

Northville Public Schools
Stormwater Management Website

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Why worry about stormwater?

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- Total Maximum Daily Loads (TMDLs)
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- Native, Non-Native, & Invasive Species
- Why use Native Plants?
- Household Hazardous Waste
- Good Housekeeping
- SEMCOG "Seven Simple Steps"

What is the problem with stormwater?

Many people may not realize that stormwater collected in drains located on the street curbs does not flow to their local water treatment plant. Rather, this water remains untreated and is discharged directly into the waterways. During this journey to the waterways, stormwater collects and carries a broad range of pollutants. Stormwater is a nonpoint source of pollution thus making it extremely difficult to address and the single greatest threat to our water quality and watershed health. Non-point source pollution comes from many diffuse runoff sources such as rainfall or snowmelt, flowing over and through the ground, picking up pollutants as it goes.

Why worry about stormwater?

When we think of water pollution, many of us may imagine chemicals being dumped or discharged directly into our waters. As a result of the Clean Water Act and other environmental legislation, such acts of pollution-considered "point source" pollution has been eradicated and/or stringently regulated. Even with the unquestioned success in addressing point source pollution, more than 40 percent of our nation's waters fail to meet designated quality standards for recreation and drinking. Surprisingly, the single greatest threat to our water quality and watershed health nationwide is stormwater and "nonpoint source" pollution. Nonpoint source pollution comes from runoff, such as rainfall and snowmelt, flowing over and through the ground, picking up pollutants as it goes. Some of these pollutants occur naturally, such as nutrients from sediments, manure, or pet wastes. Other polluntants, such as fertilizers, automotive grease, and oil, occur from our interaction with the environment. Stormwater acts as a carrier of nonpoint source pollution and therefore is considered a major cause of water quality problems both in Michigan and nationwide.

What impact can one individual have?

Since there is a widespread and diverse nature of the sources of stormwater pollutants, the only way it will be successfully addressed is through the collective efforts of each and every individual. Additionally, Michigan's regulatory and enforcement arrangement is dependent upon the effort of individuals, in both pollution prevention and reporting of violations. Individual effort is critical.One way you can contribute to the solution is by educating yourself about the problem. Exploring the District's Stormwater Management Website is a good start.

What role does The District play in stormwater management?

The District implemented a Stormwater Pollution Prevention Iniative to reduce the discharge of pollutants from their Municipal Separate Storm Sewer System (MS4) to the Maximum Extent Practicable and protect water quality in accordance with the appropriate water quality requirements of Michigan Act 451, Public Acts of 1994, Part 31, and the Federal Water Pollution Control Act and the district National Pollutant Discharge Elimination Permit (NPDES).

Comment on our SWMP:

By Contact Form:
Click Here

By Mail:
405 W. Main Street
Northville, MI
48167-1576

By Phone:
(248) 344-3500

NORTHVILLE
PUBLIC SCHOOLS

Stormwater Program Websites

Michigan Department of Environment, Great Lakes & Energy- Stormwater Program

Be a Responsible Waterfront Owner

Environmental Protection Agency Storm Water Program

Watch our Stormwater Management video
Click Here!

SURVEY

Please take our Watershed Survey
Click Here

Environmental News & Information @ Clean Water Chronicles
Click Here!

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What are we doing about the problem?

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A Brief History

Historical industrialization and urbanization during the 20th century resulted in unanticipated problems related to water quality in the nation's watersheds. In response to increased water quality issues, the first federal legislation was passed in 1948 as the Federal Water Pollution Control Act . This was updated and expanded in 1972 as the Clean Water Act. Later amendments led to the implementation of pollution controls for waste water plants and industry as well as water quality standards for all surface waters.

The NPDES under the Clean Water Act essentially made it illegal to discharge pollutants directly into waterways without obtaining a permit. This program was an overwhelming success in addressing point source pollution in our watersheds. However, it did not address the much larger and difficult problem of nonpoint source pollution. One of the first nationwide efforts to clean up and restore a river or watershed was locally focused on the Rouge River in Michigan.

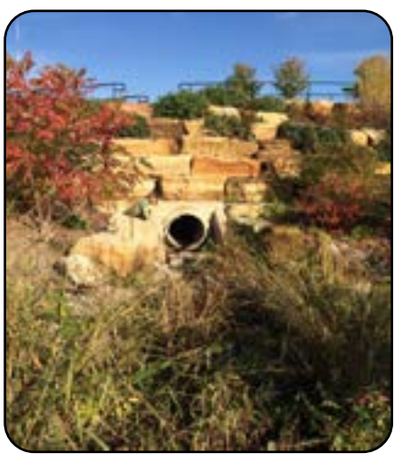
The Rouge River and Stormwater Permitting

The Rouge River has a historic place in our understanding of both point source pollution and stormwater pollution nationwide. As a result, it has been at the forefront of efforts to manage water pollution in general.

By the early 1960s, the Rouge River Watershed was in a severely degraded condition. The result of the same expansion of industry and urban areas has created similiar water quality issues across the nation. Both point source pollution and stormwater discharges contributed to a seriously polluted watershed. Following the success of the NPDES, plans were implemented to address the watershed wide water quality issues associated with the Rouge River. Among these was the first voluntary watershed based stormwater permit, under which fifty communities participated in watershed planning efforts. This permitting process was adopted for use statewide, and became the model for the national stormwater permitting program.

Education

A major component of the stormwater permit is watershed based outreach and education because stormwater pollution is the direct result of our daily activities. Since each of us contributes to the problem, the more we learn about it, understand how we contribute to it, and what we can do about it as a community, the more successful we will be in solving it. The only way this problem will be solved is through the collective efforts of each one of us.





Stormwater Program Websites

Michigan Department of Environment, Great Lakes, & Energy- Stormwater Program

Be a Responsible Waterfront Owner

Environmental Protection Agency Storm Water Program

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What is a Watershed?

We all live in a watershed. All of the ground upon which we stand is in a watershed. Since water flows downhill, every place on land ultimately drains to another. It is possible to determine a boundary around a given area within which all rainfall, surface water and underlying ground water drains to a common outflow. This boundary defines the watershed of that outflow location. Watersheds are defined by natural geographic and geologic boundaries, and may be large or small. Larger watersheds may contain one or more smaller sub-watersheds. The two largest watersheds in the United States are separated at the Continental Divide, along which either side drains entirely to the Atlantic or the Pacific Oceans. All watersheds in the U.S. are sub-watersheds of one of these two.

Stormwater Pollution and Watersheds

The water quality of a watershed is affected by everything that happens anywhere above the outflow point. Detrimental inputs such as those introduced by stormwater, occurring anywhere within the watershed, affect the entire area downstream because the water flows downstream. In addition to the pollutants it carries, the increased flow rates associated with stormwater introduce other problems, such as channel erosion and flooding.

Ours to protect

We in Michigan are fortunate that we live in an area where there is such a vast resource of water that adds to our enjoyment and quality of life. Each and every one of us has a responsibility to help keep this water clean, so that it remains safe for us to drink and to play in. To do this, we need to understand the things we do that make a difference for better or worse. The District is dedicated to teaching the community what choices can make a difference.

What can I do?

Recognizing the different watersheds in the area increases opportunities for participation in multiple watershed groups and related activities. Stewardship can be fun, even when we join with groups outside of our community. Learn how different communities protect their watersheds while enjoying kayaking, fishing, or other outings. There are numerous educational opportunities for individuals or groups. It is a great way for children and families to become involved in their community, develop leadership skills, and have fun while helping protect our watersheds.



Stormwater Program Websites

Environmental Protection Agency - "A Watershed Approach"

Environmental Protection Agency - "How's My Waterway"

Water Cycle

Surface Water

Ground Water

Water Quality

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The Rouge River Watershed

The Rouge River is 127 miles long and drains 467 square miles before emptying into the Detroit River. This complex system has four main branches, and many small tributaries that run through three counties and 48 municipalities. The Rouge River serves 1.5 million people. The highly stressed river system is in the midst of the most densely populated and heavily urbanized area of the state. In fact, recent history has shown Southeast Michigan is the fastest urbanizing area of the state, and continues to experience population growth.

Despite this fact, much of the river is highly accessible to the public through adjacent park lands. Although its state designated uses include water contact recreation and warm water fisheries, it is also designated for industrial and agricultural water supplies and commercial/recreational navigation. Unfortunately because the Rouge is not meeting the water quality requirements for many of these designated uses, in various locations, and has been identified as an Area of Concern by the Environmental Protection Agency.

As noted on our "What are we doing about the problem" page, the Rouge holds an important place in the history of the management of water pollution. It is at the forefront of the development of new solutions to the problem of stormwater pollution. As part of a Remedial Action Plan (RAP) designed to restore the water quality in watershed to meet all of the designated uses, these efforts involve numerous projects and billions of dollars.

Proper pollution and watershed management is expensive. In the end, prevention is significantly less expensive than the cost of remediation. This is why stormwater management and permitting is so important. The most critical part of this is the collective efforts of each individually to be good stewards, minimize their impact on their watershed, and report violators.

Opportunties to Get Involved

There are numerous opportunities for the public to become involved and learn more about the health and care of the watershed all while having fun. The Friends of the Rouge offers educational activities as well as volunteer opportunities. While stormwater management plans define ways to address stormwater pollution, this public awareness is critical. It is only through the individual effort of each of us that the problem can be solved.





Stormwater Program Websites

Want to see events, stories and news that impact our watershed?
Click Here

Friends of the Rouge River (FOTR)

Friends of the Rouge River on Facebook!

Alliance of Rouge Communities (ARC)

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The Huron River Watershed

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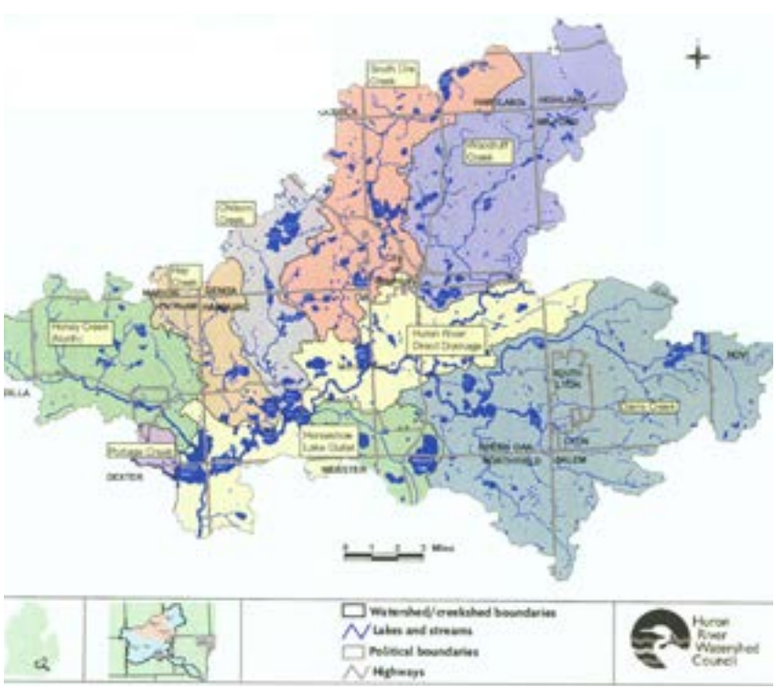
The Huron River is located in Southeastern Michigan, the headwaters of the Huron River originates at Big Lake in Springfield Township and works its way through the Huron-Andersonville swamp, a complex series of wetlands and lakes. The river basin drains 900 square miles, includes 24 tributaries, and meanders for 126 miles before discharging directly into Lake Erie. Ten metroparks and two thirds of Southeastern Michigan's recreational lands are contained within its drainage boundary. The Huron River serves as water supply to over 150,000 residents. Known for its high water quality, twenty seven miles have also been designated as a scenic river by the State of Michigan. The river is not free flowing along the course, as there are at least 98 dam segments, seventeen of which are along the main course.

Public Outreach

There are numerous opportunities for the public to become involved and learn more about the health and care of the watershed all while having fun. The Huron River Watershed Council offers educational activities as well as volunteer opportunities. Recreational events such as the "River Round-Up" increases awareness of the watershed. While stormwater management plans define ways to address stormwater pollution, this public awareness is critical. It is only through the effort of each individual that the problem can be solved.





Stormwater Program Websites

Huron River Watershed Council (HRWC) Website

Huron River Watershed Council on Facebook

Huron River Watershed Council on Twitter

Huron River Watershed Council on YouTube



Northville Public Schools Watershed Map

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Pollutants & Illicit Discharges

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Types of Pollutants

Typically, pollutants are synthetic, man-made substances that are used as part of our daily lives. Lawn fertilizers, car wash soaps, pesticides, motor oil, household cleansers, paint, salt, and numerous other sources contribute to polluting our watersheds. However, some pollutants are natural substances that become problematic due to the actions of humans. Sediment, which is essentially dirt carried in stormwater, is one of our most prominent and problematic pollutants.

Sources of Stormwater Pollution

Unlike the point source pollutants generated by industry, the sources of stormwater pollutants are widespread and diverse. Thus, stormwater is considered nonpoint source pollution. Stormwater runoff, combined sewer overflows, illicit discharges, flooding, and failing septic systems are all potential sources of stormwater pollution.

How do Pollutants cause damage?

It is relatively easy to understand how some stormwater pollutants might be a problem. Combined sewer overflows, storm sewer overflows and leaking septic systems can introduce bacteria such as *E. coli* and biota into our lakes and rivers. Other sources may be less straightforward. Lawn fertilizers and pesticides are washed off of walks and even lawn areas and into our storm sewers, eventually settling into our waters. Once there, these pollutants create algae blooms that affect water temperature and kill fish.

What are we doing about Stormwater Pollutants?

Every body of water is required to meet certain quality standards based on its designated use(s). A body might be designated for use as a public water supply (high water quality) or for industrial purposes (lower water quality), swimming, or agriculture. Once a use is determined, the water quality must continue to meet the level required for that use. Levels of pollutants are restricted and all parties that are potential contributors of pollutants are limited to a fixed quantity of each. We are all potential polluters, therefore each of us is responsible for policing our watershed by minimizing our own contributions and reporting violators.

Illicit Discharges

Illicit discharges are generally any discharge into a storm drain system that is not composed entirely of stormwater. The exceptions include water from fire fighting activities and discharges from facilities already under an NPDES permit. Illicit discharges are a problem because, unlike wastewater which flows to a wastewater treatment plant, stormwater generally flows to waterways without any additional treatment. Illicit discharges often include pathogens, nutrients, surfactants, and various toxic pollutants.

Phase II MS4s are required to develop a program to detect and eliminate these illicit discharges. This primarily includes developing:

- A storm sewer system map,
- An ordinance prohibiting illicit discharges,
- A plan to detect and address these illicit discharges, and
- An education program on the hazards associated with illicit discharges.

Illicit Discharge Reporting

If you see an illicit discharge occurring outside of district property, please call the Pollution Emergency Alert System number listed on the right column of this page.



Stormwater Program Websites

Environmental Protection Agency - "After the Storm"

Environmental Protection Agency - Total Maximum Daily Loads (TMDLs)

Environmental Protection Agency - Pollution Control

Northville Public Schools District Spill & Illicit Discharge Reporting Number

(248) 344-3259

Call this number to report concerns, spills or illicit discharges to the Northville Public Schools Facilities & Operations

Oakland County Environmental HotLine

(248) 858-0958

Call this number to report concerns regarding storm drain related pollution in Oakland County

Wayne County Environmental Hotline

1-888-223-2363

Call this number to report concerns regarding storm drain related pollution in Wayne County.

Pollution Emergency Alert System (PEAS) Hot line

1-800-292-4706

For Non-emergency calls or Inquiries call the Environmental Assistance Center:

1-800-662-9278

Oakland County Drain Commissioner Website

Wayne County Drain Commissioner Website

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Total Maximum Daily Loads (TMDLs)

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What are TMDLs?

The Environmental Protection Agency has published a series of Total Maximum Daily Loads (TMDLs) for a variety of known water body pollutants such as *E.coli*, phosphorus, sediment, dissolved oxygen, and total dissolved solids. A TMDL represents the maximum amount of a pollutant that can enter a water body so the water body will continue to meet the State of Michigan water quality standards. Studies are conducted on local water bodies to assess their relative quality and if there are any known impairments. If there are impairments and they meet specific criteria, a TMDL is issued for the water body.

What you can do to help!

Here are some simple steps developed by Southeast Michigan Council of Governments (SEMCOG) that can help you reduce your impact.

Fertilization -A significant contributor to depleted dissolved oxygen in our waterways

Proper fertilization is important for a healthy lawn.

- When fertilizer is put down at the right time and in the right way it strengthens lawns. A healthy lawn protects water by holding soil and pollutants and minimizing the need for pesticides.

Improper fertilization harms our water.

- Improper fertilization causes discharge into storm drains in streets, which empty into lakes and rivers. Fertilizers in lakes and rivers cause algae to grow, which uses oxygen that fish need creating a TMDL for dissolved oxygen.

Fertilize in the fall.

- Fall is the best time for plants to absorb nutrients and develop a strong root system.

If you would like more information,
click here
for more SEMCOG fertilizing tips!

Pet Waste - A significant contributor to *E. coli* levels in our waterways

Dispose of it promptly and properly.

- Whether in your yard or on a walk, promptly dispose of your pet's waste in the trash or down the toilet where it will be properly treated. When pet waste is left behind, it washes into storm drains and ditches. From there it heads straight to your local lakes and streams carrying harmful bacteria with it.

Watch instead of feeding.

- Feeding ducks and geese may seem harmless but, in fact, can be a nuisance to people and harmful to our water. Feeding waterfowl causes them to become dependent on humans. This creates unnaturally high populations and problems in our parks and lakes. Waterfowl waste can pollute our water with harmful bacteria.

Spread the word.

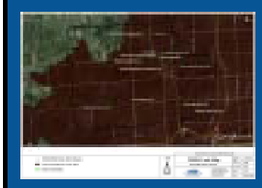
- Tell others how they can help protect our lakes and streams. Also, work cooperatively with your local government to install signs, bag dispensers, and trash cans in convenient public places to remind visitors to clean up after their pets.



Stormwater Program Websites

Environmental Protection Agency - Total Maximum Daily Loads (TMDLs)

Northville Public Schools TMDL E. *coli* Map



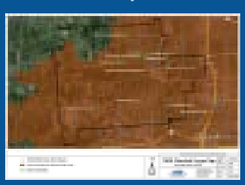
(Click Map to Enlarge)

Northville Public Schools TMDL Phosphorus Map



(Click Map to Enlarge)

Northville Public Schools TMDL Dissolved Oxygen Map



(Click Map to Enlarge)

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Johnson Creek and the Issue of Low Dissolved Oxygen Levels

One such TMDL, for dissolved oxygen (DO), exists right around the corner in the local Johnson Creek. Dissolved oxygen is a major water quality indicator. Like the air we breathe, survival of aquatic life depends on a sufficient level of dissolved oxygen in water. Having a TMDL highlights that studies have confirmed that Johnson Creek has a low level of DO and which is a concern for all the aquatic life that lives within. Low DO results primarily from excessive algae growth from Phosphorus or Nitrogen. Major sources of phosphorus and nitrogen include fertilizers, organic wastes, soil erosion, and herbicides all of which are carried by storm water flush to our very own Johnson Creek.

Johnson Creek is the only designated trout stream in the Rouge River watershed and in Wayne County. The watershed is a mix of agricultural, low and medium density residential, industrial, and commercial land use. The channel has historically been modified through past drainage projects. Dredged spoils can be seen along the banks at numerous locations along the watercourse. For more information about Johnson Creek click the link along the right column.





Stormwater Program Websites

Johnson Creek EGLE Water Bureau Report

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Sewer Overflows and Septic Systems

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Sewer Overflows and Septic Systems

In Southeast Michigan, one of the most complex and persistent pollution issues being addressed is the introduction of sewage to our waters through Combined Sewer Overflows (CSOs), Sanitary Sewer Overflows (SSOs), malfunctioning septic systems, and illicit or illegal/inappropriate connections to the storm system.

Combined Sewer Overflows

A Combined Sewer System is one in which sanitary waste water and stormwater are carried through the same pipes to a wastewater treatment plant. When functioning within their designed capacity, these systems provide a mechanism for stormwater to be treated, along with the waste water, prior to being discharged into the waterways. These types of systems were typically installed prior to the rapid expansion of our built environment. The added loads and associated increased stormwater runoff generated by massive urbanization has resulted in an overloaded system. These stresses result in the regular occurrence of what are known as CSOs When precipitation is great enough, the combined sewer flows exceed the pipe capacity, and the overflow exits the main pipe at interceptors, which discharge the mixed storm/sanitary flows directly into waterways without treatment.

Combined Sewer Systems are no longer allowed in new construction. However, identifying and eliminating all such existing systems and connections is complex and expensive to accomplish.

Sanitary Sewer Overflows

Even areas serviced by separate sanitary and stormwater sewer systems have overflows, which affect water quality similar to CSOs. SOSs typically result from aging infrastructure or electrical/mechanical failures. Stormwater flows find their way into sanitary sewer lines via broken lines from any number of causes, or lift station failures. This causes back flows and basement flooding as well as discharge to local waterways. This problem is equally difficult to both diagnose and treat.

Addressing the Problem of CSOs and SSOs

Solving the problem of CSOs and SSOs is complex and expensive. Being the focus of pioneering efforts in managing point source pollution stormwater runoff and a national model for stormwater permitting, it is no surprise that the Rouge River is also taking the lead as a test bed for new methods of solving the problem. The Rouge River Wet Weather Demonstration has already utilized $1 billion of a projected $2.4 billion, with the remaining projects in various stages of development and completion. When the project is complete, it is anticipated that there will be a total reduction of 85% in combined sewer overflows.

Septic Systems

Did you know that as a homeowner you are responsible for maintaining your septic system? Did you know that you should periodically inspect your system and pump out your septic tank?

Your septic system if properly designed, constructed and maintained can provide long term effective treatment of household waste water. If your septic system is not maintained you may need to replace it. This could end up costing you thousands of dollars. A malfunctioning system can contaminate groundwater that might be a source of drinking water. For more information on septic systems click the link to the Environmental Protection Agency document on Septic System Maintenance in the right hand column!

Stormwater Program Websites

Environmental Protection Agency - Combined Sewer Overflows

Environmental Protection Agency - Sanitary Overflows

Environmental Protection Agency - Septic System Maintenance

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What is Impervious Cover?

Impervious cover is any surface that cannot effectively absorb water. Such surfaces are typically man-made or the result of human input. Concrete or asphalt roads, parking lots and walks, rooftops of all types, and compacted soil are all examples of impervious cover.

What is the problem with Impervious Cover?

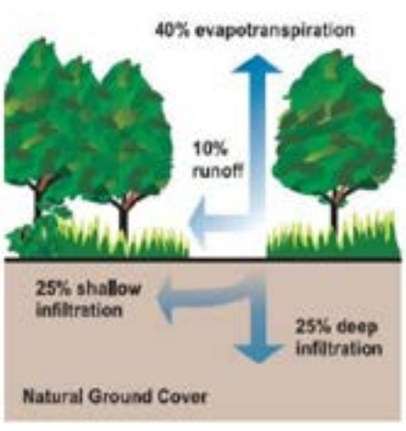
Stormwater runoff is the greatest threat to our water quality and impervious cover is the single greatest contributor to stormwater runoff. In a natural landscape, rainfall and any runoff are absorbed by the soil and vegetation. In this process, the flow of water is slowed as it percolates into the soil. This replenishes the water table and ultimately restores our streams, rivers and lakes. This slow absorption has the added benefit of naturally filtering the runoff of any impurities.

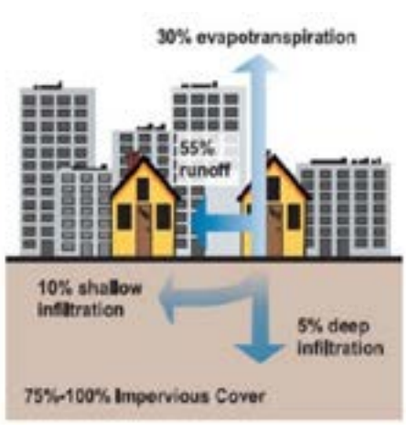
Increased development brings with it increased areas of impervious cover and thus increased runoff. This also results in a reduced area of natural landscape to intercept and filter runoff. As the area of impervious surfaces increases, the quantity of pollutants carried by the runoff increases. This results in an increase in the distributed polluted runoff over a small natural area. The smaller natural area cannot properly absorb or filter the water and runoff, and the polluted runoff ends up in our waters.

In addition to affecting water quality by allowing more pollutants to enter our waters, impervious cover directly affects the quantity of water in our watersheds. Stormwater runoff flows more quickly over impervious surfaces. The increased volume of runoff and increased speed of flow does several things. First, it makes that flow more erosive, resulting in channelizing and scouring of riverbeds/banks, and depositing of sludge as the flow reaches water bodies. Second, the increased flow combined with reduced natural area capable of absorbing the water results in increased and more intense flooding. In fact, studies show that the size of one hundred year floods can double in areas with as little as 20-30 percent impervious cover. Third, because less water is able to be absorbed, water tables and wetlands are not replenished, resulting in streams and wells going dry.

What can be done about the problem?

With such a direct relationship between the amount of impervious cover as a result of development and the degree of damage caused to a watershed, any efforts to address watershed health must focus on reducing impervious cover. Accomplishing this is a difficult task because it encompasses a range of economic, political, social, and legislative issues. However, there are other steps that we as individuals can take to help alleviate the problem. Minimizing our use of polluting substances and keeping them away from impervious surfaces, practicing good housekeeping by properly storing and disposing of household materials, and saving water are all efforts that are easily accomplished. Incorporating elements of green infrastructure into our land is something else we can do at the community level as well as in our own homes. Green infrastructure involves the use of native plants and earth friendly landscaping in ways that enhance the natural absorption filtration processes and help mitigate the impact of stormwater runoff. Such elements might include rain gardens, no-mow zones, buffer strips, green roofs, and grassy swales. All are designed to increase the infiltration rate of the soil. Again it is significantly more cost effective to prevent pollution than to remediate the water.





Stormwater Program Websites

Environmental Protection Agency - Urban Non point Source Fact Sheet

United States Geological Survey- Stormwater, Impervious Surface, and Stream Health

Northville Public Schools
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Why is Riparian Zone Management Important?

Riparian zones have the capacity to buffer rivers and other waters from nonpoint source runoff from agricultural, urban and/or other land uses. Healthy riparian zones can absorb sediments, chemical nutrients, and other substances contained in nonpoint source runoff. They also provide for aquifer recharge, diverse habitats, and water storage/release. A healthy, functioning riparian zone and associated uplands dramatically increase benefits including fish and wildlife habitat, erosion control, forage, late season stream flow and most important of all water quality.

What is Riparian Zone Management?

Riparian Zone Management, also known as "Riparian Corridor Management" is a system that allows for the protection of water resources while still allowing sustainable mixed use of surrounding riparian area. It is a combination of techniques that protect and in some cases improves water quality and biodiversity. These techniques include, but are not limited to:

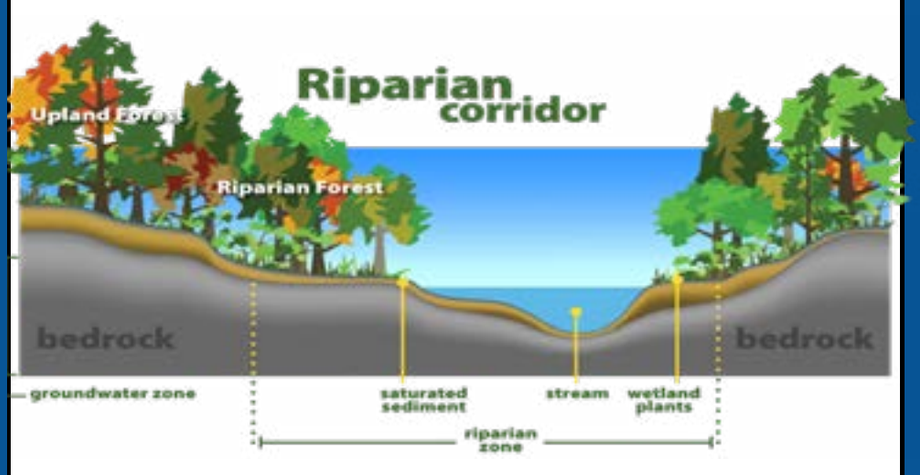
1. **River Friendly Lawn Care** - Practices from both private and public landowners can impact the health of the riparian corridor as well as water quality. There are several techniques that can be implemented at low or no cost to protect and improve water quality, including the use of low phosphorus fertilizers, use of native plants, and environmentally friendly weed management.

2. **Riparian Buffer Zones** - Buffer zones are areas of vegetation between the river and the surrounding land use. These areas are critically important because they absorb sediment, chemical nutrients, and other substances, provide for aquifer recharge and dramatically increase benefits such as fish and wildlife habitat, erosion control, and water quality. These areas can be created and maintained at low or no cost. There are several types of buffers including Grow Zones (often called no-mow zones), Native Plant Buffers and Forested Buffers.

3. **Stream Bank Stabilization** - With increased upstream development comes an increase in impervious surfaces. This increases the flow, and therefore causes accelerated stream bank erosion in our streams and rivers. Past practices to stabilize eroding stream banks may have done more harm than good by shifting and concentrating problems further downstream. New techniques have been developed that are low cost, environmentally beneficial, and can even be implemented by private citizens without heavy equipment. There are several types of methods which include live fascines, live stakes, and brush mattresses .

4. **Woody Debris Management** - In the recent past, logjams were thought to be a significant problem and were completely removed from stream channels. New studies have shown that logjams help reduce erosion, provide habitat for wildlife, and are an important part of the natural processes of a river system. Now it is recommended to leave most logjams in place. Woody debris management is the process of determining what to do about wood in the river; move, remove or add, and how best to do that work. Methods have been specifically developed to give guidance on how to manage a logjam, while preserving the benefits they provide and minimizing the problems they can create. Two methods that can be useful are the Clean and Open Method and Habitat and Structure Method.

5. **River Maintenance** - River improvement in the past included the removal of everything in the river; logs, garbage, basketballs and shopping carts. Now we know that pulling those out of the river may have done more harm than good. New ways of maintaining the river as a natural amenity have been developed. These methods, in conjunction with the aforementioned techniques, can reduce maintenance time and costs while improving water quality and the overall health of the riparian corridor.



Stormwater Program Websites

Huron River Watershed Council - Riparian Corridor Protection

Riparian Management Zones

Riparian Zone Management and Trout Streams

Riparian Zone and Stream Restoration

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What is a Native Plant?

Native plants (also called indigenous plants) are plants that have evolved over thousands of years in a particular region. They have adapted to the geography, hydrology, and climate of that region. Native plants occur in communities, that is, they have evolved with other plants in association with animals, parasites, and disease causing organisms. As a result, a community of native plants provides habitat for a variety of native wildlife species such as birds and butterflies.

What is a non-native species?

While native species occur in their natural regions without the direct or indirect activities of humans, "non-native" species occur outside that natural range. In North America, many non-native plants were brought over for agricultural, medicinal, and ornamental purposes. Many plants were introduced accidently as well. The introduction of the non-native organisms continues to be a problem today due to our increased travel and international trade. Not all non-native plants or animals become a problem. Many non-native plants represent significant human food sources. However, some of these plants have certain aggressive traits that make them an invasive species.

What is an invasive species?

Invasive species are those non-native species that can significantly disrupt natural communities causing environmental or economic harm. In a new environment, invasive plants are released from the natural constraints of their native ranges. They lack the control of herbivores, parasites, diseases, and competition that was present in their native habitats. Invasive plants exhibit both rapid growth and reproduction rates because of abundant seed production, reproduction through vegetative clones, and/or extended growing seasons.

Why are invasive, non-native plants a concern?

Invasive, non-native plants displace native plants and animals, and so disrupt ecological processes and degrade biological resources. Invasive plants often lack the natural population controls that keep them in check in their native ecosystems. Controls existing in the new ecosystem (herbivores, parasites, diseases and native plants) are not adapted to make use of the non-native invaders. This disparity of population controls, in addition to their rapid growth and reproduction, creates a situation in which the invasive plants are better competitors. They reduce the amount of sunlight, water, nutrients, and space available to native plants, eventually competing with and replacing natives. This represents a loss in habitat and food source for wildlife. Invasive plants have even shown to alter hydrological patterns and soil chemistry. In the big picture, invasive plants reduce biodiversity.

How do invasive, non-native plants get into natural areas?

Our increasing global society has transported plants worldwide at an unnaturally fast pace. Once a new species is introduced, either from another continent, or another region of North America, its seeds may be carried by wind, water, animals or vehicles. Seeds or vegetative structures can be deposited miles from their original sites, allowing the species to spread at a rate that it could never accomplish on its own. Unsuspecting homeowners may use invasive, non-native plants in their landscaping. Species may easily spread into natural areas from nearby yards and lawns.

Source: StewardshipGarden.org, Environmental Protection Agency

Oakland County Conservation District Invasive Species Information

OAKLAND CONSERVATION DISTRICT

Stormwater Program Websites

MDNR - Invasive Species Awareness

MDNR - Invasive Species "Watch List"

Environmental Protection Agency - Green Acres Native Vegetation Program

Environmental Protection Agency - Green Acres Toolkit



Invasive Species - Common Buckthorn
"Rhamnus cathartica"



Invasive Species- Phragmites
"Phragmites australis"

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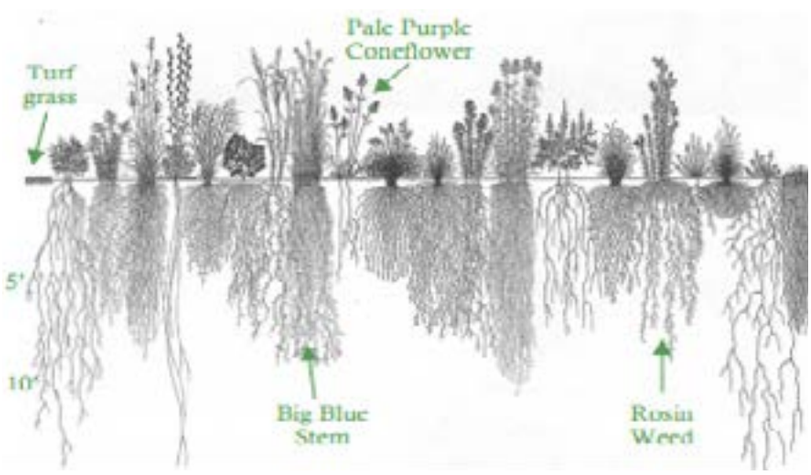
Why use Native Plants?

The school district encourages the use and planting of native vegetation, wild flower planting, rain gardens at school facilities. Please contact the Facility Operations Department at (248) 344-3259 for more information.

- Native plants do not require fertilizers. Vast amounts of fertilizers are applied to lawns. Excess phosphorus and nitrogen (the main components of fertilizers) run off into lakes and rivers causing excess algae growth. This depletes oxygen in our waters, harms aquatic life and interferes with recreational uses.
- Native plants require fewer pesticides than lawns. Nationally, over 70 million pounds of pesticides are applied to lawns each year. Pesticides run off of lawns and can potentially contaminate rivers and lakes. People and pets in contact with chemically treated lawns can be exposed to pesticides.
- Native plants require less water than lawns. The modern lawn requires significant amounts of water to thrive. In urban areas, lawn irrigation uses as much as 30% of the water consumption on the East Coast and up to 60% on the West Coast. The deep root systems of many native Midwestern plants increase the soil's capacity to store water. Native plants can significantly reduce water runoff and potential flooding.
- Native plants help reduce air pollution. Natural landscapes do not require mowing. Lawns must be mowed regularly. Gas powered garden tools emit 5% of the nation's air pollution. Forty million lawn mowers consume 200 million gallons of gasoline per year. One gas-powered lawn mower emits 11 times the air pollution of a new car for each hour of operation. Excessive carbon from the burning of fossil fuels contributes to global warming. Native plants sequester, or remove, carbon from the air.
- Native plants provide shelter and food for wildlife. Native plants attract a variety of birds, butterflies, and other wildlife by providing diverse habitats and food sources. Closely mowed lawns do not benefit most wildlife.
- Native plants promote biodiversity and stewardship of our natural heritage. In the U.S., approximately 20 million acres of lawn are cultivated, covering more land than any single crop. Native plants are a part of our natural heritage. Natural landscaping is an opportunity to reestablish diverse native plants, thereby inviting the birds and butterflies back home.
- Native plants save money. A study by Applied Ecological Services (Brodhead, WI) of larger properties estimates that over a 20 year period, the cumulative cost of maintaining a prairie or a wetland totals $3,000 per acre versus $20,000 per acre for non-native turf grasses.



Stormwater Program Websites

Wildflower Association of Michigan



Landscaping with Native Plants- A Wise Choice!

A Citizen's Guide to Native Landscaping

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Why is household hazardous waste disposal important?

Leftover household products that contain corrosive, toxic, ignitable, or reactive ingredients are considered to be household hazardous waste. Products such as paints, cleaners, oils, batteries, and pesticides contain potentially hazardous ingredients that require special care during the disposal process.

Improper disposal of household hazardous waste can include pouring them down the drain, on the ground, into storm sewers, or in some cases putting them out with the trash. The dangers of such disposal methods might not be immediately obvious, but improper disposal of these wastes can pollute the environment and pose a threat to human health. Many communities in the United States offer a variety of options for conveniently and safely managing household hazardous waste.

How can you reduce your household hazardous waste at home?

Consider reducing your purchase of products that contain hazardous Ingredients and learn about the uses of alternative methods or products, without hazardous ingredients, for some common household needs. To avoid the potential risks associated with household hazardous wastes, it is important that people always monitor the use, storage, and disposal of products with potentially hazardous substances in their homes.

How you can reduce, reuse, recycle and dispose of waste in your community!

The options of reduction, reuse, recycling, and disposal, listed in order of the Environmental Protection Agency's preferred waste management hierarchy, are all important tools to help safely manage and mitigate household hazardous waste. The links displayed along the right side of the page include information can help you determine the best ways to reduce, reuse, or dispose of common household products that may contain hazardous ingredients.

Oakland Conservation District Website

OAKLAND CONSERVATION DISTRICT

Oakland Conservation District Facebook

Local Household Hazardous Waste Programs

EGLE Household Hazardous Waste Info

North Oakland Household Hazardous Waste Consortium (NO HAZ)

Wayne County House Hazardous Waste Program

Resource Recovery and Recycling Authority of Southwest Oakland County (RRRASOC)

Southeastern Oakland County Resourse Recovery Authority (SOCRRA)

Travel Trailer Sanitary Waste Disposal

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Why is Good Housekeeping/Pollution Prevention Necessary?

The District conducts numerous activities that can impact water quality if practices and procedures are not in place to prevent pollutants from entering nearby MS4s and/or nearby lakes, streams, and rivers. These activities include bus and vehicle fleet maintenance, minor road repairs, landscaping, construction activities, and building maintenance. The area also conducts activities that remove pollutants from the MS4 when preformed properly, such as parking lot and street sweeping and storm drain system cleaning. Finally, the area can be the source of stormwater pollutants if best management practices (BMPs) are not in place to contain spills, manage trash, and handle non- stormwater discharges.

The District has trained their staff on ways to protect stormwater, maintain MS4 infrastructure, and perform daily municipal activities, such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and stormwater system maintenance. This includes:

- Development of inspection and maintenance and schedules for stormwater BMPs
- Implementing BMPs to treat pollutants from transportation
- Infrastructure, maintenance areas, storage yards, sand and salt storage areas and waste transfer stations
- Procedures for properly disposing of pollutants from the MS4s
- Identification of ways to incorporate water quality controls into new and existing flood management projects



Stormwater Program Websites

Environmental Protection Agency - Stormwater Best Management Practices

Michigan's Water Strategy



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Practical tips to help keep our water clean

SEMCOG Seven Simple Steps

Contributors to Stormwater Pollution

- **Washing cars in the drive, and letting soapy/dirty water run into the storm drain.**
- **Leaving pet waste on lawns and other areas.**
- **Improperly using, storing or disposing of household cleaners.**
- **Fertilizing more than required, and leaving it on the sidewalk.**
- **Allowing grass clippings and leaves to sit on walks and drives.**

SEMCOG offers technical support on a number of issues including effective stormwater management. SEMCOG has developed a series of simple steps each of us can take to help decrease our impact on our watersheds. These "Seven Simple Steps" offer practical, real world tips on ways we can keep our water clean. Click the headings below for more information.

Save Water

The Great Lakes are the largest system of fresh water on earth and contain almost 85 percent of North America's supply. Each one of us uses about 77 gallons of water each day. That is a lot of water. Overuse wastes water, money, and adds to pollution.

Practice good car care

There are over 68 million automobiles in the U.S., and almost half of them leak some sort of hazardous fluids. Combined with the used fluids that are improperly disposed of, and the substances used to keep them clean, our cars are a major contributor to the pollution of our waters. Proper care of them is crucial.

Choose earth friendly landscaping

Many of us take pride in our lawns and gardens for the curb appeal we think they provide yet the way we maintain them is a major contributor to the pollution of our waters. There are better alternatives.

Help keep pollution out of the storm drains

If you learn only one thing from reading these pages, it should be that the water that goes into our storm drains does not get treated, but is discharged directly into our waterways. This means that all of the pollutants carried by the water are also discharged there. Keeping pollutants out of our stormwater and thus our storm drains is the single biggest contribution we can make toward eliminating stormwater pollution.

Fertilize caringly

Your lawn does not require all of the fertilizer you likely apply to it. Fertilizer is a pollutant, it should be used sparingly. It is required by law that any fertilizer left on your walks and drives be swept back onto the lawn area. Be sure that you or your lawn care contractor does this.

Clean up after your pet

Stormwater carries everything it comes into contact with, including pet waste, to storm drains and discharges it untreated into our waters.

Carefully store and dispose of household cleaners and chemicals

The great majority of household cleaners and chemicals are poisons and pollutants. Proper care in their use, storage and disposal is critical to your health safety and the environment. Take steps to protect yourself, and keep these substances out of our waters.

SEMCOG
Southeast Michigan
Council of Governments

Stormwater Program Websites

- SEMCOG "Protect Our Waterways" Program Website
- A Citizen's Guide to Watershed Friendly Lawn Fertilizer
- A Citizen's Guide to Watershed Friendly Auto Care
- A Citizen's Guide to Rain Barrels
- A Citizen's Guide to Rain Gardens
- A Citizen's Guide to Watershed Friendly Pet Care
- A Citizen's Guide to Cold Weather Practices