Minnesota
DEPARTMENT OF NATURAL RESOURCES

News and information for participants in the
Minnesota Adopt-a-River Program

Cleanup Review

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Lessons Learned From Cleanups

Joe Beattie, Hastings High School Field Biology Teacher

On a cool morning this past October (2004), students from the Hastings High School field biology class donned their waders and headed into the waters of the Vermillion River. We were in search of garbage on our biannual cleanup.

On October 14, 2004, 28 students from Hastings High School Field Biology class removed approximately 500 pounds of garbage from the Vermillion River. (photo by Joe Beattie 10/14/04)

It didn't take long to start filling our plastic sacks. On the trail down to the river, we gathered fast-food drink glasses, plastic soda pop bottles, and candy wrappers. Students almost immediately began finding larger objects once they stepped foot in the river channel. A couple of students extracted a plastic sled half-buried in a sand bar. Some others yanked a plastic inner tube from the river bottom. As we waded downstream, the garbage diversity mounted. One student found a fishing pole and pondered whether or not he could restore it to working condition. After a bit of walking we rounded a curve in the stream and came upon a log pile strewn with litter: plastic automotive oil bottles and many plastic soda pop bottles. Gradually the river grew shallow and braided its way into what the locals refer to as the "bottoms." We picked up what we could, including some large Styrofoam blocks. After quite a workout, we did an about-face and headed back to our starting point.

We have never kept an inventory of our garbage over the years for a couple of reasons. First, maintaining an on-going record of data has not been our primary objective, instilling a sense of community responsibility is. Also, the Adopt-a-River Program tracks our progress for us as we send in the purple cards after each cleanup.

Contents:

"Students learn so many long-lasting lessons from cleaning up our assigned segment of the river."

We have the good fortune to live in a community characterized by a unique river. As the Vermillion flows through Hastings, it drops precipitously over a sizable falls, which historically was utilized by a gristmill. The river then shoots through a stretch of whitewater that attracts kayak enthusiasts from great distances. Downstream from the whitewater, the river slows down and parallels the Mississippi River for some twenty miles until it joins the mighty river near Red Wing.

Students learn so many long-lasting lessons from cleaning up our assigned segment of the river. They witness how the river changes along its course. The health of the river becomes evident in a gut-level, intuitive way as they walk along. We often have the chance to observe river wildlife such as muskrats, beaver, belted kingfishers, bald eagles, great blue herons, and painted turtles. And of course, we have the inherently satisfying feeling of doing something that is clearly right and good. Students frequently sound off that this day is among the most valuable in the class.

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The notion of experiencing the river through cleanups was given a boost on November 18, 2004, when Chad Pregracke spoke at the 4th Annual River Summit that was held in St. Paul. Chad is a young, vibrant man whose mission is to bring attention to the status of major river systems of the United States by conducting extensive clean-up operations through the non-profit that he founded called Living Lands and Waters. He talked from the heart about how he started small and gradually increased the scope of his efforts by appealing to citizens, corporations and politicians. By the end of his presentation, we had ideas rolling through our head. The students and I chatted about how we might bring more light to the status of the Vermillion River by launching a river clean-up day coordinated with other cities. Perhaps through a larger and more visible effort we might raise consciousness about the river and potentially spur more citizen involvement, much like our river monitoring efforts.

Over time, Hastings citizens have certainly become progressively more aware of our monitoring efforts. In the grocery store or at the bank, people approach me to ask what the students are doing down by the river. I respond that the students are involved in a project called the Vermillion River Watch.

In an attempt to gain a sense of the biological health of the river, students biannually analyze the aquatic macroinvertebrate population. They begin their analysis by first collecting a macroinvertebrate sample from multiple river habitats: the rocky bottom, leaf litter amassed on log snags, and shoreline vegetation. Students then bring the sample back to the lab to be meticulously counted and identified to the family level. Numerical and identification data are then used to calculate a series of well-accepted biological measurements. These measurements are designed to reveal the river's level of health.

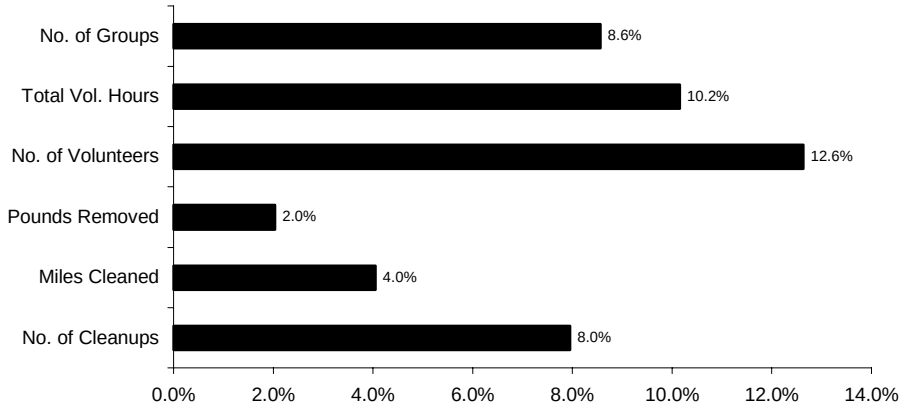
Students report their data to the Vermillion River Joint Powers Board, a group of county commissioners responsible for governing the watershed. This data is used to help implement the watershed management plan written by the board. The plan provides standards for river protection and enhancement. The process of authentic data collection and reporting is an invaluable experience for biology students. They acquire first hand knowledge of what it is like to work with both the scientific and political community.

My students and I are extremely pleased with our participation in the Adopt-a-River Program. By coupling our cleanups with our monitoring efforts, the students are able to gain a deeper appreciation for their environment as well as their community. Like other "service learning" projects in schools, these projects benefit our community as well as provide invaluable opportunities for the students to learn about the river in a "hands-on" way rather than just reading about it in text books.

Editor's Note: Since starting with the Adopt-a-River Program in 1999, Mr. Beattie's students have removed a total of 2,600 pounds of garbage in 6 cleanups.

School Groups are Important to Adopt-a-River's Success

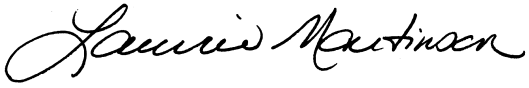
Some may not realize how important school groups are to a program like Adopt-a-River. In fact, Mr. Beattie's students are only one of 22 school-sponsored groups from kindergarten through 12th grade that are currently active in the program. Throughout the program's 15-year history, a total of 49 K-12 groups have participated in cleanups through the program. These groups represent 30 cities around Minnesota. These groups have participated in cleaning everything from nearby stormwater ponds to vast stretches of rivers. Not surprisingly, the Mississippi River, with 18 groups conducting cleanups, is the most well-represented water body. The graph below shows the proportion of all Adopt-a-River activity that K-12 groups are responsible for.



Percentage of All Adopt-a-River Activity Conducted By K-12 Groups

Director's Comments: "To be gripped by the reality of this…"

Laurie Martinson, Director DNR Trails & Waters Division



The current DNR strategic conservation agenda (including the Adopt-a-River Program) measures our progress toward the agency mission, "to work with citizens to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life."

In the DNR's strategic agenda, the Adopt-a-River Program is a key performance indicator for measuring healthy waters and watersheds, with an emphasis on conservation. In light of the DNR's strategic thinking, what does this hands-on conservation effort really look like?

To be gripped by the reality of this caring for the public waters, you need to be a volunteer on a shoreline cleanup. I attended the 13th Annual Great Mississippi Riverboat Cleanup, sponsored by the Adopt-a-River Program and Padelford Packet Boat Company, last summer (July 28, 2004) and it was a profound experience. I was one of roughly 90 volunteers that broke into six groups and spread out over two miles of shoreline. In just a few hours, we removed 4,030 pounds of man-made trash, all tucked like jackstraw onto the edges of the Mississippi River flood plain near Pig's Eye Lake in St. Paul and South St. Paul.

Our findings ranged from the disgusting and nasty to the whimsical and sublime. We even found a few items that seemed to still have some useful wear left in them. We found everything from oil bottles to toys, tires to mattresses, and almost anything in between. Much of it appeared to be a probable threat to wildlife, to the quality of drinking water, and to the over-all health of the river.

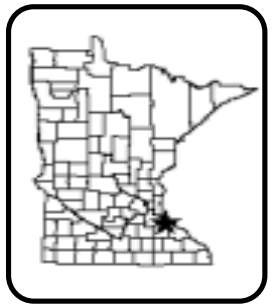
Thank you in advance for all the efforts you will be contributing this coming season. Let's join together to see that our public waters will continue to become healthier. And when you decide to conduct a shoreline cleanup, don't forget to think through your safety plan. We want your cleanup efforts to be as safe and fulfilling as possible.

Celebrating the Importance of Water

Historical Moment: December 24, 1882

MCRR Wins River Connection at Red Wing

Paul E. Nordell, DNR Adopt-a-River Program Coordinator



In the days before the Interstate Commerce Act of 1887, railroads mischievously manipulated shipping rates. Desperate attempts were made by some to introduce competition in the hopes of establishing fair rates. One of these attempts took place in Red Wing. Red Wing, claiming to be the largest primary wheat market, shipped 1.8 million bushels in its peak year, 1873. Railroads being built along the Mississippi River were making grain shipments into Red Wing easier, and the city was thriving as a transfer point for steamboat shipments.

Red Wing's prominence as a grain center was already facing uncertainty. The very rails that were delivering grain were causing the market to change to the city's disadvantage. Six years prior to Red Wing's peak, in 1867, Minnesota's first all-rail route into Iowa, the "Eastern Express", cut off Red Wing's hinterland west of Northfield by heading straight south. To reclaim its market area, Red Wing needed a rail line following the Cannon River to Northfield that was free of Chicago or Milwaukee financial interests.

A.B. Stickney, with the backing of wealthy English investors, decided to step into the fight to save Red Wing from the control of the Chicago Milwaukee and Saint Paul Railroad (CMSP) and its shipping rates. Stickney's plan was to avoid the Chicago destination all together, routing south of Chicago or through the port of Duluth. Either way, it would give Minnesota grain an advantage in the more lucrative markets of the Eastern U.S. This attitude was seen as a direct threat to the CMSP. Stickney chose the Minnesota Central Railroad (MCRR), which was being built between Red Wing and Mankato, as his primary weapon in the struggle against his competitors.

The fight to be the first Cannon Valley line was intense. It involved surveyors removing stakes in the middle of the night, battle truces negotiated by local officials, and, ultimately, the federal court system. The winner in the struggle for Red Wing was the MCRR, which arrived in Red Wing on December 24, 1882. The CMSP lost primarily because a 420-foot bridge east of Cannon Falls blew down in a gale on December 3, 1882. Because of this, the CMSP was unable to complete its parallel line into Red Wing until June 1883. The MCRR victory gave this railroad the right to share Levee Street in Red Wing with the CMSP, and, most importantly, gave the MCRR the right to cross over the CMSP main line to get where grain barges could be loaded on the Mississippi River. The MCRR could now have access to competing railheads further down the Mississippi, and it could offer the option of shipment through the port of Duluth.

Primary Source: *The Chicago and Great Western in Minnesota*, by Roger Bee, Gary F. Browne, and John C. Lueke (1984).

Stormwater: What is it and What You Can Do

Shaun Lettau, MCC – DNR Adopt-a-River Program Assistant

Most people realize that stormwater ultimately finds its way into our public waters through a series of underground storm sewers or above-ground drainage ditches. But have you ever stopped to think what is in that water as it flows into the lakes and streams we are so proud of? Most people do not realize the burdens these man-made systems place on natural systems, much less what steps average citizens can take to minimize these problems.

Stormwater, or more accurately stormwater runoff, is defined as the rainfall or snowmelt that runs off the ground or impervious surfaces (i.e. buildings, pavement) and drains into either natural or man-made drainage ways. Since this water flows primarily on the surface, it collects a wide assortment of pollutants and carries them into our lakes and rivers. The type and amount of pollutants that drain into our public waters varies greatly based on location and storm severity. For example, 90% of pollutants found in stormwater runoff come from the first inch of precipitation, referred to as the "first flush" (*Stormwater Problems & Impacts: Why all the Fuss?*, Land-of-Sky Regional Council, Asheville, NC). This shows that it does not require a lot of precipitation to create serious pollution problems.

Another factor that determines how much pollution is carried in any given event is the amount of time between "flushes." The longer this time frame, the greater the accumulation of pollutants. Since winter is usually the longest time between flushes in Minnesota, approximately 65% of the state's annual stormwater pollution is a result of the first large spring snow melt (*BMP Design Supplements for Cold Climates*, Minnesota Pollution Control Agency).

A third factor influencing the amount of pollutants getting carried into public waters is the area covered by impervious surfaces (i.e. pavement, buildings). As communities are developed, the amount of precipitation that infiltrates the ground can be reduced by as much as 85% (*Stormwater Problems & Impacts: Why all the Fuss?*, Land-of-Sky Regional Council). This not only increases stormwater pollution, it also contributes to extreme water level fluctuations.

As you can see from the table on page 8, the list of pollutants that are normally contained in stormwater is quit long and can create a large number of problems as pollutants accumulate in our natural water bodies. While this table does not list every pollutant found in stormwater, or its consequences, it does give an idea of the main categories of pollutants.

After reading through this list, you may start feeling overwhelmed by the problem rather than motivated to solving it. In reality, average citizens can do many things to help solve the problem of stormwater pollution.

One of the greatest ways you can help our waterways is to become involved in one of the many groups that actively work toward reducing the problems of stormwater runoff.

One of many stormwater outfalls that drain into the Mississippi River in St. Paul (DNR A-a-R photo, 5/13/04)

One way is to join programs like Adopt-a-River. By removing shoreline garbage, harmful chemicals are also removed before they leach into the water. Education is another great way to attack this problem through storm-drain stenciling or simply by "spreading the word" about stormwater runoff. Some groups have even become involved with recycling programs either at home or at work.

Joining large groups is not the only way to make a difference with the stormwater problems, however. The following are a few day-to-day steps you can take around your home, especially in urban areas, to reduce stormwater pollutants (*How Citizens Can Help Control Stormwater Pollution*, Land-of-Sky Regional Council).

- Properly dispose of oil and other household hazardous chemicals. This means taking these wastes to a collection center, rather than allowing them to spill. Also, store and use chemicals properly to prevent leakage.
- Make sure your vehicles are running properly and not leaking any fluids.
- Don't litter and properly dispose of any litter you do find.
- Practice environmentally friendly lawn-care practices (minimizing use of chemicals, sweeping – not washing – excess chemicals off driveways and walkways, composting yard waste, etc.)
- Reduce runoff by promoting a more natural landscape (reducing impervious areas, planting more vegetation cover, etc.)
- Report any pollution, illegal dumping, or soil erosion to the proper authorities.

Remember, this is just a sample of ways you can reduce the stormwater pollution being generated from your neighborhood. For more ideas contact the Adopt-a-River Program, your local Soil & Water Conservation District, or your local public works department.

Stormwater runoff is a serious threat to the water resources that make this state great. As you can see, however, it is a threat that can be managed if we work together. By taking these small steps, we can reduce the amount of pollutants in stormwater runoff and make Minnesota's public water much healthier.

To learn more about the problems associated with stormwater, please visit the following websites:

www.landofsky.org/water/storm_water_fact_sheets
www.pca.state.mn.us/water/stormwater
www.epa.gov/npdes
www.bwsr.state.mn.us/watermgmt
www.stormwatercenter.net

Pollutants found in Stormwater Runoff

Pollutant	Source in Nature	Role in Nature	Source in Developed Areas	Consequences of Pollutants
Sediment	Riverbanks & shorelines	Store nutrients, maintain stream profile	Construction sites, lack of vegetation	Block sunlight, release excess nutrients, affect aquatic habitats
Nutrients/ Organic Compounds	Decomposing organic matter, natural runoff rates	Support vegetation growth	Pesticides, fertilizers, sewage, yard waste, food & pet waste	Algae blooms, oxygen deprivation, fish die-offs
Trace Metals	Mineral weathering	Nourishment for plants and animals	Motor vehicle wear, power plants, chemicals, construction materials	Alters human and wildlife development, increase toxicity levels
Salts/ Chlorides	Mineral weathering	Support ecosystems	Water softening & de-icing salts	Sterilize soil, reduce biotic growth
Oil & Grease	Decomposing organic matter	Store nutrients	Pavement, motorized vehicles, industry	Reduce oxygen of water, increases nutrient load, wildlife hazard
Bacteria	Native animals, soils	Decomposition & nutrient cycling	Improper wastewater management, domestic & ag. animals	Increased risk of disease
Thermal changes	Sun exposure, shallow water, seasonal changes	Offer variety of natural habitats	Impervious areas, tree removal, shallow ponds	Stresses/ kills fish & wildlife, changes habitats
Trash	Not found	Not found	Spillage, floods, improper disposal	Suppresses foliage, stresses/ kills fish & wildlife, eyesore
Toxic & Synthetic Chemicals	Not found	Not found	Pesticides, motorized vehicles, improper disposal, air deposition	Changes natural systems, degrades ecosystem health

Table modified from *Introduction to Stormwater: Concept, Purpose, Design*, Ferguson, B.K., 1998.

Creature Feature

Common Loon: *Gavia immer*

DNR File Graphic

If you have ever visited or cleaned the shoreline of one of the many lakes in central or northeastern Minnesota, chances are you have heard at least one of the four distinctive calls that can only come from our state bird, the common loon. These calls can be any combination of long drawn-out wails, a sort of maniacal laughter, a hooting sound, or yodeling.

Perhaps you may have seen the black head and red eye of these aquatic birds bobbing on the waves or diving underwater to hunt. Thanks to solid bones (to ease diving), those red eyes (for better vision underwater), and webbed-feet that seem to be set too far back on their bodies (that allow better movement when diving), loons are made to fish. These adaptations allow loons to dive down to 250 feet and stay under water for up to 5 minutes when pursuing the small fish that comprise the majority of their diet.

Even though these adaptations benefit loons in water, they can be detrimental elsewhere. Having solid bones (most bird bones are hollow) a loon's body is heavier then other birds their size. This means they need long "runways" to take off, up to 600 feet. Also, their leg position makes it very difficult to walk on land.

As an adult male reaches three or four years of age, it will choose a territory and attract a mate. Both the male and female then start building a nest of reeds and grasses on the edge of a lake or island, taking turns to incubate the one or two olive-green to brownish-colored eggs. After about a month, the small brownish chicks emerge and are nearly ready to swim. The chicks are unable to fly for their first two months, therefore they must rely on their parents for protection. Adult loons protect their young by taking turns carrying the chicks on their backs.

Loon chicks are especially susceptible to predation from large fish, especially northern pike and muskies, as well as snapping turtles. Loons may also face predation from bald eagles, and "egg stealers" such as skunks, raccoons, and foxes. However, the most serious threat to loons today stem from pollution problems, especially mercury (from air pollution) and lead.

Lead poisoning is a large threat to Minnesota's estimated 12,000 loons. Lead, typically found in fishing tackle, sinks to the lake bottom where it is swallowed by loons either during feeding or when they swallow pebbles to aid in digestion. Since an adult loon typically only weighs about 10 pounds, a single lead sinker can prove to be fatal when absorbed into the blood stream. To reduce the problem of lead poisoning, angler's are encouraged to use non-lead fishing tackle.

To learn more about our state bird and how you can help through the lead tackle exchange program or the state's monitoring program, visit the DNR's website (www.dnr.state.mn.us) and follow the links.

Spring 2005 Adopt-a-River Calendar of Events.

As of February 11, 2005 * Contact organizers to verify times and locations.

March 12th: New Ulm Community Cleanup Day
Residents of New Ulm are asked to cleanup the garbage and debris around their houses. Contact Scott Sparlin at 507-359-5765 or by e-mail at ssparlin@friendsofmnvalley.org.

March 12th: White Bear Lake Cleanup
The White Bear Lake Conservation District is planning a lake-wide cleanup. For information contact Kristine Lampert at 651-748-8997 or at kristine_lampert@yahoo.com.

April 16th (tentative)**: Annual Minneapolis Parks Earth Day Cleanup**
Call the Earth Day Hotline at 612-313-7722 to become involved with any of the city's Earth Day activities.

April 16th: 18th Annual City of St. Paul, Parks Cleanup Day
Contact St. Paul Parks & Recreation Environmental Programs at 651-266-6400 for more information.

April 19th (tentative)**: 16th Annual Greater Lafayette Park Cleanup & Celebration**
Volunteers from local government agencies and businesses will spend a few hours cleaning this downtown St. Paul business and industrial park. Contact Paul Nordell at 651-297-5476 or by email at paul.nordell@dnr.state.mn.us for more information.

April 23rd (tentative)**: 13th Annual REAP Cleanup**
Volunteers are encouraged to contact Lois Swanson at 651-451-1038 for information about joining the River Environmental Action Plan (REAP) as they clean their section of the Mississippi River in South St. Paul.

April 30th (tentative)**: Shingle Creek Watershed Cleanup**
Residents of Brooklyn Center, Brooklyn Park, Crystal, Plymouth and Robbinsdale are encouraged to contact Joyce Gulseth at 763-569-3327 or through email at jgulseth@ci.brooklyn-center.mn.us for more information.

May 14-22: National River Cleanup Week
Any groups interested in conducting their cleanup during this week can register to be included in the National River Cleanup Registry through America Outdoors. For information, contact American Outdoors at 865-558-3595, by email at infoacct@americaoutdoors.org or register online at www.nationalrivercleanup.com

June 16th: 14th Annual DNR / Padelford Great Mississippi Riverboat Cleanup
Pre-registration is encouraged for this great event to help clean the Mississippi River aboard the *Harriet Bishop* riverboat. Food and entertainment will be provided. Contact the Adopt-a-River Program at 651-297-5476 or at paul.nordell@dnr.state.mn.us to learn how you can "get on board."

Adopt-a-River Notes & News

Purple Cards: Thank you to all the groups that have sent in their purple cleanup report cards for 2004. As of February 11, 2005, 134 cleanups have been reported for 2004 totaling 121,716 pounds and 12,137 volunteer hours. To date, Adopt-a-River volunteers have spent nearly 212,000 hours removing over 4.6 million pounds of trash from Minnesota's public water. Excellent work! Also, please remember that if you have completed a cleanup and not reported it to SEND IN THOSE PURPLE CARDS. Results can also be emailed to shaun.lettau@conservationcorps.org or faxed to 651-297-5475.

How-to Kits: We have just completed the latest revisions to the Adopt-a-River's "How-to" kit. One of the major changes include a "Promotional Assistance Form" for any groups interested in having us design flyers or brochures for their cleanups, or wish to promote their cleanups on the DNR's Internet Calendar of Events. Other changes to the packet include a "Suggested Checklist for Cleanup Day" and a more user-friendly rewrite of many of the other inserts. If you would like an updated how-to kit, please contact the Adopt-a-River Program at (651) 297-5474, shaun.lettau@conservationcorps.org; or view the packet online at www.dnr.state.mn.us/adoptriver/howtokit.

Pictures and stories wanted: If your group has any great cleanup pictures, stories, or advice; send them to us. Your group's contribution could be recognized in future issues of the *Cleanup Review*, or on our website, www.dnr.state.mn.us/adoptriver. Please see our contact information below.

Congratulations Camp Sunrise: Camp Sunrise, a camp that introduces inner-city youth to the outdoors, will be recognized for their Adopt-a-River cleanup efforts along the St. Croix River in the upcoming *DNR Volunteers* newsletter as they "Focus on Volunteers." Keep up the great work guys!

This 19-foot "Koi Carp," by Steve Bateman, was the main focus at the DNR's Adopt-a-River booth at the 2004 Minnesota State Fair. It "swam" to the International Marketplace in St. Paul after the fair for display. This sculpture, as well as all of the past sculptures, may be viewed by visiting our website.
(Photo by Dawn Flinn, 8-31-04)

Cleanup Review is published by the Minnesota Department of Natural Resources for the Adopt-a-River Program in the Trails & Waterways Division.

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*Don't forget to visit our web site at:
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