

Protecting Wisconsin's Water

Better Oversight of Development is Necessary to Prevent Runoff Pollution



WISPIRG Foundation
American Rivers

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WISPIRG Foundation

BRINGING RIVERS TO LIFE



American Rivers
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Foreword

Stormwater runoff is one of the largest threats to clean water today, and a large component of this runoff comes from unrestrained development and improperly managed construction sites. In turn, the sediment that runs from these areas flows into our rivers and streams choking the life out of them. Slowly but surely, the rivers we love to fish, swim and boat on become shallower, support less life, and fill up with pollutants.

It is not impossible to build and grow an economy while protecting clean water. Formerly working as a project engineer in construction, I saw many properly managed building sites that kept sediments from getting into the local streams. Additionally, I have worked with communities that reduced their impervious surfaces and minimized the stormwater and pollution that ran off their roads and roofs when it rained. Communities across the country are realizing that protecting water systems, sustainable growth and a healthy economy all go hand in hand. Green solutions like green roofs, constructed wetlands, and specialized stormwater landscaping are rapidly becoming cheaper and more effective as research and development on these techniques progress. Additionally, communities are finding that using these techniques and incorporating better stormwater management policies are creating healthier, cleaner places to live and play.

The folks at WISPIRG have put together a superb report. Thoroughly researched and well written, this document delves into the current and looming stormwater problems Wisconsin faces. Though stormwater pollution may seem like a mundane topic, it is a largely preventable problem that is damaging Wisconsin's environment and economy. All of Wisconsin's citizens deserve to know what poorly managed development and construction do to their waters. This report outlines these problems and some of the solutions for the public; now we just need to take the next step and put these solutions to work. Action must be taken to preserve and protect those two assets that are so important to the health and prosperity of Wisconsin's communities: clean water and healthy rivers.

Gary Belan
Associate Director
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Executive Summary

From the Sugar River south of Madison to the Lake Michigan shoreline, the excess flow of runoff pollution into Wisconsin's waterways has led to serious water quality problems, including impaired drinking water quality, degraded wildlife habitat and uncontrolled sewage overflows. These problems extend downstream, from contamination in the Great Lakes to the dead zone that forms every year at the mouth of the Mississippi River.

In 2002, the state took a major step toward solving these problems by adopting a set of the nation's strongest stormwater regulations. The regulations set limits on runoff from roads and developed areas and require nutrient management plans for agricultural land.

However, developers are not fully complying with the law. To improve the health of Wisconsin's waterways, the state should strengthen its oversight of development projects.

Polluted runoff degrades thousands of streams, rivers and lakes in Wisconsin.

- The Wisconsin Department of Natural Resources (DNR) identified runoff as a dominant source of pollution in over

two-thirds of impaired river sections in the state and over 50 percent of impaired lakes in a 2006 assessment.

Development projects create runoff pollution both during construction and long term.

- During construction, development clears land of vegetation, allowing rainwater to carry loose soil into nearby waterways. According to the U.S. Environmental Protection Agency, a construction site of one acre can release between 20 and 150 tons of sediment per year.
- Sediment is the most common symptom of water quality degradation in Wisconsin's rivers and streams—contributing to the impairment of over 1,600 miles of rivers and streams and nearly 200,000 acres of inland lakes.
- After development, new roads and buildings replace natural surfaces that formerly stored and cleaned runoff with hard, paved surfaces that divert water and pollution directly into creeks or into sewers.

- As a result, runoff increases the variability of stream flow, eroding stream banks, impairing wildlife habitat, polluting drinking water, and contributing to flooding and sewer overflows.

Without better enforcement of runoff prevention rules, future growth in Wisconsin could exacerbate runoff pollution.

- In the next 14 years, Wisconsin's population is expected to increase by over half a million people, or by about 10 percent.
- If development continues at even half the pace as in the past, the amount of built-up land in Wisconsin could increase by about 12 percent by 2020. To put that in perspective, imagine a construction site covering a plot of

land 1.5 times the size of Milwaukee County, or nearly 250,000 acres.

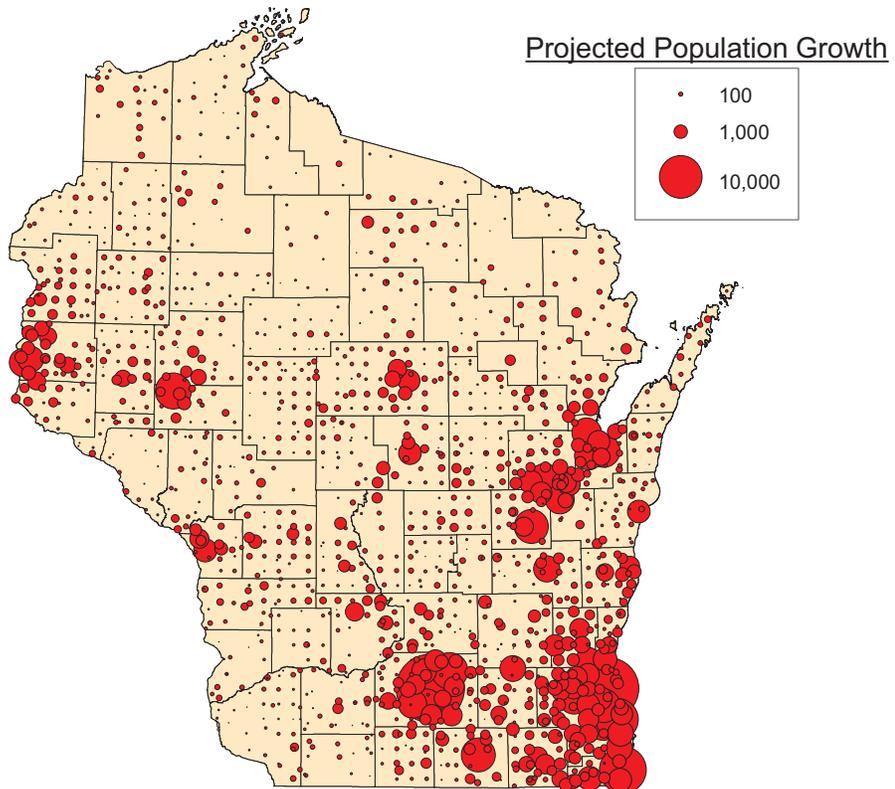
- Much of this construction is likely to occur in or around population centers. (See Figure ES-1.) Municipalities expected to grow by more than 2,500 people by 2020—and that also contain waterways already impaired by sedimentation—include:

Milwaukee metropolitan area:

Germantown, Mequon, Sussex, Menomonee Falls, Milwaukee, Waukesha, New Berlin, West Allis, Greenfield, Franklin, Oak Creek, South Milwaukee, Caledonia, Mount Pleasant and Salem.

Madison area: DeForest, Sun Prairie, Madison, Fitchburg, Watertown, and Janesville.

Figure ES-1: Population Growth Projections by Municipality, 2005-2020



Green Bay area: Howard, Green Bay, Bellevue, DePere, Buchanan, Appleton, Menasha, Grand Chute, Greenville, Oshkosh, Fond du Lac, and Manitowoc.

Central and Western Wisconsin: Plover, Onalaska, Eau Claire, and Hudson.

Weak enforcement policies allow developers to subvert runoff prevention law.

- Wisconsin’s runoff prevention rules require builders to reduce sediment runoff during construction by 80 percent at sites of one acre or larger. Builders must also design sites to prevent runoff after construction, reducing sediment runoff by 80 percent, cutting peak runoff discharge during storms, creating protective buffers between developments and waterways, and implementing practices that allow water to infiltrate into the ground rather than directing it off the site.
- Flaws in enforcement allow developers to subvert the runoff rules. A DNR official has estimated 100 percent non-compliance in at least one region of the state.
- The Department of Commerce, which oversees “commercial” construction sites (an estimated 85 percent of all sites), has weak enforcement practices compared to DNR. Proposed Commerce runoff rules, scheduled to go into effect in April 2007, do not correct the situation. For example, under the proposed rules:

Developers are not required to submit specific construction site or runoff control plans to the Department of Commerce. As a result, the department is unable to conduct even basic reviews of commercial construction sites before construction begins.

Applicants will be granted automatic permit coverage 7 days after submitting a permit application—without adequate time for review.

Commerce will charge a permit fee of only \$25 for all applicants, regardless of the size of the construction project—far less than would be necessary to fund a meaningful oversight program.

Commerce is not required to share information with DNR on a timely basis. As a result, DNR does not know even the location of a majority of the construction sites it has ultimate authority over—much less information about violations that require enforcement action.

- The difference in enforcement approaches between DNR and Commerce is readily apparent. While DNR has referred at least 16 violations of construction-site stormwater rules to the Department of Justice for enforcement in the last two years, the Department of Commerce has not referred any since it began monitoring commercial sites in 1994.

To prevent growth from exacerbating runoff pollution, Wisconsin should improve oversight of development projects.

- The state should consolidate all construction site stormwater regulation back within DNR, the agency with the legal authority and expertise to enforce the Clean Water Act in Wisconsin.
- In the event that Commerce continues to oversee commercial construction sites, it should ensure that all developers submit a DNR-approved application, including enough detailed information about proposed projects to evaluate their compliance with Wisconsin’s runoff prevention law. Projects should not be automatically approved without adequate review.

- Additionally, Commerce should share permit applications with DNR on a frequent and timely basis and make them available to the public over the Internet. Commerce should also share information about site monitoring and any identified violations to enable DNR enforcement action.
- Permit fees (at either agency) should be set at a level to ensure adequate funding and staff for project review, inspection and enforcement action. Based on DNR estimates of staff requirements for optimal construction site permitting and enforcement, the average stormwater permit application should be accompanied by a fee in the range of \$600, tied to inflation.
- Both agencies should emphasize low-impact development techniques, such as minimizing the amount of impervious surface on a site, as simple and effective approaches to achieving the long-term stormwater reduction goals laid out in Wisconsin law.

Introduction

Before industrialization came to Wisconsin, the “Coaster” brook trout used to swim freely between the Great Lakes and the state’s rivers and streams. However, as forests were cleared and factories built along rivers and lakeshore, rivers became degraded to the point where trout stopped migrating to the lakes.¹

The passage of the landmark federal Clean Water Act in 1972 established limits on direct pollution of Wisconsin waters and set up mechanisms to restore waterway health. Discharge of industrial pollution began to decline. However, the Coaster hasn’t yet returned to its former habitat. It remains limited to the headwaters of relatively pristine streams.²

One of the major culprits behind the continued degradation of Wisconsin waters—and a major impediment to the return of the Coaster—is stormwater runoff pollution. Environment Canada estimates that runoff in the Great Lakes basin carries more than 100,000 tons per year of sediment, oil, grease, metals, and other contaminants through streams and rivers, and ultimately into the lakes.³ Water quality analysts have identified more than 800 toxic

contaminants in Great Lakes water and sediment.⁴ In Wisconsin, the Department of Natural Resources (DNR) estimates that polluted runoff affects about 40 percent of the state’s 44,000 miles of streams and rivers and about 90 percent of the state’s 15,000 lakes.⁵

Wisconsin has long been aware of this problem and has taken action to solve it. In 2002, the state adopted a set of rules designed to reduce the impact of runoff from existing communities, new developments, agriculture and roads. When the rules were enacted, clean water advocates hailed them as the strongest in the country.

The rules represented more than just a few new responsibilities for local governments, developers and farmers. They represented a whole new way of thinking about the connection between land use and water quality. In order to make the rules work, local and state agencies would have to help their citizens incorporate water quality into their long-range planning and into their daily activities, whether managing a field of crops, operating a storm sewer system, designing a new commercial development, or planning an urban revitalization project.

However, without effective funding and

enforcement of the rules, business as usual will continue. In this regard, Wisconsin has a long way to go to make its runoff prevention program effective. For example, in 2004 the Environmental Integrity Project documented that most state agencies in the Great Lakes Region do not have the resources to inspect even a fraction of the tens of thousands of construction site stormwater permits they issue every year.⁶ Wisconsin's problems extend even deeper: for most construction projects, the state collects very little information and issues permits without even basic review.

Responsibility for regulating runoff from construction sites has been largely handed to the Department of Commerce, which is not living up to its responsibilities under the law.

This report takes a broad look at the effect of runoff on Wisconsin's waterways and examines how future growth and development could lead to water quality decline. The report also explores problems with the enforcement of the state's runoff prevention rules, suggesting reforms that will realign oversight of development activity with the ultimate goal: cleaner water for Wisconsin.

Stormwater Runoff Pollutes Wisconsin's Water

Despite progress in controlling industrial water pollution over the last 30 years, water quality problems in Wisconsin persist. Most urban and suburban watersheds, and the near-shore areas of Great Lakes cities, still do not have water that:⁷

- is safe for swimming;
- contains fish that are safe to eat; and/or
- supports diverse communities of plants and wildlife.

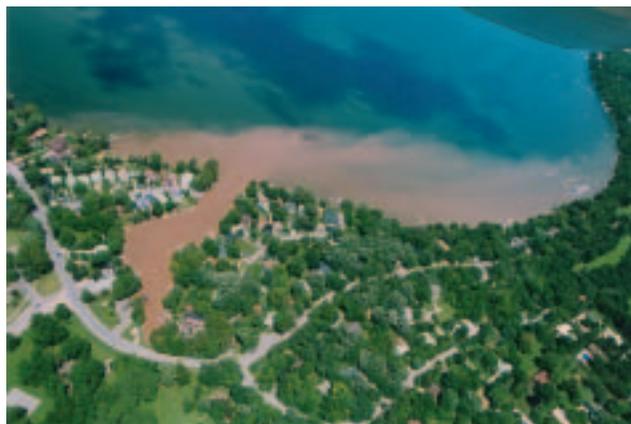
The Wisconsin Department of Natural Resources (DNR) monitors the status of lakes and rivers across the state. In its latest water quality report, DNR found that:⁸

- More than 8,000 miles of rivers and streams and more than 360,000 acres of inland lake area do not fully support fish and aquatic life, and
- Stormwater runoff is a dominant source of pollution in over two-thirds of impaired river and stream sections and over 50 percent of impaired lakes.

Stormwater runoff—directly tied to land use—is one of the primary factors behind

water pollution.⁹ Rainwater or melting snow can carry fertilizer and pesticides from agricultural land into nearby waterways. Developing land increases the volume of runoff after rainstorms and seeds the runoff with contamination.

After heavy rainfall, water flows down fields, lawns, rooftops, sidewalks, parking lots and streets, carrying everything from sediment to road grime into waterways. In some areas, runoff overwhelms outdated sewage infrastructure, spilling raw or partially treated sewage into waterways.



Dane County Land and Water Resources Department

A plume of sediment-contaminated runoff enters Spring Harbor.

As a result, runoff makes Wisconsin's streams, rivers and lakes less suitable for drinking and less able to support a diverse community of wildlife. Areas downstream become more prone to flooding and sewage overflows. And the pollution ends up in the Great Lakes or the Mississippi River.

Runoff Pollutes Drinking Water and Degrades Wildlife Habitat

Pollution from runoff causes significant problems for communities across the state. Contaminated drinking water must be filtered and treated before public use—which is harder and more expensive to do with more polluted water. Runoff also damages wildlife habitat and makes waterways less suitable for recreation.

Polluting Drinking Water

A source of clean drinking water is one of the most important requirements for a healthy community. Natural areas filter pollutants out of runoff and keep drinking water sources clean, making them a valuable part of the natural infrastructure that supports communities across the state.¹⁰

In Wisconsin, public water supply systems use more than 600 million gallons of water per day.¹¹ About 70 percent of Wisconsin's drinking water comes from underground aquifers, and 30 percent comes from surface sources, including the Great Lakes and nearby rivers.¹² When this water is not clean, public water supply agencies have to spend money building and operating water treatment plants to remove contaminants.¹³

Runoff can contain a variety of harmful contaminants that impair drinking water quality and threaten public health, including fallen air pollution, pesticides, and pollution from roads, such as oil, salt, sediment and bits of rubber. Some of these

chemicals are toxic, such as lawn care pesticides and diesel exhaust particles that fall back to the ground.

Other contaminants can become toxic during the drinking water treatment process. Drinking water treatment plants often use chlorine to kill the bacteria in the water before pumping it into homes and businesses. While this step protects the public from bacterial infections, chlorine treatment can produce byproducts when it reacts with organic pollutants and sediments that are also in the water. These chlorinated byproducts, such as trihalomethanes and haloacetic acids, are suspected of causing birth defects, miscarriages, and cancer.¹⁴ Chlorination tends to be the treatment of choice in the Great Lakes region.¹⁵

Degrading Wildlife Habitat

Runoff can also reduce the ability of a waterway to support a full, diverse and healthy range of wildlife—reducing the capacity of the ecosystem to absorb and filter pollution or to support activities like recreational fishing.

Runoff comes in large amounts after rainstorms, eroding stream channels and destabilizing stream banks, increasing the amount of sediment in the water.¹⁶ These changes disrupt habitat for aquatic organisms and pollute the water.

Runoff also carries nutrients such as phosphorus and nitrate compounds. These chemicals promote excessive growth of harmful aquatic vegetation, including algae. As this vegetation dies and decays, it removes oxygen from the water, which can kill local species of aquatic plants and fish. This process is known as eutrophication, and it makes waterways less able to support fishing, recreation, industry and drinking.¹⁷

Increased pollution and degraded habitat kill sensitive species and lead to a shift toward more pollution-tolerant insects and weeds. Waterways in Wisconsin surrounded by urban areas and with high levels of treated sewage discharge tend to have

an impaired aquatic community, with a narrow range of pollution-tolerant species.¹⁸ Correspondingly, waterways fed by land with a large amount of forest and wetlands are more likely to have a full and healthy aquatic community.¹⁹ Forests and wetlands provide a buffer from runoff pollution and help to maintain a healthy supply of water, food and habitat for sensitive species.²⁰

Runoff Causes Flooding and Sewer Overflows

Runoff causes flooding in downstream areas by increasing the levels of water in a stream immediately after a storm. In some areas, flooding overwhelms outdated sewage infrastructure, spilling raw or partially treated sewage into rivers and the Great Lakes.

Increasing Flooding

Runoff increases the amount of water reaching a waterway after a storm and raises the elevation of the flood plain, leading to higher flood vulnerability in downstream areas.

- Flooding is the leading cause of Federal Emergency Management Agency disaster declarations in Wisconsin.²¹
- In an average year, Wisconsin suffers about \$150 million in flood damage.²²

The predicted effects of global warming in Wisconsin include an increase in the frequency of heavy rainstorms, which could increase the frequency and severity of flooding events.²³

Sewage Overflows

Heavy rainfall can overwhelm sewage infrastructure, resulting in the release of raw or partially treated sewage into rivers and

lakes. Some storm drains are combined with sewage systems (CSOs), and are especially vulnerable to overflowing. Isolated or sanitary sewer systems (SSO) do not have a direct connection to runoff channels, but can still overflow if rainwater infiltrates the system through illegal connections or leaky pipes. The U.S. EPA estimates that every year, such overflows discharge on the order of 1 trillion gallons of untreated stormwater containing human sewage.²⁴

For example, during May of 2004, a series of rainstorms caused 1.7 billion gallons of wastewater to overflow from sewer systems in Milwaukee, including more than 500 million gallons directly from sanitary sewer systems (which contain the highest concentration of waste).²⁵

Sewage discharge can contaminate waterways with fecal bacteria, making rivers and lakes unsafe for swimming or drinking.²⁶ In 2005, Wisconsin health officials closed a swimming beach or issued a bacterial contamination advisory for a total of 1,063 beach-days (at 192 monitored beaches).²⁷ Water samples exceeded bacterial contamination standards more than 40 percent of the time at South Shore Beach in Milwaukee (47 percent), Brule River State Forest Beach #3 in Douglas (43 percent), Barker's Island Inner Beach in Douglas (43 percent), Kohler Andrae State Park North Picnic Beach in Sheboygan (41 percent), and Eichelman Beach in Kenosha (40 percent).²⁸

For Additional Information

For further background on the causes and effects of stormwater pollution, see:

- *Stormwater Strategies: Community Responses to Runoff Pollution*, Natural Resources Defense Council. Available at www.nrdc.org/water/pollution/storm/stoinx.asp
- *Site Planning for Urban Stream Protection, Chapter 2: The Importance of Imperviousness*, The Center for Watershed Protection. Available at

www.cwp.org/SPSP/TOC.htm

- *Urbanization Impacts on Aquatic Resources*, Public Sector Consultants for the Michigan Land Use Leadership Council. Available at www.michiganlanduse.org/resources/councilresources.htm

Improper Development Causes Runoff Pollution

Development alters the landscape, changing how the site discharges or retains stormwater after rainfall or heavy snow. Construction clears land of vegetation, allowing rainwater to carry loose soil into nearby waterways. After completion, roads and buildings typically replace natural surfaces that store and clean runoff with hard, paved surfaces that divert water and pollution directly into creeks or sewers. The way each individual site is designed greatly affects its contribution to the overall problem of contaminated runoff.

During Construction

Construction requires removing vegetation from a site, exposing loose soil. If not contained, rainwater or snowmelt can mix with soil and then carry it away and into streams and lakes.

According to the U.S. Environmental Protection Agency, a construction site of one acre can release between 20 and 150 tons of sediment per year to downstream waterways.²⁹ While agriculture and other types of land uses are also significant sources of sediment, construction activity causes soil erosion faster than any other kind of land use activity—more than 10 times faster than agriculture.³⁰

In Dane County, for example, construction sites and other transitional land uses only make up about 0.3 percent of the land area of the Lake Mendota watershed at any given time. However, these land areas are



Dane County Land and Water Resources Department

Sediment escaping a construction site through stormwater runoff.

responsible for about one-quarter of the sediment that ends up in Lake Mendota.³¹

According to the DNR's most recent water quality report, sediment is the most common symptom of water quality degradation in Wisconsin waterways.

- Sediment contributes to the impairment of over 1,600 miles of rivers and streams.³²
- Sedimentation also affects nearly 200,000 acres of inland lakes—or 50 percent of all impaired lake area.³³

Post-Construction

After a construction project is completed, the new structures become a lasting part of the landscape. The addition of paved surfaces causes increased levels of stormwater runoff, which carries pollutants from roads, rooftops and parking lots into creeks and rivers.

When rain falls on natural, undeveloped land, water is captured by leaves, branches, ground cover, roots or soil. At Wisconsin's latitude and with its climate, much of the rain eventually evaporates back into the air. The remaining water either flows into a stream or filters underground into the water table.³⁴ In the process, vegetation and soils filter and clean the water of sediment and pollution.³⁵

However, when natural landscape is replaced with a road, a driveway or a building,

the ground becomes less able to capture water. Concrete, asphalt and rooftops do not absorb water. Instead, these impervious surfaces create runoff, directing large volumes of rainfall into gutters, trenches, canals and storm sewers.

High volumes of this runoff quickly reach nearby creeks, rivers and lakes:³⁶

- Replacing a meadow with a parking lot increases runoff by about 16 times.³⁷
- In urban areas, up to 50 percent of rainwater or snowmelt becomes surface runoff.³⁸
- In downtown areas, 90 percent or more of precipitation becomes runoff.³⁹

Future Growth in Wisconsin Could Worsen the Runoff Problem

With the adoption of runoff prevention rules in 2002, Wisconsin policymakers recognized that if improper development continued unrestrained, the state's water quality problems would worsen.

Built-up land area has increased faster than population growth over the last few decades in Wisconsin. Following a pattern typical of urban sprawl, population shifted from urban centers into suburbs and exurbs in formerly undeveloped or agricultural land on the outskirts of cities. At the same time, this growth increased the amount of impervious surface in area watersheds, increasing the amount of runoff.

If development continues at even half the pace as in the past few decades, and if developers neglect runoff prevention measures, many watersheds could become increasingly impervious and vulnerable to the effects of runoff.

The most vulnerable parts of the state include the areas around where most of Wisconsin's future population growth is expected to occur: around population centers in the Milwaukee area, in the Fox River valley, and around Eau Claire and Hudson in Western Wisconsin.

Impervious Surface is Rapidly Covering Wisconsin

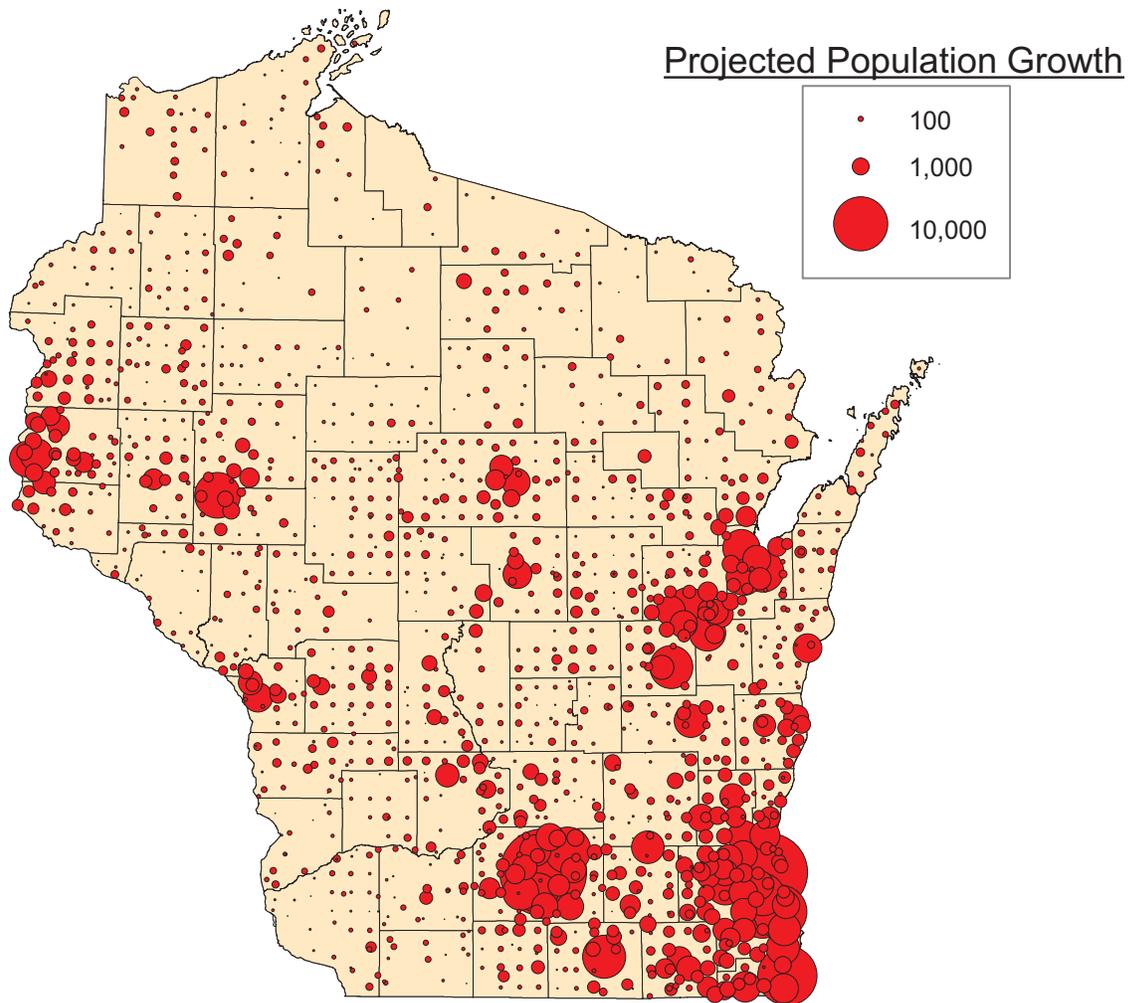
The Natural Resource Conservation Service of the U.S. Department of Agriculture (USDA) conducts periodic surveys of land use and presents the results in its *Natural Resource Inventory*. According to USDA, the amount of built-up land in the state increased about three times faster than population growth from 1982 to 1997.

In 1982, Wisconsin had about 1.3 million acres of developed land. By 1997, developed land area had increased by more than 400,000 acres, or by about 32 percent.⁴⁰ At the same time, Wisconsin's population increased by about 10 percent, from 4.7 million in 1982 to 5.2 million in 1997.⁴¹

This trend toward less density in Wisconsin communities adds more impervious surface to the landscape and increases runoff. For example:

- According to research at the U.S. EPA, development at 1 unit per acre and 20 percent impervious cover creates almost three times as much total runoff as development at 8 units per acre and 65 percent impervious cover.⁴²

Figure 1: Projected Population Growth in Wisconsin from 2005 to 2020, by Municipality⁴⁶



- Researchers in Connecticut found that low-density sites produce 95 percent more runoff during construction than high-density sites.⁴³
- The New Jersey State Plan calls for higher-density development around town centers and infill development in areas with existing infrastructure. Researchers at Rutgers University found that this plan would reduce runoff by 30 percent versus business as usual.⁴⁴

If Past Growth Patterns Continue, Stormwater Runoff Will Increase

In the next 14 years, Wisconsin’s population is expected to increase by over half a million people, or by about 10 percent.⁴⁵ (See Figure 1.)

If development continues at even half the pace as in the past, the amount of built-up land in Wisconsin could increase substantially.

From 1982 to 1997, Wisconsin added about 0.9 acres of built-up land for every new resident. At that rate of expansion, population growth through 2020 would bring 240,000 acres of new development. To put that in perspective, 240,000 acres is about 1.5 times the size of Milwaukee County. Development on that scale would increase the amount of built-up land in Wisconsin by about 12 percent.

Without effective oversight of the construction sites that will be created to accommodate this growth, sites could discharge thousands of tons of sediment into Wisconsin rivers, streams and lakes every year. Additionally, sites could be built in ways that increase stormwater runoff in the long term.

Waterways Near Population Centers are Most at Risk

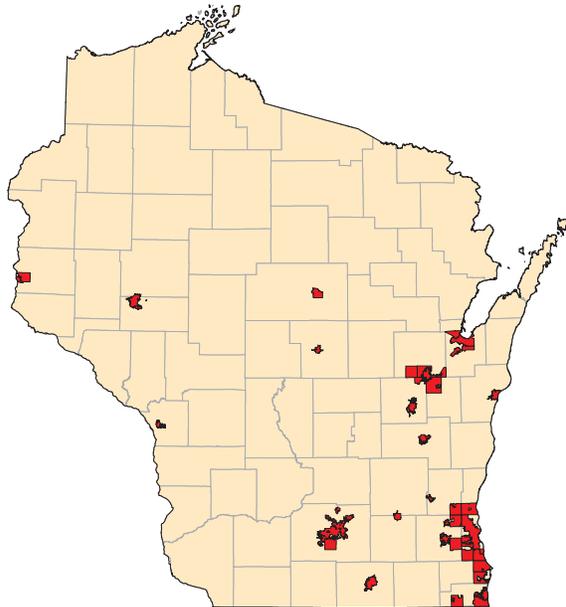
Much of the development to accommodate future growth in Wisconsin is likely to occur

in or around population centers. (See Figure 2.) Waterways in these areas are most at-risk for suffering the negative impacts of construction-related runoff pollution.

Municipalities expected to grow by more than 2,500 people by 2020 that also contain waterways already impaired by sedimentation include:

- *Milwaukee metropolitan area:* Germantown, Mequon, Sussex, Menomonee Falls, Milwaukee, Waukesha, New Berlin, West Allis, Greenfield, Franklin, Oak Creek, South Milwaukee, Caledonia, Mount Pleasant and Salem.
- *Madison area:* DeForest, Sun Prairie, Madison, Fitchburg, Watertown, and Janesville.
- *Green Bay area:* Howard, Green Bay, Bellevue, DePere, Buchanan, Appleton, Menasha, Grand Chute, Greenville, Oshkosh, Fond du Lac, and Manitowoc.
- *Central and Western Wisconsin:* Plover, Onalaska, Eau Claire, and Hudson.

Figure 2: Municipalities Projected to Grow by More than 2,500 People by 2020 that also Contain Waterways Affected by Sediment



Weak Enforcement Policies Allow Developers to Subvert Runoff Prevention Law

In 2002, Wisconsin adopted a set of rules designed to reduce the impact of runoff from existing communities, new developments, agriculture and roads. When the rules were enacted, clean water advocates hailed them as the strongest in the country.

The rules are notable for their emphasis on runoff prevention. They require nutrient management plans for agricultural land and sediment management for construction sites, and promote the design and retrofitting of built-up areas to capture runoff and allow it to evaporate or infiltrate into the ground, as opposed to discharging it to gutters and storm sewers.

However, flaws in enforcement allow developers to subvert the runoff rules. A DNR official has estimated 100 percent non-compliance in at least one region of the state.⁴⁷ A big part of the reason for this high rate of non-compliance is that the Department of Commerce (an agency without the same expertise or orientation toward environmental protection as the Department of Natural Resources), is responsible for enforcing the rules at “commercial” construction sites (an estimated 85 percent of all sites).

Wisconsin’s Landmark Runoff Prevention Rules

Wisconsin’s runoff prevention rules require developers to control runoff at construction sites in two ways. During construction, developers are required to minimize the amount of sediment leaving the site in rainwater or snowmelt. Additionally, developers must design projects to manage stormwater in the long-term—installing features that capture and retain stormwater rather than allowing it to run off site.

Reducing Sediment Runoff During Construction

As of March 10, 2003, developers of construction sites encompassing 1 or more acres of land disturbance are required to reduce sediment runoff by 80 percent (or to the “maximum extent practicable”). This goal can be achieved by protecting storm drain inlets and implementing related measures. Developers are required to have a written plan describing how their individual projects will manage sediment, and adhere to it.⁴⁸

Additionally, developers are required to manage the use, storage and disposal of chemicals, cement and other materials to prevent them from polluting runoff.⁴⁹

Design for Better Stormwater Management in the Long Term

Builders must also design sites to handle runoff in the long term. By designing sites with less paved surface, incorporating rain gardens, filter strips, vegetated swales or other features, sites can capture water that would otherwise carry pollution into rivers and allow it to filter into the ground—partially replicating the natural functions of the landscape before development. (See “Principles of Low Impact Development” on page 23.)

Developers of sites larger than 1 acre must write and implement a stormwater management plan to address the impact of the project on water quality. Under the rules, developers must:

- Reduce suspended solids in runoff at newly developed sites by 80 percent (or to the maximum extent practicable);⁵⁰
- Reduce suspended solids in runoff at infill development and redevelopment sites by 40 percent (or to the maximum extent practicable);⁵¹
- Reach the 80 percent reduction in suspended solids in runoff within 10 years;⁵²
- Reduce peak runoff discharge during storms, replicating the pre-development runoff rate of the site during a large storm (a 24-hour storm that statistically occurs once every two years).⁵³
- Install measures that allow water to infiltrate into the ground rather than running off into a waterway, with pretreatment to protect groundwater where necessary—infiltrating 60 to 90 percent of the rainfall annually

compared to pre-development conditions;⁵⁴ and

- Place protective buffer areas between developments and lakes, streams and rivers.⁵⁵

Gaps in Oversight of Construction and Development

However, weak enforcement policies allow developers to forego required runoff prevention measures. A DNR official has estimated 100 percent non-compliance in at least one region of the state.⁵⁷

“Commercial” Construction Sites are Overseen by the Department of Commerce, not DNR

Although the Department of Natural Resources (DNR) is the only agency authorized to enforce the federal Clean Water Act in Wisconsin, the Department of Commerce (Commerce) is in charge of key aspects of the regulation of construction sites.⁵⁸ In 1993, the state legislature brought Commerce into the picture in an attempt to streamline the construction site permitting process.⁵⁹

The Department of Commerce is in charge of “commercial” construction projects, defined as “public buildings and buildings that are places of employment.”⁶⁰ This definition applies to the bulk of all construction projects in the state.⁶¹

Commerce, a business-oriented agency with limited environmental expertise, is responsible for an estimated 85 percent of new construction sites each year.⁶² Despite the fact that DNR is the state agency with the most expertise in stormwater control and environmental management, DNR provides no application review for these projects, no site monitoring and no enforcement.

Principles of Low-Impact Development

Low-impact development focuses on creating a built landscape with the function of a natural landscape—or retrofitting an urban area to restore ecological function. Low-impact principles include:⁵⁶

- Focus on prevention of runoff rather than mitigation;
- Conserve natural landscape features and processes to retain stormwater and filter pollution;
- Emphasize simple, non-structural, low-tech and low-cost methods;
- Manage runoff as close to the source as possible;
- Distribute small-scale measures across the landscape;
- Disconnect impervious surfaces from traditional drainage infrastructure and instead direct runoff to “rain gardens” and other natural infrastructure;
- Minimize overall impervious surface area; and
- Customize the approach to the land under consideration.

For more information on low-impact development, see:

- *Catching the Rain: A Great Lakes Resource Guide for Natural Stormwater Management*, American Rivers. Available at www.americanrivers.org.
- “Low-Impact Development,” Chapter 12 of *Stormwater Strategies: Community Responses to Runoff Pollution*. Natural Resources Defense Council. Available at www.nrdc.org.
- *Low-impact Development: Urban Design Tools*, a web page addressed to watershed managers, created by the U.S. EPA and the Low-Impact Development Center. Available at www.lid-stormwater.net.
- *The Stormwater Managers Resource Center*, a web page providing technical advice on stormwater management issues, created by the Center for Watershed Protection. Available at www.stormwatercenter.net.
- *Low-Impact Development Design Strategies: An Integrated Design Approach*, Prince George’s County, Maryland and U.S. EPA. Available at www.epa.gov/owow/nps/lid.

At the beginning of 2006, the Department of Commerce proposed a set of rule changes to improve management of stormwater at commercial construction sites. The rules are currently scheduled to go into effect by April 2007.⁶³

However, the proposed rules are flawed, and are not adequate to bring oversight of commercial construction sites up to the standards required by the federal Clean Water Act and Wisconsin law. A discussion of key weaknesses follows.

Commerce is Unable to Conduct Even Basic Reviews of Development Projects before Construction Begins

One of the key features of Wisconsin's runoff prevention rules is the preparation of runoff management plans for construction sites. If no one reviews the plans before construction begins, the existence of the plans cannot be verified and flaws in the plans cannot be corrected.

For development projects within its jurisdiction, DNR requires developers to submit an application for a stormwater permit (otherwise known as a Notice of Intent). Permit coverage allows developers to legally proceed with construction. The permit application includes information that allows DNR staff to evaluate the project, including:⁶⁴

- A specific description of the site and a map indicating its location;
- The planned change in percentage of impervious surface on the site;
- The type and location of stormwater discharges;
- Planned measures for erosion and sediment control during construction and long-term stormwater management after construction
- Plans for groundwater infiltration;
- Identification of any wetlands, endangered species, or cultural or historical resources that may be affected by the project;

- Verification that all submitted information is true, under penalty of law.

In contrast, under the proposed rules, the Department of Commerce will require none of this information. For commercial developments, Commerce requires an application that is only one page long. This application asks no specific questions about erosion control or stormwater management.⁶⁵ Without such site-specific information, the Department of Commerce will have difficulty providing even a basic review of proposed projects to ensure adequate runoff prevention.

What little review the Department of Commerce will be able to provide is far weaker than standard practice at DNR. For example:

- DNR has the authority to require additional information from applicants before granting coverage;⁶⁶
- Applications for coverage to DNR include a permit fee of up to \$350, used to fund program implementation;⁶⁷
- DNR requires all developers to have proof of coverage and a copy of their erosion control and stormwater management plans on site.⁶⁸
- DNR posts applications on the Internet, enabling public review.

In comparison, the proposed Department of Commerce rules do not enable staff to address incomplete applications or require copies of plans on site, and Commerce does not yet post applications online.⁶⁹ The rules do propose a permit fee payable to Commerce—however the level of the fee is set at \$25, which is grossly inadequate to fund any meaningful staff time for project review.⁷⁰

Even if the Department of Commerce requested adequate information from developers, it would have very little time to review new applications. Under the

proposed rules, Commerce has only 7 days to object to an application before permit coverage is automatically granted.⁷¹

Finally, the proposed rules allow municipalities to serve as the Department of Commerce's agents—collecting applications for permit coverage.⁷² There is no way to assure that municipalities will deliver the applications to Commerce within 7 days to enable Commerce—much less DNR—to review proposed projects before work begins. If municipalities are providing review themselves, it is unlikely that they will have staff with the same level of expertise in stormwater management as the specialists at DNR.

These deficiencies impair the ability of the Department of Commerce to effectively prevent runoff from developments from harming the waters of Wisconsin.

Commerce Does Not Give DNR Enough Information to Identify and Correct Violations

The proposed Commerce rules acknowledge that DNR has ultimate authority over all permitted construction sites in Wisconsin. However, Commerce fails to give DNR enough information to effectively participate in the process.

Commerce is not required to notify DNR when it receives permit applications or when coverage is granted.⁷³ Commerce only submits a summary of applications a few times per year—likely well after construction has begun.⁷⁴ As a result, DNR is not able to review permit applications to identify any potential problems.

Moreover, DNR often does not know the location of the majority of construction sites in the state—despite the fact that it is required under state and federal law to monitor them for compliance with stormwater regulations. To make matters worse, Commerce is not required to notify DNR if its own monitoring reveals a violation. Instead, Commerce can take action to correct the violation without DNR involvement.⁷⁵

Commerce Has Inadequate Enforcement Tools

Although Commerce can take action to correct any violations uncovered by monitoring permitted construction sites, Commerce has fewer enforcement tools than DNR to ensure compliance with the law.

In dealing with developers whose projects violate state rules, DNR can:

- Require plan modifications;⁷⁶
- Require significant projects to go through a more intensive individual permit process;⁷⁷
- Revoke permit coverage;⁷⁸
- Issue notices of non-compliance and then notices of violation; and
- Levy fines up to \$10,000 per violation per day of non-compliance.⁷⁹

However, the proposed Commerce rules establish no authority to require individual permits, no authority to revoke permit coverage, and no power to issue notices of violation.⁸⁰

The Department of Commerce does have access to general enforcement powers that allow it to issue stop work orders and levy fines of up to \$100 per violation per day of non-compliance.⁸¹ While these actions might be effective in some cases, once the violations are corrected, construction can continue without any further penalty for having violated state and federal law.

Commerce has a Track Record of Leniency

Finally, the Department of Commerce has a track record of not using the enforcement tools at its disposal to ensure compliance with stormwater runoff rules.

In the past two years, DNR has referred at least 16 violations of stormwater rules to the Department of Justice for civil prosecution.⁸² For example, in June 2006, Attorney General Lautenschlager reached a settlement with River View Estates, LLC—

developer of a subdivision in the City of Waukesha. The developer agreed to pay \$100,000 in penalties and implement better management practices to resolve the civil suit, which alleged that the developer failed to comply with provisions of its erosion and stormwater control provisions. The suit also alleged that the developer failed to conduct and document weekly

inspections of the site, allowing sediment controls to fail and discharge sediment into a tributary of Pebble Brook Creek.⁸³

In contrast, the Department of Commerce has not referred any violations to the Department of Justice in the past two years. In fact, Commerce has not referred any violations since it began monitoring commercial construction sites in 1994.⁸⁴

Policy Recommendations

To prevent future growth from exacerbating runoff pollution, Wisconsin should improve oversight of development projects.

Only with comprehensive information gathering, effective project review, and meaningful enforcement can the state ensure that developers work to prevent contaminated runoff from harming Wisconsin's treasured lakes, rivers and streams.

Specifically, Wisconsin leaders should:

Consolidate all construction site stormwater regulation back within the Department of Natural Resources (DNR).

- DNR is the agency with the legal authority to enforce the federal Clean Water Act in Wisconsin. DNR staff also have expertise in stormwater management and a clear focus on protecting Wisconsin's environment. Involving the Department of Commerce—an agency without the same focus on environmental protection—in the process of overseeing “commercial” construction sites has resulted in ineffective management of runoff from those sites.

- The proposed changes to erosion and stormwater control rules at the Department of Commerce do not remove roadblocks preventing DNR from effectively enforcing state and federal runoff prevention law. As a result, the state should shift responsibility for commercial construction sites back to DNR.

Ensure that all developers supply comprehensive and detailed information about their construction plans to regulators.

- In the event that Commerce continues to manage commercial construction sites, state leaders should ensure that Commerce requires developers to use the same permit application form as DNR. In other words, regulators should collect enough detailed information to determine if proposed projects comply with Wisconsin's landmark stormwater prevention rules. This information should be detailed enough to ensure the prevention of erosion and sediment runoff during construction, as well as the prevention of long-term stormwater runoff after construction is completed.

- DNR should have the opportunity to review all permit applications on a timely basis. To facilitate this, Commerce should share applications with DNR, as well as post them on the Internet to facilitate public involvement.

Give regulators adequate time to review proposed plans before granting permit coverage and before allowing construction to begin.

- In the event that Commerce continues in its current role, it should not automatically approve construction projects without a detailed review. By approving projects by default after 7 days under the proposed rules, the Department of Commerce short-circuits any opportunity for meaningful oversight.
- Agency staff should be able to request additional information before granting permit coverage if they find an application to be deficient.

Improve information sharing between Commerce and DNR, enabling DNR to effectively use its enforcement tools.

- If Commerce continues to manage commercial construction sites, it should ensure frequent and effective communication with DNR about monitoring schedules and any identified violations. With appropriate and timely information, DNR—as the agency with ultimate enforcement authority over construction sites under the Clean Water Act—may apply the appropriate enforcement tools to correct the situation.

Ensure that adequate funding and

staff are available to review applications, inspect sites and address violations.

- The state should ensure that adequate resources are available to employ enough staff to effectively review permit applications, inspect sites during and after construction, and address violations.
- Agencies should universally require permit fees to accompany permit applications—in amounts adequate to fully fund all oversight activity. Based on DNR estimates of staff requirements for optimal construction site permitting and enforcement, the average permit application should be accompanied by a fee in the range of \$600, tied to inflation.⁸⁵ The permit fee of \$25 in the proposed Commerce rules is grossly inadequate to support a meaningful regulatory program.

Emphasize low-impact development techniques to achieve long-term runoff prevention goals.

- Both DNR and Commerce should emphasize low-impact development techniques as simple, cost-effective and intelligent approaches to achieving the long-term stormwater reduction goals laid out in Wisconsin law. Such techniques include minimizing the amount of impervious surface on a site, disconnecting impervious surfaces from traditional drainage infrastructure, installing measures such as green roofs or rain gardens to capture and infiltrate water, and otherwise managing stormwater as close to the source as possible. Guidance to permit applicants should address how to use low-impact development techniques to prepare sound construction plans.

Notes

1 Jim Lee, “Coaster Brook Trout Fishery Remains a Source of Debate,” *Central Wisconsin Sunday*, 7 April 2006.

2 Ibid.

3 As cited in International Joint Commission, *Twelfth Biennial Report on Great Lakes Water Quality*, ISBN 1-894280-45-8, September 2004; Environment Canada, *The State of Municipal Wastewater Effluents in Canada*, ISBN 0-662-29972-8, 2001, 12.

4 University of Wisconsin Aquatic Sciences Center, *Water Facts*, accessed at www.aqua.wisc.edu/WaterLibrary/facts.asp, 12 September 2006.

5 Virginia Mayo Black, “Hundreds of Hours, Thousands of Words: Unwrapping Wisconsin’s Polluted Runoff Rules,” *Wisconsin Natural Resources Magazine*, June 2003.

6 Environmental Integrity Project, *Weathering the Storm: Controlling Stormwater Pollution in the Great Lakes States*, September 2004.

7 As cited in International Joint Commission, *Twelfth Biennial Report on Great Lakes Water Quality*, ISBN 1-894280-45-8, September 2004; Northeastern-Illinois Planning Commission, *Strategic Plan for Water Resource Management*, 2002; SOLEC, *State of the Great Lakes Ecosystem Conference*, Co-Chair, Harvey Shears, Cleveland, www.epa.gov/glnpo/solec/2002, 2002; SOLEC, *State of the Lakes Ecosystem Conference: The Year of the Nearshore*, Prepared by: Nicole Swerhun and the LURA Group, Toronto, 1996, 13-15, www.epa.gov/grtlakes/solec/96/index.html.

8 Wisconsin Department of Natural Resources, *2006 Water Quality Report to Congress*, 27 July 2006.

9 Charlie A. Peters et al., U.S. Geological Survey, *Water Quality in the Western Lake Michigan Drainages*, Wisconsin and Michigan, 1992-1995, USGS Circular 1156, 11 June 1998.

10 Clean Water Network and the National Resources Defense Council, *Wetlands for Clean Water: How Wetlands Protect Rivers, Lakes, and Coastal Waters from Pollution*, April 1997; Albert Todd, “Making Decisions About Riparian Buffer Width,” in *Riparian Ecology and Management in Multi-Use Watersheds*, (Middleburg, VA: American Water Resources Association, 2000), 445-450.

11 See Note 4.

12 Ibid.

13 S. Postel and S. Carpenter, “Freshwater Ecosystem Services,” in G.C. Daily ed. *Natures Services: Societal Dependence on Natural Ecosystems* (Island Press: Washington DC), 195-214, 1997.

14 Jeremiah Baumann, Sean Gray, Jane Houlihan, and Richard Wiles, the State PIRGs and Environmental Working Group, *Consider the Source: Farm Runoff, Chlorination Byproducts, and Human Health*, 8 January 2002.

15 U.S. Environmental Protection Agency, Great Lakes Commission, *Human Health and the Great Lakes: Lake by Lake—Michigan*, Fact Sheet, 29 April 2003, available at www.great-lakes.net.

- 16 The Center for Watershed Protection, *Site Planning for Urban Stream Protection: Chapter 2, The Importance of Imperviousness*, downloaded from www.cwp.org on 4 February 2003.
- 17 Sharpley et al, U.S. Department of Agriculture, *Agricultural Phosphorous and Eutrophication*, July 1999.
- 18 See Note 9.
- 19 Ibid.
- 20 Albert Todd, "Making Decisions About Riparian Buffer Width," in *Riparian Ecology and Management in Multi-Use Watersheds*, (Middleburg, VA: American Water Resources Association, 2000), 445-450.
- 21 Federal Emergency Management Agency, *Wisconsin Disaster History*, 5 December 2005.
- 22 Wisconsin Department of Natural Resources, Mary Kay Judd and Mary Ellen Vollbrecht, *Wetlands, Wonderlands: What's a Wetland Worth?*, 2 December 2005.
- 23 Union of Concerned Scientists, *Climate Change in Wisconsin: Impacts, Property and Infrastructure*, (Factsheet) 11 August 2005.
- 24 U.S. Environmental Protection Agency, *Report to Congress on the Impacts and Controls of CSOs and SSOs*, EPA 833-R-04-001, August 2004.
- 25 Steve Schultze and Marie Rohde, "MMSD Lowers Dumping Estimate; Only 1.7 Billion Gallons of Sewage Discharged, It Says," *Milwaukee Journal Sentinel*, 25 May 2005.
- 26 See Note 16.
- 27 Natural Resources Defense Council, *Testing the Waters: A Guide to Water Quality at Vacation Beaches*, July 2006.
- 28 Ibid.
- 29 U.S. Environmental Protection Agency, *Report to Congress on the Phase I Stormwater Regulations*, (EPA833-R-00-001), February 2000, p. 4-1.
- 30 Ibid.
- 31 Jeremy Balousek, Urban Conservation Engineer, Dane County Land and Water Resources Department, Personal Correspondence, 9 November 2006.
- 32 Derived from a database of impaired water segments [303(d) list], obtained from Lisa Helmuth at DNR on 26 July 2006; Wisconsin Department of Natural Resources, *2006 Water Quality Report to Congress*, 27 July 2006.
- 33 Ibid.
- 34 JJ Steuer and RJ Hunt, U.S. Geological Survey, *Use of a Watershed Modeling Approach to Assess Hydrologic Effects of Urbanization, North Fork Pheasant Branch Basin near Middleton, Wisconsin*, USGS Water Resources Investigation Report 01-4113, 2001.
- 35 See Note 10.
- 36 See Note 16; Peter Lehner et al, NRDC, *Stormwater Strategies: Community Responses to Runoff Pollution*, 1999.
- 37 See Note 16.
- 38 Ministry of Public Works and Government Services Canada, Environment Canada, *The State of Municipal Wastewater Effluents in Canada*, ISBN 0-662-29972-8, 2001.
- 39 Ibid.
- 40 Natural Resource Conservation Service, U.S. Department of Agriculture, *1997 Natural Resources Inventory*, Table 5: Changes in Land Cover/Use Between 1982 and 1997, downloaded from www.wi.nrcs.usda.gov on 1 September 2006.
- 41 1982: Population Estimates Branch, U.S. Bureau of the Census, *Intercensal Estimates of the Total Resident Population of States: 1980 to 1990*, August 1996; 1997: Population Estimates Program, U.S. Census Bureau, *State Population Estimates: Annual Time Series, July 1, 1990 to July 1, 1999*, 29 December 1999.
- 42 Geoffrey Anderson, Office of Policy, U.S. Environmental Protection Agency, *Smart Growth For Clean Water*, (Presentation), 24 February 2005, obtained from Brad Garman at the Michigan Environmental Council 4 October 2005.
- 43 M.P. Cote, J. Clausen, B. Morton, P. Stacey, S. Zaremba, *Jordan Cove Urban Watershed National Monitoring Project*, Presented at the National Conference on Tools for Urban Water and Resource Management Protection, Chicago, 2000.
- 44 Center for Urban Policy and Research, University of Rutgers, *The Costs and Benefits of Alternative Growth Patterns: The Impact Assessment of the New Jersey State Plan*, 2000.
- 45 Wisconsin Department of Administration, *Population & Household Projections: 2000-2030*, 4 March 2004.
- 46 Map created using data described in Note 45.
- 47 As cited by Brent Denzin, Midwest Environmental Advocates, letter to Jo Lynn Traub, US EPA, Region 05, *Re: State of Wisconsin WPDES Construction Site Permit Program*, 13 November 2006.

- 48 Wisconsin Administrative Code § NR 151.11.
- 49 Wisconsin Administrative Code § NR 151.11(6)(d).
- 50 Wisconsin Administrative Code § NR 151.12(5)(a)1.
- 51 Wisconsin Administrative Code § NR 151.12(5)(a)2,3.
- 52 Wisconsin Administrative Code § NR 151.12(5)(a)4.
- 53 Wisconsin Administrative Code § NR 151.12(5)(b).
- 54 Wisconsin Administrative Code § NR 151.12(5)(c)2.
- 55 Wisconsin Administrative Code § NR 151.12(5)(d).
- 56 This list is adapted from: Peter Lehner et al, NRDC, *Stormwater Strategies: Community Responses to Runoff Pollution*, Chapter 12: Low-impact Development, 1999; and American Rivers, *Catching the Rain: A Great Lakes Resource Guide for Natural Stormwater Management*, July 2004.
- 57 As cited by Brent Denzin, Midwest Environmental Advocates, letter to Jo Lynn Traub, US EPA, Region 05, *Re: State of Wisconsin WPDES Construction Site Permit Program*, 13 November 2006.
- 58 Only agency: Wisconsin Statutes § 283.001 and 283.33; see also DNR and EPA, “Memorandum of Understanding between EPA and DNR,” February 4, 1974.
- 59 As cited by Brent Denzin, Midwest Environmental Advocates, letter to Jo Lynn Traub, US EPA, Region 05, *Re: State of Wisconsin WPDES Construction Site Permit Program*, 13 November 2006: 1993 Wisconsin Act 16; Wisconsin Statutes § 101.1205(1) and § 281.33. The 1993 act did not extend legal Clean Water Act permitting authority to Commerce; but that authority was effectively transferred to Commerce anyway through the subsequent adoption of Wisconsin Administrative Code Section NR 216.42(4).
- 60 Wisconsin Statutes § 101.1205(1).
- 61 As cited by Brent Denzin, Midwest Environmental Advocates, letter to Jo Lynn Traub, US EPA, Region 05, *Re: State of Wisconsin WPDES Construction Site Permit Program*, 13 November 2006: Telephone Conversation between Eric Rortvedt (DNR) and Brent Denzin (MEA), January 23, 2006.
- 62 Ibid.
- 63 Department of Commerce, *Proposed Rules Related to Erosion Control for the Construction of Buildings*, Comm. 60.12(1), Draft sent to the Legislature, 16 August 2006.
- 64 As described by Brent Denzin, Midwest Environmental Advocates, letter to Jo Lynn Traub, US EPA, Region 05, *Re: State of Wisconsin WPDES Construction Site Permit Program*, 13 November 2006.
- 65 Ibid.
- 66 Wisconsin Administrative Code § NR 216.45.
- 67 Wisconsin Administrative Code § NR 216.43(2).
- 68 Wisconsin Administrative Code § NR 214.455
- 69 Brent Denzin, Midwest Environmental Advocates, letter to Jo Lynn Traub, US EPA, Region 05, *Re: State of Wisconsin WPDES Construction Site Permit Program*, 13 November 2006; Department of Commerce, *Proposed Rules Related to Erosion Control for the Construction of Buildings*, Comm. 60.12(1), Draft sent to the Legislature, 16 August 2006.; Wisconsin Administrative Code § Comm. 61.115.
- 70 §25: Department of Commerce, *Proposed Rules Related to Erosion Control for the Construction of Buildings*, Comm. 20.085(b), Draft sent to the Legislature, 16 August 2006.
- 71 Department of Commerce, *Proposed Rules Related to Erosion Control for the Construction of Buildings*, Comm. 60.12(1), Draft sent to the Legislature, 16 August 2006.
- 72 Department of Commerce, *Proposed Rules Related to Erosion Control for the Construction of Buildings*, Comm. 60.11, Draft sent to the Legislature, 16 August 2006.
- 73 As cited in Brent Denzin, Midwest Environmental Advocates, letter to Jo Lynn Traub, US EPA, Region 05, *Re: State of Wisconsin WPDES Construction Site Permit Program*, 13 November 2006: Wisconsin Administrative Code § 61.115(4); Telephone Conversation between Eric Rortvedt (DNR) and Brent Denzin (MEA), 26 January 2006; Lynita Docken and James Quast (Commerce), Hearing on Proposed COMM 2, 20, 21, 60, and 61 Rules, 18 January 2006.
- 74 Wisconsin Administrative Code § 61.115(4); General Permit, Part 1.C.
- 75 Department of Commerce, *Proposed Rules Related to Erosion Control for the Construction of Buildings*, Comm. 60.15, Draft sent to the Legislature, 16 August 2006.

76 Wisconsin Administrative Code § NR 216.51(2).

77 Wisconsin Administrative Code § NR 216.51(5).

78 Wisconsin Administrative Code § NR 216.51(4).

79 Wisconsin Statutes § 283.89 and Wisconsin Administrative Code § NR 216.51(2).

80 Department of Commerce, *Proposed Rules Related to Erosion Control for the Construction of Buildings*, Draft sent to the Legislature, 16 August 2006.

81 Wisconsin Statutes § 101.1205(6).

82 See Wisconsin Department of Natural Resources, *Stormwater Runoff Enforcement Cases*, 11 July 2006, available at dnr.wi.gov/org/water/wm/nps/stormwater/enforcement.htm.

83 State of Wisconsin Department of Justice, *Attorney General Peg Lautenschlager Announces DOJ and River View Estates Settle Civil Charges for Environmental Violations at Waukesha Real Estate Development*, Press Release, 23 June 2006.

84 As cited in Brent Denzin, Midwest Environmental Advocates, letter to Jo Lynn Traub, US EPA, Region 05, *Re: State of Wisconsin WPDES Construction Site Permit Program*, 13 November 2006; E-mail from Joseph Thomas, Attorney, Department of Commerce to Brent Denzin, MEA (Jan. 27, 2006).

85 Wisconsin Department of Administration, Division of Executive Budget and Finance, *Fiscal Estimate – 2003 Session: Revise Chapter NR 216, Wis. Adm. Code*, DOA-2048 (R10/2000), February 2004.