



FRENCH CREEK WATERSHED CONSERVATION PLAN Update 2024

EXECUTIVE SUMMARY DRAFT

**Prepared by
Western Pennsylvania Conservancy
In partnership with French Creek Valley Conservancy
For the communities & conservation partners of the watershed**

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Western Pennsylvania Conservancy

800 Waterfront Drive
Pittsburgh, PA 15222
Toll-free: 1-866-564-6972
www.WaterLandLife.org
info@paconserve.org



French Creek Valley Conservancy

411 Chestnut Street
P.O. BOX 434
Meadville, PA 16335
(814) 337-4321
www.frenchcreekconservancy.org
watershed@frenchcreekconservancy.org

French Creek Conservation Consortium

- Allegheny College ~ Creek Connections & Watershed Conservation Research Center
- Allegheny Valley Conservancy
- Chautauqua County Soil & Water Conservation District
- Chautauqua Watershed Conservancy
- City of Meadville
- Crawford County Conservation District
- Crawford County Planning Commission
- Ducks Unlimited
- Edinboro Lake Association
- Erie Bird Observatory
- Erie County Conservation District
- Erie County Planning & Community Development
- Findlay Lake Nature Center
- Foundation for Sustainable Forests
- French Creek Valley Conservancy
- Friends of Erie National Wildlife Refuge
- Mercer County Conservation District
- Mercyhurst University
- Penn State Extension
- Pennsylvania Department of Conservation & Natural Resources
- Pennsylvania Department of Environmental Protection
- Pennsylvania Environmental Council
- Pennsylvania Fish & Boat Commission
- Pennsylvania Game Commission
- Pennsylvania Organization for Watersheds & Rivers
- PennWest Edinboro University
- Richard King Mellon Foundation
- Seneca Nation of Indians
- Sherman Chamber of Commerce
- The Nature Conservancy
- Tom Ridge Environmental Center
- Trout Unlimited
- Union City Borough
- U.S. Army Corps of Engineers
- U.S. Dept. of Agriculture Natural Resources Conservation Service
- U.S. Fish & Wildlife Service
- Venango County Conservation District
- Western Pennsylvania Conservancy

INTRODUCTION



2022 Pennsylvania River of the Year poster (poster by POWR)

French Creek is one of the most ecologically significant waterways in Pennsylvania, containing possibly more diverse species of fish and freshwater mussels than any other comparably-sized stream in the Commonwealth or northeastern United States.

French Creek has won the honored designation of [Pennsylvania River of the Year](#) twice, 2003 and 2022, thanks to its proud rural character, extensive history and close-knit culture of its communities!

[French Creek Valley Conservancy](#) serves as the regional coordinator and liaison for watershed conservation actions, advocacy, education and outreach. Since

2009, they have moderated the annual French Creek Conservation Consortium, which brings together public, private, and non-profit conservation stakeholders from throughout the watershed to update each other on their current projects, identify new sources of funds or partners, avoid the duplication of efforts, and plan coordinated action in response to conservation needs.

The annual [French Creek Cleanup](#) has brought together hundreds of volunteers of all ages for more than 30 years, to collect garbage from French Creek, its tributaries, and conserved lands.

The [French Creek Water Trail](#) guides paddlers along approximately 78 navigable miles from the Union City Dam to the City of Franklin and is managed by FCVC.

The update to this watershed conservation plan was completed in 2024 with the purpose to serve as a current reference to information, resources, and potential partners in natural resources conservation and community revitalization initiatives in French Creek. Partner and public surveys captured special or unique concerns for this region, helped develop goals of the plan, provide mapping of French Creek, and discuss management options and how the plan will be used in the future to support the need for funding and implementation of projects to conserve French Creek.



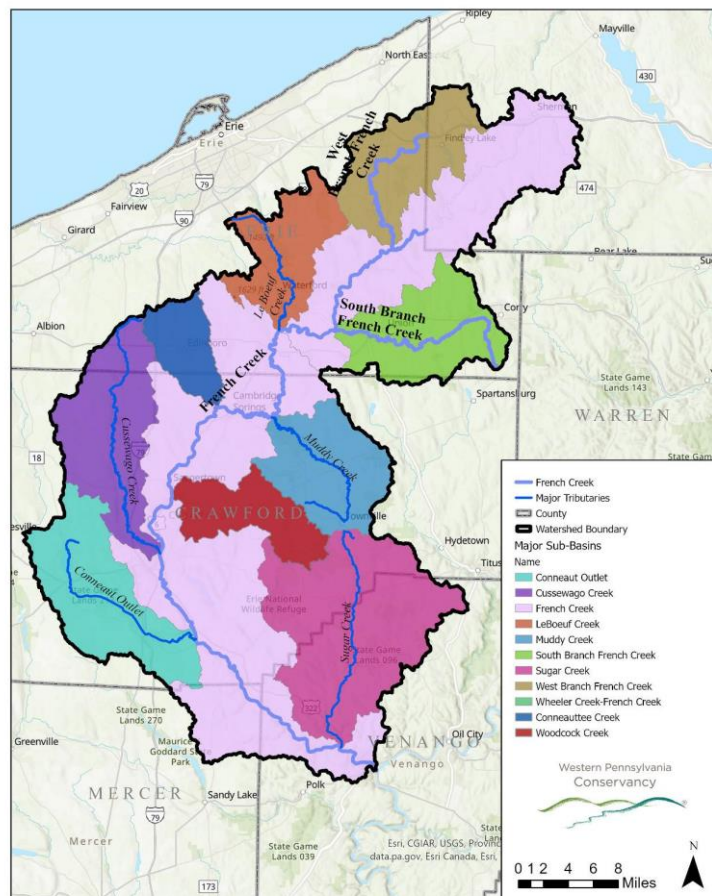
French Creek cleanup volunteers (photo by FCVC)

PROJECT AREA CHARACTERISTICS

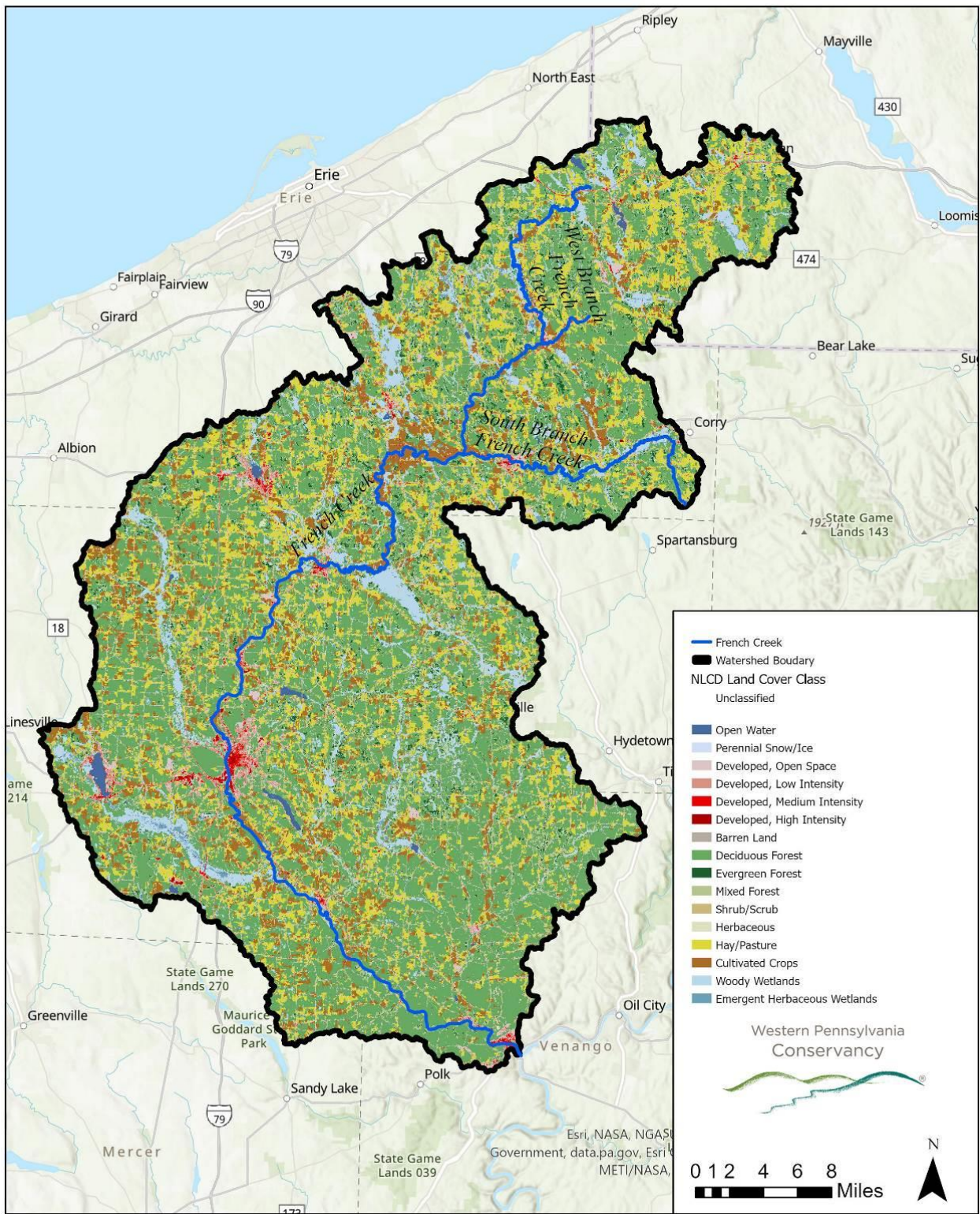
French Creek and West Branch French Creek originate in Chautauqua County, in western New York and flow southwest to their confluence in Erie County, Pennsylvania. South Branch French Creek originates near Corry in Erie County and flows west to its confluence with French Creek near Union City in Erie County. French Creek then flows south through Crawford County, the northeast corner of Mercer County, and finally into Venango County, where it flows southeast to its confluence with the Allegheny River at Franklin, Pennsylvania. The entire French Creek watershed covers an area of approximately 1,237 square miles (791,405 acres). The main stem of French Creek flows 117 miles from its New York headwaters to its mouth at Franklin. A relatively large tributary watershed, French Creek constitutes 11 percent of the drainage basin for the Allegheny River.

The French Creek watershed is highly rural with a few urban centers. The landscape is a mix of land use classifications, primarily divided between forested (53%) and agricultural (40%). Many municipalities in the watershed have little or no zoning and subdivision regulations, and many of the regulations in place are quite dated and provide little protection for environmental or social concerns. Municipalities without these land use controls are generally governed by countywide controls.

French Creek Watershed Major Sub-Basins



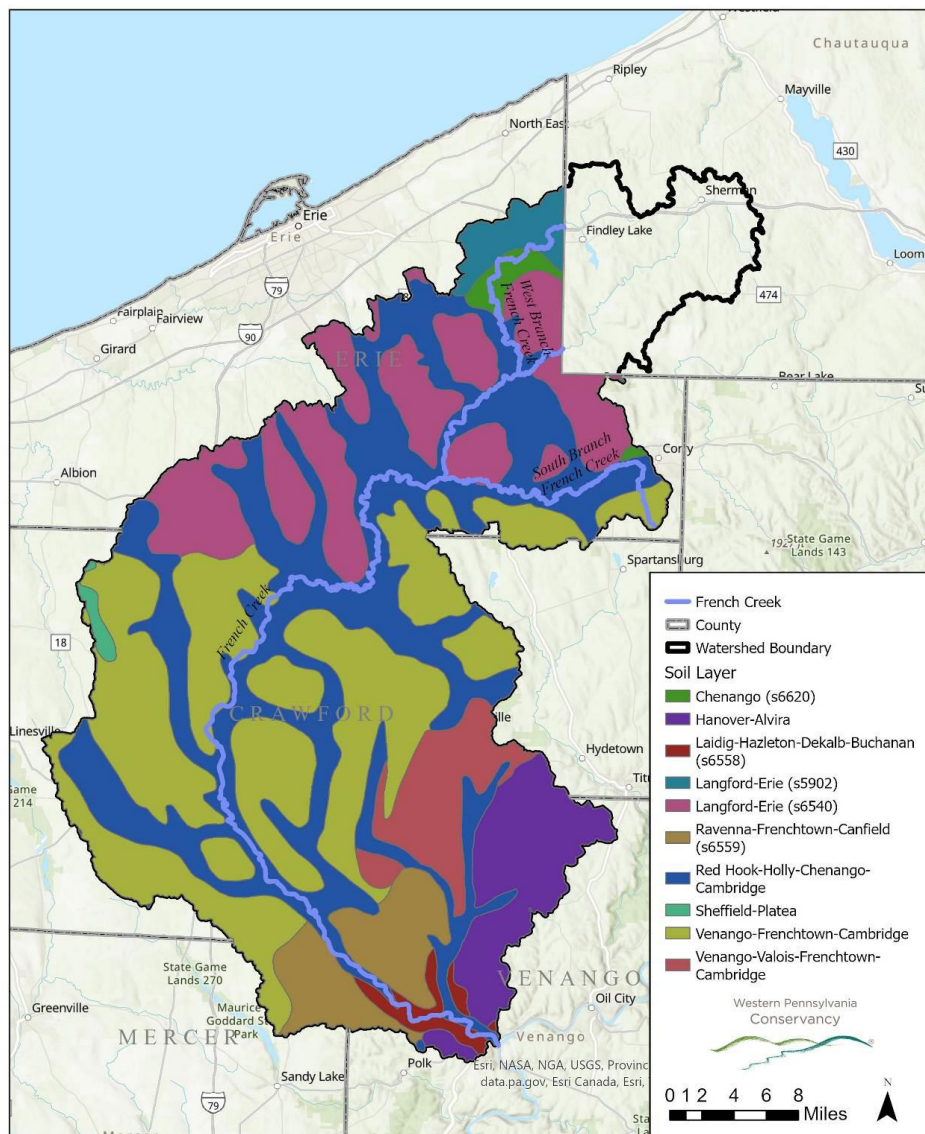
French Creek Watershed Land Cover



LAND RESOURCES

An important note for the water quality of French Creek is the absence of the coal-containing Allegheny Group (Pennsylvanian Period). This fact has allowed French Creek to escape the fate of coal mining and associated abandoned mine drainage, which has decimated streams to the south and east. Soils in the glaciated French Creek watershed are generally categorized as either gravelly soils of outwash terraces, floodplains, and moraines formed from stream deposits and glacial outwash; or as soils of upland areas formed from the weathering of glacial till. Glacial outwash is formed from materials carried away from glaciers by meltwater. The steep soils tend to be droughty while the soils in depressions are very poorly drained. The soils of this general area were historically used for intensive farming.

French Creek Watershed Soil Layers



Although many farms still exist, including some dairy operations, much of the agriculture in the watershed has been lost and portions of this land have reverted to forest.

Publicly-owned lands in the French Creek watershed are considered to be those owned by the Pennsylvania Department of Conservation and Natural Resources (DCNR), Pennsylvania Game Commission (PGC), Pennsylvania Fish & Boat Commission (PFBC), U. S. Army Corps of Engineers (USACE), U. S. Fish & Wildlife Service (USFWS), and other government agencies including counties and local municipalities. Local parks can be explored through DCNR's [Explore PA Local Parks](#).



A small section (128.55 acres) of [Cornplanter State Forest](#), owned by DCNR, is within the French Creek watershed in Crawford County near Townville. There are no other state parks in the watershed. The PGC owns the majority of public lands with more than 30,000 acres of State Game Lands (SGL) in noncontiguous parcels spread throughout the watershed. The largest contiguous public land in the watershed is the USFWS [Erie National Wildlife Refuge](#) in Crawford County, separated among two divisions totaling more than 9,000 acres.

The USACE operates public access areas on 3,085 acres surrounding the [Union City Dam Reservoir](#) and [Woodcock Creek Lake](#). The PFBC owns, leases, or has easements on more than 1,000 acres of public access areas, including [Tamarack Lake](#) (Appendix K). The Commission also operates two fish culture stations at [Corry State Fish Hatchery](#) and [Union City Aquatic Conservation Center](#), the latter of which also began propagating freshwater mussels in 2020.

[Western Pennsylvania Conservancy](#) has protected 4,587 acres in the watershed, approximately 3,500 acres of which are available for public use and the remainder held in private easements. In addition, [French Creek Valley Conservancy](#) (FCVC) has protected 3,497 acres in easements and public access areas throughout the watershed. Other local and regional land trusts, including [Allegheny Valley Conservancy](#) and the [Foundation for Sustainable Forests](#) (FSF) and resource management agencies like county conservation districts and the [USDA Natural Resources Conservation Service](#), have also protected forests, agricultural lands, wetlands, and the natural resources and rural character of the region through voluntary easements with cooperative private landowners (Appendix K). About 93 percent of the watershed is in private ownership, emphasizing the need for and awareness of community-supported conservation programs to protect the watershed.

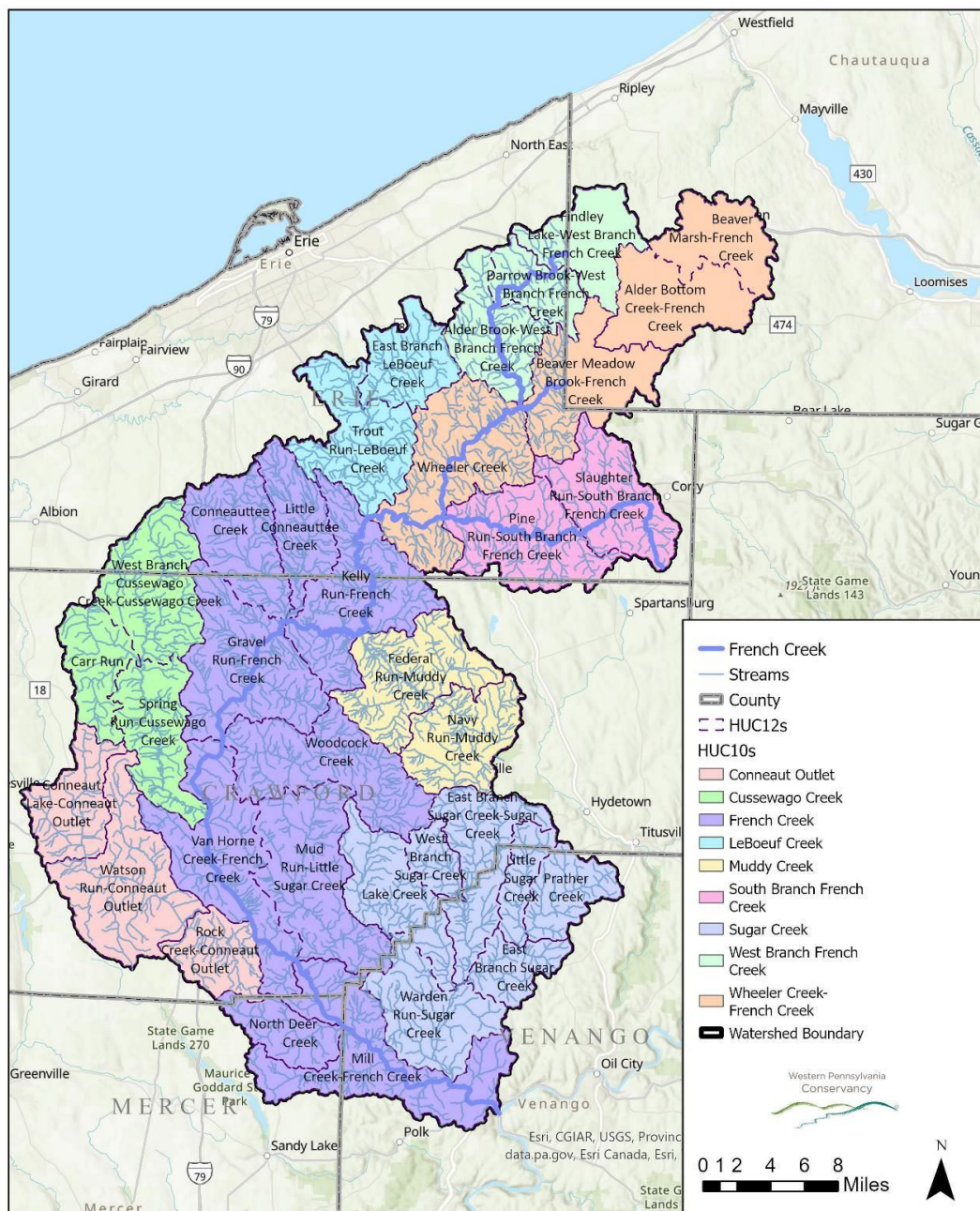
Private landowners may voluntarily cooperate with any land trust to protect their land, enhance property values and protect natural resources through a variety of conservation options. Voluntary legal agreements called conservation easements may limit development and subdivision while retaining private ownership of the property. Land can also be protected by selling or donating to accredited land trusts or public agencies, bargain sales, and establishing life estates.

[illegible]

WATER RESOURCES

The French Creek watershed has ten major tributaries whose sub-basins cover at least 50 square miles. In addition, those major sub-basins can be broken down further into the Pennsylvania State Water Plan designated small watersheds (Figure 13). The PA portion of the main stem of French Creek is classified as a warm water fishery (WWF) by the PA Department of Environmental Protection's Water Quality Standards ([PA Title 25, Chapter 93](#)).

French Creek Small Watersheds





French Creek contains a wide variety of wetland types. [Wetlands are integral parts of the watershed ecosystem.](#) They function in a variety of ways to benefit humans as well as wildlife. Wetlands improve water quality in lakes and streams by stabilizing and filtering sediments and toxins. Wetland plants remove excessive nutrients and prevent them from entering waterways. Wetlands augment and help control water quantity in a watershed. They retain waters during high flow periods to lessen

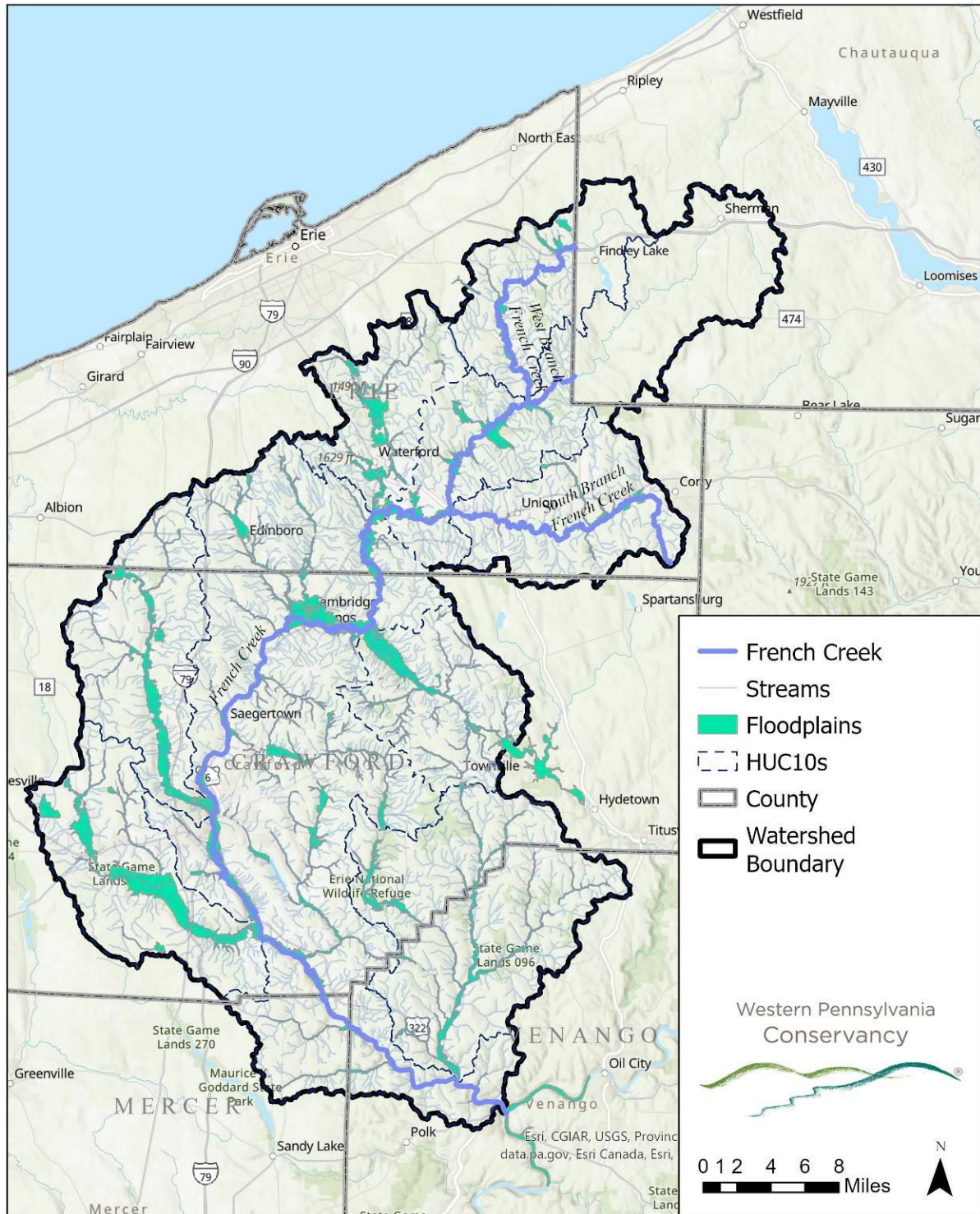
flooding. Wetlands also provide important recharge areas for groundwater, especially important for low flow augmentation during droughts. Wetlands are important habitats for many species of plants and animals. Wetlands serve as a link between terrestrial and aquatic environments and dramatically increase plant and animal diversity for both environments. Lastly, wetlands are important for the recreational and aesthetic values they provide to humans. Boating, fishing, hunting, and birding are just a few of the activities provided by wetlands.

French Creek is considered a relatively-young stream that meanders through gravel-filled streambeds with wide floodplains. The coarse-gravelly soils laid down by glacial events tend to be highly erodible. Many areas along French Creek have experienced extensive erosion due, in part, to a stream's natural tendency to meander as it cuts its way through the gravelly outwash plains of the former glacial advances. Development has led to the loss of riparian buffers, draining and filling of wetlands, and increased impervious surfaces in the watershed, exacerbating the erosive forces of French Creek. Compounded with the increase in impervious surfaces due to roadway construction, these alterations to the watershed hydrology have significantly changed the stream characteristics.

Overall, the water quality in the French Creek watershed is relatively good; however, there are sections that are degraded by various pollutants. Water quality has remained good partially due to the glacial history of the watershed. Material deposited across the French Creek landscape by the glaciation process is high in carbonate, which acts as a natural buffer against acidification by atmospheric deposition and industrial discharges. The glacial material in the French Creek watershed is high in calcium carbonate (CaCO_3), as well as dolomite, another carbonate-rich material. This leads to the alkaline nature of water in the French Creek watershed.

Another factor leading to good water quality in French Creek is the highly rural nature of the watershed. With relatively little development and low percentages of impervious material, precipitation and runoff in the watershed is able to seep into the ground and carries fewer pollutants to waterways.

French Creek Watershed Floodplains



There are, however, threats to French Creek's naturally occurring good water quality. In areas where development has occurred at higher levels, especially around lakes, water quality has been degraded. In addition, point discharges from urban areas, including industrial discharges and sewage treatment plants have degraded sections of French Creek and certain lakes within the watershed. While the rural nature of the watershed has protected it from degradation due to urban runoff, the threat of degradation due to improper agricultural and forestry practices is substantial. Improper agriculture and forestry practices can impact water quality by increasing sediment loads, introducing nutrients and pesticides, and eliminating or reducing riparian buffers.

Nutrient enrichment is occurring in French Creek and many of its tributaries. This is evident by summer algal blooms and excessive aquatic weed growth. Excessive nutrients can have a negative effect on aquatic organisms as nutrient levels build up and oxygen levels are sometimes critically depleted during warmer summer months when flows are reduced. This is especially problematic for French Creek's freshwater mussel species, which depend on oxygenated water and cannot move to find more suitable conditions. Excessive aquatic weed growth may reduce aesthetic and recreational opportunities in French Creek watershed also.

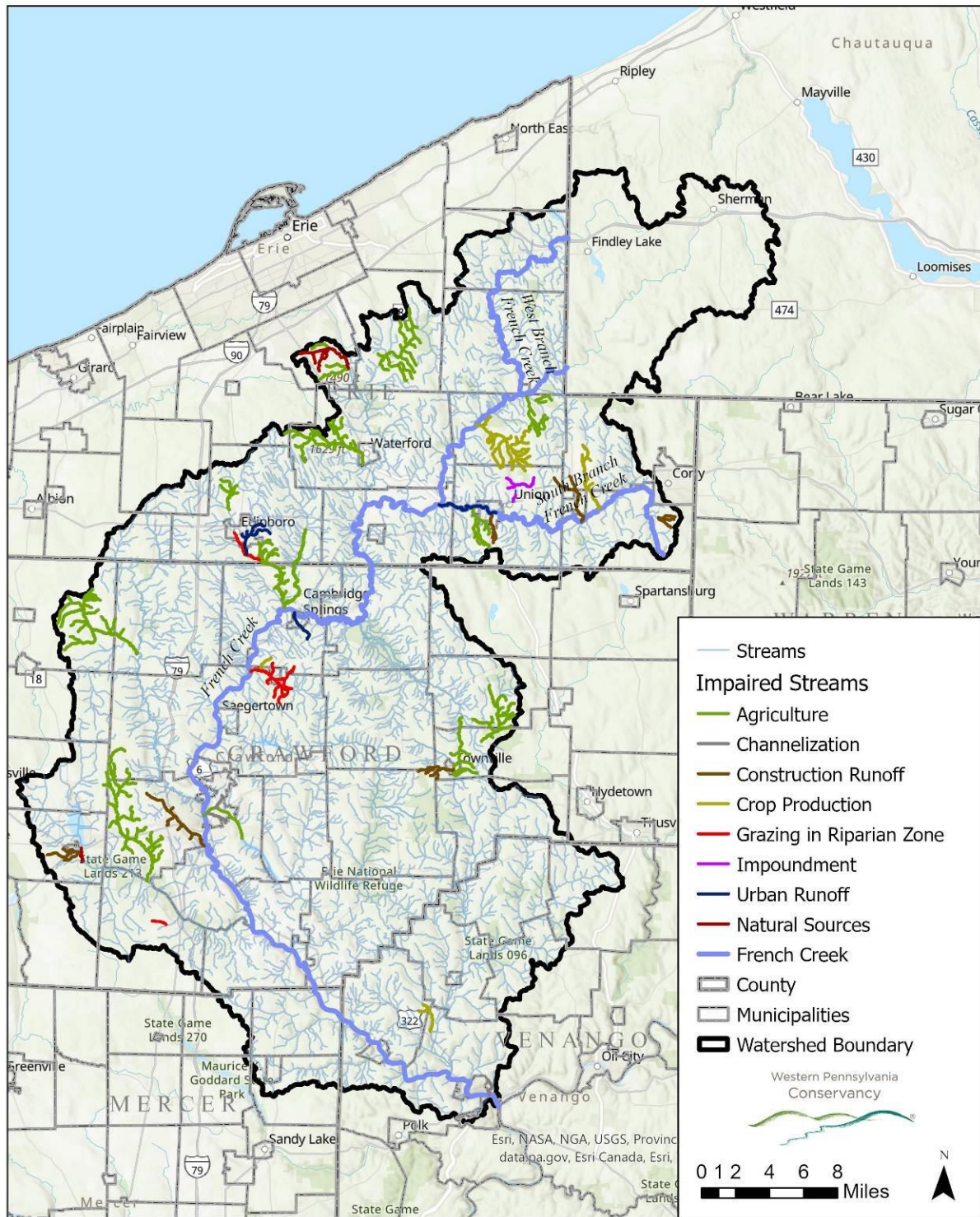
Non-point source (NPS) pollution is the major cause of surface water degradation in the state. Non-point source pollution can travel via surface runoff or it can enter the groundwater and flow to streams and lakes via sub-surface channels. Other potential sources of NPS pollution include gravel mine drainage, urban runoff/storm sewers, residential runoff, atmospheric deposition, golf courses, development and construction projects, leachate from landfills, and silviculture projects.

Pennsylvania's Department of Environmental Protection (PA DEP) [Integrated Water Quality Monitoring and Assessment Report](#) satisfies the requirements of sections 305(b) and 303(d) of the Clean Water Act (CWA). Section 303(d) requires states to list all impaired surface waters not supporting uses even after appropriate and required water pollution control strategies have been applied. The 303(d) list includes the reason for impairment, which may be one or more point sources, like industrial or sewage discharges, or non-point sources, like abandoned mine lands or agricultural runoff and the pollutant causing the impairment such as metals, pH, mercury or siltation. 305(b) is the narrative report.

Previous data collected through the NAWQA program reported 48 fish species and 69 macroinvertebrate families collected at Utica. Aquatic macroinvertebrates are often used as indicators of water quality. A high number of families, including pollution intolerant forms such as those found at Utica, suggested good biodiversity and relatively good water quality. Groundwater wells throughout Pennsylvania are also monitored by USGS for groundwater levels.

[County Conservation Districts](#) perform some water quality monitoring in sub-basins where their efforts are focused on implementing BMPs or other projects to address stream impairments. The PFBC also conducts water quality monitoring throughout the watershed. They utilize water chemistry field analysis, macroinvertebrate and fish sampling on stream segments that are routinely stocked to monitor the health of waterways and biological communities. Numerous researchers associated with local universities also have performed monitoring projects throughout the watershed.

French Creek Watershed Stream Impairment Source



BIOLOGICAL RESOURCES

The French Creek watershed contains a wealth of wildlife resources, both aquatic and terrestrial. There is an abundance of species of special concern, considered rare, threatened, or endangered in the state and in the nation, and also numerous game and non-game species. This amazing biodiversity leads to an enormous array of wildlife viewing and outdoor recreation opportunities.

Biodiversity in French Creek is perhaps best represented by a group of fish known as [darters](#). Darters are an important indicator of water quality because they do not migrate and remain relatively stationary in stream systems, relying on high dissolved oxygen, low temperatures, and low bed siltation rates, making them highly susceptible to environmental threats like those associated with erosion. Darters are important species of host fish that are vital to the completion of the freshwater mussel reproductive cycle. Darters and other fish transport young mussels on their gills to aid in their dispersal throughout the watershed. While acceptable water quality and substrate conditions exist in many sections of French Creek, other areas are threatened by the invasive round goby and improper agricultural, forestry, and development practices contributing excess nutrients and silt.

Common Name	Scientific Name	PA Status
eastern sand darter	<i>Ammocrypta pellucida</i>	endangered
greenside darter	<i>Etheostoma blennioides</i>	stable
rainbow darter	<i>Etheostoma caeruleum</i>	stable
bluebreast darter	<i>Etheostoma camurum</i>	threatened
Iowa darter	<i>Etheostoma exile</i>	endangered
fantail darter	<i>Etheostoma flabellare</i>	stable
spotted darter	<i>Etheostoma maculatum</i>	threatened
Johnny darter	<i>Etheostoma nigrum</i>	stable
Tippepaddlecraft darter	<i>Etheostoma tippepaddlecraft</i>	threatened
variegate darter	<i>Etheostoma variatum</i>	stable
banded darter	<i>Etheostoma zonale</i>	stable
logperch	<i>Percina caprodes</i>	stable
gilt darter	<i>Percina evides</i>	threatened
longhead darter	<i>Percina macrocephala</i>	threatened
blackside darter	<i>Percina maculata</i>	stable

Pennsylvania Fish and Boat Commission's Unassessed Waters Initiative is a fish and water quality monitoring program that has worked to document trout populations and other fishes in the French Creek watershed and across the state, completing 191 unassessed waters surveys and documenting 24 naturally-reproducing wild populations of trout and eight class A trout streams.

French Creek is also noted for its diverse freshwater mussel species. The unique and complex lifestyle of freshwater mussels makes them extremely vulnerable to pollution and habitat degradation. These organisms lead a relatively sessile existence as adults. They burrow into the stream bottom with a muscular foot and rarely move more than a few hundred feet during their lifetimes, which can sometimes be 50 or more years. They siphon water into their bodies using incurrent and excurrent siphons. The water then passes through their gills where oxygen is



Wavy-raved lampmussel (photo by WPC)

extracted for breathing and then through their gut where microorganisms and other material are filtered for food. Pollutants in the water can be taken up in the mussels' body tissue making many species extremely susceptible. Siltation caused by excessive erosion can smother entire mussel beds.

The eastern hellbender (*Cryptobranchus alleganiensis*), a species of salamander found within the French Creek watershed, is considered to be very sensitive to pollution. It is completely aquatic, and depends on waterways that are cool and clear, containing many large rocks. The hellbender, which has been designated Pennsylvania's State

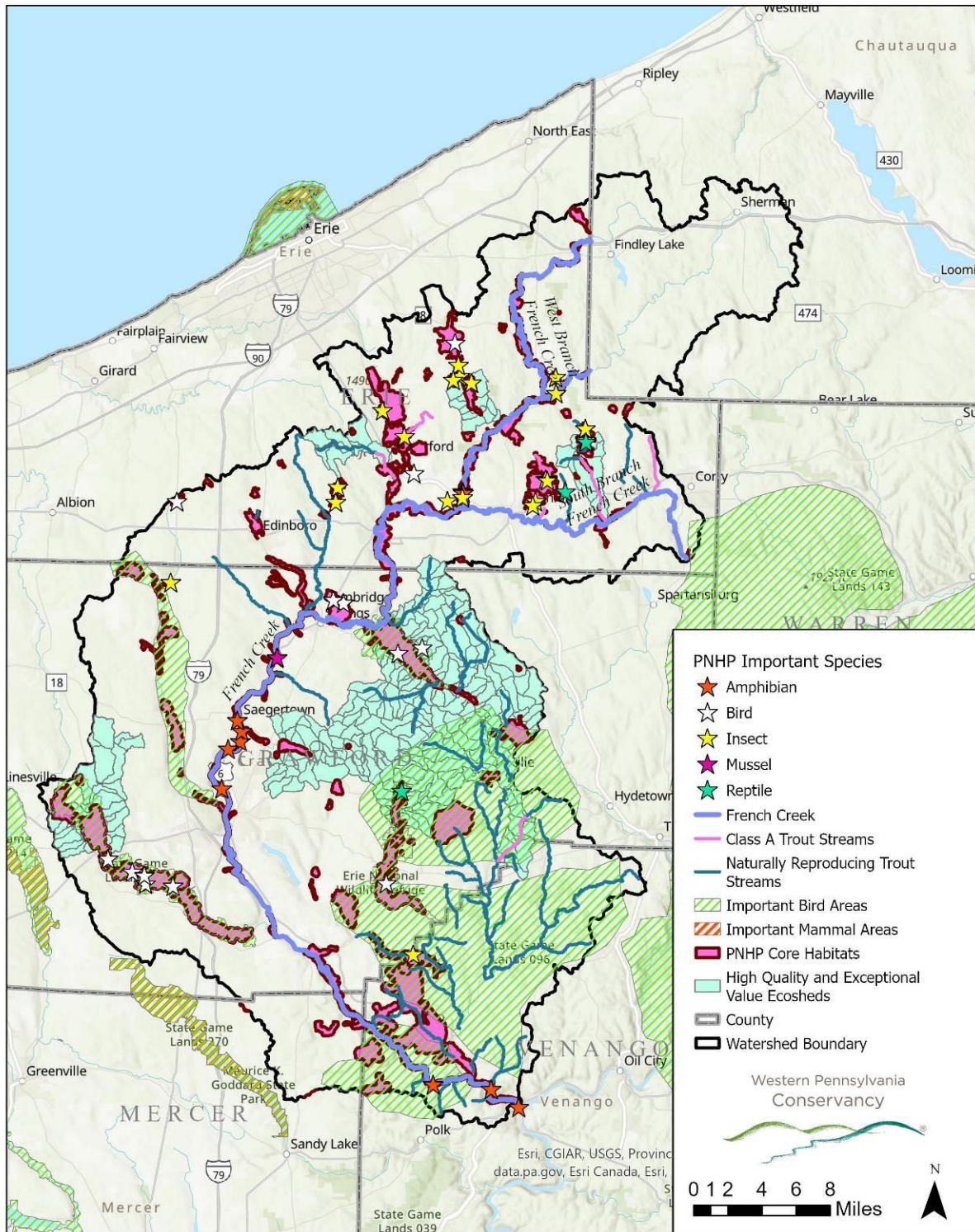
Amphibian, is one of the largest salamanders in the world and the largest salamander in North America, reaching lengths of over two feet and weighing up to five pounds. Finding this species denotes a healthy stream ecosystem. Hellbender populations have declined throughout their range, primarily due to human misperceptions and pollution. Preserving healthy streams and restoring stream habitats that have become degraded will maintain current populations of hellbenders and other salamanders, as well as aid in increasing their numbers and distribution.

A total of 302 PNDI elements are reported from the French Creek watershed and buffered locations are shown in Figure 19 and listed in Appendix H ([PNHP 2024](#)). These include two mammal species, 26 bird species, 26 fish species, 15 reptile and amphibian species, 33 insect species, 19 unionid (mussel) species, four land snails, 15 natural communities, one unique geological feature, and 153 plant species.



Eastern hellbender salamander (photo by WPC)

French Creek Watershed Important Species and Core Habitats



CULTURAL RESOURCES



French Creek has a rich history beginning several thousand years ago when humans first appeared on the landscape. The Native Americans that settled this region were descendants of peoples who migrated across a land bridge that connected Alaska with Asia and then spread across North America. The [Iroquois](#), which included the [Seneca Nation](#) of the upper Allegheny and French Creek region, settled along waterways of the French Creek valley, where their communities subsisted on

wild game like fish, deer, turkey, squirrels, wild pigeons, and bear and the lush natural resources of the forests and wetlands that they managed with prescribed fires and other methods to form orchards and meadows. The Seneca remained in Meadville into the early 1800s, until thousands of American settlers, many of them farmers, began cutting the trees, cultivating the land, and building dams and mills on the streams by the 1830s. The landscape, resources, and hunting grounds on which the Seneca lifestyle depended disappeared from the French Creek valley. In 2019, Jay Toth, a tribal archeologist of the Seneca Nation, reminded conservation partners working in French Creek, "...the types of land that conservation organizations will acquire are not 'vacant lands;' they are lands that native people used and lived on, where natives are potentially buried." He reminded everyone, "...be aware and respectful."

Early settlers utilized French Creek as a transportation route for goods. Timber, skins, and other products could be shipped all the way to the Gulf of Mexico from the French Creek valley, via the Allegheny, Ohio, and Mississippi Rivers. Until this time, settlers in the region had to traverse 15 miles over land from Waterford to Lake Erie via the Portage Trail in order to get goods to the Atlantic Ocean. The French Creek Feeder Canal was completed in 1837 between Meadville and Conneaut Lake. This allowed goods to be transported from French Creek at Meadville to Conneaut Lake and then on to Lake Erie via the Erie Extension Canal, thus ending the need to transport goods overland to Lake Erie. The French Creek valley prospered as timbering and farming molded the landscape. Many sites in the watershed became popular tourist attractions. People flocked to resorts in Cambridge Springs to bathe in the mineral-rich springs in the area. In the late 1800s and early 1900s, resorts also attracted tourists to many of the glacial lakes in the watershed, including Conneaut Lake and Lake Pleasant, where social halls, water slides, and boat rides provided family recreation.

The [Pennsylvania Historical & Museum Commission](#) reviews and lists properties in Pennsylvania for inclusion on the [National Register of Historic Places](#). Because of its rich history, the French Creek watershed has dozens of sites listed on the National Registry. Significant historic preservation has been accomplished through historical societies, civic groups, etc.

The French Creek watershed offers the outdoor enthusiast a good supply of outdoor recreational amenities. Public facilities offer access to French Creek, area lakes and reservoirs, natural areas, wildlife refuges, and hunting land (Figure 9). Most of the abundant outdoor recreational opportunities in the region highlight its natural resources. Recreation must be developed to satisfy these demands, while simultaneously providing protection for natural resources.

Today, many people are seeking alternative forms of transportation for travel, recreation, and fitness. Specifically, walking and biking have grown in popularity throughout the region. In response, several groups have begun planning and implementing trail and greenway development throughout the watershed. The [Northwest Pennsylvania Greenways Plan](#), originally adopted in 2009, is a multi-county planning effort undertaken by the [Northwest Regional Planning and Development Commission](#) (Northwest Commission) on behalf of the eight counties it serves: Clarion, Crawford, Erie, Forest, Lawrence, Mercer, Venango, and Warren. It aimed to capture efforts to conserve and enhance natural system greenway corridors and establish new recreation and transportation corridors to create a regional greenway and trail network.

Land-based recreational opportunities also abound in the French Creek watershed. Greenways are defined as “any undeveloped area that is open for recreation, transportation, and quality of life activities. Greenspace resources include: agricultural area, recreational parks, education parks, bikeways, trails, forests, state game lands, riparian area, and community courtyards.”

There is also demand for many other types of outdoor recreation. Hunting, fishing, ice-fishing, hiking, bird watching, and cross-country skiing are a few of the many activities that are enjoyed throughout the French Creek watershed.



The main stem of French Creek is navigable by paddle craft for its entire length from the Union City Dam to its confluence with the Allegheny River at Franklin, with the exception of Saegertown Dam. FCVC is the designated manager of French Creek as an official PA Water Trail. Paddlers can obtain copies of the water trail maps and guides at FCVC's office in Meadville or on the website at www.frenchcreekconservancy.org. Paddling is also permitted on all lakes and reservoirs mentioned in the Water Resources section. Conneaut Lake and Edinboro Lake offer unlimited restrictions for powerboating and several other lakes and impoundments in the watershed offer access for limited horsepower or electric motors. Lake Pleasant, Eaton Reservoir, and Union City Reservoir allow no motors for boats.

ISSUES, CHALLENGES, AND ACCOMPLISHMENTS

There are a multitude of activities in the French Creek watershed that can affect water quality, aquatic biota, and ultimately, quality of life for watershed residents. Most of the activities that potentially threaten the health of the French Creek watershed are important to the economic viability of the region and the wellbeing of residents. Therefore, it is important to find ways that these activities can coexist and thrive while maintaining the ecological integrity of the watershed. Humans are inextricably linked to the environment in which we live and we must foster this link by both utilizing and protecting natural resources with the goal of sustainability.

It is undeniable that human activities, such as agriculture, logging, mineral extraction, development, and even some forms of recreation can potentially threaten the health of the French Creek watershed. The goal of this plan is to provide information on ways to minimize those threats through education, research, and cooperative community-based approaches. Most of the potential threats and recommendations have been voiced by watershed stakeholders through the French Creek Conservation Consortium, through public stakeholder meetings for the conservation planning process, and public opinion surveys. Potential threats are described as types of pollutants, forms of habitat degradation, or other activities and land uses that may have a negative impact on the health of the watershed. Management recommendations that are offered to address these potential threats through restoration, maintenance, enhancement, and overall protection of the resources of the French Creek watershed.

Pollutants

“A pollutant is a by-product of human activities which enters or becomes concentrated in the environment, where it may cause injury to humans or desirable species” (Kline, n.d.). Pollutants are generally described as heat, nutrients and organic wastes, toxins/hazardous substances, and invasive exotic species.

Heat

Heat is considered a type of pollution that can impact aquatic organisms if water temperatures are elevated beyond tolerable limits. Elevated water temperatures decrease dissolved oxygen levels and magnify stresses associated with chemical pollutants. The loss of riparian buffers along streams also contributes to heat pollution from lack of shade.

Nutrients and Organic Wastes

PA DEP biologists have noted nutrients as the leading cause of stream impairment in the French Creek watershed. The primary nutrients affecting aquatic ecosystems are nitrogen and phosphorous. Although important for plant growth and primary production in ecosystems, excess nitrogen and phosphorous can promote the eutrophication of streams and lakes. These nutrients cycle naturally through the environment and are initially introduced to aquatic and terrestrial ecosystems through the weathering of soil and rock and from the atmosphere. Anthropogenic impacts to the landscape have dramatically increased the amount of these nutrients entering aquatic systems.

Agricultural, timber, and even mining practices throughout the watershed have the potential to contribute high levels of nutrients to surface waters and groundwater. These impacts are exacerbated when riparian buffers are removed and agricultural Best Management Practices are not utilized. These effects can be minimized when BMPs are utilized to minimize soil disturbance.

As impervious surface area increases through development and urbanization, runoff from parking lots, roadways, rooftops, and other areas carry high levels of nutrients to receiving bodies of water. These problems are compounded when development practices fail to limit or mitigate these negative effects through the use of alternative materials, greenspace, and sufficient stormwater management design.

Nutrients and organic waste are often contributed by point sources (i.e. a pipe from a sewage treatment plant or industrial discharge, on-lot septic systems). Organic wastes breakdown into nitrogen and phosphorous constituents and further contribute to profuse plant growth and low dissolved oxygen levels. Permitting and monitoring by DEP for point source discharges has helped to curb problems associated with these discharges. On-lot septic systems associated with older homes and seasonal cottages along streams and lakes, may release nutrients in the watershed. Because of the age of some of these structures, they escape regulation by DEP and can severely impact water quality.

Toxins and Hazardous Materials

The French Creek watershed is well situated to receive air born pollutants from industrial areas to the west due to continental wind patterns. These pollutants can fall as wet deposition (rain or snow), or dry deposition attached to dust particles. Pennsylvania receives rainfall with an average pH of approximately 4.4 (USGS). Acidic precipitation is the result of chemical reactions in the atmosphere between naturally occurring elements, like oxygen and nitrogen, and the byproducts of the combustion of fossil fuels from industry, agriculture, and vehicles. Along with acidification of surface waters, acid precipitation carries various chemical pollutants, including nitrogen and phosphorous that impact streams, lakes, rivers, and ultimately groundwater.

There are natural sources of some toxic substances such as heavy metals, but many industrial, agricultural, and household processes produce toxic materials. Toxic wastes produced by human activities contain substances that rarely occur in nature, or not high concentrations. Toxic wastes, such as heavy metals, hydrocarbons of petroleum origin, pesticides, organic poisons, like PCBs and inorganic poisons, like chlorine and ammonia, are not readily biodegradable.

Toxins have the ability to severely impact water quality and can cause rapid mortality for large numbers of aquatic organisms. In other cases, toxins may not kill aquatic organisms, but may build up in their body tissue and affect physiological functions when certain levels are reached. Decreased reproductive success is a possible physiological effect of increased toxin levels in body tissue. Build-up of toxins can also be harmful to human health and lead to fish consumption advisories. Certain lakes in the watershed have been found to contain high levels of mercury in benthic sediments, which also leads to fish consumption advisories.

Invasive Exotic Species

Exotic species are introduced, non-native species. They are considered invasive if able to out-compete native species for resources. Considered a form of biological pollution, exotic species have the potential to negatively impact the native flora and fauna of the French Creek watershed. When species are introduced to an ecosystem that did not evolve with them as part of the natural community, they have the tendency to aggressively out compete native species for available resources and are able to drive the native species out. With no natural predators or sufficient competitors, exotic species can quickly become invasive and reduce the community diversity becoming the overwhelmingly dominant species. In some cases, these species have the potential to drastically alter the ecosystem itself with severe consequences to native species.



Japanese knotweed grows and spreads aggressively; it is costly to control once it becomes established

Invasive Plants

Invasive plants in the French Creek watershed include common reed, purple loosestrife, and hybrid cattails. These species all invade wetlands, especially those that have recently been disturbed either by natural processes (e.g. severe flooding) or human activity. Plant species of special concern, due to their needs for specialized habitats and low-competition environments, are perhaps more susceptible to the threats posed by aggressive exotic species. Other invasive plant species prevalent in the French Creek watershed include multiflora rose (*Rosa multiflora*), Tartarian honeysuckle (*Lonicera tatarica*), Japanese knotweed (*Polygonum cuspidatum*), giant hogweed (*Heracleum mantegazzianum*), common privet (*Ligustrum vulgare*) and reed canary grass (*Phalaris arundinacea*). Experts believe these to be some of the most serious threats to our native ecosystems and many have been designated “Noxious Weeds” by the Pennsylvania Department of Agriculture and are also a major concern to our agricultural community.

[The French Creek Cooperative Weed Management Area](#) was formed as a coalition of state, federal, and private resource managers to work together in the French Creek watershed to reduce the presence of invasive plants. They developed a Cooperative Weed Management Plan for French Creek in 2019. Now, the Crawford County Invasive Species Advisory Council plays this role. They share information about the identification and management of invasive weed species, educational opportunities for landowners and land managers, develop common management objectives, set realistic management priorities, facilitate effective treatment, and coordinate efforts over geographical and municipal boundaries with similar land types, use patterns, and problem species.

Invasive Animals

The zebra mussel, a small black and white striped bivalve mollusk, was discovered in Edinboro Lake in 2000. Once established, zebra mussels quickly colonize all available hard substrate on lake bottoms, outcompeting native organisms for food and have clogged water intake pipes for drinking water and industries.

Hemlock Woolly Adelgid

This tiny, fluid-feeding insect was introduced from Japan in the early 20th century and was first discovered in Pennsylvania in 1969 and New York in 1985. The hemlock woolly adelgid most commonly affects hemlocks but can also affect spruce trees. Damage is inflicted when an immature nymph or adult sucks sap from twigs, which causes hosts to lose needles, and possibly die. Hemlock woolly adelgid eggs hatch in February or March. The species prefers mild conditions and is most active from October to June. Cold weather may contribute to high mortality and will likely limit expansion of this pest. Chemical pesticides seem to be the most effective management tool, most successfully used in late September through October.

Round goby

Another relatively new invasive species that has been documented in the French Creek watershed is the Round Goby (*Neogobius melanostomus*), a benthic species that is a small fish that feeds on mussels as well as a large variety of other species. The Round Goby heavily outcompetes a vast number of native species such as darters, sculpins, and catfish. It was first introduced into the Great Lakes around 1990 by being released through the ballast waters on large freighter ships where it was picked up most likely from its native range in Eurasia. The high adaptability to a various habitat has led to an extremely high abundance and distribution within the Great Lakes causing a has greatly changed the ecosystem. Negative economic and ecological impacts have been a constant issue since its introduction. It was first noted within the watershed in 2016 in LeBeouf Creek, a tributary to French Creek.

Prevention, Early Detection, and Rapid Response

Prevention through education is probably the best means of avoiding exotic species introductions. Once established, it is impossible to completely eradicate some invasive species. The PNHP developed [iMapInvasives](#) as an online, GIS-based data management system used to assist community scientists and natural resource professionals working to protect our natural resources from the threat of invasive species. It is driven by a partnership of dedicated conservation professionals that form a network of organizations working to ensure that the iMapInvasives partnership continues to grow and contribute to the field of conservation.

Habitat Degradation

Habitat degradation is another major threat to aquatic organisms. In stream or river systems, habitats ranging from uplands to riparian forest areas to stream bottom substrate must be considered when determining habitat quality. Aquatic organisms rely on healthy riparian buffers for many reasons and the stream health cannot be considered separately from the adjacent land areas. French Creek faces many forms of habitat degradation. These stem from human activities and various land use practices throughout the watershed.



Erosion and Sedimentation

French Creek, and all streams, have naturally occurring amounts of suspended sediments that are the result of weathering of rocks and soils in the watershed. These natural levels of suspended sediments rarely are high enough to muddy the water, impede sunlight penetration, or smother benthic aquatic organisms or fish eggs. Human activities on the landscape have a tremendous tendency to increase sediment loads of streams and lakes. Increases in erosion and sedimentation lead to higher than normal levels of suspended sediments in water and buildup of silt on stream bottoms smothering organisms. The human activities that most commonly contribute sediments to surface waters are improper agricultural practices, deforestation, construction of buildings and roadways, urbanization, and mining. Increased amounts of suspended solids and sedimentation can lead to increased turbidity, which blocks sunlight penetration and decreases dissolved oxygen levels. Increased scour and erosive forces occur when sediment levels are increased because sediment particles act like sandpaper abrading the streambed. There are several BMPs designed to decrease erosion and provide benefits to the wildlife and landowners.

Alterations of Hydrology

Hydrology is simply the study of the movement of water through various stages on the earth's surface. Water is stored (i.e. groundwater, surface water, ice caps) and transported (i.e. evaporation, transpiration, precipitation) in a continuous cycle. Aquatic habitats evolve certain characteristics based on the hydrology of water. Human impacts to the landscape have altered the hydrology of the French Creek watershed with dams and water withdrawals that have altered natural flow regimes and hydrological patterns, disrupting nutrient flows in an aquatic ecosystem. In addition to alterations in nutrient flow, dams may exacerbate erosion problems downstream by altering natural flow levels.

Channel/Streambank Modification

Modifications to natural stream channels and streambanks are frequent occurrences, often occurring without adequate planning to avoid impacts to aquatic organisms or areas downstream. It is important to note that alterations to the natural stream channel or streambank design may cause problems such as increased erosion, flooding, or lowered water levels further downstream. Many agencies and organizations are working to restore riparian habitat. It has been said that a functioning, intact riparian habitat is the most important tool in combating the effects of non-point source pollution and streambank erosion. Characterization of the riparian habitats throughout the French Creek watershed will be essential in enabling agencies and organizations to more effectively work on restoration in the most critical areas.

Recreation

The French Creek watershed has many recreational opportunities that focus on the natural resources of the watershed. The activities are often associated with the lakes and waterways or riparian corridors along the waterways. It is estimated that recreational demands in the watershed will increase as populations increase. Aquatic habitats are at risk by humans trampling and disturbing them as they seek to enjoy the natural resources found there. In addition, many forms of recreation, such as ATV riding and power boating, may be highly incompatible with some areas. This leads to natural resource degradation and loss of aquatic habitat for many species. Any future recreational developments should be very carefully planned to ensure natural

resources are protected. This will benefit all by ensuring outdoor enthusiasts will continue to be attracted to the French Creek watershed and by providing a boost to the local economy.

Climate Change

Climate change refers to long-term shifts in temperatures and weather patterns. Changes to Earth's climate driven by increased human emissions of heat-trapping greenhouse gases are already having widespread effects on the environment: glaciers and ice sheets are shrinking, river and lake ice is breaking up earlier, plant and animal geographic ranges are shifting, and plants and trees are blooming sooner. Effects that scientists had long predicted would result from global climate change are now occurring, such as sea ice loss, accelerated sea level rise, and longer, more intense heat waves. Some changes (such as droughts, wildfires, and extreme rainfall) are happening faster than scientists previously assessed (NASA 2024).

Climate Resiliency

The Nature Conservancy's Resilient and Connected Landscapes project is the first study to comprehensively map resilient lands and significant climate corridors across Eastern North America. Released in October 2016, the study took eight years to complete, involved 60 scientists, and developed innovative new techniques for mapping climate-driven movements. The tool can be found at <https://www.maps.tnc.org/resilientland/#/explore>. The tool includes three interactive maps to explain the project.

Management Options

The success of the *French Creek Watershed Conservation Plan* is dependent on support and cooperation from watershed organizations, state and federal agencies, counties, local municipalities, businesses and the public. Management goals aim to guide voluntary actions to restore, maintain, and enhance resources throughout the area and facilitate collaboration among the partners in the Directory of Watershed Resources and the residents and stakeholders of the watershed. The plan may also serve as a reference to support the need for funding for projects.

Project Area Characteristics

Goal 1-A: Proactively plan for future development.
Goal 1-B: Carefully plan development to ensure economic enhancement while preserving community character without adversely affecting quality of life.
Goal 1-C: Enhance marketability to prospective business and establish economic stability to maintain a balanced workforce.
Goal 1-D: Encourage economic growth with minimal impacts to the environment.
Goal 1-E: Increase communications and cooperation among municipalities and counties within the region to promote sharing of services and improve conditions collectively affecting the watersheds.
Goal 1-F: Identify impacts of atmospheric deposition to minimize and remediate these impacts.
Goal 1-G: Enhance transportation infrastructure.
Goal 1-H: Enhance financial support and services to prepare emergency response providers.
Goal 1-I: Educate stakeholders how land use planning can be effective.
Goal 1-J: Educate stakeholders about benefits of watershed protection and the use of best management practices.
Goal 1-K: Support community libraries and expand service opportunities.

Land Resources

Goal 2-A: Explore opportunities to generate alternative energy.
Goal 2-B: Reduce impacts caused by dirt and gravel roadways.
Goal 2-C: Establish cooperation between surface and subsurface rights landowners and develop protection rights for surface landowners in order to protect their property.
Goal 2-D: Preserve agricultural lands and culture for future generations.
Goal 2-E: Establish or enhance incentives for land protection and conservation practice implementation.
Goal 2-F: Identify, inventory, cleanup illegal dumpsites, and prosecute violators using illegal dumpsites.
Goal 2-G: Work with agriculturalist to install best management practices at their farms to reduce impacts on herds and area waterways.
Goal 2-H: Minimize impacts caused by exploration, production, retirement, and abandonment of wells.
Goal 2-I: Reclaim abandoned wells, mines, and quarries.
Goal 2-J: Protect ecologically significant lands.
Goal 2-K: Increase awareness about practices to assist agricultural and forest landowner in managing their lands effectively.
Goal 2-L: Increase awareness about the impacts from litter, illegal dumps, and abandoned vehicles.

Water Resources

Goal 3-A: Protect area waterways while increasing wildlife habitat opportunities.
Goal 3-B: Increase awareness about the benefits of riparian corridors.
Goal 3-C: Further investigate wetlands and their functions and protect their resources.
Goal 3-D: Educate stakeholders about the value and importance of wetlands.
Goal 3-E: Reduce the amount of erosion, sedimentation and other pollutants entering waterways.
Goal 3-F: Monitor water quantity to ensure demand does not exceed water supply.
Goal 3-G: Monitor the use of brine water as a treatment on dirt and gravel roads.
Goal 3-H: Minimize potential flooding damages by taking a proactive approach to managing floodplains.
Goal 3-I: Encourage non-structural approaches to floodplain management.
Goal 3-J: Minimize impacts from stormwater through planning.
Goal 3-K: Establish, maintain, or upgrade sewage treatment facilities.
Goal 3-L: Establish, maintain, or upgrade water treatment facilities.
Goal 3-M: Investigate the need and effectiveness of establishing a water quality trading program within the French Creek watershed.
Goal 3-N: Develop a monitoring plan for the watershed or completed project areas, integrating quality assurance/quality control standards into the plan.
Goal 3-O: Promote conservation practices to reduce water consumption.
Goal 3-P: Assess natural and man-made impoundments and implement ecosystem enhancement recommendations.
Goal 3-Q: Protect and evaluate waterways that are designated or eligible for classification as High Quality, Exceptional Value, or Class A.
Goal 3-R: Reduce water quality impacts by properly disposing of un-needed medication.
Goal 3-S: Provide educational programs educating residents about impacts and pollution sources.

Biological Resources

Goal 4-A: Reduce impacts caused by invasive and nuisance species.
Goal 4-B: Develop, adopt, and implement management plans to protect forest and wildlife resources.
Goal 4-C: Implement best management practices to protect forest resources.
Goal 4-D: Identify Important Bird and Mammal Areas
Goal 4-E: Identify and protect biologically diverse areas.
Goal 4-F: Enhance aquatic habitats.
Goal 4-G: Protect rare, threatened, and endangered species and their habitats.
Goal 4-H: Identify and protect important habitats for plant and animal species.
Goal 4-I: Increase the use of native plants in landscaping and remediation projects.
Goal 4-J: Implement wildlife management practices to protect biodiversity.

Cultural Resources

Goal 5-A: Increase awareness of recreational resources through marketing and outreach.
Goal 5-B: Enhance recreational opportunities for sportsmen and outdoor enthusiasts.
Goal 5-C: Increase recreational opportunities for area youth by establishing programs, encouraging outdoor recreational activities and opportunities.
Goal 5-D: Improve recreational facilities and ensure availability and access.
Goal 5-E: Establish, expand, and improve area trails.
Goal 5-F: Link recreational facilities to each other.
Goal 5-G: Encourage environmentally sound practices when operating recreational vehicles and enforce existing laws to minimize intrusion on private lands.
Goal 5-H: Expand awareness, appreciation, and support for the arts.
Goal 5-I: Highlight and preserve local history within the region.
Goal 5-J: Promote appreciation for the local history.
Goal 5-K: Promote community involvement in conservation and educational initiatives.
Goal 5-L: Establish ongoing environmental education programs and displays.
Goal 5-M: Educate recreation users about proper and safe practices.

Directory of Watershed Resources

Allegheny College

520 N. Main Street
Meadville, PA 16335
(814) 332-4351
info@allegheny.edu
www.allegheny.edu

Allegheny College-Creek Connections

(814) 332-5351
creek@allegheny.edu
www.sites.allegheny.edu/creekconnections

Allegheny College - Watershed Conservation Research Center

www.sites.allegheny.edu/wcrc

Allegheny Valley Conservancy

PO Box 96
Franklin, PA, 16323
(814) 432-4476 Ext. 121
<http://www.avc-pa.org>

Allegheny Valley Trails Association

Box 264
Franklin, PA 16323
(814) 432-5823
www.avta-trails.org

Bartramian Audubon Society

P.O. Box 315
Slippery Rock, PA 16057
bartramianaudubon@gmail.com
www.bartramianaudubonsociety.org

Chautauqua County Soil & Water Conservation District

220 Fluvanna Avenue, Suite 600
Jamestown, NY 14701
Chaut-Co@soilwater.org
www.soilwater.org

Chautauqua Watershed Conservancy

71 East Fairmount Avenue, PO Box 45
Lakewood, NY 14750
(716) 664-2166
info@chautauquawatershed.org
www.chautauquawatershed.org

City of Meadville

894 Diamond Park
Meadville, PA 16335
Ph. 814-724-6000
<https://www.cityofmeadville.org>

Conneaut Lake Aquatic Management Association

P.O. Box 49
Conneaut Lake, PA 16316
www.facebook.com/people/Conneaut-Lake-Aquatic-Management-Association

Council on Greenways & Trails

P.O. Box 32
Oil City, PA 16301
<http://www.nwpagreenways.org>

Crawford County Conservation District

Woodcock Creek Nature Center
21742 German Road
Meadville, PA 16335
(814) 763-5269
www.crawfordconservation.com

Crawford County Planning Commission

903 Diamond Park
Courthouse, 3rd Floor
Meadville, PA 16335
(814) 333-7341
Planning@co.crawford.pa.us
www.crawfordcountypa.net/Planning/Pages/Planning-Commission.aspx

Ducks Unlimited

One Waterfowl Way
Memphis, TN 38120
(901) 758-3825
www.ducks.org

Edinboro Lake Association

(814)460-7976
www.edinborolakeside.com

Erie Bird Observatory

301 Peninsula Drive, Suite 12
Erie, PA 16505
(814) 580-8311
info@eriebirds.org
www.eriebirdobservatory.org

Erie County Conservation District

1927 Wager Road
Erie, PA 16509
(814) 825-6403
eriecons@erieconservation.com
www.erieconservation.com

Erie County Department of Health

606 West 2nd Street
Erie, PA 16507
(814) 451-6700
ecdinfo@eriecountypa.gov
www.eriecountypa.gov/departments/health/

**Erie County Department of
Planning & Community
Development**

150 East Front Street, Suite 300
Erie, PA 16507
(814) 451-6336
www.eriecountypa.gov/departments/planning-and-community-development/

**Erie National Wildlife Refuge
(USFWS)**

11296 Wood Duck Lane
Guy Mills, PA 16327
(814) 580-9983
<http://www.erie.fws.gov>

Ernst Conservation Seeds

8884 Mercer Pike
Meadville, PA 16335
(800) 873-3321
<http://www.ernstseed.com>

Findley Lake Nature Center

www.facebook.com/FindleyLakeNatureCenter

**Findley Lake Nature Trails
Network**

<https://www.facebook.com/FindleyLakeNatureCenter/about>

**Findley Lake Watershed
Foundation**

P.O. Box 125
Findley Lake, NY 14736
www.findleylakewf.org

**Foundation for Sustainable
Forests**

P.O. Box 146
Spartansburg, PA 16434
(814) 694-5830
<http://www.foundationforsustainableforests.org>

**French Creek Cooperative Weed
Management Area**

<https://www.facebook.com/FCCWMA>

French Creek Valley Conservancy

411 Chestnut Street, P.O. BOX 434
Meadville, PA 16335
(814) 337-4321
www.frenchcreekconservancy.org/

Mercer Co. Conservation District

24 Avalon Court, Suite 300
Mercer, PA 16137
(724) 662-2242
<http://www.mercercountycd.com>

**Mercer Co. Regional Planning
Commission**

2491 Highland Road
Hermitage, PA 16148
(724) 981-2412
mail@mcrpc.com

Mercyhurst University

501 East 38th Street
Erie, Pennsylvania 16546
(814) 824-2000
<http://www.mercyhurst.edu>

**Natural Resources Conservation
Service (USDA)**

14699 N. Main Street Extension
Meadville, PA 16335
(814) 547-5962
<http://www.nrcs.usda.gov>

Northwest PA Duck Hunters Association

P.O. Box 8073
Erie, PA 16505
(814) 882-3473
<http://www.paduck.com>

Northwest Pennsylvania Woodland Association

NWPAwoods@gmail.com

Oil Heritage Region, Inc.

217 Elm Street
Oil City, PA 16301
(800) 483-6264
info@oilregion.org
<http://www.oilregion.org>

PA DCNR Bureau of Forestry – Cornplanter Region

323 North State Street
North Warren, PA 16365
(814) 723-0262
www.dcnr.pa.gov/about/Pages/Forestry.aspx

PA CleanWays of Venango County

1168 Liberty Street
PO Box 831
Franklin, PA 16323
(814) 432-9684

PA Department of Agriculture

Region 1
13410 Dunham Road
Meadville, PA 16335
(814) 332-6890
<http://www.agriculture.pa.gov>

PA Department of Conservation and Natural Resources

Bureau of Rec & Conservation
<http://www.dcnr.pa.gov>

PA Department of Environmental Protection

Northwest Region
230 Chestnut Street
Meadville, PA 16335
(814) 332-6945
<http://www.dep.pa.gov>

PA Department of Transportation

Engineering District 1-0
P.O. Box 398
255 Elm Street
Oil City, PA 16301
(814) 678-7085
<http://www.penndot.pa.gov>

Pennsylvania Environmental Council – West Region

810 River Avenue, Suite 201
Pittsburgh, PA 15212
(412) 481-9400
<http://www.pecpa.org>

PA Fish & Boat Commission

11528 State Highway 98
Meadville, PA 16335
(814) 336-2426
<http://www.fishandboat.com>

PA Game Commission

Northwest Region
1509 Pittsburgh Road
Franklin, PA 16323
(833) 742-4868
<http://www.pgc.pa.gov>

Penn State Crawford Co. Cooperative Extension

1099 Morgan Village Road, Suite A
Meadville, PA 16335
(814) 333-7460
CrawfordExt@psu.edu
www.extension.psu.edu/crawford-county

Penn State Extension

The Pennsylvania State University
323 Agricultural Admin. Building
University Park, PA 16802
<http://www.extension.psu.edu>

Penn State Erie Co. Cooperative Extension

Summit Township Building, Suite 400
1230 Townhall Road West
Erie, Pennsylvania 16509
(814) 825-0900
ErieExt@psu.edu
www.extension.psu.edu/erie-county

Penn State Master Watershed Stewards

(814) 898-7086

www.extension.psu.edu/programs/watershed-stewards

Penn State Mercer Co. Cooperative Extension

463 North Perry Highway

Mercer, PA 16137

(724) 662-3141

MercerExt@psu.edu

www.extension.psu.edu/mercer-county

Penn State Venango Co. Cooperative Extension

867 Mercer Road

Franklin, PA 16323

(814) 437-7607

VenangoExt@psu.edu

www.extension.psu.edu/venango-county

Pennsylvania Landowners' Association

palandowners@outlook.com

<http://www.palandowners.com>

Pennsylvania Organization for Watersheds and Rivers (POWR)

105 Lt Michael Cleary Drive

Dallas, PA 18612

(570) 718-6507

<http://www.pawatersheds.org>

Pennsylvania Sea Grant (PSU)

Tom Ridge Environmental Center

301 Peninsula Drive

Erie, PA 16505

<http://www.seagrant.psu.edu>

PennWest Edinboro University

219 Meadville Street

Edinboro, Pennsylvania 16444

(814) 732-2000

<http://www.edinboro.edu>

Presque Isle Audubon Society

Tom Ridge Environmental Center

301 Peninsula Drive, Suite 8

Erie, PA 16505

<http://www.presqueisleaudubon.org>

Purple Martin Conservation Association

Tom Ridge Environmental Center

301 Peninsula Drive, Suite 8

Erie, PA 16505

<http://www.purplemartin.org>

Richard King Mellon Foundation

500 Grant Street, Suite 4106

Pittsburgh, PA 15219

(412) 392-2800

<http://www.rkmf.org>

Seneca Nation of Indians

90 Ohi:yo' Way

Salamanca, NY 14779

(716) 945-1790

<http://www.sni.org>

Sherman Chamber of Commerce

111 Mill Street, P O Box 629

Sherman, NY 14781

(716) 761-6781

<http://www.shermanny.org>

The Nature Conservancy - PA

2101 North Front Street

Building #1, Suite 200

Harrisburg, PA 17110

(866) 298-1267

pa_chapter@tnc.org

<http://www.nature.org>

Tom Ridge Environmental Center

301 Peninsula Drive Suite 1

Erie, PA 16505

(814) 835-1384

info@treecf.org

<http://www.treecf.org>

Trout Unlimited

Northwest PA Chapter #41

Erie, PA 16501

<http://www.nwpatrout.org>

Union City Borough

13 South Main Street

Union City, PA 16438

(814) 438-2331

<http://www.unioncitypa.us>

U. S. Army Corps of Engineers
Pittsburgh District (Woodcock Lake)
2200 William S. Moorhead Federal
Building
1000 Liberty Avenue
Pittsburgh, PA 15222
(412) 395-7103
<http://www.lrd.usace.army.mil>

**Western Pennsylvania
Conservancy - Watershed
Conservation Office**
1067 Philadelphia Street
Suite 101
Indiana, PA 15701
724-471-7202
water@paconserve.org

Venango Co. Conservation District
4871 US 322
Franklin, PA 16323
(814) 676-2832
<http://www.venangocd.org>

Venango Co. Planning Commission
1168 Liberty Street
Courthouse, 1st Floor
Franklin, PA 16323
(814) 432-9689
<http://www.venangocountypa.gov/452/Planning-Commission>

**Venango Museum/Allegheny River
Support Groups**
270 Seneca Street
Oil City, PA 16323
(814) 676-2007
venangomuseum@gmail.com
<http://www.venangomuseum.org>

**Western Pennsylvania
Conservancy**
800 Waterfront Drive
Pittsburgh, PA 15222
(412) 288-2777
<http://www.waterlandlife.org>

**Western Pennsylvania
Conservancy - Northwest Regional
Office**
Galena Building, Suite 100
1140 Liberty Street
Franklin, PA 16323
814-346-0377
northwest@paconserve.org