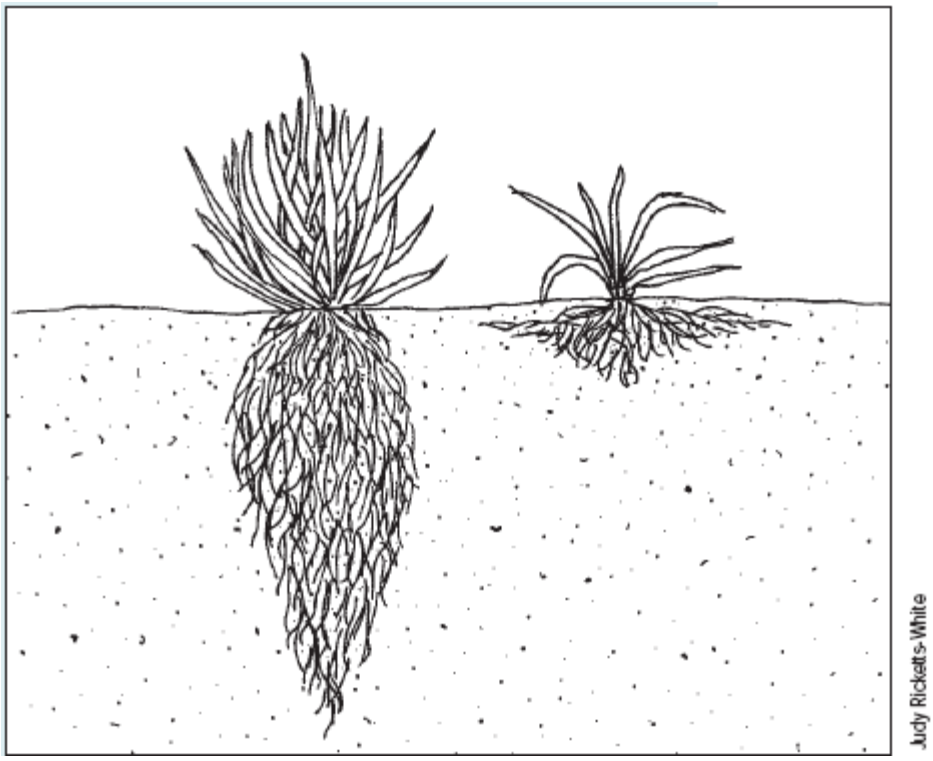
Lawn Care the Environmentally - Friendly Way



Know Your Soil Fertility

Leaving the grass clippings on the lawn after mowing is the best kind of fertilizer. Research has shown that recycling clippings in place reduces the need for supplemental fertilizer applications by 50 to 100 per cent!

If you must fertilize, avoid over-fertilization by having your soil testing and following soil test recommendations. Choose a fertilizer formulation that most closely matches what the soil lacks. Slow-release fertilizers improve the chances that nutrients will remain in the root zone until the grass can use them. For additional water quality protection, use organic fertilizers if possible. Organic formulas combine the benefits of slow nutrient release with the addition of organic matter to the soil. Organic fertilizers may also help reduce some turf disease problems.

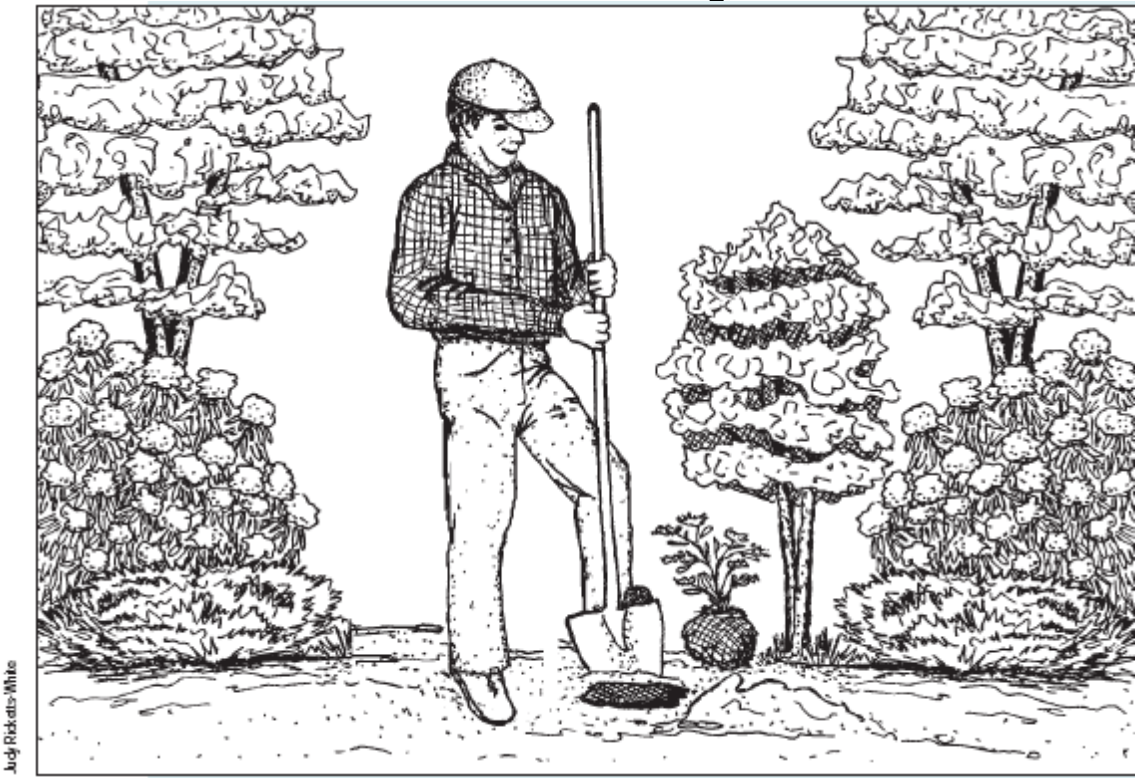
Never apply more than one pound of nitrogen per 1,000 square feet at one time. To determine what is one pound of nitrogen, divide the first number on the fertilizer bag into 100. The result is the amount (in pounds) of fertilizer that should be applied to 1,000 square feet of lawn. Bluegrass lawns generally require three applications. Recommended application times coincide with three holidays: Memorial Day, Labor Day and Columbus Day.

To ensure best plant use of fertilizers and to reduce potential water quality problems, Illinois lawns should be fertilized between May and November. Always check the weather and avoid applying fertilizer before heavy rainstorms or during long, dry spells.

To learn more or report possible illegal discharges to the storm drain system, call the *Village* of *Winnetka* at 847-716-3568.

(Source: Clean Water Fact Sheet, produced by NEMO and Sea Grant Connecticut)

Going Native – Rethinking Plant Selection for the Home Landscape



WHAT ARE NATIVE PLANTS, NON-NATIVE PLANTS, AND WEEDS?

Native plants are plants that have evolved over hundreds or thousands of years in a particular region. They have adapted to the geography, hydrology and climate of the region and to the other species of plants and animals inhabiting the region. As a result, native plants are part of a community that provides habitat (food and shelter) for a variety of native wildlife species such as songbirds and butterflies. Native plants, when used in home landscaping, provide the ecological benefits of supporting local wildlife while requiring minimal maintenance due to their adaptation to local climate and soil conditions.

Non-native plants (also called invasive or exotic plants) are plants that have been introduced into an ecosystem in which they did not evolve. Some of these plants are introduced deliberately, as with our many exotic landscaping plants. Others are introduced accidentally, through the spread of seed by wildlife or by their inadvertent inclusion in seed mixes being sent from one area of the world to another. Some of these introduced, non-native plant species do not grow well in their new environment or do not reproduce easily so they are easily controlled and pose no threat to the native ecosystem. Other introduced species find their new home much to their liking and reproduce prolifically, even in natural, minimally managed landscapes. These aggressive, or invasive plants often have no natural enemies or controls to limit their spread. Invasive non-native plant species can be a serious threat to native plants and

communities, out-competing local species for available sunlight, water and nutrients, and do not provide the wildlife habitat benefits of the plants they replace.

Weeds are plants that are growing in places where they are not wanted. Both native and nonnative plants can become weeds in a managed landscape like a garden or agricultural field. Nonnative species tend to become invasive weeds in natural landscapes due to the lack of natural controls.

HOW CAN USING NATIVE PLANTS HELP THE ENVIRONMENT?

Landscaping with native plants has many positive factors that relate to conservation landscaping and to sustainable landscapes.

- Native plants save energy. Native plants have evolved and adapted to local conditions. They are vigorous and hardy, able to survive winter cold and summer heat. Once established, they require little or no irrigation or fertilization. They are resistant to local pests and diseases. Thus, native plants suit today's interest in "low-maintenance" gardening and landscaping.
- Native plants stay put. Native species are members of a community that includes other plants, animals and microorganisms. A natural balance keeps each species in check, allowing it to thrive in suitable conditions but preventing it from running amok. Native species rarely become invasive unless a major disturbance disrupts the natural balance of the community.
- Native plants support the local ecosystem. Native plants provide food and shelter for birds, butterflies and other desirable wildlife.
- Native plants are interesting. The diversity of native plants includes interesting flowers and foliage. Native trees and shrubs provide a variety of heights, shapes, and textures in the landscape. Many provide winter interest with their bark or seedpods. Native plants also have historical and cultural interest. Some of these plants played a significant role in Native American culture or in European exploration and settlement of the continent. Many species have value as food or medicine. Others have been used for rope and twine, fabrics and dyes, and other domestic purposes. Native plants provide the people of today with a tangible link to the past.

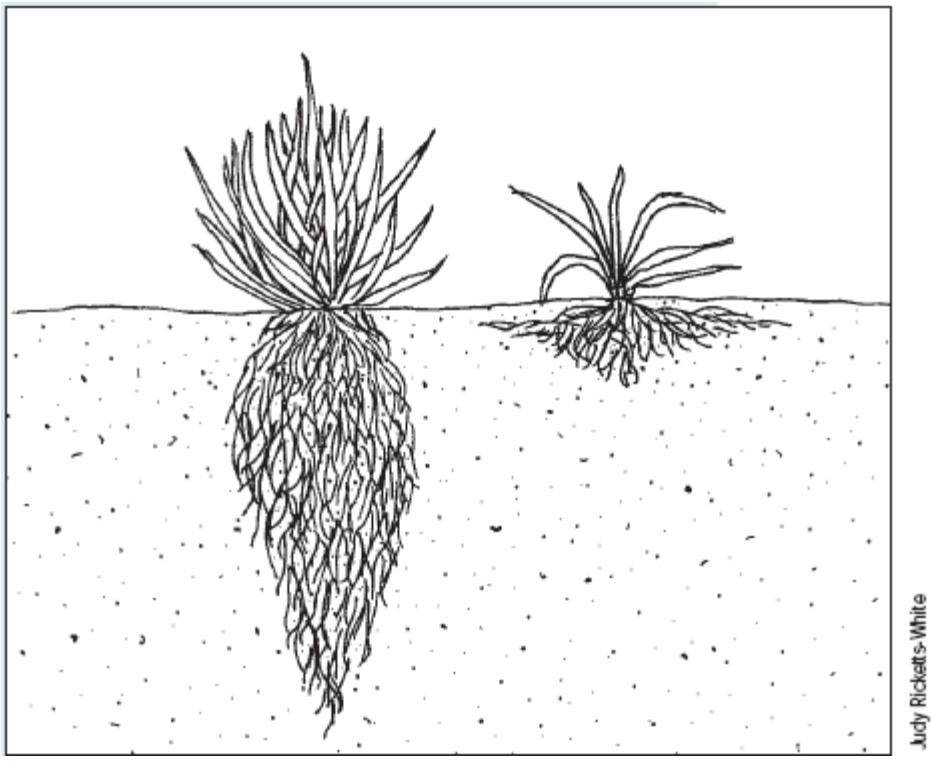
HOW CAN I BEGIN LANDSCAPING WITH NATIVE PLANTS?

If you are planning a landscape on an undeveloped lot, first examine the existing plants to determine which habitat type you will be working within. Identify native trees and shrubs and see how many could be incorporated into your new landscape. Protecting existing native plants in a new landscape reduces the number of plants to be purchased and provides an instant "mature landscape". Also identify invasive species for removal to prevent future problems. In an existing landscape, replace plants that are lost to disease or storm damage with native species. Lists of native and invasive plant species, and books and pamphlets describing how to use them in home landscaping, are available from a number of sources. As the natural landscape is developed, a general decline in both plant and wildlife habitat diversity occurs, leading to an overall decline in many species and a population explosion of "pest" species best suited to backyard living (including squirrels, house sparrows, and white-tailed deer). To help offset this loss, consider planting native trees, shrubs and perennials around your home and yard.

To learn more or report possible illegal discharges to the storm drain system, call the *Village* of *Winnetka* at 847-716-3568.

(Source: Clean Water Fact Sheet, produced by NEMO and Sea Grant Connecticut)

Lawn Care the Environmentally - Friendly Way



Know Your Watering Schedule

Most lawns require about one inch of water per week, either from natural rainfall or irrigation. Some homeowners like to water their lawn for a few minutes several times a week, but this practice actually weakens the grass by discouraging deep root growth. To promote deep root growth and drought resistance, use a rain gauge to keep track of rainfall. If Mother Nature has not provided an inch of rain in a week, then apply an inch of water. Measure watering levels by placing a tuna fish or other shallow can under the sprinkler system. Don't apply water faster than the ground can soak it up. If water runs off the lawn, slow down the watering.

During prolonged dry spells, it is better to let the lawn go dormant than to stress the grass by watering and forcing it to grow. Stressed grass is susceptible to pest and disease problems. Fine fescues and turf-type tall fescues are the more drought-tolerant of the common lawn grasses. Bluegrasses may require supplemental water to survive drought conditions.

To learn more or report possible illegal discharges to the storm drain system, call the *Village* of *Winnetka* at 847-716-3568.

(Source: Clean Water Fact Sheet, produced by NEMO and Sea Grant Connecticut)

After the Storm

A Citizen's Guide to Understanding Stormwater

EPA 833-B-03-002

January 2003

For more information contact:

or visit
www.epa.gov/npdes/stormwater
www.epa.gov/nps

What is stormwater runoff?

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.

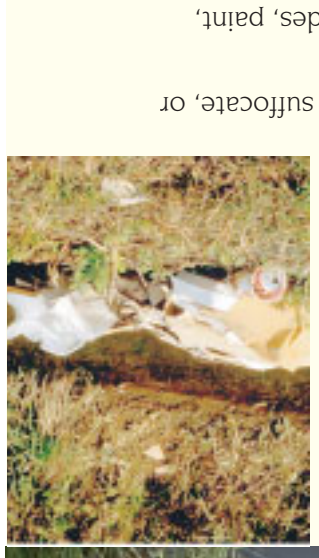
Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

Why is stormwater runoff a problem?

The effects of pollution

Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.
- Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.
- Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.



Stormwater Pollution Solutions

Residential

Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them onto the ground or into storm drains.

Lawn care

Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.

- Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- Cover piles of dirt or mulch being used in landscaping projects.

Septic systems

Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.

- Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- Don't dispose of household hazardous waste in sinks or toilets.

Auto care

Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.

- Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.

Pet waste

Pet waste can be a major source of bacteria and excess nutrients in local waters.

- When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.

Education is essential to changing people's behavior. Signs and markers near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.

Residential landscaping

Permeable Pavement—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.

Rain Barrels—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.

Rain Gardens and Grassy Swales—Specially designed areas planted with native plants can provide natural places for rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.

Vegetated Filter Strips—Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.

Commercial

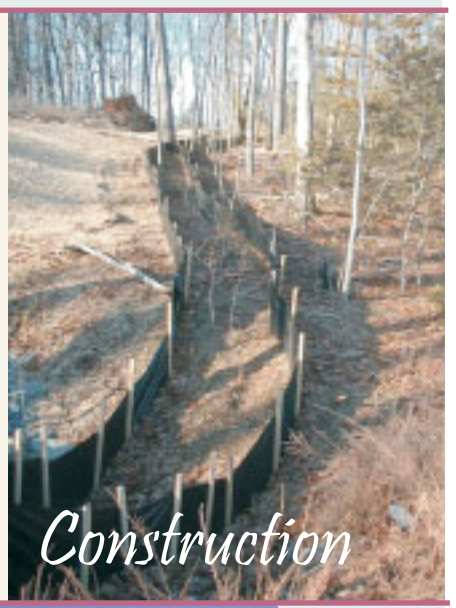
Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

- Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- Cover grease storage and dumpsters and keep them clean to avoid leaks.
- Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

Construction

Erosion controls that aren't maintained can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

- Divert stormwater away from disturbed or exposed areas of the construction site.
- Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.



Agriculture

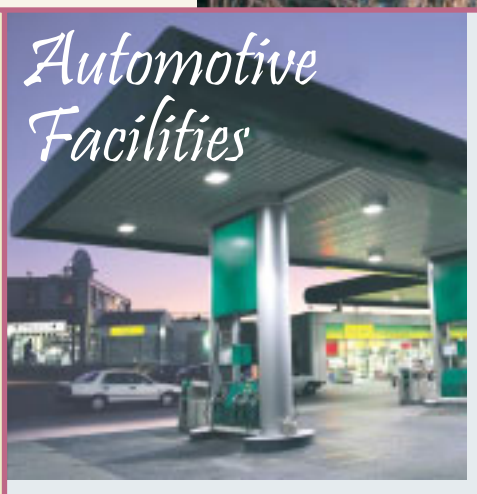
Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.

- Keep livestock away from streambanks and provide them a water source away from waterbodies.
- Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- Vegetate riparian areas along waterways.
- Rotate animal grazing to prevent soil erosion in fields.
- Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.

Forestry

Improperly managed logging operations can result in erosion and sedimentation.

- Conduct preharvest planning to prevent erosion and lower costs.
- Use logging methods and equipment that minimize soil disturbance.
- Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- Construct stream crossings so that they minimize erosion and physical changes to streams.
- Expedite revegetation of cleared areas.



Automotive Facilities

Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil, and other harmful fluids that can be picked up by stormwater.

- Clean up spills immediately and properly dispose of cleanup materials.
- Provide cover over fueling stations and design or retrofit facilities for spill containment.
- Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local waterbodies.
- Install and maintain oil/water separators.

Managing Your Household Chemicals

Your Home Contains Hazardous Chemicals

Household products are potentially hazardous if they pose risks to people, animals or the environment. Many of the chemicals that are used in everyday activities can be poisonous when they enter aquatic systems (lakes, ponds, streams, or rivers) and can also contaminate area drinking water supplies. The U.S. Environmental Protection Agency estimates that the average household in America generates 20 pounds of hazardous household wastes annually. The typical home also stores 100 pounds of hazardous wastes.

Protect Yourself, Your Family, Your Community

You can prevent human health and environmental problems, and save some time and money by making wise choices in the purchase and use of hazardous household products.

At the Store:
- Read labels thoroughly.
- Select products with the least cautionary labeling.
- Seek the least hazardous products to accomplish the job.
- Choose products with environmental friendly packaging (i.e., recyclable symbols).
- Look for concentrates, which use less packaging.
- Purchase the smallest amounts needed.

At Home:

- Follow directions on products.
- Store cleaning chemicals safely in locked cabinets in the kitchen, garage and hobby areas, away from children, the sun, heat, and ignitable sources.
- Use products in well-ventilated areas.
- Store products only in original containers.
- Do not mix commercial chemicals.
- Keep fire extinguishers handy throughout your home. (Check with your fire department for recommended type.)
- Never pour chemicals down the sink or storm drain.

Make Your Own Non/Low Toxic Household Cleaners

By making your own cleaning products, you can: promote a healthy environment, reduce chemicals going to landfills or incinerators, save money, eliminate cluttered cabinets, and easily prepare the right amount of cleaner for any job. Visit http://nemo.uconn.edu/tools/publications/clean_waters/cwfact2.pdf to learn how to create your own non/low toxic household cleaners.

To learn more or report possible illegal discharges to the storm drain system, call the *Village* of *Winnetka* at 847-716-3568.

(Source: Clean Water Fact Sheet, produced by NEMO and Sea Grant Connecticut)

PET WASTE AND WATER QUALITY

Pet owners, take heed . . . When you clean up after your pet, do you dump the waste in the street or storm sewer? Do you leave it to decay on the sidewalk or the grass near the street? If so, you may be causing pollution and health problems.

Are you polluting our rivers?

Pollutants from improperly disposed pet waste may be washed into storm sewers by rain or melting snow. Storm sewers drain **directly** into our rivers, carrying many pollutants along with the water.

When pet waste is washed into the river the waste decays, using up oxygen and sometimes releasing ammonia. Low oxygen levels and ammonia combined with warm temperatures can kill fish. Pet waste also contains nutrients that encourage weed and algae growth. Overly fertile water becomes cloudy and green – unattractive for swimming, boating and fishing. Perhaps most importantly, pet waste carries diseases which make water unsafe for swimming or drinking.

Are you risking your health?

When pet waste is disposed of improperly, your health may be at risk too. Pets, children who play outside, and adults who garden are most at risk for infection from some of the bacteria and parasites found in pet waste. Flies may also spread diseases from animal waste. Diseases or parasites can be transmitted from pet waste to humans.

Pet waste may not be the largest or most toxic pollutant in urban waterways, but it is one of the many little sources of pollution that add up to a big problem.

What should you do with the waste you pick up?

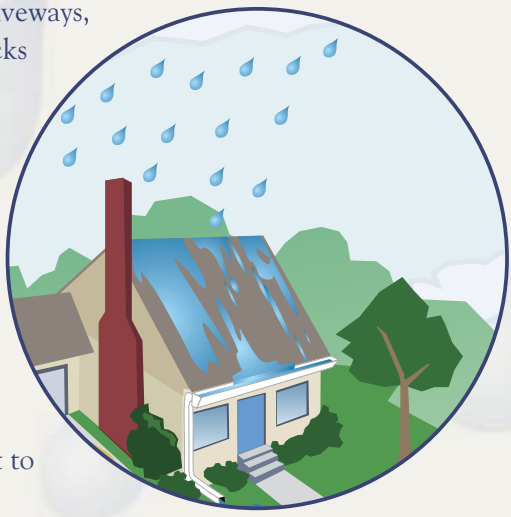
1 Flush it down the toilet . . .
The water from your toilet goes to a septic system or sewage treatment plant that removes most pollutants before the water reaches the river. To prevent plumbing problems, do not try to flush debris such as rocks, sticks or cat litter. Cat feces may be scooped out and flushed down the toilet, but used litter should be put in a securely closed bag in the trash.

2 Put it in the trash
When taking your pets for a walk, carry a bag, shovel, or pooper scooper. Any waste left by the animal should be cleaned up immediately.

Always remove waste from areas where children play. They are the most frequent victims of diseases from pet waste.

Adapted from University of Wisconsin–Extension in cooperation with the Wisconsin Department of Natural Resources. (1999). *Pet Waste and Water Quality.* [Brochure]. Author: Johnson, C.

As stormwater flows over driveways, lawns, and sidewalks, it picks up debris, chemicals, dirt, and other pollutants. Stormwater can flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water. Polluted runoff is the nation's greatest threat to clean water.



By practicing healthy household habits, homeowners can keep common pollutants like pesticides, pet waste, grass clippings, and automotive fluids off the ground and out of stormwater. Adopt these healthy household habits and help protect lakes, streams, rivers, wetlands, and coastal waters. Remember to share the habits with your neighbors!

Healthy Household Habits for Clean Water

Vehicle and Garage

- Use a commercial car wash or wash your car on a lawn or other unpaved surface to **minimize** the amount of dirty, soapy water flowing into the storm drain and eventually into your local waterbody.

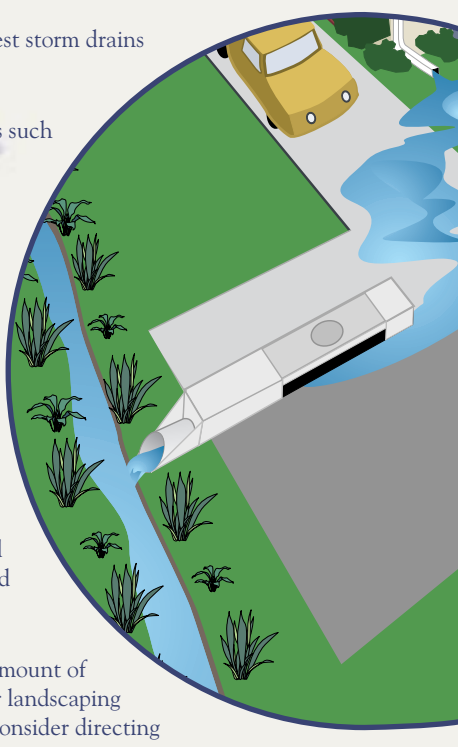
- Check your car, boat, motorcycle, and other machinery and equipment for leaks and spills. Make repairs as soon as possible. Clean up **spilled fluids** with an absorbent material like kitty litter or sand, and don't rinse the spills into a nearby storm drain. Remember to properly dispose of the absorbent material.
- **Recycle** used oil and other automotive fluids at participating service stations. Don't dump these chemicals down the storm drain or dispose of them in your trash.

Lawn and Garden

- Use pesticides and fertilizers **sparingly**. When use is necessary, use these chemicals in the recommended amounts. Avoid application if the forecast calls for rain; otherwise, chemicals will be washed into your local stream.
- Select **native** plants and grasses that are drought- and pest-resistant. Native plants require less water, fertilizer, and pesticides.
- **Sweep up** yard debris, rather than hosing down areas. Compost or recycle yard waste when possible.
- Don't overwater your lawn. Water during the **cool** times of the day, and don't let water run off into the storm drain.
- Cover piles of dirt and mulch being used in landscaping projects to prevent these pollutants from blowing or washing off your yard and into local waterbodies. **Vegetate** bare spots in your yard to prevent soil erosion.

Home Repair and Improvement

- Before beginning an outdoor project, locate the nearest storm drains and **protect** them from debris and other materials.
- **Sweep up** and properly dispose of construction debris such as concrete and mortar.
- Use hazardous substances like paints, solvents, and cleaners in the **smallest amounts possible**, and follow the directions on the label. Clean up spills **immediately**, and dispose of the waste safely. Store substances properly to avoid leaks and spills.
- Purchase and use **nontoxic**, **biodegradable**, **recycled**, and **recyclable** products whenever possible.
- **Clean** paint brushes in a sink, not outdoors. Filter and reuse paint thinner when using oil-based paints. Properly dispose of excess paints through a household hazardous waste collection program, or donate unused paint to local organizations.



- **Reduce** the amount of paved area and increase the amount of vegetated area in your yard. Use native plants in your landscaping to reduce the need for watering during dry periods. Consider directing downspouts away from paved surfaces onto lawns and other measures to increase infiltration and reduce polluted runoff.

Pet Care

- When walking your pet, remember to **pick up** the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.

Swimming Pool and Spa

- **Drain** your swimming pool only when a test kit does not detect chlorine levels.
- Whenever possible, drain your pool or spa into the **sanitary** sewer system.
- Properly store pool and spa chemicals to **prevent** leaks and spills, preferably in a covered area to avoid exposure to stormwater.

Septic System Use and Maintenance

- Have your septic system **inspected** by a professional at least every 3 years, and have the septic tank **pumped** as necessary (usually every 3 to 5 years).
- Care for the septic system drainfield by **not** driving or parking vehicles on it. Plant only grass over and near the drainfield to avoid damage from roots.
- Flush responsibly. Flushing household chemicals like paint, pesticides, oil, and antifreeze can **destroy** the biological treatment taking place in the system. Other items, such as diapers, paper towels, and cat litter, can **clog** the septic system and potentially damage components.

Storm drains connect to waterbodies!

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EPA 833-B-03-003
January 2003

THE YEAR OF CLEAN WATER

Celebrate Recommitment

Remember: Only rain down the drain!

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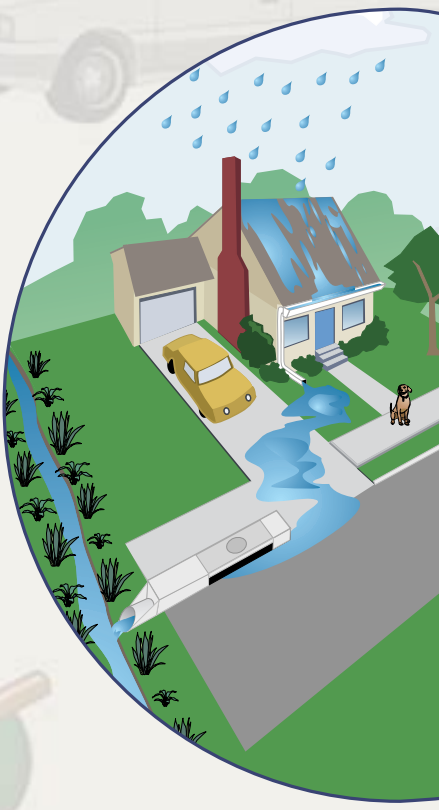
Make your home

The

SOLUTION TO STORMWATER POLLUTION!

A homeowner's guide to healthy habits for clean water



EPA United States Environmental Protection Agency

RETHINKING YARD CARE

About a century ago, wooden rain barrel was a familiar sight in many backyard gardens. Its purpose was simple – collecting rainfall running off a roof and storing it for future use. Often, that use would have been watering flowers and garden plants when the weather turned dry.

A rain barrel reminds us of a simpler, more sensible, approach to yard care. It suggests an awareness of personal actions and their effects on the environment, with the knowledge that simple and natural methods are sometimes the most effective ways to care for our yard.

Many sources of water pollution originate right in our yards. Fertilizer and pesticides applied to lawns in excessive amounts or before heavy rains can wash into ditches and storm sewers and eventually reach the river. Likewise, leaves and grass clippings contain nutrients such as phosphorus and nitrogen that can be washed away before collection and end up in our waters if we conveniently rake them to the curb. Leaves and grass can also clog storm sewers and contribute to localized flooding.

It is time to rethink.

In the forest environment, a layer of fallen leaves helps reduce erosion by protecting soil from the impact of falling raindrops. Leaves and grassy vegetation are decomposed by soil organisms, which return nutrients to the soil. Decaying vegetation also forms an insulating layer of mulch and adds organic matter which reduces daily temperature fluctuations and increases the soil's capacity to hold moisture.

What works for nature can work for homeowners.

By properly mowing, mulching, and composting leaves and grass clippings, the normal amount of fertilizing, watering, and weeding can often be reduced. If grass clippings are allowed to remain on lawns instead of being raked or bagged, they will produce benefits from natural recycling.

Ultimately, awareness of our personal actions could mean the difference between clean and polluted rivers.

Adapted from University of Wisconsin–Extension in cooperation with the Wisconsin Department of Natural Resources. (1999). *Rethinking Yard Care - A Series of Water Quality Fact Sheets for Residential Areas.* [Brochure]. Author: Korb, G.

Rivers & Streams Begin at Your Front Door

Even though you live miles from a river or stream, you may be polluting it without knowing it.

Before you pour anything into the gutter or down the drain, stop and think! Storm drains go directly into channels and creeks, rivers and streams.

Did You Know...

Anything we use in our home, car and business like motor oil, paint, pesticides, fertilizers and cleaners can wind up in the street.

A little water from rain or a garden hose can carry automotive and household materials through the storm drain, polluting streams, rivers, and wetlands. Storm drains are there to drain water off the street - not for disposal of hazardous materials.

Dumping one quart of motor oil down a storm drain contaminates 250,000 gallons of water.

Because storm drains are separate from our sewer system, Storm Water & Urban Runoff Pollution can flow into streams and rivers without treatment.

Where Does It Go?

These pollutants flow together on a journey from the storm drain to ditches, creeks, rivers, streams and wetlands. This type of pollution is called Storm Water & Urban Runoff Pollution and is a serious threat to the rivers and streams of Illinois.

What Is Storm Water & Urban Runoff Pollution?

Storm water runoff refers to seasonal rainfall flows. It is very noticeable during a heavy rain storm when large volumes of water drain off paved areas. Urban runoff can happen anytime of the year when excessive water use from irrigation, car washing and other sources carries litter, lawn clippings and other urban pollutants into storm drains. Even an automobile leaking motor oil miles from a river or stream can cause pollution.

How Is It Different From Other Forms of Water Pollution?

Storm Water & Urban Runoff Pollution can include anything that washes into the storm drain from the community. Unlike water pollution linked to factories or sewage treatment plants, Storm Water & Urban Runoff Pollution can come from city streets, neighborhoods, farms, construction sites and parking lots.

Where Does Storm Water & Urban Runoff Pollution Come From?

- Automotive leaks and spills
- Improper disposal of used oil and other engine fluids down the storm drain
- Metals found in vehicle exhaust, weathered paint, rust, metal plating and tires
- Pesticides, herbicides and fertilizers from lawns, gardens and farms
- Improper disposal of cleaners, paint and paint removers
- Soil erosion and dust debris from landscape and construction activities
- Litter, lawn clippings, animal waste and other organic matter
- Oil stains on parking lots and paved surfaces

Storm Water & Urban Runoff Pollution and Our Rivers and Streams

Storm Water & Urban Runoff Pollution may have a serious impact on water quality in Winnetka. Pollutants from the storm drain system can harm aquatic life as well as wetland habitats. It can also degrade recreation areas such as beaches, fishing areas, and boating areas.

A Storm Water Quality Management Program has been developed by the Village of Winnetka, which participates in the National Pollutant Discharge Elimination System (NPDES). Village's responsibilities involve encouraging the public to help protect water quality, monitoring runoff in the storm drain system, investigating illegal disposals and maintaining storm drains.

The support of Village residents, businesses and industries is needed to improve water quality and reduce the threat of Storm Water & Urban Runoff Pollution. Proper use and disposal of materials we use everyday will help stop this form of pollution before it reaches the storm drain and our rivers and streams.

To report possible illegal discharges to the storm drain system, call the *Village* of *Winnetka* at 847-716-3568.

(Source: Orange County, California)

STORM SEWERS – RIVERS BENEATH OUR FEET

Storm sewers are pipes laid underground, often below streets. Inlets or drains located along curbs and in parking areas collect storm runoff into these pipes, which carry the flows to the river. A common misconception is that water running off streets goes into a sewage treatment plant. It does not. In fact, stormwater usually receives no treatment.

Stormwater is Not Clean Water

Stormwater runoff carries pollutants that seriously harm our waters:

- Sediment. Soil particles washed off construction sites or farm fields into a lake or stream make the water cloudy or turbid. When sediment settles out of the water, it gradually fills in the river bed.
- Phosphorus. This nutrient, often attached to soil particles, fuels the growth of algae and aquatic weeds. These plants are important in providing habitat for fish and wildlife. However, rapid and excessive growth of algae and aquatic plants can degrade water quality and interfere with swimming, boating and fishing.
- Micro-organisms. Bacteria, viruses and other disease causing organisms make waterways unsafe for swimming, wading and other types of recreation. Some of these organisms, notably Cryptosporidium, are difficult to remove through water treatment and may endanger people who depend on drinking water supplies drawn from lakes or streams.
- Toxic chemicals. Motor oil, lead from gas and auto exhaust, zinc from roof drains and tires, and pesticides in stormwater runoff may kill aquatic organisms or impair their health, growth or ability to reproduce.

We Can All Help!

Each of us contributes to stormwater pollution and each of us can help stop it. Here are some ways you can help:

- Keep pesticides, oil, leaves and other pollutants off streets and out of storm drains.
- Divert roof water to lawns or gardens where it can safely soak in.
- Clean up pet waste – bury it or flush in down the toilet.
- Keep cars tuned up and repair leaks – or better yet, walk, bike or take the bus.

The amount of pollution that you stop may seem small, but together it all adds up to cleaner water for everyone to enjoy!

Adapted from University of Wisconsin–Extension in cooperation with the Wisconsin Department of Natural Resources. (1999). *Cleaning Up Stormwater Runoff - A Series of Water Quality Fact Sheets about Stormwater Runoff.* [Brochure]. Author: Johnson, C.

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NPDES Phase II Training for Municipal Employees

Mark Phipps, P.E., CFM, CPESC

Water Resources Department Manager

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NPDES Phase II

- National
- Pollutant
- Discharge
- Elimination
- System

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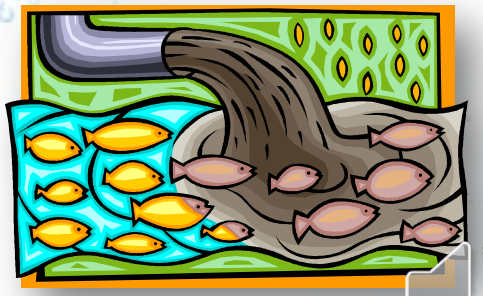
NPDES Phase II

- Industrial Sites (ILR00)
- Construction Sites (ILR10)
- Municipal Separate Storm Sewer Systems (ILR40)



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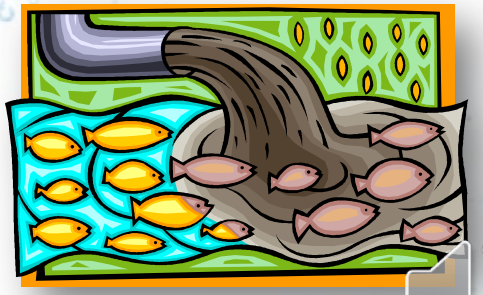
NPDES Phase II

Reduce Stormwater Pollution to the Maximum Extent Practicable



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NPDES Phase II

Six Minimum Control Measures

1. Public Education and Outreach
2. Public Involvement/Participation
3. Illicit Discharge Detection and Elimination
4. Construction Site Runoff Control
5. Post-Construction Stormwater Management
6. Pollution Prevention for Municipal Operations

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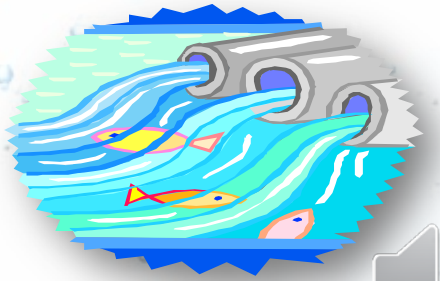
NPDES Phase II

- Notice of Intent
- Annual Report
- Audit



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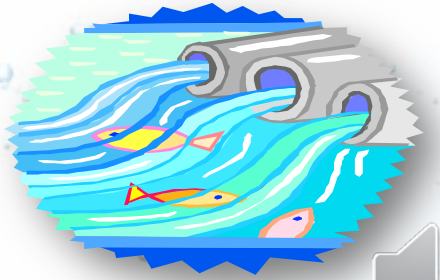
NPDES Phase II

Stormwater Pollution Prevention Training Required for Municipal Employees



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Stormwater Pollution Prevention for Municipal Operations

Mark Phipps, P.E., CFM, CPESC

Water Resources Department Manager

Municipal Operations

- Municipal Facilities
- Drainage System

Municipal Facilities

- Fleet Maintenance Facilities
- Storage Yards
- Parks and Open Spaces
- Water Treatment Facilities
- Paved Parking Lots

Municipal Facilities

- Fleet Maintenance Facilities
  - Fuel
  - Other Vehicle Fluids
  - Paint
  - Cleaning Solvents
  - Vehicle Wash Water

Municipal Facilities

- Storage Yards
  - De-Icing Materials
  - Pavement Repair Materials
  - Landscaping Materials
  - Aggregate
  - Debris

Municipal Facilities

- Parks and Open Space
  - Lawn Chemicals
  - Landscaping Materials
  - Fuel

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Municipal Facilities

- Water Treatment Plants
- Paved Parking Lots

Control Measures

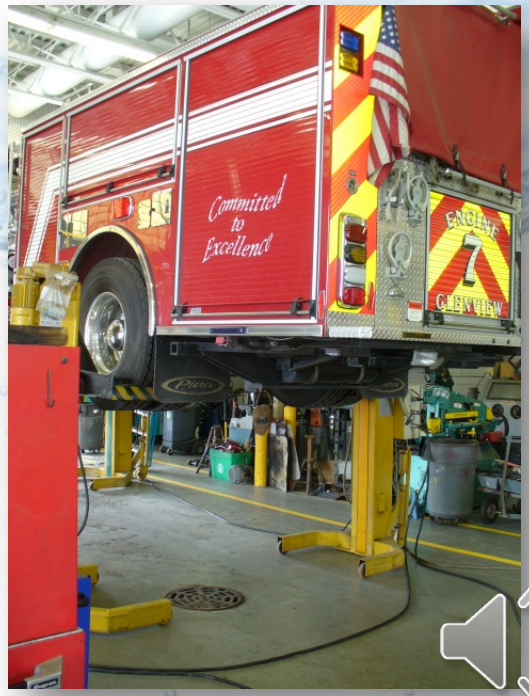
- Good Housekeeping
- Preventative Maintenance
- Spill Prevention and Response
- Structural Control Measures
- Employee Training
- Inspections

Control Measures

- Good Housekeeping
  - Keep Facilities Clean
  - Store Materials in an Orderly Fashion

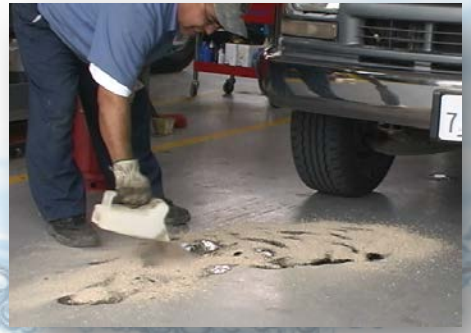
Control Measures

- Preventative Maintenance
  - Inspect and Maintain Vehicles and Equipment
  - Inspect and Maintain SW Mgmt System



Control Measures

- Spill Prevention and Response
  - Inspect Pollution Sources
  - Contain Spills and Leaks
  - Monitor Filling of Storage Tanks
  - Emergency Response



Control Measures

- Structural Control Measures
  - Triple Basins
  - Storage Containers
  - SW Mgmt System

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Control Measures

- Employee Training
  - Awareness of Conditions Causing Pollution
  - Proper Use of Control Measures

Control Measures

- Inspections
  - Routine Visual Inspections
  - Annual Inspections

Drainage System

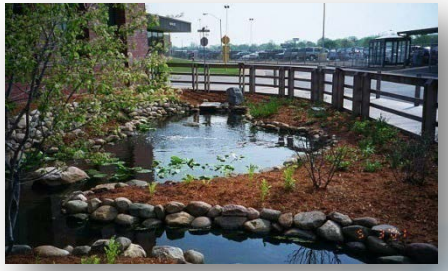
- Sewer Cleaning
- Catch Basin Maintenance
- Detention Basin Maintenance
- Stream Maintenance

Drainage System

- Street Sweeping
- Street De-Icing
- Street Repair

Drainage System

- Green Infrastructure
  - Rain Gardens
  - Permeable Pavement
  - Green Roofs
  - Rainwater Harvesting



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Municipal Operations

- Stormwater Pollution Prevention Plan for Municipal Facilities
- Inspection and Maintenance Procedures

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Illicit Discharge Detection and Elimination

Mark Phipps, P.E., CFM, CPESC

Water Resources Department Manager

Program Components

- Storm Sewer System Map
- Ordinance
- Procedures

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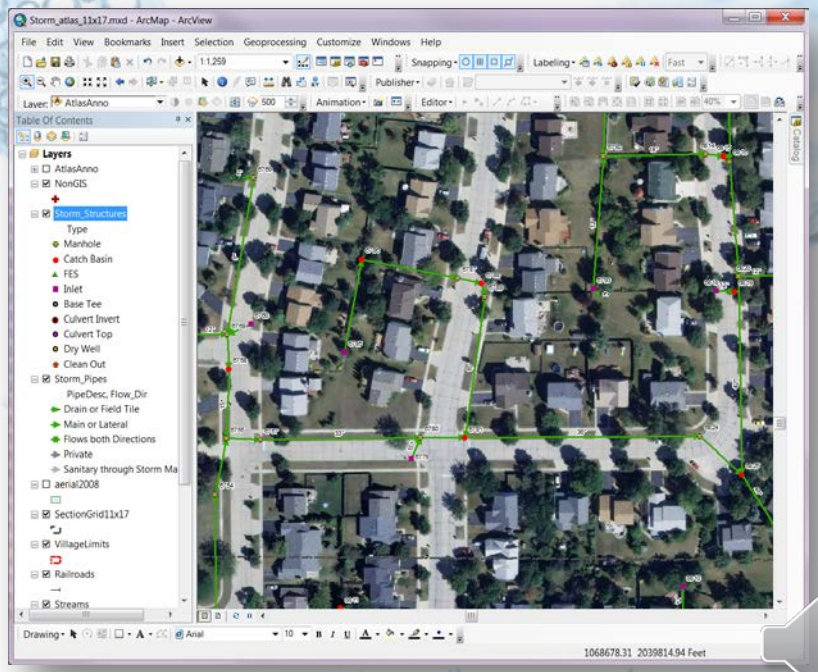
Program Components

- Storm Sewer System Map
  - Outfalls
  - Receiving Waters



Program Components

- Ordinance
  - Defines Illegal Discharge
  - Provides Enforcement Procedures
  - No “Grandfather Clause”

Ordinance

Illegal Discharge

Any direct or indirect non-stormwater discharge to the stormwater drainage system, except as specifically exempted.

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Ordinance

- Illegal Discharge Exemptions
  - Water line and hydrant flushing
  - Lawn watering
  - Storm sewer cleaning water
  - Residential vehicle washing
  - Fire fighting activities
  - Others

Ordinance

No "Grandfather Clause"

The construction, use, maintenance, continued existence of illicit connections to the stormwater drainage system is prohibited.

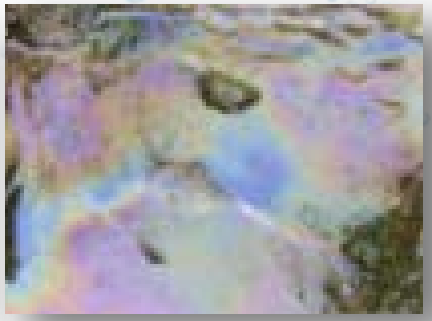
Program Components

- Procedures
  - Outfall Screening
  - Illicit Discharge Tracking
  - Illicit Discharge Removal

Procedures

- Outfall Screening
  - Outfall Reconnaissance Inventory Form
    - Pipe Description
    - Indicators






Procedures

- Outfall Screening
- Outfall Classification
  - Unlikely
  - Potential
  - Probable
  - Obvious

Procedures

- Outfall Screening
- Screening Resources
  - ORI Forms
  - Maps
  - Laboratory Bottles
  - Camera
  - Test Strips for pH, Ammonia, and Chlorine

Procedures

- Outfall Screening
- Timing
  - IEPA Recommends Annually
  - Late Summer-Early Fall
  - 48 Hours After Significant Rainfall

Procedures

- Illicit Discharge Tracking
  - Dye or Smoke Testing
  - Move Up the System
  - Split the System
  - Move Down the System

Procedures

- Illicit Discharge Removal
  - Emergency Response
  - Enforcement Actions

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NPDES Phase II Quiz

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Question #1

How many Minimum Control Measures are there?

A. 2

B. 4

C. 6

D. 8

Question #2

Where should a municipal vehicle be washed?

A. Inside the Public Works garage

B. Outside, in a location where the wash water will not drain to an inlet or waterway

C. Either A or B

D. Outside, if it's warm and sunny

Question #3

Which of the following materials is a likely source of pollution resulting from fleet maintenance?

A. Gasoline

B. Antifreeze

C. Solvents

D. All of the Above

Question #4

Which of the following is NOT an example of Green Infrastructure?

A. Rain Garden

B. Green PVC Pipe

C. Permeable Pavement

D. Rainwater Harvesting

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Question #5

Which strategy for street de-icing would be an effective BMP for stormwater pollution prevention?

A. Just enough salt to keep the roads safe

B. The more salt, the better

C. Salt, salt, and then more salt

D. Don't stop until all the salt is gone

Question #6

Which of the following BMPs is an example of Good Housekeeping?

A. Sweep pavement clean regularly

B. Dispose of vehicle fluids in hazardous waste containers

C. Label materials properly

D. All of the above

Question #7

Which detention basins should a municipality maintain?

A. At least those owned by the municipality

B. Only those that residents complain about

C. Only the largest

D. Only those planted with turf grass

Question #8

Which of the following BMPs would effectively reduce stormwater pollution from a storage yard?

A. Store all materials under a roof or tarp

B. Regularly check vehicles for leaking fluids

C. A and B

D. Storage yards are not a significant source of pollutants

BAXTER & WOODMAN Consulting Engineers

Question #9

Which strategy for park maintenance would be an effective BMP for stormwater pollution prevention?

A. The more fertilizer, the better

B. Take soil samples and apply only as much fertilizer as needed

C. Keep turf grass mowed short

D. Leave landscaping materials uncovered

Question #10

Which of the following is considered an illicit discharge?

A. Fire hydrant flushing

B. Runoff from fire fighting activities

C. Municipal vehicle and equipment wash water

D. Runoff from lawn watering

Question #11

Which of the following is NOT considered an illicit discharge?

A. Motor oil

B. Residential vehicle wash water

C. Paint

D. Prescription medication

Question #12

Which of the following would indicate a potential illicit discharge?

A. Strong odor from an inlet

B. Colored water in a storm sewer pipe

C. Stained outfall pipe

D. All of the above

Question #13

What should be done if a suspicious discharge is traced and the source is outside your municipal boundary?

A. Notify the adjacent municipality
B. Notify the IEPA
C. Plug the pipe
D. Ignore it

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Question #14

How often can the IEPA conduct an audit of your Stormwater Management Program?

A. Whenever they want

B. Once every five years

C. Once per year

D. Twice per year

Question #15

How often should municipal employees receive training in stormwater pollution prevention?

A. At the start of their employment

B. Annually

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