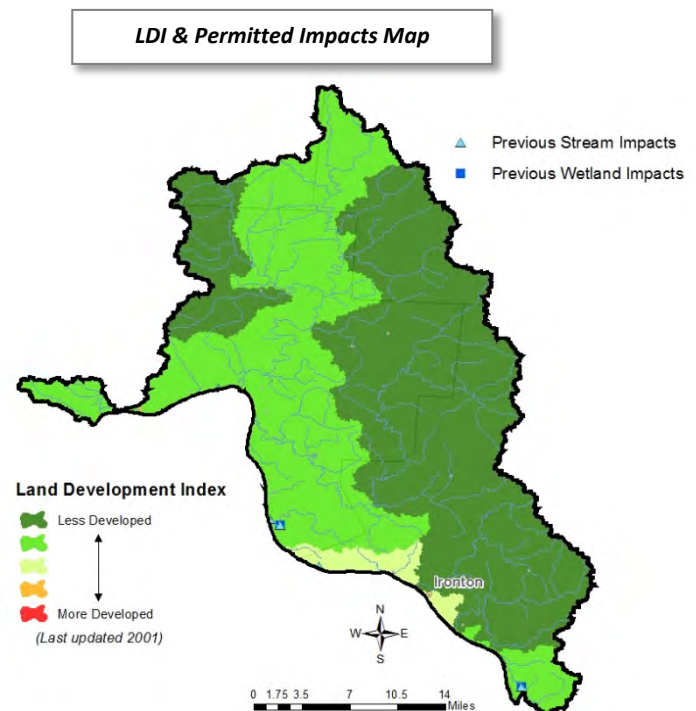
Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):

- Lower Scioto Dissected Plains (70d)
- Monongahela Transition Zone (70b)
- Northern Bluegrass (71d)
- Ohio/Kentucky Carboniferous Plateau (70f)



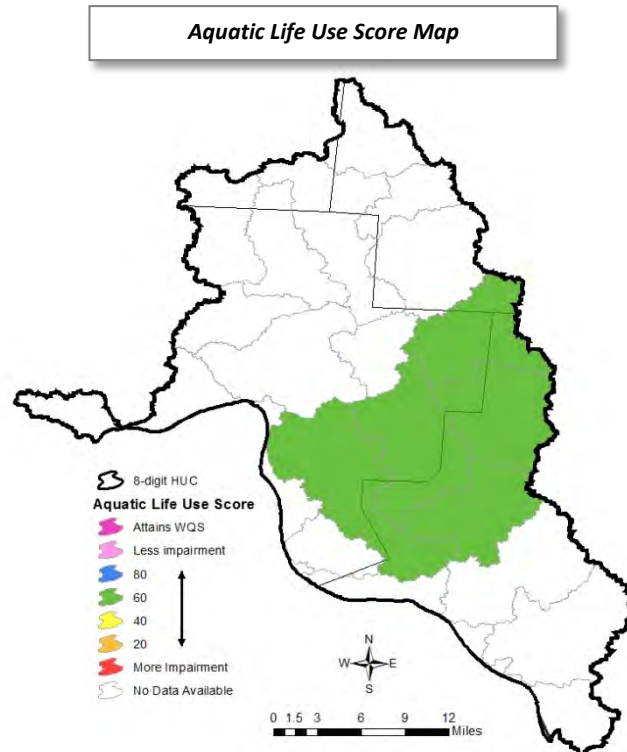
Threats and Impacts

The Landscape Development Index (LDI) for the service area shows less development in the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 4,747 linear feet. And the average annual



wetland mitigation (2004-2012) has been: 0.61 acres.

In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and an OEPA Biological and Water Quality Report [Southeast Ohio Tributaries (1991)] have identified sources of water quality threats and impacts including: organic enrichment, metals, nutrients, sedimentation, and siltation. Sources of impairment include: septic systems, urban runoff/storm sewers, acid mine drainage, dam/impoundment



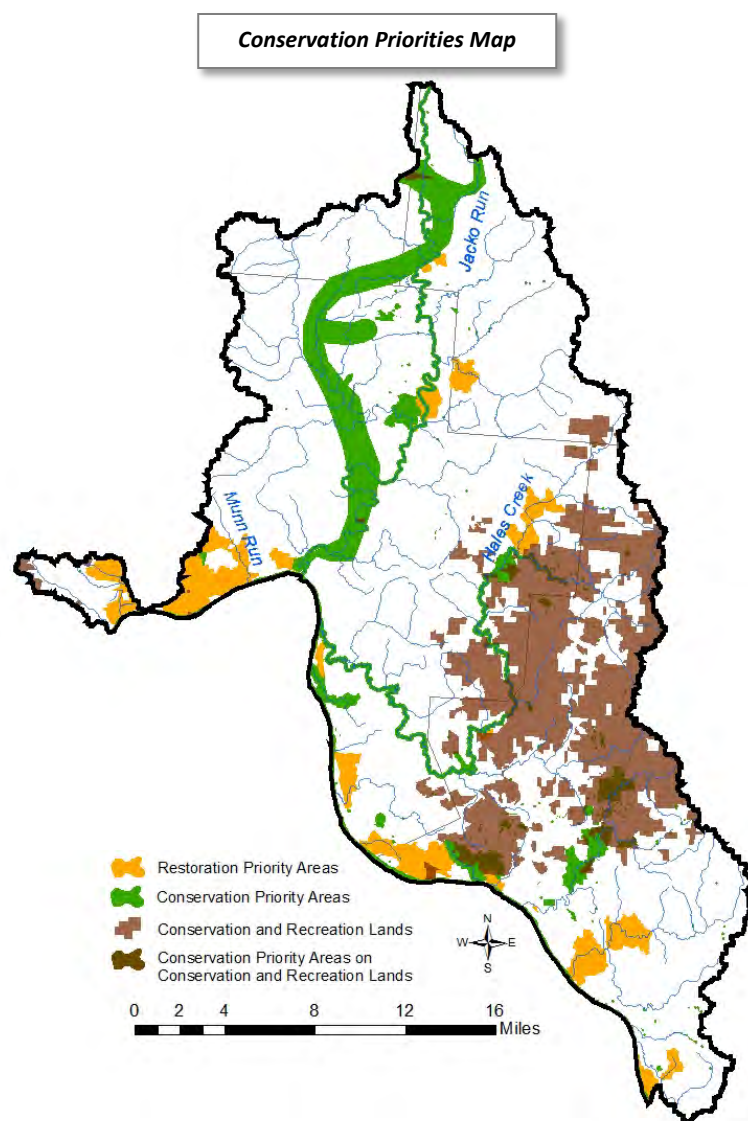
Aquatic Resource Goals

No Watershed Action Plans have been developed for this Primary Service Area; however, it is possible to establish goals that would have a positive effect on the above sources of impairment. The goals that the TNC In-Lieu Fee Program might support include:

- Reduce sediment loading
- Reduce total suspended solids
- Improve and increase riparian habitat
- Preserve and protect riparian corridors Remove dams and other obstructions that serve as barriers to fish movement or restrict or alter flow conditions
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.

Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

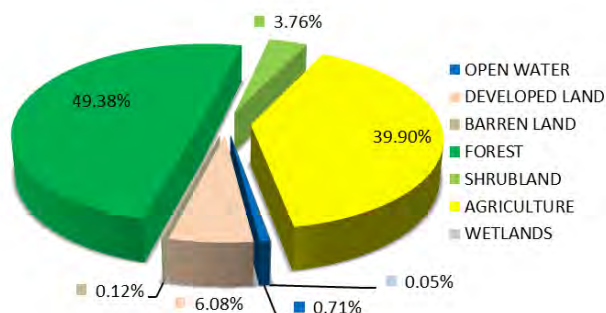


| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|-------------|--------------------|--------------------------|-------------------------------|-------------------------------------|
| Pine Creek | | | | Hales Creek (RM 38.15) to the mouth |

Service Area 38**Ohio Brush-Whiteoak
HUC 05090201****Watershed Characteristics****Geographic Overview Map**

- 8-digit HUC size: 1327 miles²
- 2-digit HUC: Ohio
- 6-digit HUC: Middle Ohio – Little Miami
- Number of 12-digit HUCs: 103
- Corps district: Huntington
- Approximate 2010 population: 122,784

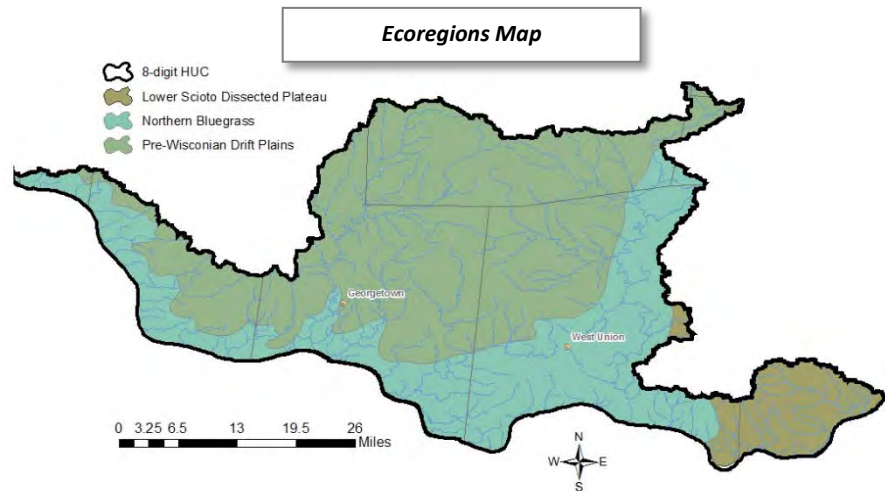
- Land Uses:



- Counties: Adams, Brown, Clermont, Hamilton, Highland, Pike, Ross, Scioto
- Waterbodies
 - Total open water: 3.04 miles²
 - Number of waterbodies over 0.5 miles² in size: 1
 - Wetlands: 5,489 acres
 - Named Streams: 1006 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), running buffalo clover (E), fanshell (E), pink mucket pearly mussel (E), northern riffleshell (E), clubshell (E), rayed bean (E), sheepsnose (E), snuffbox (E), small whorled pogonia (T), Virginia spiraea (T), eastern hellbender (SC), timber rattlesnake (SC), bald eagle (SC)

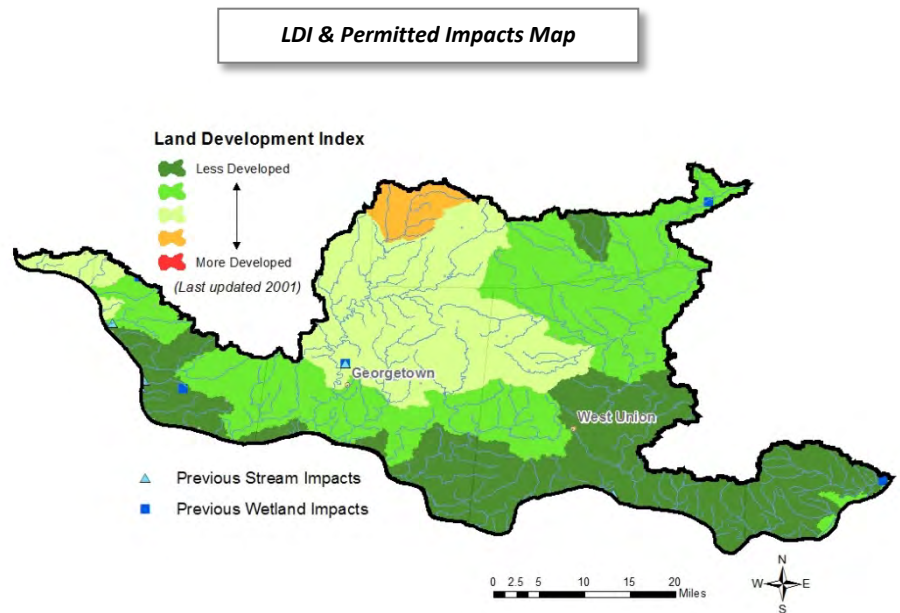
Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):

- Lower Scioto Dissected Plateau (70d)
- Northern Bluegrass (71d)
- Pre-Wisconsin Drift Plains (55d)



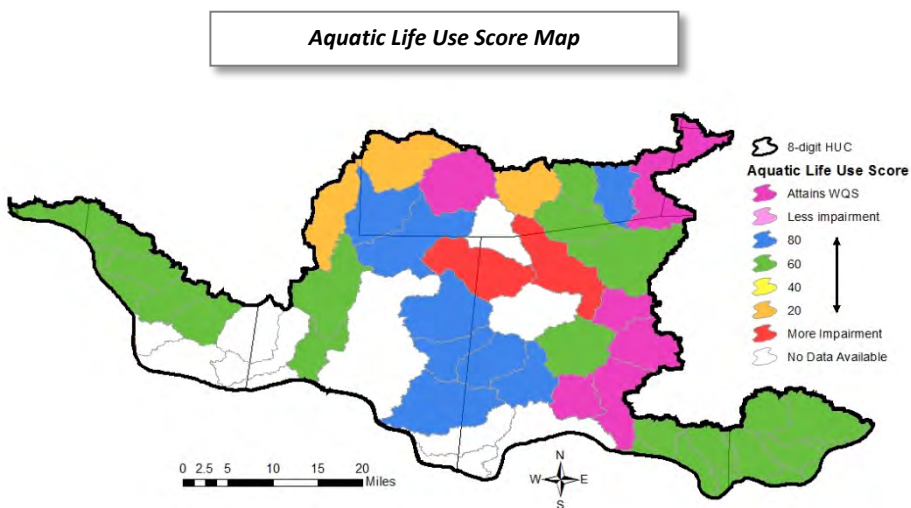
Threats and Impacts

The Landscape Development Index (LDI) for the service area shows moderate development in the north and less along the Ohio. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 6,612 linear feet. And the average annual wetland mitigation (2004-2012) has been: 4.51 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and an OEPA Biological and Water Quality Report [Ohio Brush Creek (2007)] have identified sources

of water quality threats and impacts including: direct habitat alterations, nutrients, organic enrichment, flow alteration, sedimentation, and siltation. Sources of impairment include: land development, channelization, livestock access, impoundments/dams, septic systems, oil/grease, SSOs, agriculture, and municipal point source discharges.

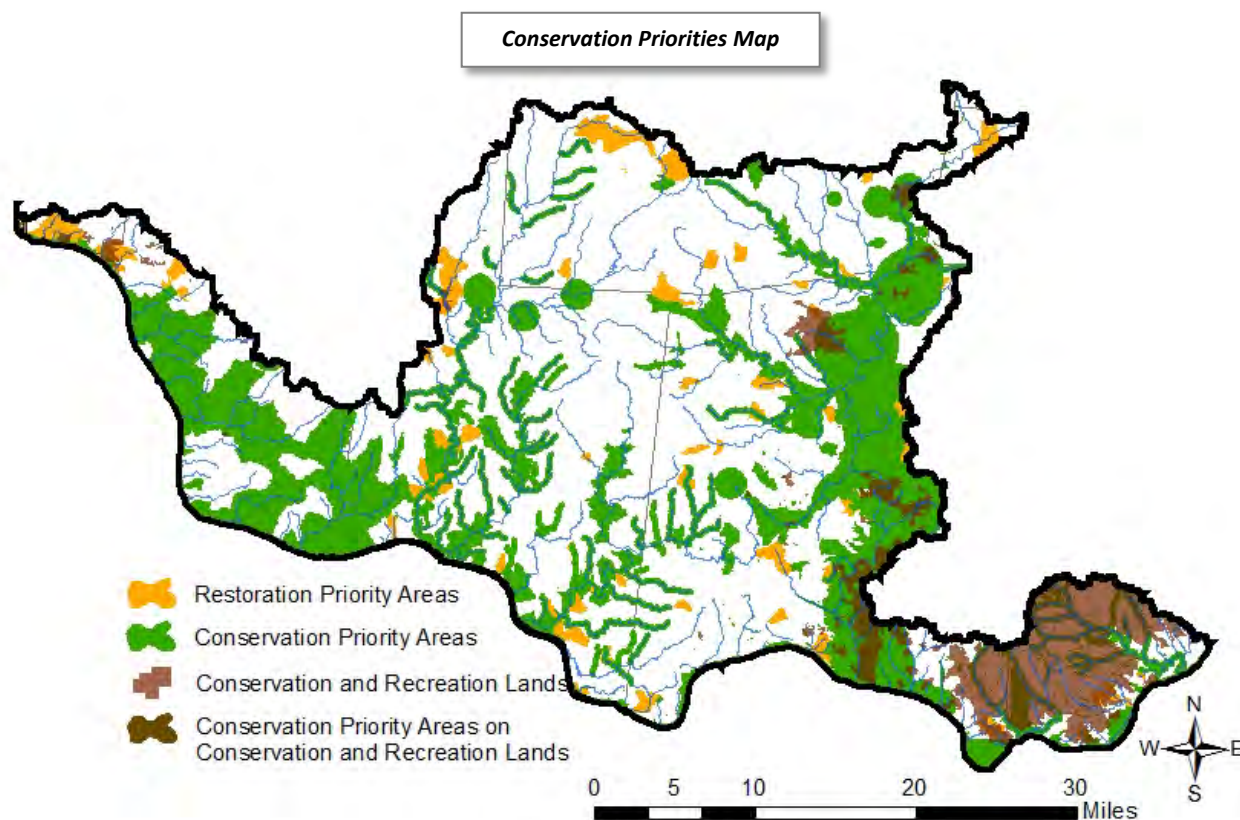


Aquatic Resource Goals

A Watershed Action Plan has been developed for one of the watersheds within this Primary Service. The goals for the White Oak Creek Watershed Action (2004) that the TNC In-Lieu Fee Program might support include:

- Reconnect floodplains to streams
- Reduce sediment loading
- Increase exclusion fencing for livestock operations
- Improve aquatic life habitat
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

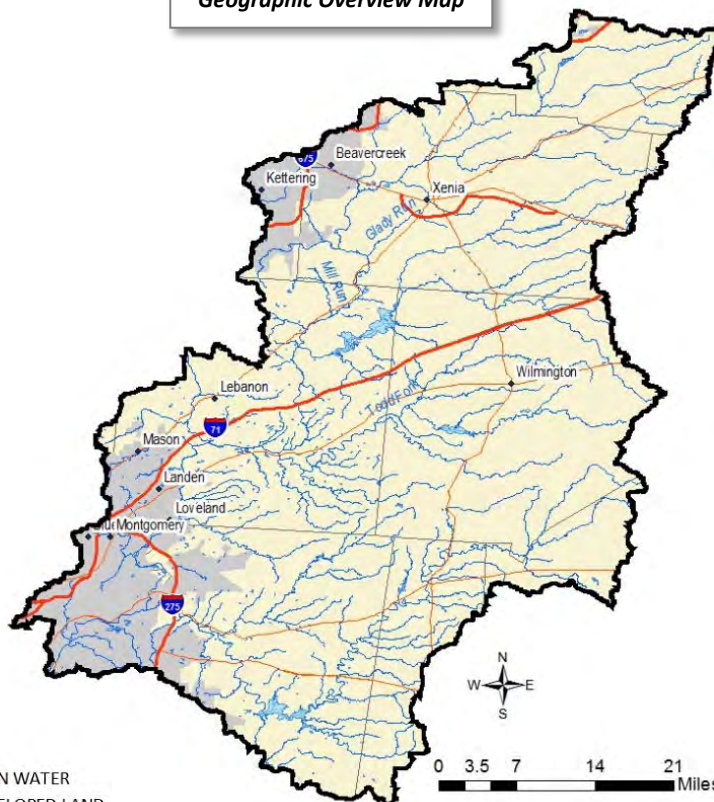
| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|-------------------------|--------------------|--------------------------|--|-----------------------|
| Ada Run | | | X | |
| Asher Run | | | X | |
| Baker Fork | | | Unnamed tributary at RM 10.98 to the mouth | |
| Barbara Run | X | | | |
| Barr Run | | | X | |
| Baylor Run | | | X | |
| Beetle Creek | | | X | |
| Big Run | | | X | |
| Black Run | | | X | |
| Brady Run | | | X | |
| Brush Fork | X | | | |
| Brush Run | | | X | |
| Brushy Fork Eagle Creek | | | X | |
| Buck Lick | X | | | |
| Buck Run | | | X | |

Continued

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|--------------------------|--------------------|--------------------------|-------------------------------|--|
| Bull Run | | | X | |
| Bundle Run | | | X | |
| Camp Run | | | X | |
| Campbell Run | | | X | |
| Cedar Run | | | X | |
| Cornick Run | | | X | |
| Dry Run | | | X | |
| Easter Run | | | X | |
| Ellis Run | | | X | |
| Evans Run | | | X | |
| Grace Run | | | X | |
| Gordon Run | | | X | |
| Hannah Run | | | X | |
| Harber Fork | X | | | |
| Hills Fork | | | X | |
| Honey Run | | | X | |
| Indian Lick | | | X | |
| Indian Run | | | X | |
| Laffery Run | | | X | |
| Lampblack Run | X | | | |
| Levanna Branch | | | X | |
| Lick Run | | | X | |
| Lower Twin Creek | | | | X |
| Mackenzie Run | | | X | |
| Mackletree Run | X | | | |
| Morley Run | | | X | |
| Myers Run | | | X | |
| Odell Creek | X | | | |
| Ohio Brush Creek | | | X | Headwaters to Beasley Fork Rd. (RM 6.30) |
| Old Lade Run | X | | | |
| Plummer Fork | X | | | |
| Pond Lick Run | X | | | |
| Rangle Run | | | X | |
| Rock Lick | X | | | |
| Rock Lick 2 | X | | | |
| Rocky Run | | | X | |
| Ruble Run | | | X | |
| Scantling Run | X | | | |
| Scott Run | | | X | |
| Semple Creek | | | X | |
| Sheep Run | | | X | |
| Shot Pouch RunPlum Creek | | | X | |
| Sink Creek | | | X | |
| Slickaway Run | | | X | |
| Soldiers Run | | | X | |
| Spoon River | | | X | |
| Stony Branch | | | X | |
| Straight Creek | | | X | |

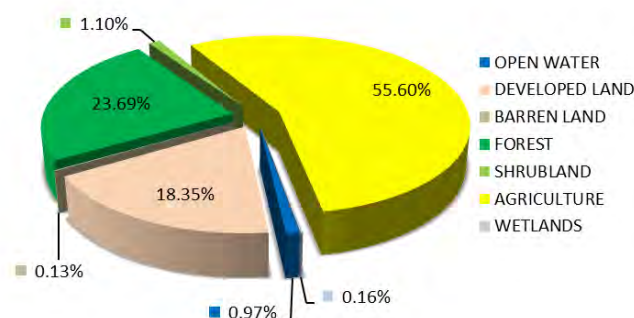
Continued

| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|--------------------------|---------------------------|---------------------------------|--------------------------------------|------------------------------|
| Suck Run | | | X | |
| Sutherland Run | | | X | |
| Sycamore Run | | | X | |
| Town Branch | | | X | |
| Town Run | X | | | |
| Turkey Creek | | | Headwaters to Friendship (RM 4.0) | X |
| Unity Creek | | | X | |
| Upper Twin Creek | | | | X |
| Waggoner Run | | | X | |
| Walnut Creek | X | | | |
| Washburn Run | | | X | |
| Wes Run | X | | | |
| West Fork | | | RM 13.7 to the mouth | X |
| West Fork Redoak Creek | | | X | |
| West Fork Straight Creek | | | X | |
| Whiteoak Creek | | | X | |
| Wild Duck Branch | | | X | |
| Wolfden Run | X | | | |
| Yellow Run | | | X | |

Service Area 39**Little Miami
HUC 05090202****Watershed Characteristics****Geographic Overview Map**

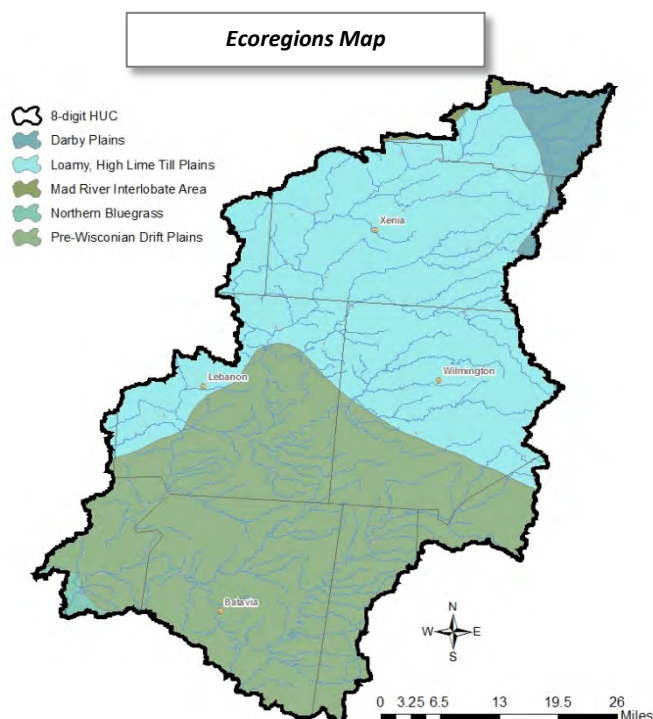
- 8-digit HUC size: 1759 miles²
- 2-digit HUC: Ohio
- 6-digit HUC: Middle Ohio – Little Miami
- Number of 12-digit HUCs: 103
- Corps district: Huntington
- Approximate 2010 population: 766,056

- Land Uses:



- Counties: Brown, Butler, Clark, Clermont, Clinton, Fayette, Greene, Hamilton, Highland, Madison, Montgomery, Warren
- Waterbodies
 - Total open water: 19.6 miles²
 - Number of waterbodies over 0.5 miles² in size: 3
 - Wetlands: 7,674 acres
 - Named Streams: 1135 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), Scioto madtom (E), running buffalo clover (E), fanshell (E), pink mucket pearly mussel (E), clubshell (E), rayed bean (E), sheepnose (E), snuffbox (E), northern riffleshell (E), eastern prairie fringe orchid (T), rabbitsfoot (T), eastern massasauga (C), timber rattlesnake (SC), bald eagle (SC)

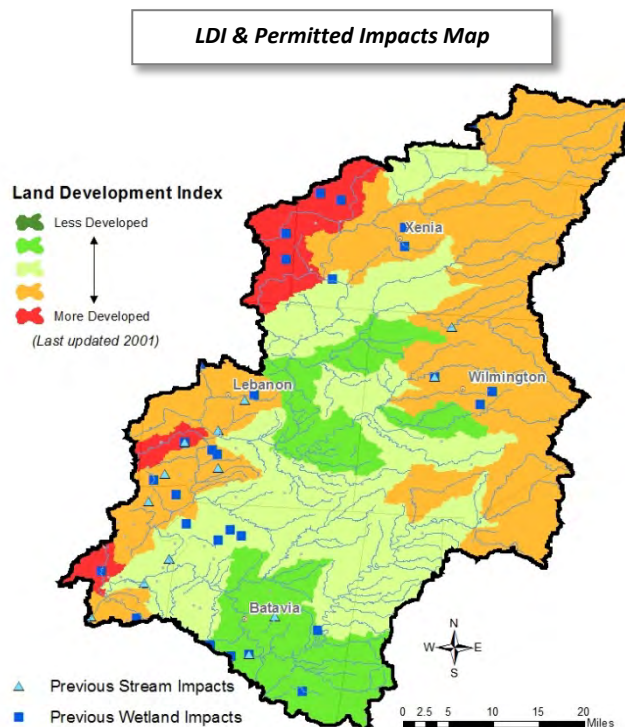
- Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):
 - Darby Plains (55e)
 - Loamy, High Lime Till Plains (55b)
 - Mad River Interlobate Area (55c)
 - Northern Bluegrass (71d)
 - Pre-Wisconsinian Drift Plains (55d)



Threats and Impacts

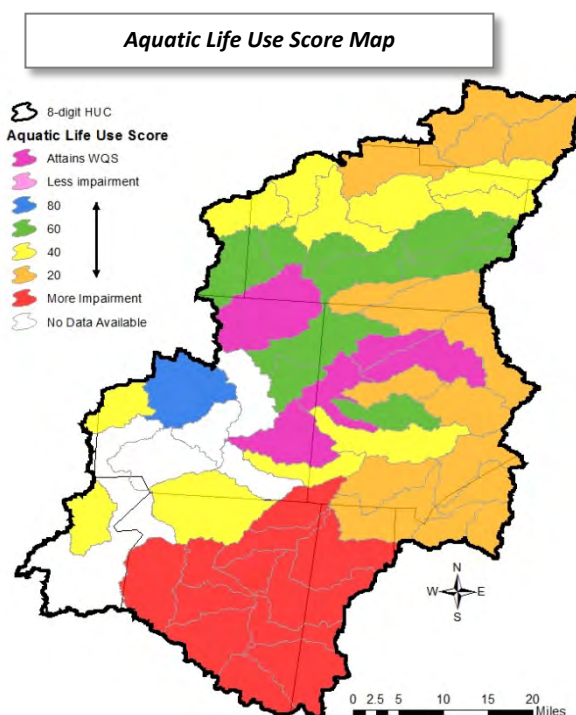
The Landscape Development Index (LDI) for the service area shows significant development across the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 6,510 linear feet. And the average annual wetland mitigation (2004-2012) has been: 4.21 acres.

In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and



macroinvertebrate sampling.

Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and two OEPA Biological and Water Quality Reports [Little Miami River –Todd Fork (2007), Little Miami River Basin (2000)] have identified sources of water quality threats and impacts including: organic enrichment, direct habitat alterations, channelization, livestock access, oil/grease, flow alteration, metals, nutrients, sedimentation, and siltation. Sources of impairment include: combined sewer overflows, major municipal point source, major industrial point source, septic systems, urban runoff/storm sewers, spills, channelization, manure lagoons, agriculture, development, CFOs, and surface mining.

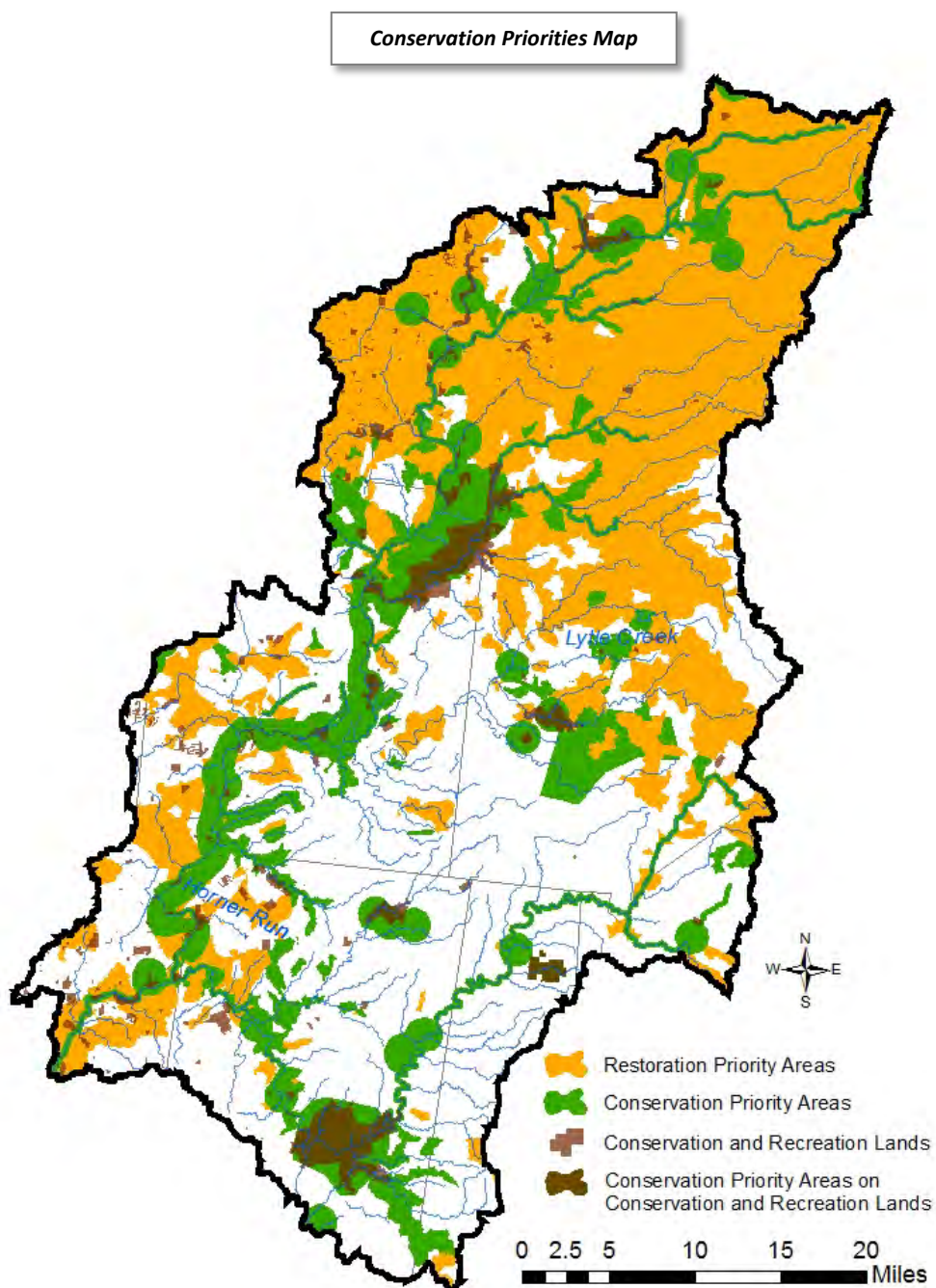


Aquatic Resource Goals

Watershed Action Plans have been developed for six of the subwatersheds within this Primary Service Area including: Todds Fork (2004), Headwaters (2006), Stonelick Creek (2009), Middle East Fork (2009), Lower East Fork (2003), and East Fork Lake Tributaries (2006). Goals for these Watershed Action Plans that the TNC In-Lieu Fee Program might support include:

- Reconnect floodplains to streams
- Reduce sediment loading
- Reduce total suspended solids
- Increase livestock exclusion fencing for streams
- Improve and restore in-stream physical habitat
- Stabilize streambanks
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Implement advanced mitigation projects
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.

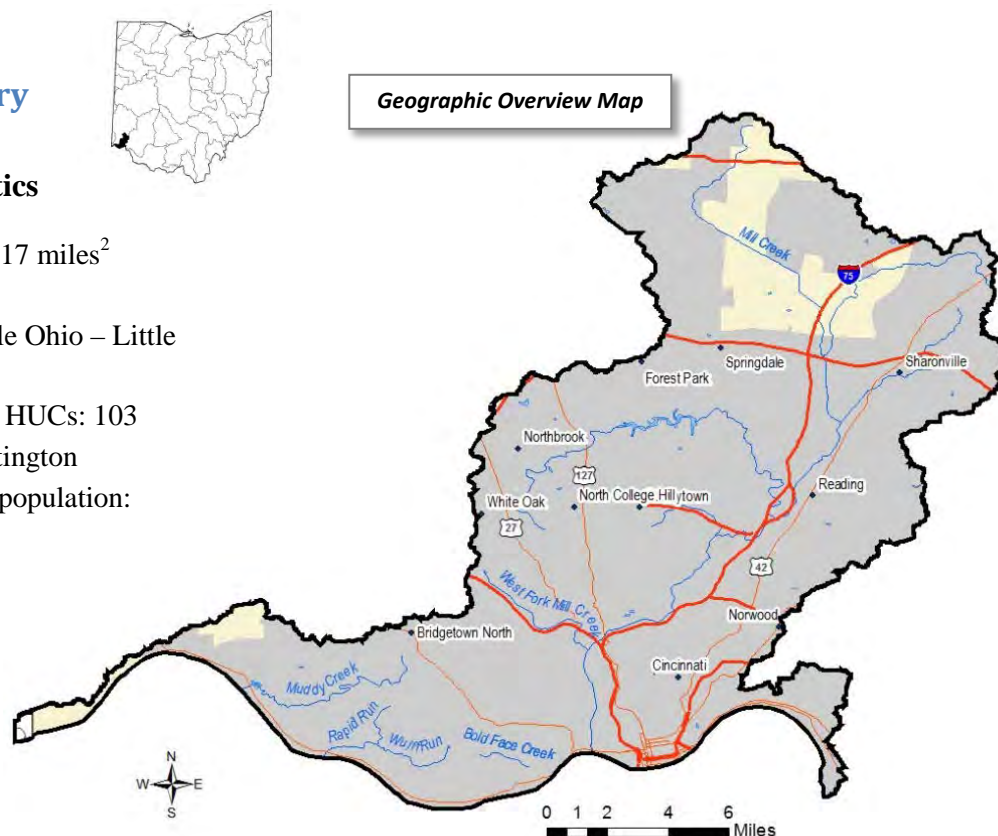


Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. Below is a compilation of these designations for this Primary Service Area:

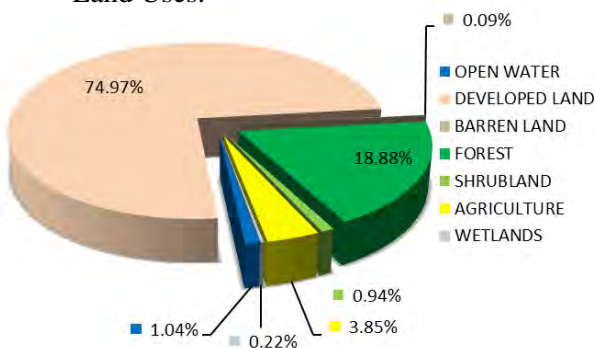
| Stream Name | Cold Water Habitat | Outstanding State Waters | Exceptional Warmwater Habitat | Superior State Waters |
|--|----------------------|--------------------------|--|---|
| Anderson Fork | | | Grog Run to the mouth | Grog Run (RM 11.02) to the mouth |
| Caesar Creek | | | X | X |
| Clark Run | | | X | |
| Conner Branch | X | | | |
| Dry Run | Headwaters to RM 1.2 | | | |
| East Fork Little Miami River | | | | East Fork Lake (RM 20.5) to the mouth, Howard Run (RM 45.18) to Tunnel Mill Rd. (RM 30.1) |
| Halls Creek | | | X | |
| Jacoby Branch | | | X | |
| Little Miami River | | X | X | |
| Massie Creek | | | | X |
| Newman Run | | | X | |
| North Fork Little Miami River | | X | | |
| South Branch | | | Paintersville-New Jasper Rd. (RM 4.0) to the mouth | |
| Unnamed Tributary Massie Creek (RM 5.3) | | | X | |
| Unnamed Tributary of Little Miami (RM 60.50) | | | X | |
| Yellow Springs Creek | | | North Fork (RM 91.64) to downstream of Beachmont Ave. (RM 3.0) | X |

Service Area 40**Middle Ohio-Laughery
HUC 05090203****Watershed Characteristics**

- 8-digit HUC size: 217 miles²
- 2-digit HUC: Ohio
- 6-digit HUC: Middle Ohio – Little Miami
- Number of 12-digit HUCs: 103
- Corps district: Huntington
- Approximate 2010 population: 592,410



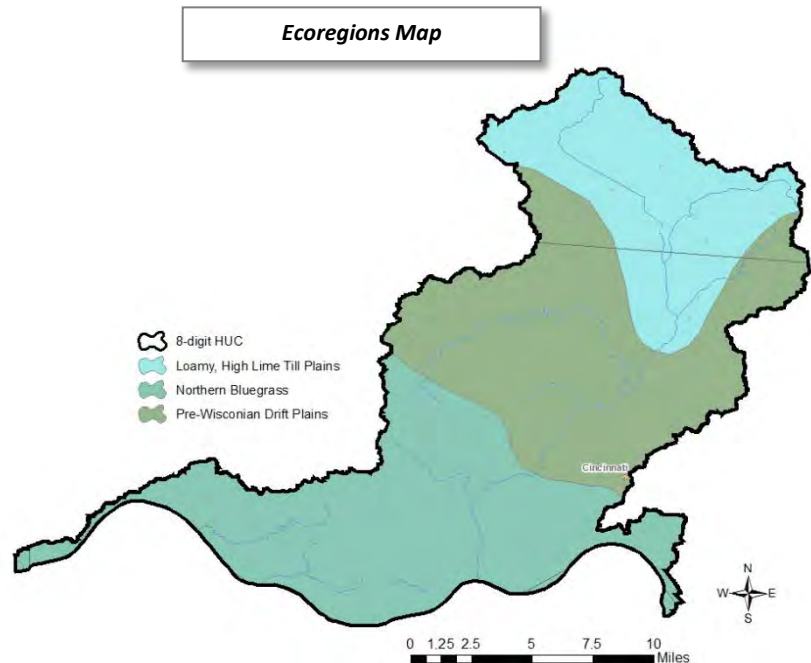
- Land Uses:



- Counties: Butler, Hamilton, Warren
- Waterbodies
 - Total open water: 0.74 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - Wetlands: 311 acres
 - Named Streams: 89 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), running buffalo clover (E), fanshell (E), rayed bean (E), pink mucket pearly mussel (E), sheepsnose (E), snuffbox (E), eastern massasauga (C), bald eagle (SC)

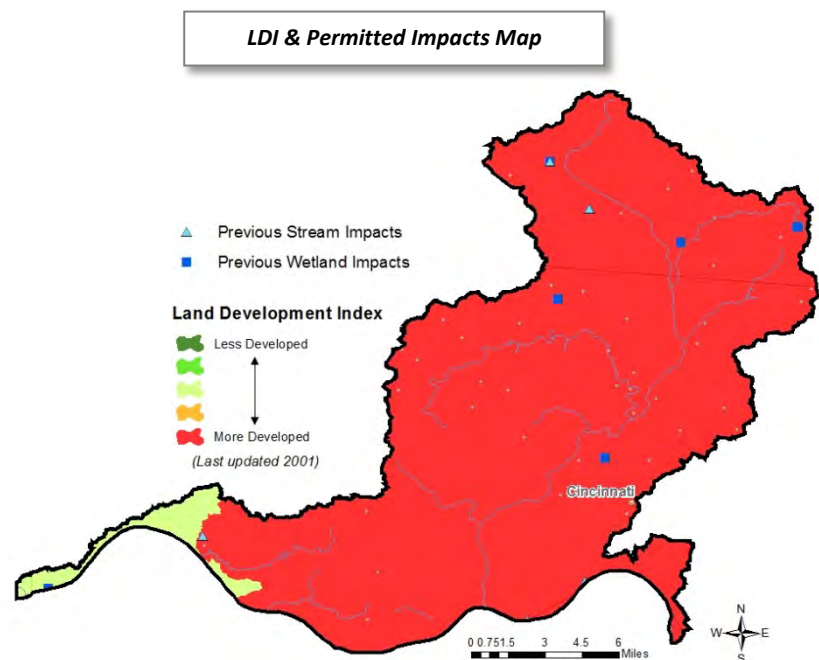
Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):

- Loamy, High Lime Till Plains (55b)
- Northern Bluegrass (71d)
- Pre-Wisconsinan Drift Plains (55d)

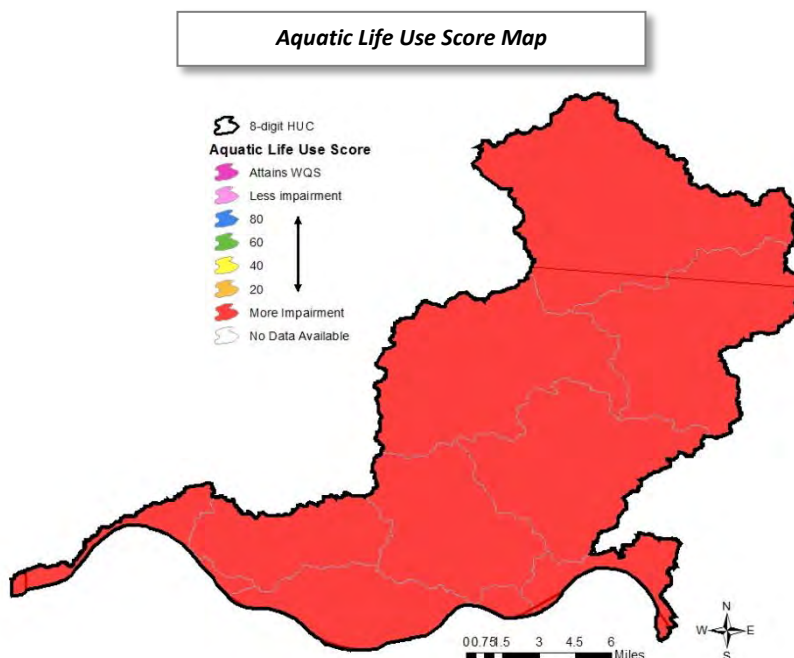


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows significant impact across the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 302 linear feet. And the average annual wetland mitigation (2004-2012) has been: 0.29 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and two OEPA Biological and Water Quality Reports [West Fork Mill Creek (2002), Mill Creek (1994)] have identified sources of water quality threats and impacts including: direct habitat alterations, nutrients, organic enrichment, flow alteration, oil/gas, sedimentation, and siltation. Sources of impairment include: channelization, CSOs, urban runoff/storm sewers, industrial point source, major municipal point source, streambank modification/destabilization, development.

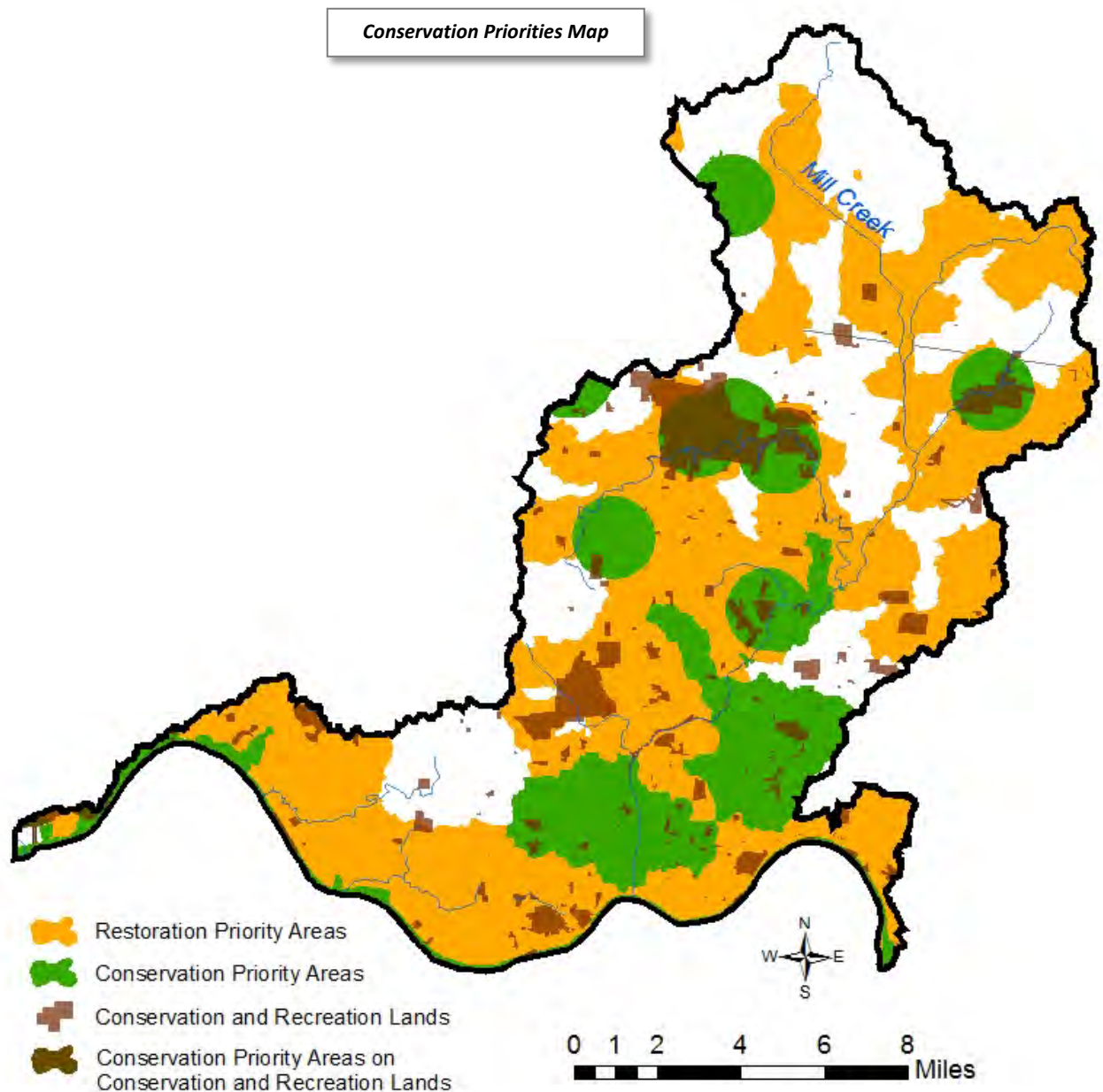


Aquatic Resource Goals

A Watershed Action Plan has been developed for one of the subwatersheds within this Primary Service Area. The goals for the Upper Mill Creek Watershed Management Plan that the TNC In-Lieu Fee Program might support include:

- Reconnect floodplains to streams
- Reduce sediment loading
- Stabilize eroding streambanks
- Improve aquatic life habitat
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Increase wetland development
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.



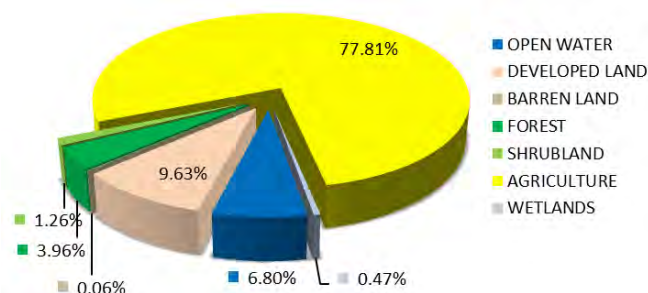
Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. No waterways in this Primary Service Area have been designated as Cold Water Habitat, Exceptional Warmwater Habitat, Outstanding State Waters, or Superior State Waters.

Service Area 41**Upper Wabash
HUC 05120101****Watershed Characteristics**

- 8-digit HUC size: 301 miles²
- 2-digit HUC: Ohio
- 6-digit HUC: Wabash
- Number of 12-digit HUCs: 103
- Corps district: Huntington
- Approximate 2010 population: 30,715

**Geographic Overview Map**

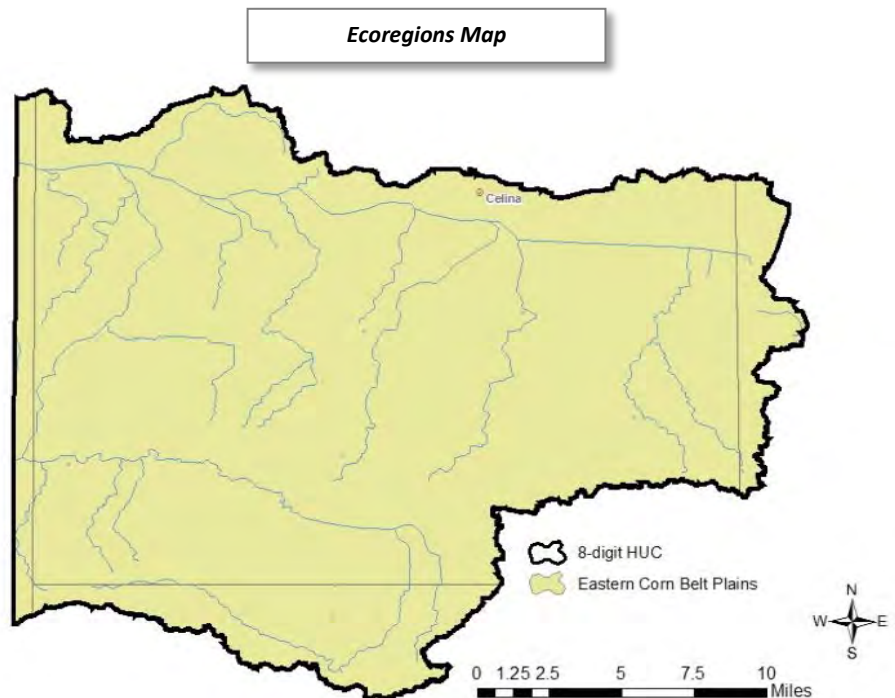
- Land Uses:



- Counties: Auglaize, Darke, Mercer
- Waterbodies
 - Total open water: 31.9 miles²
 - Number of waterbodies over 0.5 miles² in size: 1
 - Wetlands: 1,212 acres
 - Named Streams: 182 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), rayed bean (E), bald eagle (SC)

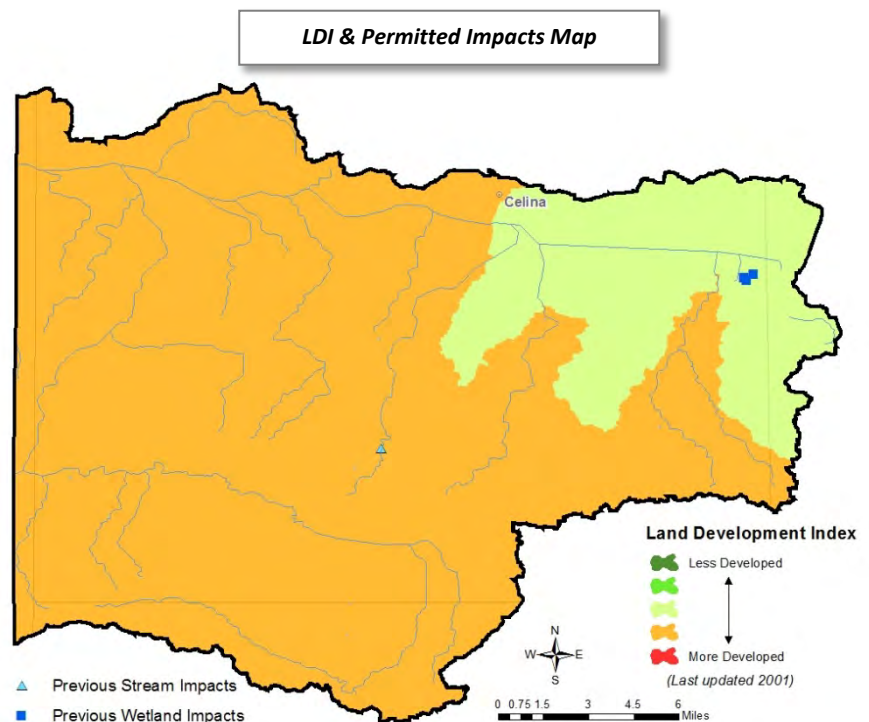
Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):

- o Eastern Corn Belt Plains (55a)

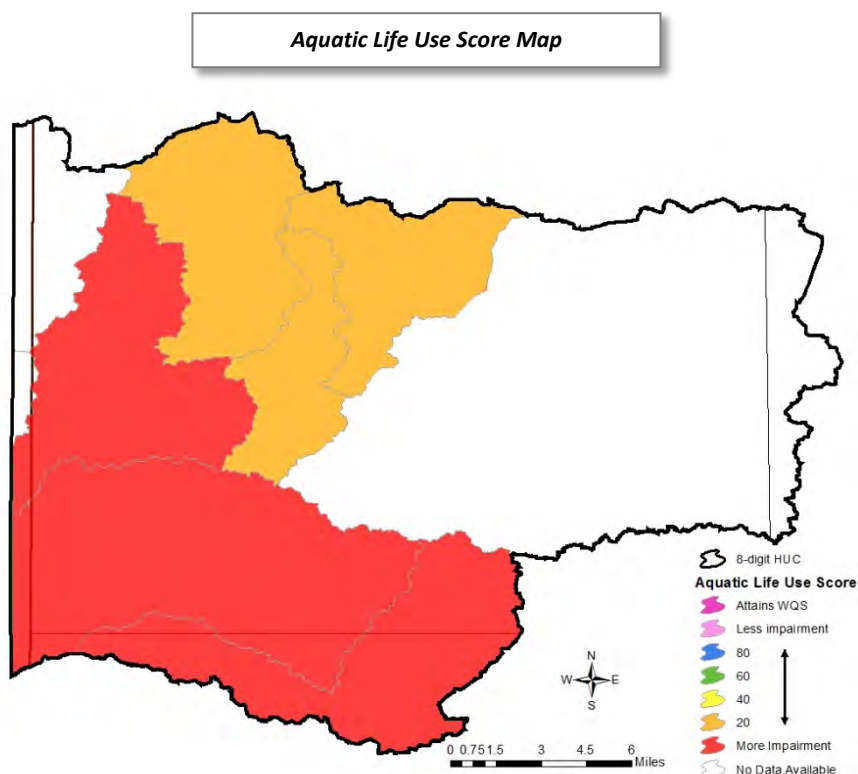


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows significant development in the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 271 linear feet. And the average annual wetland mitigation (2004-2012) has been: 0.68 acres.



In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report and an OEPA Biological and Water Quality Report [Wabash River Basin (1999)] have identified sources of water quality threats and impacts including: direct habitat alterations, nutrients, organic enrichment, sediment, and siltation. Sources of impairment include: channelization, CFOs, minor municipal point source, agriculture, and streambank modification/destabilization.

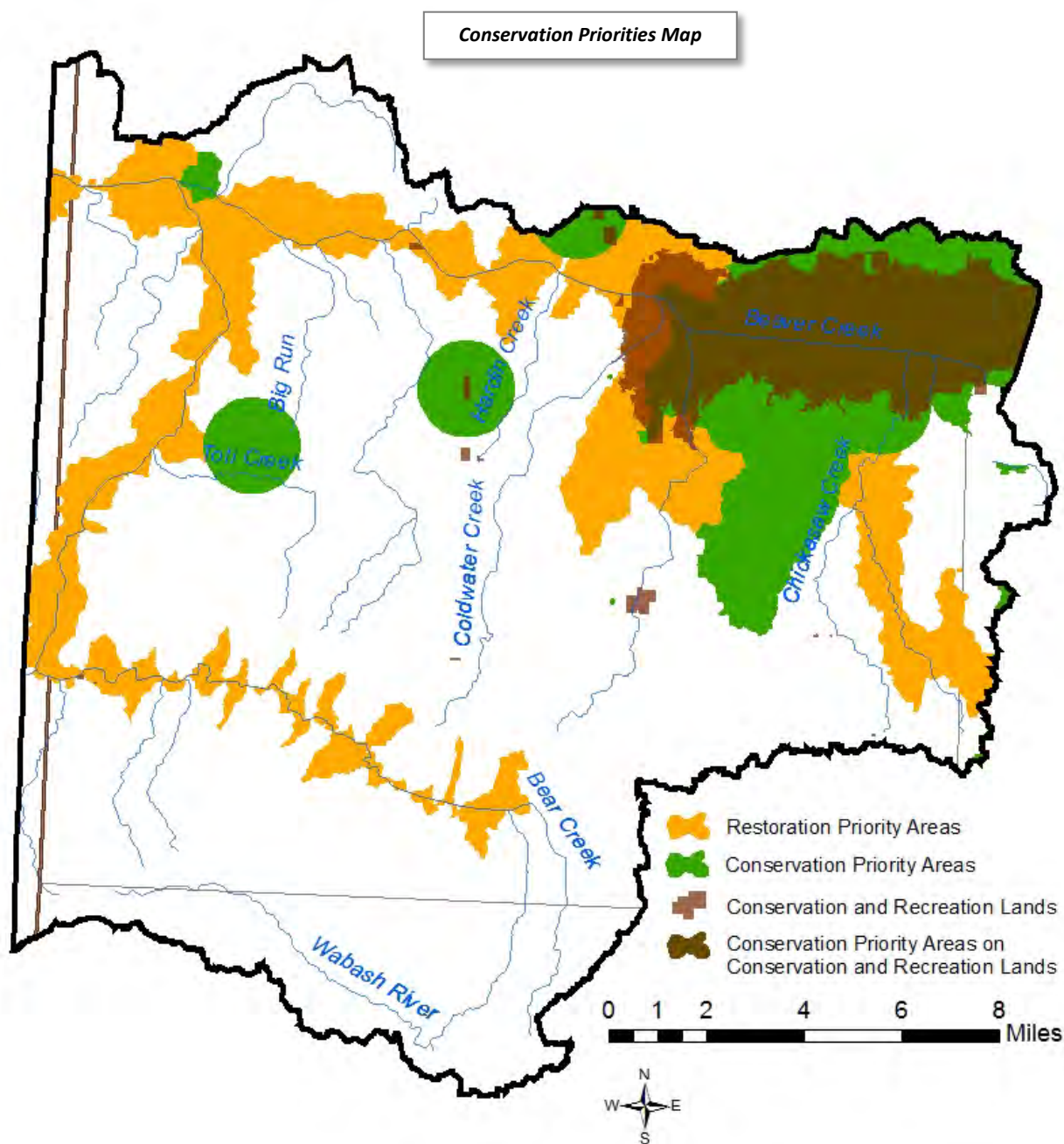


Aquatic Resource Goals

A Watershed Management Plan has been developed for the Grand Lake St. Marys/Wabash River (2008). The goals for this plan that the TNC In-Lieu Fee Program might support include:

- Reduce sediment loading
- Stabilize streambank erosion
- Reduce the level of pathogens from livestock operations
- Improve and increase riparian habitat
- Preserve and protect riparian corridors
- Increase wetland development
- Educate the local community regarding water quality enhancement

Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.

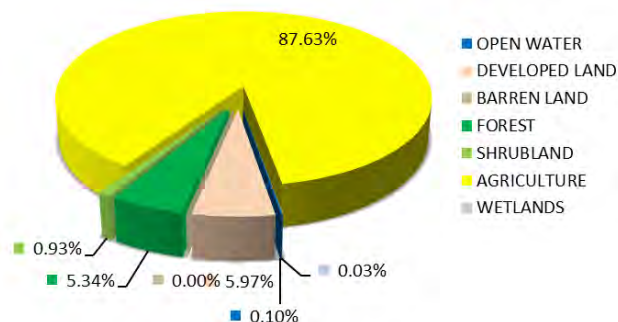


waterways in this primary service area have been designated as Cold Water Habitat, Exceptional Warmwater Habitat, Outstanding State Waters, or Superior State Waters.

Service Area 42**Mississinewa
HUC 05120103****Watershed Characteristics****Geographic Overview Map**

- 8-digit HUC size: 30 miles²
- 2-digit HUC: Ohio
- 6-digit HUC: Wabash
- Number of 12-digit HUCs: 103
- Corps district: Huntington
- Approximate 2010 population: 1,607

- Land Uses:



- Counties: Darke, Mercer
- Waterbodies
 - Total open water: .005 miles²
 - Number of waterbodies over 0.5 miles² in size: 0
 - Wetlands: 73 acres
 - Named Streams: 21 miles
- Federally Listed Species (based on county occurrences): Indiana bat (E), clubshell (E), rayed bean (E), copperbelly water snake (T), Kirtland's warbler (E), piping plover (E/CH), Lakeside daisy (T), eastern massasauga (C), Lake Erie watersnake (SC), bald eagle (SC)

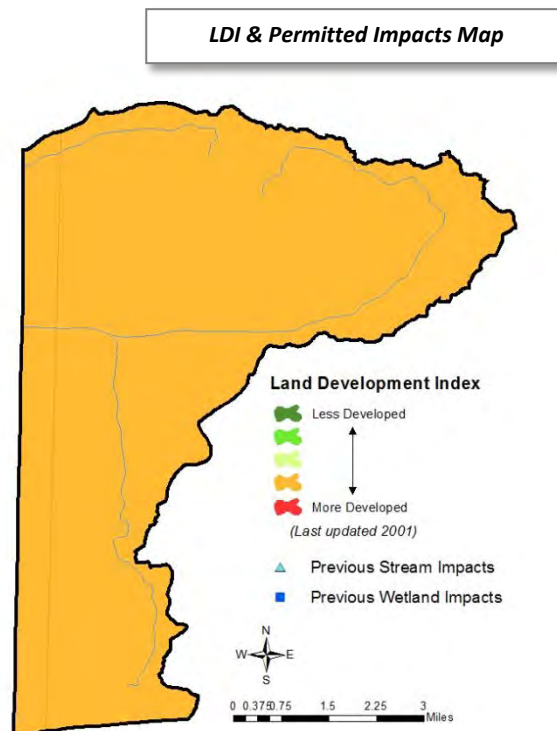
Level IV Terrestrial Ecoregions (see Appendix 1 of the CPF for full descriptions of each ecoregion):

- o Eastern Corn Belt Plains (55a)
- o Loamy High Lime Till Plains (55b)

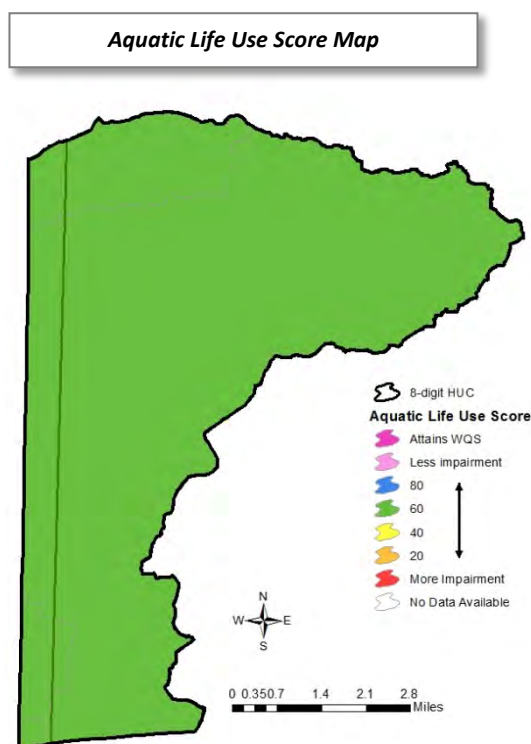


Threats and Impacts

The Landscape Development Index (LDI) for the service area shows significant development across the watershed. The intended use of the LDI is as an index of the level of human induced impacts on the biological, chemical, and physical processes of surrounding lands or waters. Through a compilation of OEPA 401 certification annual reports it was found that the average annual stream mitigation (2006-2012) has been: 0 linear feet. And the average annual wetland mitigation (2004-2012) has been: 0.03 acres.



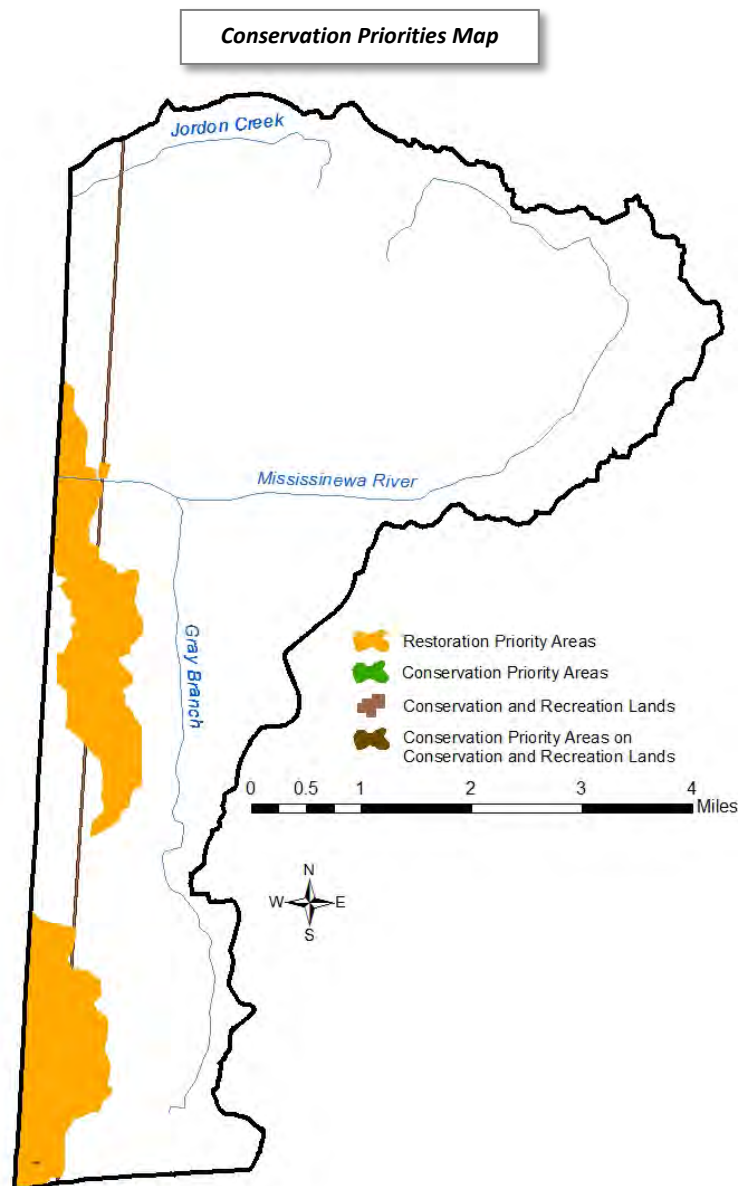
In the OEPA's 2012 Integrated Water Quality Monitoring and Assessment Report the aquatic life use score is calculated for many of the HUC-11 watersheds in the State based on fish and macroinvertebrate sampling. Watershed scores are roughly equivalent to the percent of sites within the HUC-11 watershed that are meeting biological expectations and the designated aquatic life use (see adjacent map). The OEPA's 2012 Integrated Report has identified causes of water quality threats and impacts including: direct habitat alterations, sedimentation, and siltation. Sources of impairment include: channelization, CFOs, agriculture, crop production with subsurface drainage and fertilizer runoff, dam or impoundment, and municipal point source discharges.



Aquatic Resource Goals

A Watershed Management Plan has been developed for the Mississinewa River (2001) in Indiana. The goals for this plan that the TNC In-Lieu Fee Program might support include:

- Reduce sediment loading
- Reduce total suspended solids
- Stabilze eroding streambanks
- Educate the local community regarding water quality enhancement



No Conservation Priority sites for this watershed were identified using the criteria presented in Element 6 of the CPF. The results are shown in the map below.

Additionally, the State of Ohio has developed various standards and designations that identify priority waterways, many of these match closely with TNC's priority conservation sites. No waterways in this Primary Service Area have been designated as Cold Water Habitat, Exceptional Warmwater Habitat, Outstanding State Waters, or Superior State Waters.

APPENDIX 1

The following information is quoted from the “Ecoregions of Indiana and Ohio” poster published in 2008 by the U.S. Environmental Protection Agency. The authors included Alan J. Woods, James M. Omernik, C. Scott Brockman, Timothy D. Gerber, William D. Hosteter, and Sandra H. Azevedo.

Ecoregions denote areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources; they are designed to serve as a spatial framework for the research, assessment, management, and monitoring of ecosystems and ecosystem components. Ecoregions are directly applicable to the immediate needs of state agencies including the development of biological criteria and water quality standards as well as the establishment of management goals for nonpoint source pollution. They are also relevant to integrated ecosystem management, an ultimate goal of most federal and state resource management agencies.

The approach used [...] is based on the premise that ecological regions can be identified through the analysis of the patterns and the composition of biotic and abiotic phenomena that affect or reflect differences in ecosystem quality and integrity (Wiken 1986; Omernik 1987, 1995). These phenomena include geology, physiography, vegetation, climate, soils, land use, wildlife, and hydrology. The relative importance of each characteristic varies from one ecological region to another regardless of the hierarchical level. A Roman numeral hierarchical scheme has been adopted for different levels of ecological regions. Level I is the coarsest level, dividing North America into 15 ecological regions, with level II dividing the continent into 52 regions. At level III, the continental United States contains 99 regions (United States Environmental Protection Agency [USEPA], 1997). Level IV is a further subdivision of level III ecoregions. Explanations of the methods used to define the USEPA's ecoregions are given in Omernik (1995), Griffith and others (1994), and Gallant and others (1989).

Characteristics of the Ecoregions of Ohio

55. Eastern Corn Belt Plains

Ecoregion 55 is primarily a rolling till plain with local end moraines. It has lighter colored soils than Ecoregion 54, loamier and better drained soils than Ecoregion 57, and richer soils than Ecoregion 61. Glacial deposits of Wisconsinan age are extensive; they are not as dissected nor as leached as the pre-Wisconsinan till which is restricted to the southern part of Ecoregion 55. Originally, natural tree cover was greater than Ecoregion 54; beech forests were common on Wisconsinan soils while beech forests and elm-ash swamp forests dominated the wetter pre-Wisconsinan soils. Today, extensive corn, soybean, and livestock production occurs and has affected stream chemistry and turbidity.

55a. The Clayey, High Lime Till Plains ecoregion is transitional between the Loamy, High Lime Till Plains (55b) and the Maumee Lake Plains (57a); soils are less productive and more artificially drained than Ecoregion 55b and supported fewer swampy areas than Ecoregion 57a. Corn,

soybean, wheat, and livestock farming is dominant and has replaced the original beech forests and scattered elm-ash swamp forests. No exceptional fish communities exist in the turbid, low gradient streams of Ecoregion 55a.

55b. The Loamy, High Lime Till Plains ecoregion contains soils that developed from loamy, limy, glacial deposits of Wisconsinan age; these soils typically have better natural drainage than those of Ecoregion 55a and have more natural fertility than those of Ecoregion 55d. Beech forests, oak-sugar maple forests, and elm-ash swamp forests grew on the nearly level terrain; today, corn, soybean, and livestock production is widespread.

55c. The Mad River Interlobate Area ecoregion is flanked by end moraines and concentrated outwash deposits that filled preglacial valleys. Abundant groundwater feeds its distinctive cold water streams that contain an abundance of riffle-inhabiting fish species. Originally, beech forest, mixed oak forest, and extensive freshwater fens/wet prairies were common in Ecoregion 55c. Today, extensive corn, soybean, dairy, and livestock farms as well as urban activity occur. Woodland still grows on steep sites and along riparian corridors; fresh water fens/wet prairies can also be found locally.

55d. The Pre-Wisconsinan Drift Plains ecoregion is differentiated from the surrounding ecoregions by its deeply-leached, acidic, pre-Wisconsinan till and thin loess; widespread areas of nearly flat, very poorly-drained soils with fragipans are also distinctive. In addition, some dissected areas occur. Streams often have more sustained runoff and biotic diversity than those of Ecoregion 55b. Originally, beech forests and elm-ash swamp forests were dominant. Today, soybeans are common and are well adapted to spring soil wetness; corn, tobacco, and livestock farming also occurs.

55e. The Darby Plains ecoregion once had a distinct assemblage of mixed oak forest; many prairies occurred on its end moraines, gravel-filled preglacial valleys, and seasonally wet areas. Today, tree density is less than in Ecoregion 55b and very large, productive crop and livestock farms occur on its level to undulating terrain. Big Darby Creek, a State and National Scenic River, has high fish diversity.

55f. The Whitewater Interlobate Area ecoregion has distinctive cool water, coarsebottomed streams that are perennial and fed by abundant groundwater. The reddsides, northern stud fish, and banded sculpin occur; they are absent or uncommon in Ecoregion 55b. Unique Ozarkian invertebrates also occur in Ecoregion 55f. Dolomitic drift and meltwater deposits are characteristic and overlie limestone, calcareous shale, and dolomitic mudstone.

56. Southern Michigan/Northern Indiana Drift Plains

Ecoregion 56 is distinguished from adjacent ecoregions by its many lakes and marshes as well as its wider assortment of landforms, soil types, soil textures, and land uses. Broad till plains with thick and complex deposits of drift, paleobeach ridges, relict dunes, morainal hills, kames, drumlins, meltwater channels, and kettles occur. Feed grain, soybean, and livestock farming as well as woodlots, quarries, recreational development, and urban-industrial areas are common. An assortment of soils developed under oak-hickory forests, northern swamp forests, or beech forests. Bogs and bog soils are also locally common. Low to medium gradient streams occur and often have rocky bottoms and low amounts of suspended sediment.

56a. The Lake Country ecoregion is a hummocky and pitted morainal area characterized by many pothole lakes, ponds, marshes, bogs, and clear streams. The well-drained end moraines and kames once supported oak-hickory forests whereas wetter areas had beech forests or northern swamp

forests; the very poorly-drained kettles had tamarack swamp, cattail-bulrush marshes, or sphagnum bogs. Today, marshes and woodland remain but corn, soybean, and livestock farming is dominant; recreational and residential developments commonly surround the lakes of Ecoregion 56a.

57. Huron/Erie Lake Plains

Ecoregion 57 is a broad, fertile, nearly flat plain punctuated by relict sand dunes, beach ridges, and end moraines. Originally, soil drainage was typically poorer than in Ecoregion 55 and elmash swamp and beech forests were dominant. Oak savanna was typically restricted to sandy, well-drained dunes and beach ridges. Today, most of the area has been cleared and artificially drained and contains highly productive farms producing corn, soybeans, livestock, and vegetables; urban and industrial areas are also extensive. Stream habitat and quality have been degraded by channelization, ditching, and agricultural activities.

57a. The Maumee Lake Plains ecoregion is poorly-drained and contains clayey lake deposits, water-worked glacial till, and fertile soils. Elm-ash swamp forests and beech forests once were extensive; marshes and bogs occurred along the coast. They have been replaced by productive, drained farmland. Sluggish, low gradient rivers wind through Ecoregion 57a and have high suspended sediment loads of clayey silts that endanger biota.

57b. The Oak Openings ecoregion is a belt of low, often wooded, sand dunes and paleobeach ridges that are situated among the broad, nearly flat, agricultural plains of Ecoregion 57a. Well-drained, sandy soils are common and originally supported mixed oak forests and oak savanna; poorly-drained depressions with wet prairies were also found. Today, general farms, residential development, oak woodland, and sand quarries occur.

57c. The Paulding Plains ecoregion is a part of the lake plain and is characterized by clayey lacustrine sediment and extensive, very poorly-drained, illitic soils such as the Paulding and Roselms. The nearly level, level, and depressional topography supported mostly elm-ash swamp forest but now has been cleared and drained for soybean, small grain, corn, and hay farming. Its very sluggish, low-gradient streams and many ditches are typically turbid and have very high loads of suspended clay that endanger biota.

57d. The Marblehead Drift/Limestone Plain ecoregion has areas of thin glacial drift and limestone-dolomite ridges and islands. Streams often flow on carbonate bedrock; their character is different from the clayey channels of Ecoregions 57a and 57c. Originally, beech forests and, especially, elm-ash swamp forests were common. Scattered carbonate ridges supported distinctive mixed oak forests and prairies, marl plains had prairies, and the Lake Erie and Sandusky Bay shoreline often supported fens. Many geographically isolated plant species occurred in Ecoregion 57d. Today, corn, small grains, soybeans, and hay are grown on artificially drained land. Vegetable and fruit farming is well adapted to the relatively mild climate near the shoreline.

61. Erie/Ontario Drift and Lake Plain

Low lime drift and lacustrine deposits blanket the rolling to level terrain of Ecoregion 61. Lakes, wetlands, and swampy streams occur where stream networks are deranged or where the land is flat and clayey. Soils are often lower in carbonate and naturally less fertile than those of other glaciated ecoregions. Urban development, industrial activity, and agriculture are widespread and scattered woodland also occurs. Lake Erie's influence substantially increases the growing season, winter cloudiness, and snowfall of the northernmost areas.

61a. The Erie Lake Plain ecoregion is a nearly level coastal strip of lacustrine deposits punctuated by beach ridges and swales. Its lake-modified climate sets it apart from other nearby ecoregions and its annual growing season is often several weeks longer than inland areas. Urban-industrial sites, ports, fruit-vegetable farms, and nurseries have developed on the plain.

61b. The Mosquito Creek/Pymatuning Lowlands ecoregion is characterized by poor drainage, wetlands, low-gradient streams, and moisture tolerant woodlands. It is nearly flat and is underlain by clayey till and fine lacustrine deposits. Originally, beech forests were common; today dairy farms and woodlots occur.

61c. The Low Lime Drift Plain ecoregion has a rolling landscape composed of low rounded hills with scattered end moraines and kettles; its terrain is distinct from the unglaciated, wooded, hilly country of Ecoregion 70 and its soils are usually less naturally fertile than the high lime till plains of Ecoregion 55. Urban-industrial activity as well as dairy, livestock, corn, and soybean farming are common; many ridges and lowlands are wooded. The growing season is shorter than that of Ecoregion 61a, and progressively decreases away from Lake Erie.

61d. The Erie Gorges ecoregion is a uniquely steep, dissected area along the Chagrin, Cuyahoga, and Grand rivers. Local relief can exceed 500 feet, rock exposures occur, and fluvial erosion rates are high. Originally, mixed mesophytic forests were common on well-drained sites; today, woodland, recreational areas, scattered farms, and housing are dominant.

61e. The Summit Interlobate Area is set apart from adjacent ecoregions by its numerous lakes, wetlands, sphagnum bogs, sluggish streams, kames, and kettles. The substrate is often sandy outwash and till. Mixed oak forests originally dominated well-drained areas; today, woodland, peatland, agriculture, gravel quarries, and urban-suburban development occurs.

70. Western Allegheny Plateau

The hilly and wooded terrain of Ecoregion 70 was not muted by glaciation and is more rugged than the agricultural till plains of Ecoregions 55 and 61. Extensive mixed mesophytic forests and mixed oak forests originally grew in Ecoregion 70. Today, most of its rounded hills remain in forest; dairy, livestock, and general farms as well as residential developments are concentrated in the valleys. Horizontally-bedded, sedimentary rock underlies the region and has been mined for bituminous coal.

70a. The Permian Hills ecoregion is rugged, wooded, and, commonly, too steep to be farmed. High gradient streams without acidity problems are characteristic and have developed on the underlying Permian shale, sandstone, and coal; on shale, the streams are often ephemeral and without large riffle-inhabiting fish populations.

70b. The Monongahela Transition Zone has rounded hills and ridges that are generally less rugged than Ecoregion 70a but are still steep. Unstable, clayey regolith has developed on the underlying coal bearing strata but is largely absent from Ecoregions 70c, 70d, and 70f. Gas wells, coal mining, and reclaimed land are locally extensive and associated stream degradation is common. Forests occupy steeper areas; dairy, livestock, and general farms also occur.

70c. The Pittsburgh Low Plateau ecoregion has rounded, forested hills and narrow, agricultural valleys; it is largely unglaciated in contrast to neighboring Ecoregion 61c. Medium textured soils are common and are markedly different from the clayey soils of Ecoregion 70b. High gradient streams with rocky bottoms and associated fauna contrast with the lower gradient, silty or sandy channels of Ecoregion 70e. Coal mining and associated stream acidity problems are present but less common than in Ecoregions 70b and 70e.

70d. The **Lower Scioto Dissected Plateau** ecoregion is rugged, dissected, and underlain by Mississippian-age shale and sandstone. It is characterized by steep ridges, high relief, and streams without acidity problems. Low gradient, broad valleys also occur. Originally, mixed oak forests and mixed mesophytic forests were widespread and bottomland hardwood forests were restricted to broad, flat-bottomed valleys. Today, the steep areas are still wooded; livestock, general, and tobacco farming occurs in less rugged areas.

70e. The **Unglaciaded Upper Muskingum Basin** ecoregion is a dissected plateau with streams that are less degraded by coal mine effluent than those of Ecoregions 70b or 70f. Originally, mixed oak forests and mixed mesophytic forests were widespread. Underfit, low gradient rivers occur in broad, silt-filled, Wisconsinan-age valleys.

70f. The **Ohio/Kentucky Carboniferous Plateau** ecoregion is characterized by extensive bituminous coal mining and associated stream degradation; mining and its effects are less prominent in Ecoregion 70e and absent from Ecoregion 70d. The ridges of Ecoregion 70f are forested while its floodplains and broad, clay-filled, flat-bottomed, preglacial valleys are used for general farms. Originally, the hill slopes had mixed oak forests, while the broad, Teays-age valleys supported mixed mesophytic forests.

71. Interior Plateau

Ecoregion 71 has rolling to deeply dissected, rugged terrain with areas of karst topography common on the Mitchell Plain (71b). Maximum elevations and local relief are greater than in Ecoregion 72. The original forest vegetation shared its beech component with Ecoregion 55 and oak-hickory forests occurred on the well-drained, upper slopes. The soils of Ecoregion 71 developed from the underlying sandstone, siltstone, shale, and limestone and are not from till like those of Ecoregion 55. Land use/land cover is a transition between the crop and livestock farms of Ecoregion 55 and the forests of Ecoregion 70; hay, grain, cattle, hog, and poultry farming occurs and woodland is common.

71d. The **Northern Bluegrass** ecoregion is deeply dissected and has some ephemeral streams in the east. The east is unglaciated whereas the plains and hills of the west are mantled by leached pre-Wisconsinan till and discontinuous loess. Ecoregion 71d is underlain by Ordovician limestone and shale which distinguishes it from other nearby ecoregions. Its lower crestal elevations, Alfisol soils, limestone bedrock, and sinkholes distinguish it from Ecoregion 70d; its ruggedness, lack of fragipans, and, often, natural vegetation differentiate it from the glaciated plains of Ecoregion 55d. In addition, Ecoregion 71d lacks the high lime, Wisconsinan till of Ecoregion 55b. Originally, in Ohio, mixed mesophytic forests, mixed oak forests, and bottomland hardwood forests grew; in Indiana, western mixed mesophytic forests and oak-hickory forests grew and they lacked many northern species. Today, the ecoregion is a mosaic of forest and agriculture with urban-industrial activity occurring near Cincinnati and along the Ohio River. It is wooded where steep; general, dairy, and tobacco farming occurs on less rugged sites.

REFERENCES

Geographic Information Systems Data:

Ohio EPA Data (ca. 2010) (<http://epa.ohio.gov/gis.aspx>)

Antidegradation Status(Outstanding State Waters, Superior Quality State Waters)
Tiered aquatic life use designation(e.g. Coldwater Habitat)
Landscape Development Index
OEPA 401 impacts (Mitigation Annual Reports)

Ohio DNR Data

Scenic River Designation (2010) (<http://watercraft.ohiodnr.gov/scenicriversmap>)
Ohio Natural Heritage Database (2007)
(http://www.dnr.state.oh.us/Home/wild_resourcehomepage/ResearchandSurveys/OhioBiodiversityDatabase/tabid/23652/Default.aspx)

NHD-Plus v.2 Data (2013) (http://www.horizon-systems.com/NHDPlus/NHDPlusV2_data.php)

Lakes (NHDWaterbody)
Streams (NHDFlowlines)
HUC 8 boundary
HUC 6 boundary
USACE Corps Districts (derived from HUC-8 boundary)

ESRI Data & Maps for ArcGIS® (2013)

State boundary
County boundary
Named Streams
Major Roads
Cities

Other Data

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