

Wisconsin's Waste and Materials Management Program

2007 Annual Report



Moving toward zero waste



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Contents

Welcome	4
Program Mission and Structure	5
Program Impacts	6
Program Budget and Staffing	7
By the Numbers	8
Legislative Summary	10
Employee of the Year	10
Accomplishments and Significant Events	11
Hot Topics	14
What's Next in 2008 and Beyond	17



Wisconsin Department of Natural Resources Waste and Materials Management Program

Credits

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This page: Photo courtesy Milwaukee Metropolitan Sewerage District

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Welcome



I want to thank you for helping the Waste and Materials Management Program have a successful 2007. Our state has strong recycling and reuse programs that protect the environment while providing valuable economic growth. And the improved management and use of waste materials is saving energy and reducing greenhouse gas emissions, thereby limiting our contribution to global climate change. We've come a long way from past practices of throwing waste into roadside ditches or un-engineered "dumps," which have evolved over the 40 years since Wisconsin first enacted laws requiring proper waste management.

Our goal is to continue moving toward zero waste in collaboration with stakeholders. We facilitate and encourage the reduction, reuse and recycling of waste materials while properly managing what can't be reused in ways that reduce greenhouse gas and other emissions, protect Wisconsin's groundwater, and protect the health of Wisconsin's citizens. This annual report provides a snapshot of our efforts and accomplishments for 2007.

Your decisions to increase recycling and reuse, reduce waste generation, and ensure responsible disposal will benefit everyone.

The December 2006 recommendations from the Governor's Task Force on Waste Materials Recovery and Disposal provided context for our program's work in 2007, including the following:

- Progress continued on electronics (e-waste) reuse and recycling through local take-back programs and the development of e-waste management legislation with input from stakeholders, including recyclers, manufacturers and retailers in e-waste recycling.
- Partnerships with nonprofit organizations increased the amount of construction and demolition and organics recycling. WasteCap Wisconsin, a nonprofit, awarded the DNR its 2007 Outstanding Partnership Award for its support of WasteCap's work in these areas and in electronics recycling.
- Work with local governments is increasing business and other non-residential recycling rates.
- Several landfills have submitted organic stability plans to reduce the amount of biodegradable materials (such as food waste) that are landfilled or to speed up the decomposition of landfilled organic materials. In addition, the amount of gas generated and managed at landfills is now on the Internet as a measure of reducing the impacts of landfills to the environment.
- Collaboration with stakeholders including local governments; the health sector; the Department of Agriculture, Trade and Consumer Protection; and the University of Wisconsin-Extension Solid and Hazardous Waste Education Center is improving the way pharmaceutical wastes are managed.

Each of us determines how the waste materials we generate are managed. Please take a moment to read our collective accomplishments for this past year. I hope you join your friends and colleagues in helping us reach our goals in 2008. Your decisions to increase recycling and reuse, reduce waste generation, and ensure responsible disposal will benefit everyone.

SUZANNE BANGERT, DIRECTOR
BUREAU OF WASTE AND MATERIALS MANAGEMENT

Program Mission and Structure

THROUGH A CENTRAL BUREAU, FIVE REGIONAL HEADQUARTER OFFICES AND SERVICE CENTERS, WASTE AND MATERIALS MANAGEMENT STAFF WORK WITH STAKEHOLDERS STATEWIDE. WE PROVIDE TECHNICAL ASSISTANCE, EDUCATIONAL OUTREACH, PLAN REVIEW, SITE INSPECTION, REGULATORY GUIDANCE AND ENFORCEMENT ACTION IN **FOUR MAIN PROGRAM AREAS**.

The **Solid Waste Management** program ensures proper management of solid waste through regulation of Wisconsin's municipal, industrial, and construction and demolition waste landfills. Staff license facilities; close poorly located or operated facilities; and make sure new facilities are properly located, designed, constructed, operated and maintained. The program also encourages beneficial use of industrial byproducts to preserve resources, conserve energy and reduce the need for additional landfills.

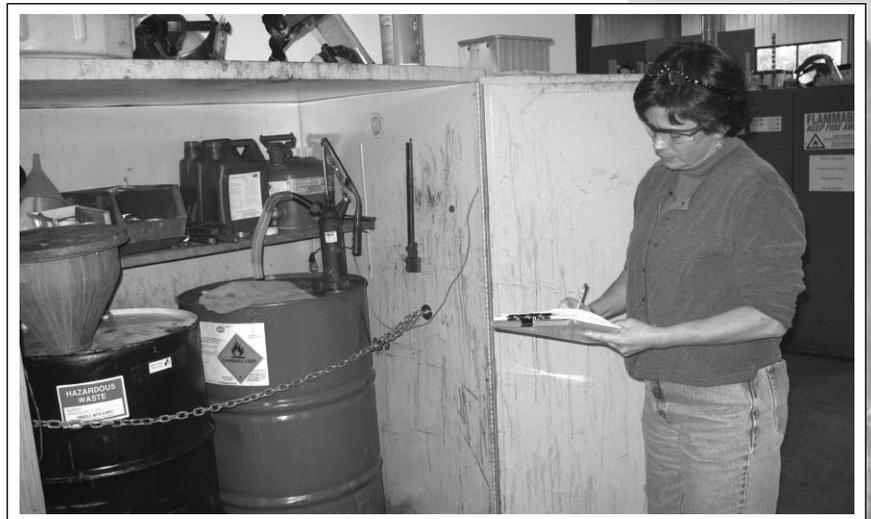
The **Hazardous Waste Management** program oversees the generation, transportation, storage, treatment and disposal of hazardous waste throughout Wisconsin. Staff work with generators and facilities to ensure proper management of hazardous waste and to prevent threats to human health and protect Wisconsin's ground and surface water, air and soil.

The **Recycling** program promotes and regulates recycling through review of municipal recycling programs and recycling and compost sites. Staff seek innovative approaches to minimize waste generation and increase recycling. Focus areas include streamlining recycling regulations and providing outreach and assistance to local governments. Staff also promote the reuse of construction and demolition debris and the diversion of organic wastes and toxic materials from landfills.

The **Mining** program regulates the environmental aspects of metallic and nonmetallic mining, including working to return closed mines to productive, healthy land. Some 2,500 nonmetallic mines throughout Wisconsin, which are administered locally, yield products as varied as sand, horticultural peat, stone for monuments, agricultural lime, gravel and dolomite used in road building. Currently, there are no metallic mining sites operating in the state, but staff monitor reclamation and remediation activity at three closed metallic mines.

Within these focus areas, we commit to streamlining regulatory processes, inviting public involvement in policy development, providing public access to information on the Internet and encouraging businesses to go beyond compliance in protecting the environment. More specifically, we strive to reduce illegal open burning, minimize landfill gas and groundwater impacts, ensure owner financial responsibility for solid and hazardous waste facilities, and restore sand and gravel pits to valued natural resources.

We commit to streamlining regulatory processes, inviting public involvement in policy development, providing public access to information on the Internet and encouraging businesses to go beyond compliance in protecting the environment.



Waste and Materials Management staff inspect facilities throughout the state to ensure proper management of hazardous and solid waste. DNR PHOTO BY TERRY NOLAN.

Program Impacts

Our staff members are important resources for businesses, local governments and others dealing with day-to-day waste and materials management decisions.

INCREASING RECYCLING AT SPECIAL EVENTS, ENSURING PROPER MANAGEMENT OF HAZARDOUS AND SOLID WASTE FOLLOWING DISASTERS AND WORKING WITH STAKEHOLDERS TO IMPROVE OPTIONS FOR COLLECTING WASTE PHARMACEUTICALS ARE JUST A FEW OF THE IMPACTS THE WASTE AND MATERIALS MANAGEMENT PROGRAM HAD IN 2007.

Our program does not directly collect or process waste materials. Rather, we work to protect human health and the environment through statewide regulation, consistent enforcement of rules, education, and work with stakeholders to find solutions to

waste and materials management problems and to address new challenges and opportunities. Our staff members are important resources for businesses, local governments and others dealing with day-to-day waste and materials management decisions.

Some examples of this from 2007 include:



PHOTO © JASO420 | DREAMSTIME.COM.

Revising hazardous waste manifest requirements, thus simplifying the paperwork businesses need to properly dispose of their hazardous waste.



PHOTO © MSHAKE | DREAMSTIME.COM.

Providing a consistent message statewide on the household waste that property owners may not dispose of on their land under state law. The policy clarification noted that demolished structures and demolition materials may not be buried on-site and must be transported to an approved solid or hazardous waste processing or disposal facility.



PHOTO © SPARKY2000 | DREAMSTIME.COM.

Providing information to landfill operators and mobile home dismantlers on the proper handling of mobile homes that may contain asbestos, in order to protect the environment and human health.



PHOTO © AREMAC | DREAMSTIME.COM.

Providing funding and support to a nonprofit organization, to work with the state's Department of Administration to integrate recycling into state building projects and facilities management and institutionalize construction and demolition material recycling as a standard practice statewide.



PHOTO © IB21CLOUD | DREAMSTIME.COM.

Actively assisting state agencies, local officials and businesses in the development of recycling markets and processing capacity for materials such as asphalt shingles and agricultural plastics. These have been "problem" materials for some time and our continued leadership on these issues encourages entrepreneurs to explore recycling options.

Program Budget and Staffing

THE WASTE AND MATERIALS MANAGEMENT PROGRAM SPENT \$6.7 MILLION IN FISCAL YEAR 2006–2007. THIS SUPPORTS THE ACTIVITIES OF 76 STAFF, INCLUDING ENGINEERS, HYDROGEOLOGISTS, WASTE MANAGEMENT SPECIALISTS, INFORMATION TECHNOLOGY SPECIALISTS, PROGRAM ASSISTANTS AND MANAGERS.

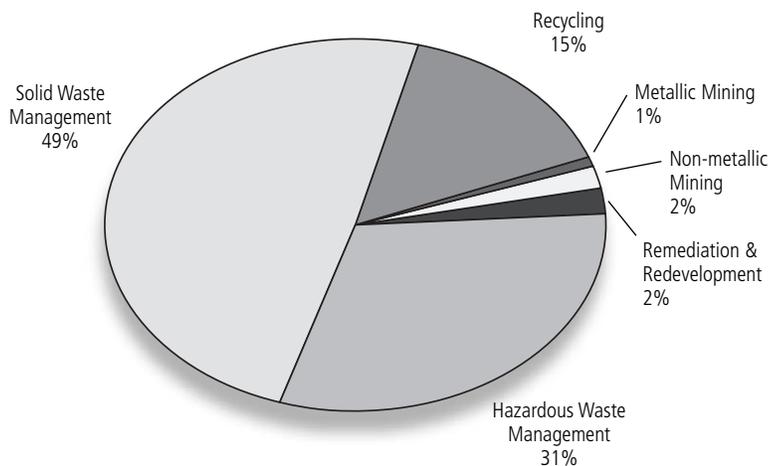
As Figure 1 shows, almost half of our expenditures go toward solid waste activities and one-third go toward hazardous waste activities. The rest of our expenditures go toward recycling (15 percent), metallic and nonmetallic mining (3 percent), and remediation and redevelopment (2 percent).

These figures do not include financial assistance the state provides to local governments for recycling or the Waste Reduction and Recycling Demonstration Grants. DNR's Community Financial Assistance Program administers these funds.

Our program's work covers a range of activities, from inspections and compliance assistance to outreach. Our staff time focuses on activities to prevent groundwater contamination and other pollution (through plan review, inspections and compliance assistance) and to provide the public, partners and regulated facilities with information, tools and guidelines to reduce waste and prevent environmental contamination.

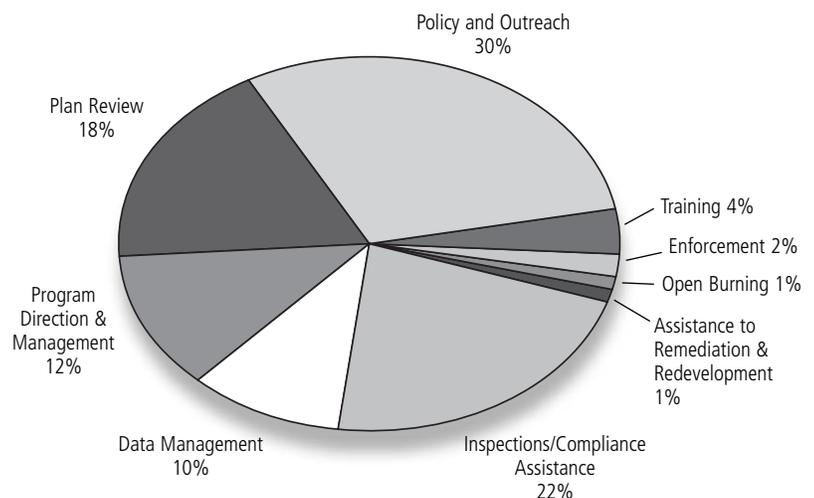
Staff time focuses on activities to prevent pollution, and to provide information, tools and guidelines to reduce waste and prevent environmental contamination.

FIGURE 1: Expenditures by program area



Source: Waste and Materials Management Program

FIGURE 2: Time spent on program activities



Source: Waste and Materials Management Program

By the Numbers

WISCONSIN HAS A WELL-DEVELOPED INFRASTRUCTURE FOR MANAGING WASTE DISPOSAL AND MATERIAL RECYCLING. HERE ARE SOME FACTS AND FIGURES ABOUT THE INFRASTRUCTURE THAT THE WASTE AND MATERIALS MANAGEMENT PROGRAM OVERSEES.

Solid waste

11.2 million tons of solid waste (municipal and industrial) were disposed of in Wisconsin landfills in 2006

72 operating licensed landfills, including 37 municipal solid waste (MSW) landfills and 35 industrial waste landfills

25 approved construction and demolition (C&D) waste sites

91 transfer stations and 44 solid waste processing facilities

2 waste-to-energy incinerators

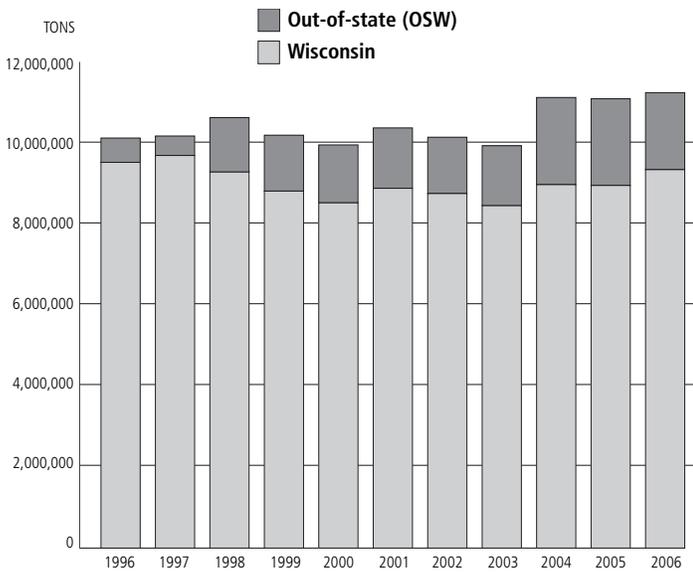
202 yard waste compost and 2 solid waste compost facilities

600 closed landfills monitored regularly to detect potential groundwater and environmental contamination

393 solid waste facility and recycling program inspections conducted by program staff

9.1 million cubic yards of additional landfill space approved following review of feasibility plans

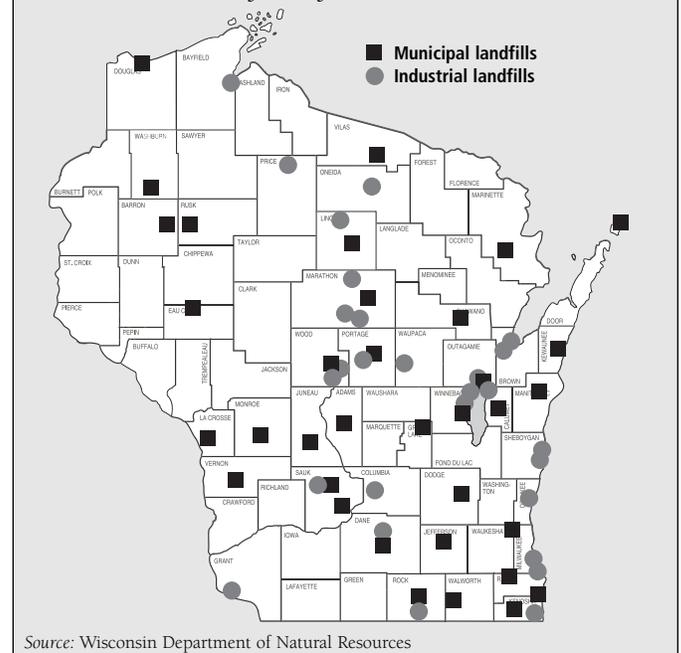
FIGURE 3: *Origin of solid waste in Wisconsin landfills*



Source: DNR Annual Tonnage Capacity Reports

FIGURE 3: The overall amount of waste landfilled in Wisconsin has increased over the past decade, though the amount of waste generated and landfilled in-state is about the same as it was 10 years ago. The amount of waste coming from other states—primarily municipal solid waste—has tripled during that time period and represented close to one-fifth of all waste landfilled in Wisconsin in 2006 (the last year for which complete numbers are available).

FIGURE 4: *Location of landfills in Wisconsin*



Source: Wisconsin Department of Natural Resources

FIGURE 4: There are currently 72 operating, licensed landfills in Wisconsin. This is down from 1,158 in 1980, when many municipalities operated small landfills and dumps. There were 861 landfills operating in 1989 and only 85 in 1999. The number of landfills has declined sharply over the years as the state and federal governments created new standards. The new rules required the use of thick, clay liners; leachate collection systems; gas collection and treatment systems; and other design and engineering practices that reduce impacts on groundwater and air quality.

By the Numbers

Hazardous waste

450,000 tons of hazardous waste transported, treated (recycled or reclaimed) or disposed of annually

11,000-plus Wisconsin businesses, schools and government institutions generate hazardous waste each year

460 Large Quantity Generators of hazardous waste

1,190 Small Quantity Generators

Over 9,400 Very Small Quantity Generators

17 licensed hazardous waste management facilities

5 closed hazardous waste disposal facilities monitored/inspected regularly

213 hazardous waste compliance evaluation inspections conducted by program staff

Recycling

1,062 local government responsible units (RUs) with recycling programs

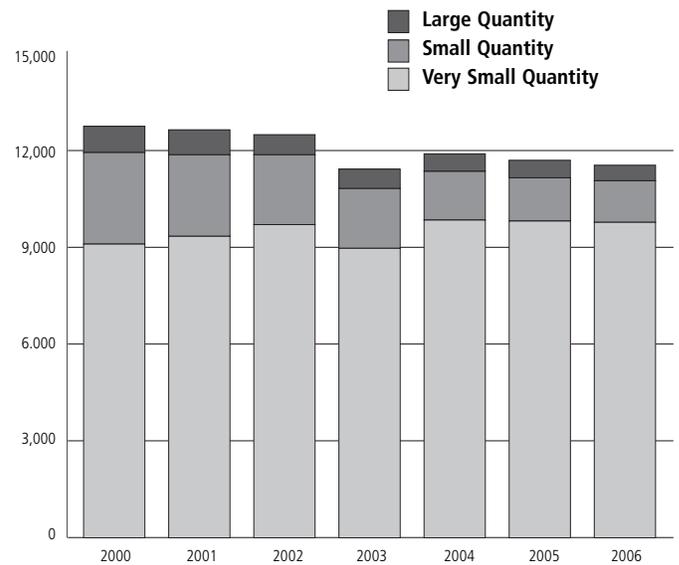
414,635 tons of paper and containers were recycled by residential recycling programs in 2006. This was a 1.9 percent increase from the 407,004 tons of these materials collected in 2005. An additional 267,000 tons of yard materials were collected for composting.

96 materials recovery facilities (MRFs) serving local government recycling programs

Nonmetallic mining

2,500 regulated nonmetallic mining sites (sand and gravel pits)

FIGURE 5: Number of hazardous waste generators in Wisconsin BY GENERATOR TYPE



Source: Waste and Materials Management Program

FIGURE 5: The downward trend in the number of large and small generators may be explained in part by recent regulations that make more wastes conditionally exempt from hazardous waste regulation if properly recycled. Not all hazardous wastes pose the same degree of hazard when recycled, and new technologies are allowing more wastes to be recycled safely. As businesses seek ways to reduce or recycle hazardous waste, this trend of decreasing generator size is likely to continue.



PHOTO © MAXXIM | DREAMSTIME.COM

Legislative Summary

State budget impacts waste and materials management

THE 2007–2009 STATE BUDGET SIGNED IN OCTOBER INCLUDED SEVERAL NEW ITEMS RELATED TO WASTE AND MATERIALS MANAGEMENT, SPECIFICALLY THE STATE'S RECYCLING PROGRAM AND THE RECYCLING SEGREGATED FUND.

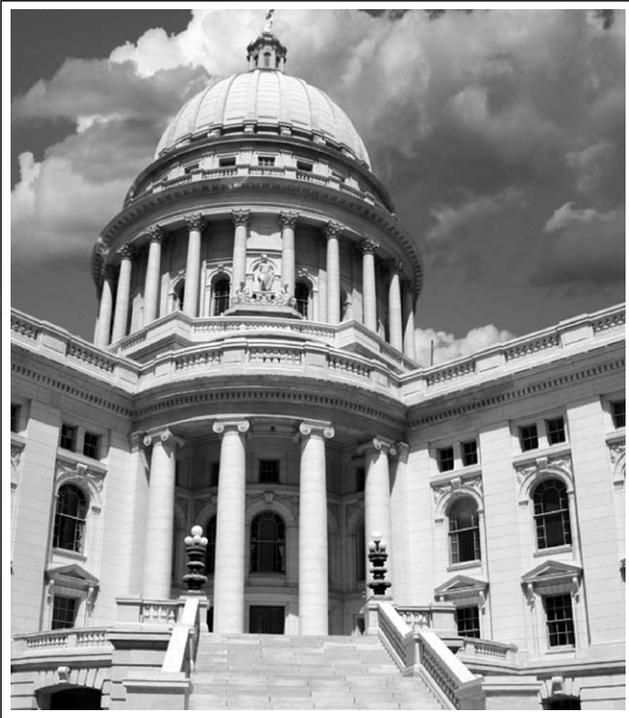


PHOTO © NOTEBOOK | DREAMSTIME.COM

The budget increased the amount available per year for basic recycling grants from \$24.5 million to \$31 million. Local recycling programs will see the increase in their grants in the 2008 calendar year.

This new funding comes from a portion of a \$2.10 per ton increase in the state portion of tipping fee for disposal of municipal and industrial waste (excluding high volume industrial waste). One dollar of the increase goes to the recycling fund and \$1.10 goes to the environmental repair fund, used for a variety of environmental projects.

The budget also included a new \$1 million per year appropriation for our program's business waste reduction and recycling assistance initiative. This allows us to contract with non-profit organizations to help businesses increase their waste reduction and recycling efforts.

Money from the recycling fund will also be used for a new compensation program for the transport of PCB-contaminated sediment to out-of-state disposal facilities; a new renewable energy grants and loans program administered by the Department of Commerce; an increase in the Clean Sweep grants administered by the Department of Agriculture, Trade and Consumer Protection; and assistance to a soybean crushing facility.

Employee of the Year



From left: Bureau Director Sue Bangert, Kathy Warren, Ann Bekta, Barb Palacek, South Central Region Director Lloyd Eagan and Gene Mitchell.

DNR PHOTO.

Ann Bekta is Employee of the Year for 2006

Ann Bekta, a waste management engineer based at the Janesville Service Center in South Central Region, is this year's recipient of the Waste and Materials Management Program's Employee of the Year. Ann earned this award for her outstanding work as the plan review engineer for a number of large landfills in southern Wisconsin.

Ann has gained the respect of her peers and the landfill operators she regulates for the depth of knowledge she has amassed over 17 years of experience and for her practical, no-nonsense approach. She has been willing to share her time and expertise, doing work when needed throughout the state and acting as a mentor for a number of staff.

Accomplishments and Significant Events



Successes continue for recycling at special events statewide

To make recycling successful at special events, dedicated people have to champion the effort. Planning, training and changes behind the scenes must happen before the gates open and the first fairgoer or festival participant walks in. For several years, Southeast Region and Northeast Region Waste and Materials Management Program staff have worked with partner organizations to offer encouragement and technical help to events organizers and local governments. These efforts started showing results in a big way in 2007.

Recycling efforts at the Experimental Aircraft Association, Country USA Festival, Winnebago County Fair and LifeFest Music Festival, and the Green Bay Arts Street Weekend continued to pay off, increasing the amount and types of materials collected over past years.

Milwaukee World Festivals, better known as Summerfest, expanded recycling beyond plastic and glass containers to include cardboard collection by the grounds crew. The result was a four-fold increase in the tons of recyclables collected (from 6.3 tons in 2006 to 25.2 tons in 2007). The city of Milwaukee expanded recycling service to other events and concerts at the lakefront festival grounds, based on the successful experience with recycling at Summerfest. In addition, DNR efforts to revive recycling at the Wisconsin State Fair continued to grow following the 2006 debut of new, bottle-shaped recycling containers.



Recycling at special events, including Milwaukee's Summerfest, is increasing thanks in part to the efforts of Waste and Materials Management staff.

DNR PHOTO BY NANCY GLOE.



Massive recycling effort at former Badger plant saves money and natural resources

A huge demolition material recycling program is underway at the former Badger Army Ammunition Plant in Sauk County. Through November 2007, crews have recycled more than 23 million pounds of metal, waste oil and scrap wood, according to property administrator Nancy Phelan.



The deconstruction and demolition process at the Badger Army Ammunition plant has included a successful, large-scale recycling program.

DNR PHOTO BY HANK KUEHLING.

The Army started work in 1997 to deconstruct and remediate the more than 7,300-acre facility. The plant manufactured ammunition propellant for World War II, the Korean War and the Vietnam War.

Waste and Materials Management Program staff have cleared the way for recycling the concrete components of many of the 1,400 buildings. The crushed concrete will be used for the reconstruction of Highway 78 and possibly Highway 12. Staff conducted environmental reviews during the development of the project, and provide oversight in the field during the project to make sure that all recycled material is clean and free of asbestos.

In addition to diverting materials from the landfill and saving taxpayers the landfill disposal costs, the recycling program eases the demand for new quarries and timber harvest and preserves our natural resources. For example, the Forest Products Laboratory estimates that reusing the lumber from Badger will save 1,000 acres of forest land. The combination of environmental benefits—from saving fuel by avoiding transporting waste to landfills to conserving carbon sequestering trees—also reduces the project's overall impact on global climate change.



Staff help train auto and scrap recyclers on proper waste management

The Auto Recyclers Cooperative Compliance Program (CCP) and the Wisconsin Institute of Scrap Recycling Industries asked staff from the Waste and Materials Management and Cooperative Environmental Assistance programs to participate in nine training sessions around the state in 2007. Staff presented information on management of certain solid and hazardous wastes recovered from dismantled vehicles, including spills reporting and alternatives to illegal open burning. More than 180 auto and scrap recyclers participated in the training sessions. Other CCP groups have since requested the presentation at future training events.

Accomplishments and Significant Events

DNR programs work together in response to waste management facility fire

On June 22, DNR staff and other local, state and federal authorities coordinated response efforts to a fire at WRR Environmental Services, a waste management and chemical processing facility in Eau Claire County. The combustion of hazardous substances in the facility posed a serious threat of contamination to air, land and water.

What began as an electrical fire quickly escalated due to the presence of flammable materials.

Fire crews used approximately 700,000 gallons of fire-suppression water, of which 80,000 were contained in above-ground storage tanks. However, an estimated 300,000 to 500,000 gallons of the water may have flowed into a nearby wetland and infiltrated into the ground.

DNR program cooperation has been critical in addressing the impacts of the accident. In the months following the fire, Waste and Materials Management, Remediation and Redevelopment, Air, and Water Program staff held regular meetings to coordinate the agency's response.

The Remediation and Redevelopment Program worked with WRR's consultants to coordinate the immediate response and determine the degree and extent of environmental contamination. The Hazardous Waste Program worked with WRR to characterize and dispose of waste—including the contaminated fire-suppression water—generated during the fire, and to redirect incoming waste shipments and notify WRR's clients. Air monitoring continued and the Wastewater/Stormwater Program dealt with contaminated fire-suppression water and rainwater.

The fire destroyed roughly half of the facility, and WRR is evaluating future operations. The DNR programs continue to work with the facility to address permitting issues and ensure safe and healthy practices. Remediation of the impacted soils and groundwater will be a long-term process.



Debris left after the June fire at WRR Environmental Services.

PHOTO COURTESY EAU CLAIRE LEADER TELEGRAM.

Waste excavation and relocation at Lake Area landfill gets underway

Relocation of material from an old, closed landfill to a modern, active site in Washburn County will help reduce groundwater contamination from leaking waste. It is the latest in a series of similar excavations around the state, including another ongoing project in La Crosse County, that move waste from old, unlined dumps and landfills to modern sanitary landfills. The new landfills are engineered to protect the environment and human health using features such as clay liners and systems to collect leachate (liquid from waste and the decomposition process).

By the end of 2007, BFI, the landfill's operator, had removed about one-third of the half-million cubic yards of waste from the old landfill site—which operated primarily in the 1970s and closed in the 1980s—to a newer landfill in its facility. The process has gone smoothly so far, and BFI should complete the excavation in 2008.

Northern Region Waste and Materials Management Program staff have been actively involved throughout the project. Staff engineers and hydrogeologists reviewed and approved BFI's plans for excavating the waste and its proposed relocation site. The Waste and Materials Management Program required BFI to have plans in place to minimize odors and noise and deal with potential problem wastes, such as hazardous waste drums, that crews might uncover in the old landfill. Program staff will continue to be involved in monitoring the old site to see if groundwater contamination decreases, and will review and approve any future uses of the site.

Progress continues on ensuring landfill owner financial responsibility

In 2007, the Waste and Materials Management Program continued monitoring all landfills' compliance with owner financial responsibility requirements, which ensure that adequate funds are available to the DNR for all necessary closure and long-term care work at the facilities if the owners do not complete these activities. In 2006, we met our goal of having all large landfills (greater than 5 million cubic yards) in compliance. In 2007, all large landfills maintained their compliance, and we worked with medium-sized landfills (0.5 to 5 million cubic yards) to help them achieve compliance. At the end of 2007, 86 percent of these landfills were in compliance, putting us well on our way to our goal of 100 percent compliance.

Accomplishments and Significant Events



Program staff assist with cleanup from August floods

Record-setting rains inundated many areas of Wisconsin in August, causing extensive damage across the southern part of the state. Particularly hard-hit were Vernon, Crawford, Richland and La Crosse counties in the DNR's West Central Region. Flooding on the Kickapoo and other rivers in that area threatened the stability of earthen dams and left towns and farm fields under water.

Several DNR programs provided assistance during and after the flooding. Waste and Materials Management Program staff in the region answered questions from businesses and homeowners about the best way to dispose of flood-damaged materials and helped properly handle abandoned items, such as fuel tanks, that had washed away in floodwaters. Staff provided information on the disposal of household hazardous waste at meetings held by the Federal Emergency Management Agency in the hardest-hit counties. Program staff also assisted area landfills overwhelmed by the volume of materials, including approving a temporary staging area for a landfill in Crawford County.



Record August rains flooded many streets and farm fields in southwestern Wisconsin.

PHOTO COURTESY AMERICAN RED CROSS BADGER CHAPTER.



Flambeau Mine receives partial Certificate of Completion

On May 31, a judge granted the Flambeau Mining Company a Certificate of Completion for 149 acres of the Flambeau Mine site in Rusk County. To date, the Flambeau Mine is the only metallic mineral mine that has been permitted, constructed, operated and reclaimed under Wisconsin's existing mining laws. The mine began operations in July 1991 and finished reclamation by the end of 1999.

As part of the Certificate of Completion process, the DNR held public and contested case hearings earlier in May. At these hear-

ings, any objecting parties had the opportunity to raise concerns about the mine reclamation process. The most significant outcome of the hearings was that the mining company received a Certificate of Completion for 149 acres of the site, excluding a 32-acre former mining support area referred to as the "industrial outlot." The company agreed to conduct additional environmental sampling of surface water, soil and the Flambeau River as conditions of the order granting the certificate.

Throughout the project, Flambeau Mining Company performed environmental monitoring of groundwater levels; groundwater quality; air quality; surface water quality; wastewater effluent quality and flow; mine inflow; wetlands; aquatic ecology characteristics including fish, macroinvertebrates and sediment; stockpile leachate quality; and meteorology.

The company remained in substantial compliance with all permit conditions and applicable standards, and met the requirements laid out in the Reclamation Plan for 149 acres of the site, which included the successful reestablishment of native vegetation. With DNR oversight, Flambeau Mining Company will continue environmental monitoring at the closed site over the 40-year long-term care period.



Northeast Region staff develop new, consistent open burning messages

Open burning of waste materials such as mixed household garbage and agricultural plastics poses significant health risks for humans and animals and is illegal in Wisconsin. Northeast Region staff started a new initiative in 2007 to raise awareness about the dangers of open burning and reduce illegal burning of waste materials. The DNR has been working to curb open burning for a number of years, but in the past many programs developed separate outreach materials and messages for the issue. For this new initiative, Waste and Materials Management staff worked closely with Air Management, Forestry and Law Enforcement, as well as with local governments.

To ensure that open burning complaints are handled efficiently and consistently, staff created a coordinated response plan, including access to a common tracking system to determine if previous complaints had been received about the same person or property. Staff also developed sample letters to send to a municipality, contractor, business or resident when an open burning complaint is received against them. Copies of the letter are sent to other parties that should be notified, including wardens, forestry staff, and the municipal fire chief and chairperson. Staff also developed new open burning display materials to educate the public at special events.

■ DNR and partners work to reduce waste pharmaceuticals in the environment

The impact of pharmaceuticals and related compounds on the environment received growing attention in 2007. These substances get into our lakes, rivers and streams in many ways, including after flushing or pouring unused or unwanted medication down the drain. Studies have found that chemicals in pharmaceuticals and related products can harm wildlife—for example, by affecting animals' reproductive systems.

In an effort to avoid these problems, as well as abuse or misuse of unused medications, communities and organizations have started holding pharmaceutical collection events around Wisconsin. However, because of federal Drug Enforcement Agency requirements and concerns that medicines could be used illegally or improperly, these collections take a great deal of planning and coordination.

The Waste and Materials Management Program supports local collection events and provides general and technical advice to organizers. We recently updated our Web site to include a comprehensive set of pharmaceutical waste pages, with detailed information and resources for the public as well as guidance for businesses and institutions looking to reduce pharmaceutical waste and manage their waste properly.

We are working with other programs, agencies and stakeholders to address this complex issue and protect Wisconsin's natural resources. In one effort, we are collaborating with the Department of Agriculture, Trade and Consumer Protection to

make Clean Sweep grant funding available for community collection events.

Other program efforts to develop long-term, statewide options for proper pharmaceutical disposal include the following:

- Developing a pilot program that will facilitate the establishment of permanent (as opposed to one-day or otherwise temporary) collection sites.
- Evaluating in-state options for the safe destruction and disposal of waste pharmaceuticals.
- Working with the state Department of Administration to include pharmaceutical waste collection services in the state's hazardous waste contract.



Pharmaceutical collection events around the state receive a variety of medications and related substances.

PHOTO COURTESY MILWAUKEE METROPOLITAN SEWERAGE DISTRICT.

■ New attention on waste materials' climate change contribution

Can the “reduce, reuse and recycle” mantra help with the fight against global climate change? According to research by the U.S. Environmental Protection Agency and others, preventing waste and choosing the right waste management alternative can significantly reduce greenhouse gas emissions by diminishing the need for raw materials, lowering energy use in manufacturing and reducing landfill methane emissions.

For some materials, the savings are impressive. For example, if Wisconsin residents and businesses recycled 75 percent of the recyclable paper they currently send to state landfills each year, it would reduce greenhouse gas emissions by the equivalent of taking more than 330,000 passenger cars off the road. Increasing reuse, composting and recycling of other materials such as untreated wood, food waste, electronic devices and beverage containers could triple that figure.

The Waste and Materials Management Program is working to incorporate climate impacts into our waste management poli-

cies and goals. For example, we have been working with state landfills to measure and report the amount of methane (a greenhouse gas 20 times more potent than carbon dioxide) and other gases escaping from landfills, and to capture more of the gas. Landfills have made significant progress in reducing these “fugitive” emissions (see the story on the next page). We also worked with members of the Governor's Task Force on Waste Materials Recovery and Disposal to present waste management policy options to the Governor's Global Warming Task Force for consideration.

As interest in carbon “cap and trade” systems increases, materials recycling, reuse and source reduction activities could earn credit for greenhouse gas reductions. We already knew materials were too valuable to waste—but they may be even more valuable than we originally thought.

Hot Topics

■ Wisconsin landfill gas emissions continue to decline

For the second year in a row, estimates indicate that municipal solid waste (MSW) landfills in Wisconsin have made significant improvement in gas collection effectiveness. Waste and Materials Management Program calculations show that fugitive landfill gas emissions declined by 27 percent in 2006 after falling by 20 percent in 2005. The reductions in both years exceed our initial target of 15 percent per year.

Fugitive landfill gas emissions are receiving more attention because of global climate change. Methane, a significant component of these emissions, is a greenhouse gas 20 times more potent than carbon dioxide. We have undertaken a major initiative to compare measured rates of gas extraction to modeled gas emissions from Wisconsin landfills, and made the amount of gas generated and released to the atmosphere one of our primary environmental results indicators.

We believe that the significant emissions reductions are a result of several factors, including: real improvement in gas extraction and treatment by landfill operators; more consistent or accurate monitoring and reporting of landfill gas extraction results to the Waste and Materials Management Program; and accelerated landfill gas generation rates at larger landfills practicing leachate recirculation or accepting substantial quantities of sludges or other high-moisture-content wastes. In the future, we will look more at this last issue and may make adjustments to the model used to estimate landfill gas emissions. Nevertheless, the estimated decreases in fugitive landfill gas emissions are a marked improvement, and represent a significant effort by landfill operators.

■ Wisconsin tackles growing electronic waste stream

The growing number of computers, cell phones, TVs and other electronics Wisconsin residents and businesses replace each year is contributing to a problematic waste stream that is potentially harmful to the environment, but also potentially valuable. Most discarded electronics can either be reused or recycled and contain valuable materials like gold, lead and plastic. Although the electronics recycling industry is growing rapidly, recycling options remain limited in many areas, and it is often difficult for consumers to know whether a recycler is reputable.

Following recommendations by the Governor's Task Force on Waste Materials Recovery and Disposal, the Waste and Materials Management Program has provided research and support for proposed state legislation that would require electronics makers to take responsibility for recycling their products. It would also ban items such as computers, TVs and computer monitors from Wisconsin landfills. We have also developed new Web pages to help households and businesses find electronics recyclers and make sure that discarded electronics are properly managed. The pages also help electronics recyclers navigate requirements that protect human health and the environment.

In 2008, many households and businesses will look to replace old TVs before the federally mandated switch to all-digital television in February 2009. We will continue to improve outreach materials on this topic and help residents and businesses manage unwanted electronics in a way that benefits both the economy and the environment.



Proper management of discarded electronics, such as cathode ray tubes (CRTs), includes disassembly with proper safety equipment for employees, as shown here at the Cascade Asset Management facility in Madison.

PHOTO COURTESY CASCADE ASSET MANAGEMENT.

■ Recycling options for asphalt shingles, other construction and demolition waste continue to expand

Efforts by builders and contractors, nonprofits, governments and recycling advocates are expanding opportunities for recycling construction and demolition (C&D) materials.

These materials—including wood, metal, concrete, gypsum wallboard (drywall), vinyl siding and asphalt shingles—are a huge portion of what goes into Wisconsin landfills (estimates range from 25 to 33 percent of the waste stream, or roughly 850,000 tons per year).

Many of these materials are recyclable and highly valuable, but require special efforts for collection and processing. To expand recycling opportunities, construction companies, recycling businesses and nonprofits have been working with the Waste and Materials Management Program to develop new methods to collect and use C&D materials, such as grinding clean gypsum wallboard for use as a soil amendment. The challenge at the job site or C&D processing facility is to sort and exclude treated wood, waste paints, solvents, adhesives and other non-recyclable components.

A successful example of this market development work from 2007 is asphalt shingles. In 2007, our program gave three new facilities approval to process asphalt shingles, including one hot-mix asphalt facility now approved to process and use ground shingles in asphalt products. Staff consulted with our counterparts in Minnesota, who have longer experience with asphalt shingle recycling and market development, and with the U.S. Environmental Protection Agency to ensure that Wisconsin shingle processing facilities use current best management practices for excluding materials that contain asbestos.

Staff developed a template approval document to streamline future approvals for shingle processing facilities.

The three newly approved facilities dramatically increased the state's capacity to process shingles for recycling, from about 5,000 tons to 35,000 tons a year. Still, in 2007, only about 7 percent of the estimated total 286,000 tons of residential asphalt shingles disposed of annually in Wisconsin municipal solid waste landfills were processed for recycling. We expect more requests for approval of shingle processing facilities in 2008, given the high cost of petroleum products, including virgin asphalt. Nationally, hot-mix facility operators report that a ton of clean, ground shingles contains roughly \$100 worth of asphalt.

Because of this hard work in both the public and private sectors, the Wisconsin C&D recycling industry is poised to greatly increase materials recovery in the next five to 10 years, saving money and resources and providing new jobs.

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Projects such as the deconstruction of the Badger Army Ammunition Plant are taking advantage of new recycling markets for materials such as concrete and wood.

DNR PHOTO BY HANK KUEHLING.

What's Next in 2008 and Beyond

IN ADDITION TO CONTINUED WORK ON TOPICS AND PROJECTS COVERED ELSEWHERE IN THIS REPORT—SUCH AS ELECTRONICS WASTE AND PHARMACEUTICAL MANAGEMENT—THE WASTE AND MATERIALS MANAGEMENT PROGRAM WILL CONTINUE TO ADDRESS THE FOLLOWING ISSUES.

Emerging markets for agricultural plastics

Farmers are using increasing amounts of plastic film for silage bags, bale wrap and other purposes. A 300-head dairy farm using plastic silage bags may produce as much as 6,000 pounds a year of waste plastic. While most of this plastic is recyclable, in reality there have been no recycling options in Wisconsin due to the need for equipment that can clean, bale and process the large amounts of film.

That is changing, and in 2007 the DNR responded to a request from the Department of Agriculture, Trade and Consumer Protection to provide outreach materials at a demonstration of new agricultural plastics recycling equipment at Farm Technology Days. The Waste and Materials Management Pro-

gram worked with the Air Program to develop and distribute an informational card and add Web content on the subject.

In 2008, we will continue to play an active role in several pilot projects around the state that will collect plastics from a small number of farms and send them to a Minnesota company for processing into products such as plastic lumber. Advocates, including our program staff, hope new recycling options will help reduce the illegal and harmful burning of these plastics and provide new market opportunities for using this valuable resource.



PHOTO © SANGIORZBOY | DREAMSTIME.COM

New efforts to increase non-residential recycling

We continue to work with local government recycling programs to increase their role in ensuring that businesses are recycling materials banned from Wisconsin landfills. Recycling program staff host joint meetings with business representatives and local officials, and conduct joint DNR/local recycling inspections of businesses as part of a local government training effort. In 2008, we plan to launch an outreach initiative to reinvigorate state recycling efforts, including getting out the business

recycling message. The current state budget provides \$2 million to stimulate and assist business recycling. Our efforts to do this will include working with certain industries and sectors to integrate recycling into their business models and developing easily accessible tools for use by recycling managers so that recycling messages are more consistent around the state.



PHOTO COURTESY MILWAUKEE DEPT. OF PUBLIC WORKS

Continued progress on landfill organic stability plans

During 2007, program plan review staff approved the first group of plans developed by landfill operators under the Landfill Organic Stability Rule. The purpose of the rule is to reduce the long-term risk of uncontrolled decomposition of organic materials in landfills. The plans describe steps landfill operators would take to either reduce the landfilling of biodegradable materials—such as food waste and paper—through composting or other methods, or

to speed up decomposition of organic materials. The plans approved in 2007 provide a good start toward achieving our goal of having all of Wisconsin's municipal solid waste landfills implement organic stability plans by 2012. We expect to see additional landfill organic stability plans in 2008 as landfill operators submit plans of operation for newly approved expansions.



DNR PHOTO BY BRAD WOLBERT

What's Next in 2008 and Beyond

Growing opportunities for composting

PHOTO COURTESY BRUCE COMPANY OF WISCONSIN



In 2007, Waste and Materials Management Program staff worked closely with the Associated Recyclers of Wisconsin (AROW) Organics Workgroup, the U.S. Environmental Protection Agency and other partners to organize a roundtable on using compost to improve stormwater management and erosion control. The day-long event included a demonstration of how compost can be used to restore vegetation on large roadside construction projects. The one-day event brought together more than 50 compost producers, highway engineers and environmental managers from Wisconsin and neighboring states. The demonstration site shows the beneficial results

of using compost blankets, berms and filter socks on steep slopes.

In 2008, we will continue working with the AROW Organics Workgroup to reduce regulatory barriers to increased composting of food scraps and paper, including updating standards for compost use. We will also participate in initiatives to build on the success of the 2007 roundtable and raise awareness about new uses for compost in landscaping and large-scale planting and restoration projects, along with the potential greenhouse gas emissions reductions that come with increased organic material composting.

2008 proposed state regulations affecting waste and materials management

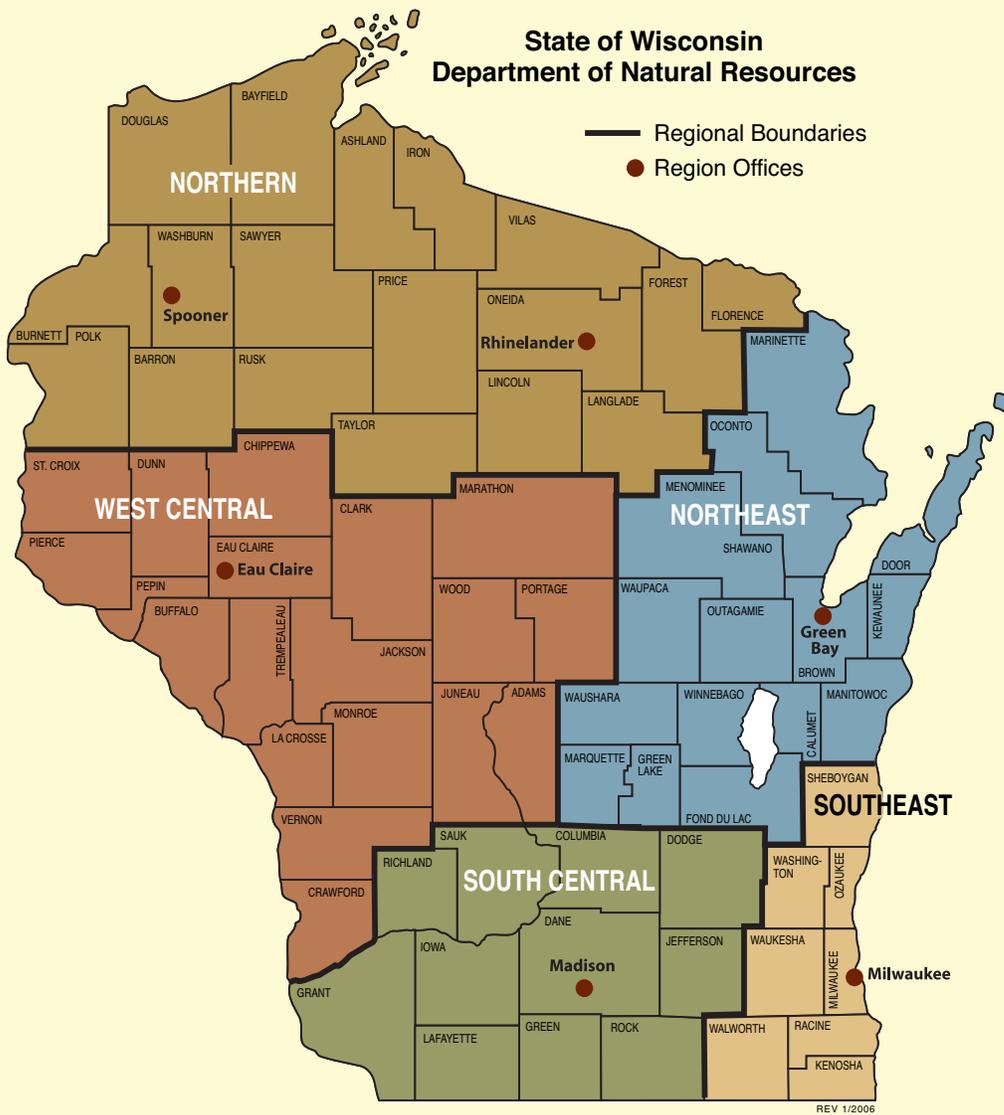
Our rules agenda for 2008 includes the following:

Rule Revision	Purpose
Emergency rule on reimbursement of fees for disposal of PCB contaminated sediments.	To reimburse paper companies for the tipping fees they pay to dispose of sediments out of state, as part of the Fox River remediation.
NR 600 series updates for hazardous waste management.	Update state regulations based on rules adopted by the U.S. Environmental Protection Agency (EPA) since 2002. To retain EPA authorization for the hazardous waste program, we are required to make these updates.
NR 500 series revisions related to management of excavated stormwater basin sediment.	Develop rules that will allow efficient and environmentally appropriate use or disposal of sediment excavated from stormwater retention basins.
NR 504 and NR 812 changes related to granting exemptions and variances from the required 1,200-foot setback of private wells from landfills.	Ensure consistency in the decision-making process regarding private well exemptions and variances near landfills between the Waste and Drinking Water programs.

Note: The Natural Resources Board may add to or modify this list during the year.



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