

# WATERSHED NEWS

November, 2000

## South Branch of the Root River Watershed Project

### IRONWOOD LANDFILL



#### Informational Meeting

*Thursday, November 16, 2000*

*7:30 p.m.*

*at the*

*Cherry Grove Community Center*

Ironwood Landfill, located southeast of Spring Valley, has the distinction of being Minnesota's first Superfund landfill. The landfill was closed in 1980 after more than 1400 barrels of toxic waste were unearthed that had been illegally buried there by a Wisconsin plastics manufacturer.

#### *Come and learn more about:*

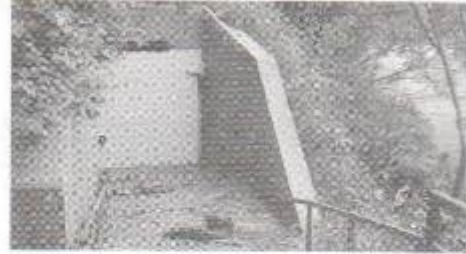
- the history of the closure
- past, present and future monitoring activities
- the results of 20 years of effort to clean up contaminated ground water



## 2000 FLOODS PROVIDE EYE OPENING REMINDER

The severe flooding on June 1 and July 10 provided a graphic reminder of nature's power. Many areas of Southeast Minnesota were devastated. The South Branch Root River experienced the worst flooding since 1942. Damage in the watershed included:

- Hundreds of acres of severely damaged crops.
- Severe loss of agricultural soils. Thousands of tons of soil were lost in the watershed.
- Accelerated erosion of riparian pasture. Some of the most severe bank erosion occurred between Mystery Cave and Forestville. In some areas, banks shifted more than 10 feet.
- Numerous deep gullies developed in fields which will require costly repair.
- Numerous fences were destroyed.
- Many physical structures were washed away, including camping trailers, picnic tables, and portable toilets. Several picnic tables were found over a mile downstream from their origin at Mystery Cave. A heavy garbage dumpster was moved about a half mile.
- Mystery Cave tour routes were flooded to the ceiling. Water got up into the Mystery Cave ticket building. Several support piers for the building were washed out. A major cleanup was required for the mud in the building and on the tour routes. Some tour passages at the Minnesota Caverns entrance also flooded. This is the first occurrence since the state acquired Mystery Cave in 1988.
- Water was over a foot deep in the Forestville main park picnic shelter, requiring extensive cleanup.



Debris and sediment were carried into the Mystery Cave entrance with the floodwaters.



Floodwaters reached the ticket building during both floods and caused damage.



Floodwaters peaked at 16.9 feet at the Historic Forestville Bridge during the July 10th flood. The bridge deck is about 16 feet.

- The Historic Forestville cellar completely filled, inundating the furnace and electrical equipment. The barn and wagon shed both had water in them. This had not occurred in recent memory. Though a lot of flood debris was left at the historic site, the flood did remove the large logjam just downstream of the 1899 steel bridge. Some damage to the bridge occurred.



Canfield Creek near Rifle Hill Quarry is normally dry except during heavy rains. After the June 1 storm, it was flowing bank full.



Etna Creek also overflowed its banks. Debris shown here on the County Road 14 bridge and on the fence in the background show how high the water was at its peak.

- Damage to many other roads and bridges in the watershed also occurred.
- Several park trails also experienced flood damage.
- A number of wells in the area showed E. coli contamination after the floods.

Although damage from this summer's heavy rains was inevitable, some land use practices contributed to flood severity. Loss of water storage through drainage and the lack of ground cover in some areas caused faster runoff and accelerated soil loss. Many areas with well maintained conservation practices showed minimal damage from the floods.



Although the damages in the upper reaches of the Root River Watershed were severe, the downstream damage is even more dramatic. Large logs, gouged fields and mounds of sand from the June 1 floods left scars on these downstream floodplain fields that are still evident.

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For the nation that *destroys its soil destroys itself.* -Franklin Delano Roosevelt.

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## South Branch Root River Watershed Project Spring and Stream Fecal Coliform Bacteria Sampling

*sampling conducted August 30, 2000 by volunteers and staff*

**Background:** As part of the water quality monitoring portion of the watershed project, the Root River and its tributaries have been tested a number of times for fecal coliform bacteria. Fecal coliform bacteria is found in the digestive system of warm-blooded animals. Its presence in water is indicative of human sewage and animal manure. Over the past two years, numerous sample results indicate excessive levels of sewage and manure in these surface waters.

Members of the project steering committee suggested that springs as well as surface water be tested for fecal coliform bacteria. Connections between groundwater (including springs) and surface water are especially strong in the South Branch watershed. This is the primary reason many of the streams are able to support cold-water species such as trout. There is also concern about possible contamination of drinking water sources. Health Department recommendations suggest the disinfection of wells containing ANY fecal coliform bacteria. This concern was heightened following summer flooding, after which numerous wells in and around the watershed tested "positive" for bacteria.

This one-day bacteria sampling effort was a collaboration between citizen stream-monitoring volunteers and staff working on the project. Throughout the project, volunteers have been taking regular stream transparency measurements and making qualitative water quality assessments. During the data analysis stage of the project, efforts will be made to relate these observations to bacteria results.

Transparency, Conductivity, Dissolved Oxygen, and Temperature were measured in the field at some sites. Fecal coliform bacteria analysis was done at the Minnesota Department of Health laboratory in Minneapolis.

**Results/Discussion:** Rainfall had occurred in the watershed a few days prior to the water sampling. In general, the streams had returned to a relatively "clear water" state from more turbid conditions that occur right after rainfall events. At some of spring and stream sites, however, there was still a tinge of cloudiness in the water, and flows seemed a bit elevated.

Sample Results are shown in Table 1. Based on State surface water quality standards\*, the fecal coliform concentrations at both surface water sites and springs would be considered high. The levels seen are comparable to those observed at other times in the project. The highest spring site concentrations (>2000) occurred at what are probably the four largest springs. These results point to a very strong connection between human and animal waste at the land surface, and groundwater. In general, even a relatively thin soil layer can "filter out" bacteria before it reaches water. For at least some areas of the South Branch Root River watershed, with its karst feature such as sinkholes, disappearing streams, and exposed fractured bedrock, this apparently isn't happening. These results should raise concerns related to drinking water, as well as to the use of surface waters for contact recreation.

\* **geometric mean of 5 samples/calendar month > 200/100ml; or any single result > 2000/100ml**

Lee W. Ganske, Minnesota Pollution Control Agency – Rochester, 9/26/00

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*When we try to pick out anything by itself, we find it hitched to everything else in the universe. -John Muir (1838 - 1914)*

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**Table 1. August 30, 2000 South Branch Root River watershed spring and stream sampling results**

Site	ID	Transparency (cm)	Conductivity ( $\mu$ mhos)	Dissolved Oxygen (mg/l)	Temp. ( $^{\circ}$ C)	Fecal Coliform (#/100ml)
Judicial Ditch 1	JD-1					9200
South Branch - above JD 1	SB-5					140
South Branch - Upper	SB-5A	48				2800
South Branch - Kohn	SB-4A	30				880
South Branch - Kohn	SB-4B	22				1800
South Branch - Hafner	SB-2					1400
South Branch - Vreeman	SB-3					340
Etna Creek	ET-1	>60	517	9.8	16.4	500
South Branch - Mystery Cave						860
South Branch - Co. Rd. 5	SB-2A					500
Canfield Creek	CN-1		637	11.7	14.1	2000
Forestville Creek - Poldervard	F-3					5800
Forestville Creek - Park	F-1					2700
South Branch - Historic Bridge	SB-1					1600
Bloomfield Spring						190
Bloomfield Spring (A106)						130
Landswerk Spring			532	7.1	9.7	4
Tammel Spring			519	7.1	9.3	<4
Sikkink Spring			655	6.3	11.0	4
Moth Spring (large)			568	7.5	14.2	3400
Grabau Spring			571	7.8	13.9	2300
Canfield Big Spring			622	10.8	9.8	2500
Rainy Spring			726	9.9	9.2	300
Canfield Middle Spring			630	10.9	9.6	2400
Canfield Lower Spring			719	10.3	9.0	480
Seven Springs Upper			547	7.4	15.5	180
Seven Springs Lower			571	7.8	13.9	180

## BACTERIA FOUND IN MANY WELLS FOLLOWING FLOODING

Following this summer's floods, several wells located in the South Branch Root River Watershed Project area were tested for coliform bacteria. The Fillmore County Public Health Nurses' office had free water test kits available to test well water for bacteria. The samples were sent to the MN Department of Health (MDH) lab in Minneapolis for analysis.

There were a total of 62 wells in the entire county that were tested at least once for bacteria. Twenty-three wells were within the watershed project area (21 in Forestville Township and 2 in York Township). The Forestville Township Board made an extra effort to distribute kits in their township because of concerns about the amount of runoff and the large number of sinkholes in the township. Of the 23 wells tested in the project area, 20 had coliform bacteria present, and of those, 16 also had *E. coli* present. After chlorinating the wells, seven were retested and all 7 still had bacteria present, 6 of those with *E. coli*. This is compared to 39 wells tested in the rest of the county, of which 17 had bacteria present (10 with *E. coli*).

These results may be skewed somewhat since well owners who have had problems with their wells in the past may have been more likely to get their wells tested. However, the results do tell us that the aquifer closest to the land's surface is very vulnerable to contamination under these geologic conditions. These results have implications for water quality in our streams also, since ground water is discharged through springs that feed many of our streams.

Coliform bacteria are found in the intestines of animals and humans. The most common sources of coliform bacteria in water are manure or sewage. Although coliform bacteria, including the common *E. coli*, are not a health danger in and of themselves, they do indicate that other more dangerous disease-causing organisms may be present. Some of these dangerous organisms are the more virulent strains of *E. coli*, viruses, parasites, and other microorganisms, which have been in the news on occasion. In order to meet the drinking water standard, no bacteria should be present in the water. The water quality standard for streams is less stringent. However, if bacteria are present in the stream while people are swimming, wading or in other contact with the water, there is the danger of illness occurring.

Poor well construction where the well is not properly cased and grouted can allow contaminants to easily enter the well. The presence of a malfunctioning septic system or feedlot or manure storage area near the well can be a source of bacteria in the well, especially if the well is poorly constructed. Bacteria can also be introduced if the well has been serviced or repaired. The well should always be chlorinated following any repairs.

Oftentimes, chlorinating the well will remove the bacteria. Potential sources of the contamination should also be corrected. If the problem still persists, the bacteria may be in the aquifer itself, and the source may not be within the control of the well owner. The well may require more frequent chlorination and testing. A drinking water treatment system may also be an option. The most expensive option is drilling a new well into a safer aquifer.

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*For in the end, we will conserve only what we love, we will love only what we understand,  
we will understand only what we are taught.* -Babe Dloum

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## **CHERRY GROVE BLIND VALLEY SCIENTIFIC AND NATURAL AREA WILL BENEFIT GROUND WATER AND TROUT**

One of Minnesota's newest Scientific and Natural Areas (SNA) is the Cherry Grove Blind Valley unit. Located just southeast of Cherry Grove, the 40 acre parcel is known for its high concentration of sinkholes. For many years, local residents have watched water disappear into several sites on the property.

Permanent protection of the site is thanks to Tom and Kathy Kappers who owned the property. In 1998, the Kappers considered mining the property. They were looking for a good source of limestone for their rock hauling business, and knew that bedrock was close the surface. At a Fillmore County Planning Commission hearing, a number of local residents expressed concern for the operation.

Most concerns were for ground water. Dye tracing had previously shown a water connection between the property and the Big Spring. Big Spring is the resurgence of Canfield Creek, one of the state's premier trout streams. In addition, a neighbor directly east of the property still relied on a natural spring for a water supply. Concerns were expressed that a mining operation might interrupt or divert groundwater flows. People were also concerned that mining could degrade the quality of ground water.

Talks between the Kappers family and Department of Natural Resources staff began soon after the hearing to explore ideas for permanently preserving the site. With the high density of karst features including several blind valley features, the property seemed ideal for a Scientific and Natural Area. The site was finally acquired in early 2000.

As a Scientific and Natural Area, the site will be ideal for study of ground water and limestone geology. Development of Scientific and Natural Areas is strictly limited which will help preserve the quality of water sinking underground. Although hunting and other intensive recreation uses are not allowed, the unit is open for hiking and nature observation. Officials eventually hope to work with adjacent landowners who may be interested in maintaining or improving the quality of water draining into the SNA.

## **MOWER COUNTY DITCH**

The upper reaches of the South Branch Root River lie in eastern Mower County where landuse involves intensive farming practices. These reaches serve as an outlet for drainage systems that help improve production on farmland throughout this portion of the South Branch Watershed. The importance of drainage in the area was significant enough that in the early 1900s the County established a public ditch system to improve and maintain drainage in this portion of the watershed. The system includes some of these upper reaches of the South Branch and is known as Mower County Ditch #1.

Today, as viewed from the agricultural community, the ditch system is in a state of disrepair and crop production is suffering as a result. Several individuals have "petitioned" the county to perform maintenance on the channel by returning it to its originally designed configuration. The process of petitioning for maintenance on legally established ditch systems is clearly laid out in Minnesota Drainage Law (MS 103E). A petition is filed, an engineer produces a report on costs, and the ditch authority initiates construction. The right to maintain legally established public ditches has also been well established in the courts.

Mower CD #1, however, is unique in that the system has not been maintained since its original construction in the early 1900s. Due to this lack of periodic maintenance additional regulatory issues apply. Minnesota Rules 4410.4300 require that an environmental assessment worksheet (EAW) be completed. In addition, if it becomes necessary to improve the channel or the outlet beyond the original design a permit for "Work in the Beds of Protected Waters" will need to be obtained from the Minnesota DNR.

The time line for any of these processes is dependent on when the paperwork is filed and how thorough the information submitted to the regulatory agency is. It is likely that all of these processes will be initiated at the same time and will proceed on a parallel tract. Approval of maintenance by the Ditch Authority can occur within 30 to 60 days. Processing of an EAW or a Protected Waters Permit can take a similar length of time. State permits cannot be issued until the environmental review (EAW/EIS) process is completed. While time is running out on the possibility of any construction this year, it is quite possible that the Ditch authority can have everything in place to commence construction next spring.

The best opportunity for public input on this issue will be the EAW process. Typically, individuals outside the immediate limits of the watershed have no opportunity to provide input to the maintenance or repair of public ditch systems. If interested, one should keep an eye open for a notice in the EQB Monitor that an EAW has been submitted and is open for review and comment.

# WATERSHED NEWS

Fillmore County Water Plan Coordinator  
912 Houston St. NW  
Preston, MN 55965

BULK RATE  
U.S. POSTAGE  
**PAID**  
PERMIT NO. 8  
Sprint Valley, MN 55975

## Local Residents Serve On Steering Committee & Assist With Grant Process

*As the South Branch Watershed Project has progressed, several local people have played a role in guiding that progress by serving on the steering committee.*

Diane Hafner	Farmer & CSMP Volunteer
Dan Terbeest	Farmer, Bloomfield Township Board & CSMP Volunteer
Sue Schrage	Fillmore SWCD Supervisor
Johannah Vreeman	Farmer & CSMP Volunteer
Carol Kohn	Farmer & CSMP Volunteer

### *Technical Staff Assisting Watershed Project:*

Donna Rasmussen	Fillmore County Water Plan Coordinator
Lee Ganske	MN Pollution Control Agency
Bev Nordby	Mower SWCD
Kevin Scheidecker	Fillmore SWCD
Jeff Green	Regional Groundwater Specialist, DNR
Bob Moody	Fisheries Biologist, DNR
Mark White	Forestville/Mystery Cave State Park
Warren Netherton	



South Branch Root River  
Watershed Project Area

This watershed project has been funded by the Clean Water Partnership Grant, Fillmore County Water Planning Grant, and by the SWCD. As work continues on this project, there will be opportunities for other people to become involved in volunteer water quality monitoring efforts, education and informational meetings, surveying, etc. If you would like to know more about the watershed project, please contact Bev Nordby in Austin at (507)434-2603 or Donna Rasmussen in Preston at (507)765-3305.