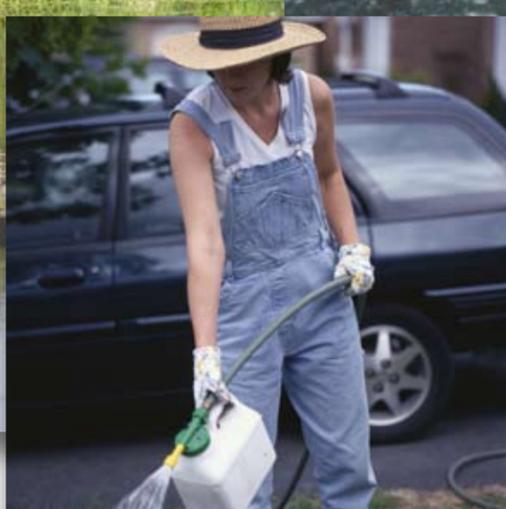


Ten things your parents never told you about Nonpoint source pollution



1. Today most water pollution has become "pointless."

Many people still think that most pollution in the Grand River comes directly from a factory — known as "point-source pollution."

At one time, this was true. Pollutants were discharged through pipes — a single point — directly into the river. Pollution could be traced to a single source, a specific business or activity.

Since the passage of pollution-control laws in the 1970s, most point sources of pollution have been cleaned up significantly.

Today we have to look into the entire Grand River Watershed to find and fight "nonpoint sources of pollution." These pollutants can't be as easily traced to one single source, but they now cause the most pollution.

There is also no easy way to measure how much pollution is entering the river. Rainwater or snowmelt carries a mix of pollutants from farm fields, suburban lawns and city streets. This runoff may carry with it such pollutants as fertilizer, road salt, sediment, bacteria,

motor oil or pesticides that enter lakes and streams or seep into groundwater.

2. Hard surfaces are hard on rain ... we can't protect water quality with parking lots.

When early settlers entered the Grand River watershed, they were in the middle of a very large forest that caught the rain as it trickled down to the ground. Then it either soaked into the soil or slowly made its way into streams and then into the river.

Today, rain falls on the hard surfaces of pavement and rooftops. These hard or "impervious" surfaces keep water from soaking into the ground. They include driveways, paved roads, sidewalks and parking lots — and even our lawns can be impervious.

When rain is not absorbed by the ground, the heat, quantity and speed of rain running off increases and a variety of pollutants are carried away. When the runoff reaches nearby streams and the Grand River, water quality is reduced.

In some cities, such as Grand Rapids, it may take only 15 to 30 minutes for pollutants to travel from your street to the Grand River via the storm sewer system.

The more houses, shops, factories and other development a watershed contains, the more impervious surfaces and water-quality problems. Many studies have found that the percentage of imperviousness can be an indicator of water quality in a watershed.

With less than 10 percent impervious surfaces, water quality is usually fairly good. Impervious surfaces at 10 to 25 percent have a noticeable impact on water quality and in watersheds with more than 25 percent, water quality can be seriously degraded.



Let's talk watershed

The Grand River Watershed, the Lower Grand to those of us east of Portland in Ionia County, is defined by the flow of water to the same destination — the Grand River.

The high points of the land mark a watershed where water is pulled by gravity to the river itself. Water is almost constantly on the move as it travels from the clouds to your yard into the river or lake and back into the clouds through the hydrologic or water cycle.

Watersheds are more than water — they also include all of the land over which water travels. Notice how rain flows in your yard and how it either stays or moves along into the street.

Do you know where rain goes after it leaves your yard?

Introduction to the Watershed Series

Part One

What watershed are you drinking?

Although we typically identify where we live in terms of cities, zip codes, or school districts, we also live in watersheds, defined by the flow patterns of rainwater or snowmelt. As part of the earth's hydrologic cycle, watersheds help recycle water.

Whenever a body of water is in trouble, one of the first things a water-quality specialist investigates is its watershed. Water quality is closely tied to what is happening on the land surrounding the water body.

Part Two

Ten things your parents didn't tell you about nonpoint source pollution

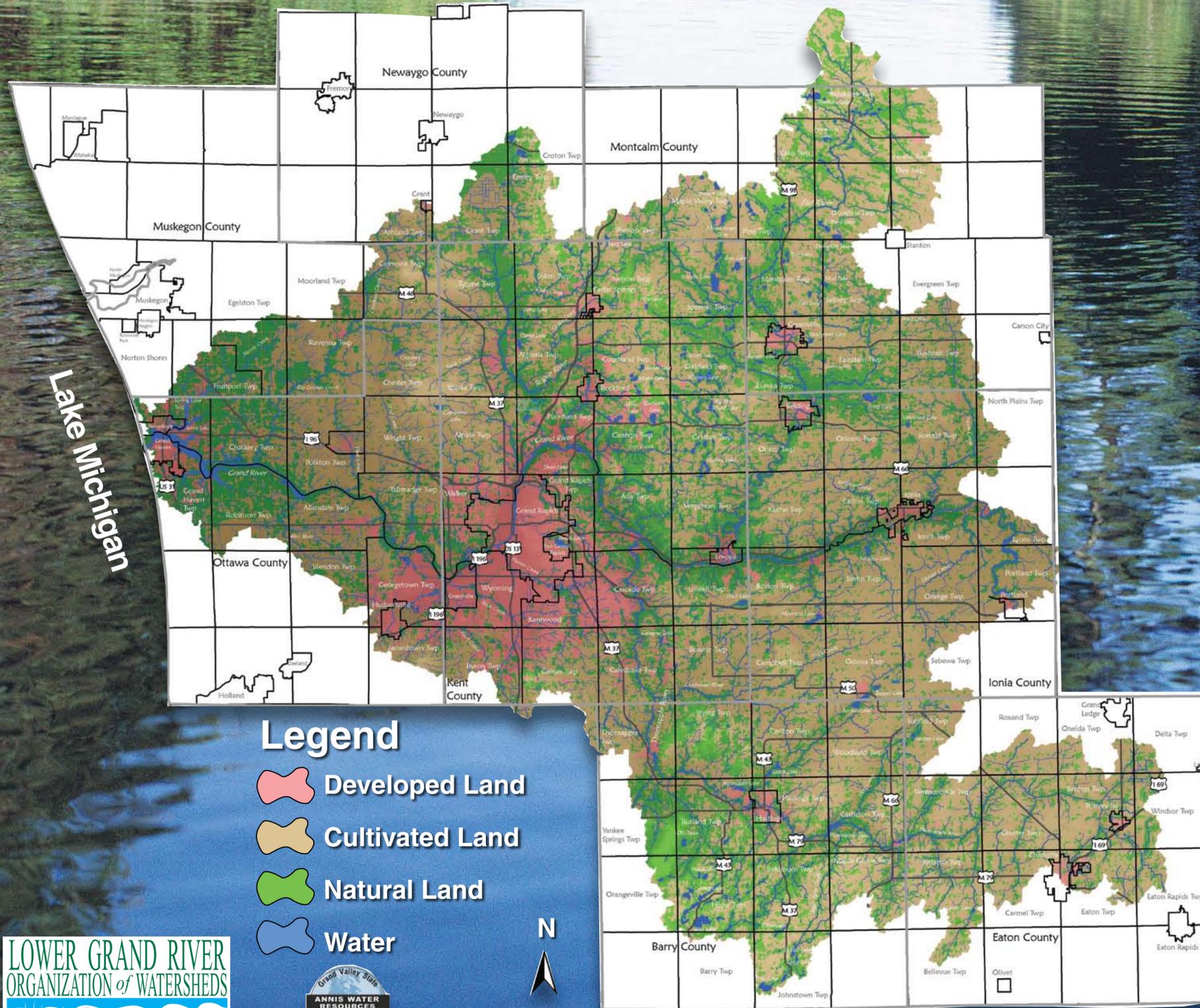
Water quality declines where land use exposes rainwater or snowmelt to various contaminants — or nonpoint sources of pollution. This arises from things like exposed construction sites, animal or pet waste, litter, leaking cars and uncontrolled farm runoff. It is the No. 1 source of pollution to the Grand River. As runoff crosses parking lots, chemical lawns and farms, it picks up whatever is on the ground and takes it to the river.

Part Three

Have you hugged your green infrastructure today?

In the past, rain falling on the Grand River Watershed fell mostly into forests where trees caught and filtered it before it flowed into the river. Today, pavement and sewer systems (gray infrastructure) have diminished the water treatment services of these natural systems (green infrastructure).

Such natural systems have become more scattered, isolated and less able to create healthy watersheds and better water quality.



3. Stormwater is not clean water — if it's on the ground, it's in stormwater.

Stormwater is often described as water from rain, melting snow and other precipitation that turns into "runoff." Stormwater runoff moves across land surfaces and returns to rivers often loaded with pollutants.

The flowing water may pick up salt, sand, soil, pesticides, fertilizers, leaves, grass clippings, animal waste, oils, grease, litter and many other pollutants.

It then carries these wastes and chemicals through storm sewers or by direct discharge into waterways. These pollutants seriously harm our waters, contributing to beach closures and damaging wildlife habitat.

Storm drains are designed to handle stormwater to prevent flooding — they are not designed to remove pollutants. Some people treat them like garbage cans, dumping waste into the drain.

Storm sewers are not connected to wastewater treatment plants. Instead everything that flows or is poured into them is discharged into the nearest water body.

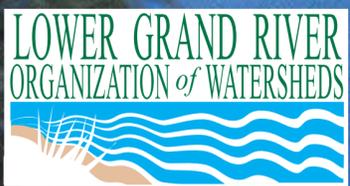
This is the largest source of pollution for the Grand River. Stormwater runoff from developed areas tends to carry higher pollutant loads than runoff from undisturbed, natural sites.

Whatever we put on the land will eventually end up mixing with stormwater. Stormwater is only as clean as the land it flows over.

4. Even if you don't live near the Grand River, you still can pollute it — and Lake Michigan.

Even if you live miles away, your backyard is connected to some part of the watershed's drainage network.

It's easy for those who live directly on the river to



understand the impact we have on its health. It is more difficult for those who never see the river to understand how water flowing from their yards and businesses reach it.

Understanding this personal connection is critical to the actions under way to restore the Grand River. Making the extra effort to reduce chemical and nutrient applications, prevent soil erosion and maintain wildlife-friendly yards helps the river and Lake Michigan.

5. Land use can predict nonpoint source pollution problems.

When you look at the patchwork of land use across the Lower Grand River Watershed, you can see distinct and broadly defined patterns of developed lands, cultivated lands and natural lands. The map above offers a glimpse of the watershed and its broad land uses.

This pattern of land use is the most important factor affecting water quality in the watershed. Some uses involve more hard surfaces where stormwater can't soak in. Pollutants that wash off from the land surface reflect the way the land is used.

Look at the watershed's land uses and where you are located.

6. Developed lands - PINK ON MAP

In neighborhoods layered with impervious surfaces, nonpoint source pollution can be intense. Developed areas, whether in cities or rural subdivisions, include neighborhoods where more than 10 percent of the area contains hard surfaces. These include rooftops, driveways, streets, parking lots, sidewalks and other surfaces that don't allow water to readily soak into the ground. Most lawns are included in this category.

Storm sewers that take stormwater runoff quickly and directly into streams may or may not be present. Most nonpoint source pollution associated with developed land uses is intensified by these impervious surfaces, where pollutants build up and high loads are discharged through stormwater runoff.

- These pollutants may include:
- Nutrients from fertilizers over-applied to lawns and plantings and overloaded septic systems
 - Soil and sediment from erosion of unprotected bare soils or construction sites
 - Oil and other fluids dripping from vehicles
 - Debris from littering and inappropriate dumping
 - Disease-causing pathogens from overloaded septic systems, unmanaged pet waste and waterfowl feeding
 - Thermal pollution from hot surfaces which heat

the stormwater runoff

- Toxic chemicals from spills of hazardous products
- Preserving water quality doesn't mean stopping development. Development can be planned and designed to minimize nonpoint source pollution and then controlled by the actions of individuals.

7. Cultivated land uses - TAN ON MAP

"Producing the goods" can help in producing clean water. These are the working lands of the Grand River Watershed, where land is used to grow crops, support orchards and raise livestock, among a variety of other economically important activities.

Cultivated lands are celebrated in efforts to protect open spaces, retain scenic views and preserve rural character. With impervious land cover often less than 10 percent, cultivation can protect the watershed by filtering stormwater runoff and recharging groundwater and local streams.

Cultivated lands require special considerations as the properties range in size from small family farms to highly intensive operations. Their impact on water quality will similarly vary by the location of operations relative to surface water, the type and intensity of production methods and involvement in conservation programs, such as use of buffer strips between

crops or feedlots and surface water.

Nonpoint source pollutants from cultivated lands might include:

- Disease-causing pathogens from unmanaged animal waste and overloaded septic system
- Nutrients from animal wastes, over-applied fertilizers and overloaded septic systems
- Soil and sediment from erosion of unprotected bare soils
- Oil and other fluids that drip from machinery and vehicles
- Debris from inappropriate dumping and littering
- Harmful chemicals spills and improper pesticide uses

8. Natural land uses - GREEN ON MAP

Where nature leads, clean water follows.

As you look around the watershed, you may notice what seems to be lots of open space. Most of these open spaces are cultivated lands. Only a few natural remnants of forests, wetlands, and prairies exist in the watershed and most are found along waterways.

Some are uncultivated or idle fields that are returning to more-natural conditions. These natural lands can be sources of our cleanest water, providing a bounty of trees, plants and soils that contribute to filtration.

These lands can be the best places for building a healthy watershed.

They trap and absorb stormwater, filtering it before releasing it slowly into the ground or surface waters. Only about 10 percent of stormwater in such areas runs off the land; most of it is taken up by trees and plants or soaks into the ground.

These are the areas of high natural value for the watershed and we should take great care in how we treat them.

9. Leave the Grand River in better shape than you found it.

We live in a place of global significance. Nowhere else on earth is fresh water so available. Here in the Great Lakes Basin, we share responsibility for protecting fresh-water resources that represent more than 90 percent of U.S. fresh water and 20 percent of the world's available fresh water resources.

Our responsibility starts with the Grand River, which is at the heart of our watershed. The river does not have an infinite capacity to absorb all the waste we let flow into it. Water quality is tied directly to what we do — and don't do — about nonpoint source pollution.

Not only do we harm the Grand River and Lake Michigan, we also diminish our future opportunities and the choices that may be available to our children.

What limits the Grand River's future most is the way we imagine it. Help us to re-think and re-imagine the Grand River as a healthy, beautiful, valuable part of our lives.

Unless we see the river's future as something more than what it is today, we run the risk of shortchanging ourselves and our economic future. Each step we take, no matter how small, will be a step forward.

Stay in touch with your watershed at www.lgrow.org

10. You do make a difference when you reduce your exposures



Many things you put on the ground or place outside are exposed to stormwater and can end up in the Grand River and then into Lake Michigan. Reduce or eliminate the exposure of anything you wouldn't want showing up in your drinking water when picked up by rain and melting snow.

The ordinary things we do every day will make a difference. Here are some ideas to get you started.

Are you ready to take on low-impact lawn care?

- Apply lawn chemicals or fertilizer sparingly, if at all.
- Use phosphorus-free fertilizers.
- Memorize the product's instructions or refer to them repeatedly if you decide to use lawn chemicals.
- Keep your mower in good shape. Leaks from oil, gasoline or hydraulic fluids can pollute thousands of gallons of water.
- Choose native landscape plants better suited to watershed conditions.

Is your yard shedding water it can be absorbing?

Depending on soil and topography, your lawn can be quite impervious, so:

- Where rain runs, make it walk.
- Where rain walks, make it crawl.
- Where rain crawls, find ways to make it linger and sink into the ground.

Did you know that each time you pick up litter, an angel gets its wings?

- Litter on the ground becomes litter in our waterways.
- Set the example for others, especially children.
 - Chase litter down. Don't let it get away from you.
 - Keep and use a litter bag in your car.
 - Participate in community cleanups.
 - "Adopt a spot" in your neighborhood to remove litter on a regular basis.
 - Start a "litter index" to spot problems and track trends in your community.
 - Get behind local "litter-free" outdoor events and activities.

Does cleaning a car dirty the river?

Runoff from cleaning your car, boat or recreational vehicle contains a nasty mix of oils, detergents and engine grime. If this mix flows across pavement into a storm drain and discharges untreated

into nearby waterways, then you might want to re-think car washing.

- Let the rain wash your vehicles for as long as you can bear it.
- Wash a vehicle only when needed rather than as a weekly chore.
- Use a commercial car wash that sends its wastewater to be treated.
- Wash vehicles on gravel, grass or other porous surfaces that filter wash waters.
- Use plain water or nontoxic, phosphate-free or biodegradable soap.
- Divert wash water into your landscape or into a sewer, not into a storm drain.

It's not just the honk, moo, neigh, quack or woof that's left behind.

Animal and waterfowl waste is a serious water-quality problem that is often overlooked, especially when concentrated near waterways.

Waste from our pets, livestock and fed waterfowl can contain disease-causing organisms which are carried by stormwater into our waterways. Such waste also contains nutrients that encourage undesired weed growth in ponds and streams.

- It's different when fish do it. For example, there are well over 200,000 dogs in the Lower Grand River watershed contributing nearly 100,000 pounds of waste each day. When it rains or as the snow melts, a lot of it can end up in our waterways, causing serious problems, unless responsible pet owners do their duty. Scoop it up and dispose of it as determined appropriate in your community.
- Feeding geese and ducks seems so nice. However when we feed waterfowl, we overload the natural systems of our water resources. These resources can naturally handle the waste from food provided in the wild, but when we add unnatural foods, wastes build up and overload the natural system. One goose produces 1 to 3 pounds of feces each day. Please don't feed waterfowl.
- Our larger animals contribute, too. Livestock and other large animals allowed access to a stream's edge can trample vegetation and cause erosion. Responsible large-animal owners fence them away from ponds, ditches, wetlands and streams while managing manure so it does not run off with stormwater.



Living in the Lower Grand River Watershed - It's like sharing your bathtub with 1 million other people

This watershed is a gathering place where people's lives are connected by falling rain and flowing water and where water quality is a vital part of its economic possibility.

Who speaks for the watershed?

The Lower Grand River Organization of Watersheds (LGROW) was formed to work with West Michigan communities in restoring, protecting and enhancing water quality in the Grand River Watershed.

LGROW, an agency of the Grand Valley Metropolitan Council, provides a framework for creating opportunities to achieve local benefits that can carry over across watersheds.

Sub-watershed groups take the lead in improving water quality at the grassroots level, emphasizing local interest and local commitment. LGROW serves as an umbrella organization for these groups, made up of people living and working in several sub-watersheds, such as the Rogue River, Thornapple River, Sand Creek, Coldwater River, Spring Lake and Bear Creek.

Through the joint efforts of its many partners, LGROW is acting to ensure a healthy and sustainable Grand River Watershed by:

1. Providing opportunities for partners to work together in solving watershed problems
2. Recognizing and sharing accomplishments and successes
3. Ensuring that local priorities are represented in regional and statewide efforts
4. Identifying and pursuing common goals and strategies
5. Collectively setting priorities
6. Preparing a Grand River Watershed Management Plan
7. Organizing and maintaining watershed-based information system
8. Tracking watershed conditions and measuring results
9. Promoting best management practices
10. Preserving local decision-making authority while encouraging regional cooperation

Watershed management is a strategic action for West Michigan. The more partners that sign on, the stronger and more influential LGROW will be for improving water quality. LGROW sees its efforts as a long-term investment in West Michigan communities.



No resource is as precious as clean and safe water.

Our legacy starts with our commitment to improving water quality.

Our responsibility is to go in that direction.



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Next:
Part 3 of 3
Have you hugged your green infrastructure today?