

## Weekly LWC Update 7-29-16

*Interested reader: each week, I gather general information for Legislative Water Commission members to help keep them apprised about water issues in Minnesota. It contains a roundup of easily attainable MN water news, as well as articles from beyond MN that may inform member thinking. It also includes summaries of meetings I have attended and reports I have read, as well as info about upcoming events. During the Legislative Session, it also includes updates on water-related legislation. Any errors or omissions are inadvertent.*

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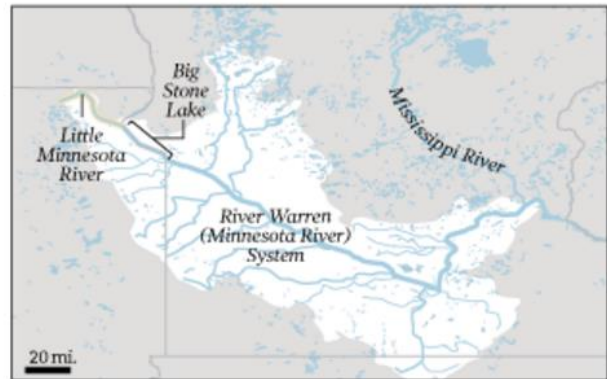
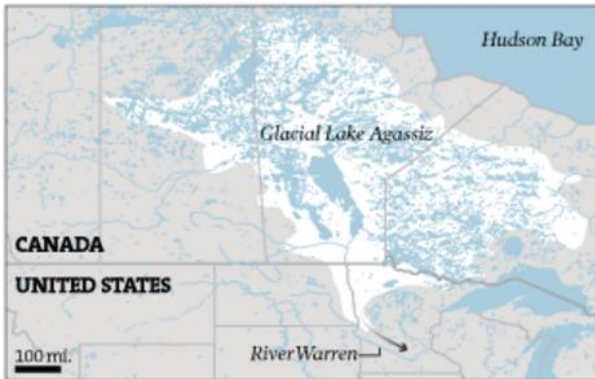
Web site: [www.lcc.leg.mn/lwc/](http://www.lcc.leg.mn/lwc/)

### 8-17-16 FIELD TOUR BACKGROUND ON THE MN RIVER

To help explain why the draining of Glacial Lake Agassiz made the MN River particularly susceptible to bank erosion, Strib: [Could the Mississippi River actually begin in South Dakota?](#), [Why Lake Itasca may not be the headwaters of the Mississippi River](#), and [A long time ago, in a river valley not so far away ...](#)

Lake Agassiz covered much of northwestern Minnesota, eastern North Dakota and a vast stretch of Canada. Contained by glacial ice on the north, it fed the massive River Warren that flowed south across what now is Minnesota.

When the ice melted, Lake Agassiz began to empty to the north, propelled by the east-west continental divide of the Coteau des Prairies at Big Stone Lake. The River Warren dwindled, becoming what now is the Minnesota River.

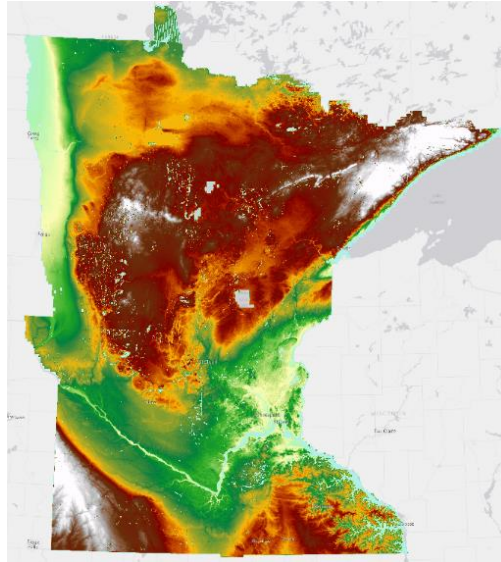


Source: University of Minnesota Anthropology Department, KMusser/Images, maps4news.com HERE

The bed of the Minnesota River now is dwarfed by the ancient river valley, yet still is more geologically prominent than the Mississippi's valley as it descends from Lake Itasca.



As the glaciers melted, the huge amount of runoff was first carried southward by the wide and deep Glacial River Warren. When the glaciers melted enough to allow Lake Agassiz to also drain north toward Hudson Bay, River Warren shrunk to become the Minnesota River that today is located at the bottom of a broad valley with high terraced banks. As soon as river level began lowering, the slope of the rivers' tributaries was steepened. Ever since then, the tributaries have been trying to reach their hydrologic equilibrium by carving their way through the banks. The LiDAR image below shows the state's highest elevations (white, then brown) and its lowest elevations (greens).



## MN NEWS WATER ACTIONS

- Pioneer Press: [Mississippi River is ready for its close-up and for you to film it](#); check out the [2015 Youth prize](#) "Fertilize Smart"
- Andover won this year's National Mayor's Challenge for Water Conservation for their population category. The Challenge is a partnership between the Wyland Foundation, EPA, National League of Cities, Toyota, ECOS, and 2 MN companies: Toro and Conserva Irrigation. Andover's success was attributed to the involvement of high school students who developed a service-learning activity about water conservation; they conducted outreach to peers, created educational posters, and shared water saving statistics during school video announcements. Mayor Trude posted a video and tweets and promoted the competition at community events. In total, 4,913 Andoverites pledged to reduce their overall water consumption by 24M gallons of water next year. Below are Steve Creech-Executive Director Wyland Foundation, Andover High School Principal-Becky Brodeur, Kina Msuya and Aisha Sow-students, and Julie Trude-Mayor at the awards ceremony on July 27<sup>th</sup>



- MPCA reports that the Clean Water Partnership Loan Program recently awarded loans to these projects to reduce pollution by upgrading septic systems in their watersheds:
  - The Snake River Watershed Management Board, \$400K loan to implement 27-33 subsurface sewage treatment system (SSTS) upgrades within the Kanabec County portion of the watershed
  - The Hawk Creek Watershed Project, \$1,05M loan to implement 75 SSTS upgrades in the Chippewa, Kandiyohi, and Renville County portions of the Hawk Creek Watershed
  - The Heron Lake Watershed District, \$450K loan to implement 30 SSTS upgrades in the Heron Lake Watershed to meet the Heron Lake TMDL Nutrient Reduction goals
- MPCA: [MPCA completes 44 enforcement cases in second quarter of 2016](#); Of these, half were related to wastewater or stormwater violations, issuing a total of \$323,068 in water-related fines:
  1. Spectro Alloys Corp., Rosemount, for hazardous waste and industrial stormwater violations, \$161,000
  2. Corn Plus, Winnebago, for wastewater violations, \$39,450
  3. Landmark of Arden Hills LLC, Andover, for stormwater violations, \$18,390
  4. Frattalone Companies Inc., Little Canada, for stormwater violations, \$18,657
  5. Koda Energy LLC, Shakopee, for wastewater violations, \$11,850
  6. Associated Milk Producers Inc., Rochester, for wastewater violations, \$9,600
  7. Saputo Dairy Foods USA LLC, White Bear Lake, for wastewater violations, \$9,015
  8. Kwong Tung Foods Inc., Minneapolis, for wastewater violations, \$7,600
  9. Valley Paving Inc., Shakopee, for stormwater violations, \$5,525
  10. City of Wyoming, Wyoming, for stormwater violations, \$5,175
  11. A-1 Excavating Inc., Argyle, for stormwater violations, \$5,175
  12. U.S. Steel Corp. Minnesota-Minntac, Mountain Iron, for wastewater violations, \$4,800
  13. City of Arden Hills, Arden Hills, for stormwater violations, \$4,625
  14. Boomerang Laboratories Inc., Spring Park, for wastewater and stormwater violations, \$4,555
  15. Gillespie Family Partnership, Elbow Lake, for stormwater violations, \$4,000
  16. RCP Transit LLC, Comfrey, for wastewater violations, \$3,131
  17. Security Band and Trust Co., Glencoe, for stormwater violations, \$2,388
  18. Jennie-O Turkey Store Inc., Willmar, for wastewater violations, \$2,000
  19. City of Brainerd, Brainerd, for wastewater violations, \$2,000
  20. Duluth Ready Mix, Inc., Saginaw, for wastewater violations, \$1,750
  21. Green Plains Fairmont LLC, and Cargill Inc., Omaha, Neb., and Wayzata, \$1,500
  22. Martin Jedlicki, Mayer, for stormwater violations, \$882

## WATER SUPPLY

- Atlas Obscura: [Republic of Kinney](#); a tale of out-of-the-box thinking to find funding for infrastructure repairs
- Morris Sun Tribune: [City approves water treatment plant contract, if state funding comes through](#)
- Strib: [E. coli in water system is persistent issue at Blue Mounds State Park](#)

## SURFACE WATER/STORMWATER

- MPR: [Water managers take public comment after seven floods at Minnesota-Canada border](#)
- DNR: [Zebra mussels confirmed in East Spirit Lake, Lake Osakis](#) and WCCO: [Zebra Mussels Found In 2 More Minnesota Lakes](#)
- Inforum: [Diversion foes file new lawsuit, this time against Minnesota DNR](#)
- Mankato Free Press: [Heat among many causes of lake algal blooms](#)
- Brainerd Dispatch: [Preserving water resources](#)

- Austin Daily Herald: [Buffer meetings planned for Thursday; Informational sessions set in 3 cities](#)
- Austin Daily Herald: [CRWD proposes project levy for water quality; Funds would contribute up to 12 percent of CIP initiative's \\$8.4M cost](#)
- Government Accounting Office: [Environmental Protection Agency: Status of Efforts to Address Nonpoint Source Water Pollution through the Section 319 Program](#); funding for 319 grants to states have declined by >30%, from about \$240M in FY 2004 to about \$160M in FY 2014
- Minnehaha Creek Watershed District: [Lake Minnetonka study is first of its kind in the country](#)
- Rochester Post Bulletin: [John Weiss: Buffers will help but aren't a perfect fix](#)

## WASTEWATER

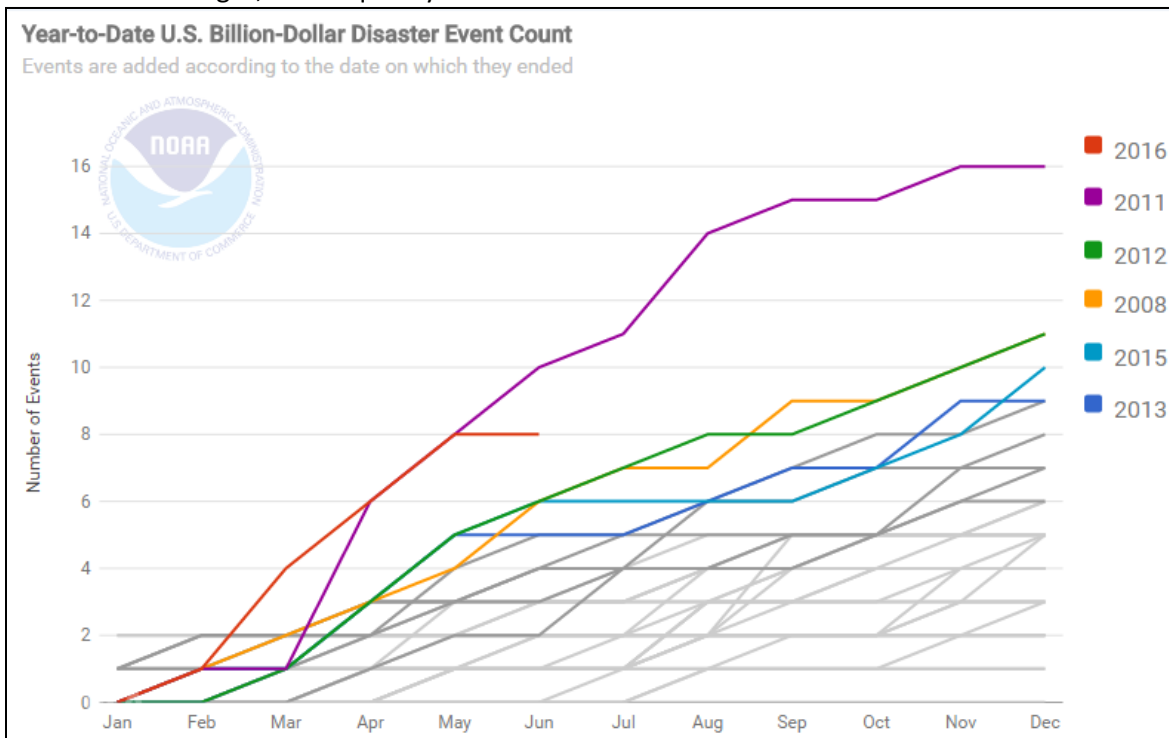
- Morris Sun Tribune: [Morris City Manager recognized by Coalition of Greater Minnesota Cities](#)
- New Ulm Journal: [City infrastructure](#)
- Austin Daily Herald: [Greater Minnesota city leaders renew push for special session](#)

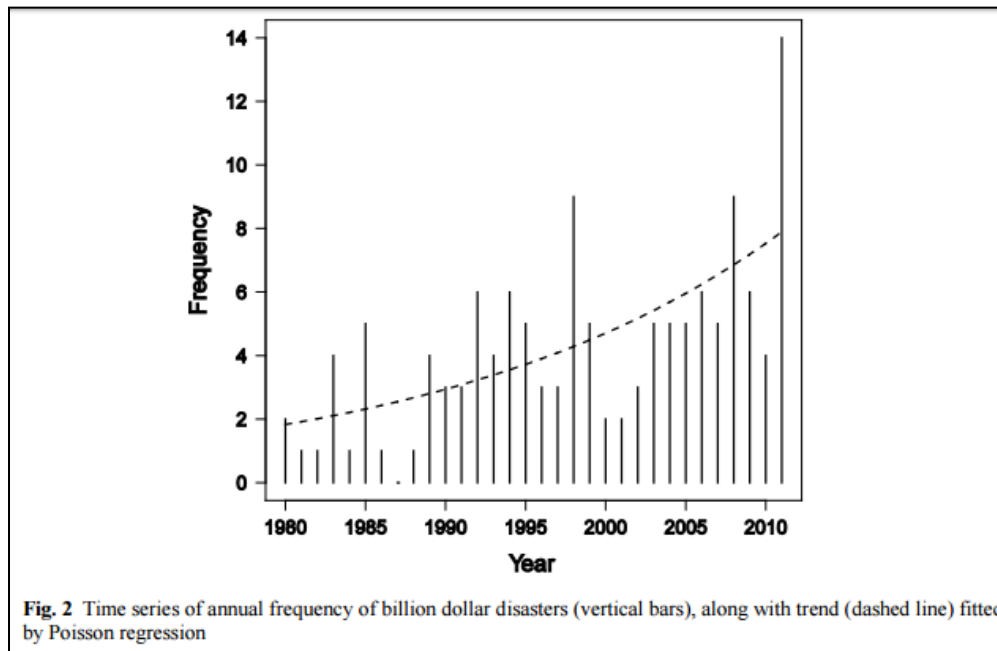
## MINING

- Duluth News Tribune: [Environmental groups question federal order on Enbridge pipeline in Minnesota](#)

## CLIMATE

- NOAA: [U.S. experienced at least 8 billion-dollar disasters so far this year](#); in 2015, the U.S. experienced 10 billion-dollar disasters, including 1 drought event, 2 flooding events, 5 severe storm events, 1 wildfire event, and 1 winter storm event, resulting in 155 lives lost and costing more than \$22B in economic damages; the frequency of billion-dollar disasters is on the rise





## AG & WATER

- Farm Forum: [2016 Minnesota Farmfest highlights and schedule](#), Hutchinson Leader: [Ag Department's Farmfest exhibit has farm safety, water quality, and more](#) and MDA: [MDA Farmfest exhibit to feature farm safety, water quality, and much more](#)
- Practical Farmers of Iowa: [Latest and Greatest Cover Crops Research by Practical Farmers](#)
- Tri-State Neighbor: [Forums to put focus on water, politics](#)
- AgWeek: [New UAV rules should help farmers, ag businesses](#); drones can complement the precision agriculture movement and the June release of the new Rule 107 for drones helped alleviate some uncertainty; they are slated to go into effect Aug 29<sup>th</sup>
- Land O' Lakes: [Land O'Lakes, Inc. Announces New Sustainability Business Division](#)
- MDA: [MDA and Conservis announce new public-private partnership to improve water quality in Minnesota](#)
- Minnesota Farm Guide: [Minnesota's own ETS offers many strip-tillage options](#)
- MDA's latest Clean Water Research projects:
  - [Assessment of rate and timing of phosphorus application in corn-soybean rotations on the potential for phosphorus loss to surface waters and tile](#)
  - [Measuring and modeling watershed phosphorus loss and transport for improved management of agricultural landscapes](#)
  - [Agricultural Best Management Practices \(BMP\) Handbook for Minnesota Update](#)

## OPINIONS

- Minnesota Daily: [Dangerous algae blooms indication of water health](#)
- MN Farm Guide: [Farmers are taking leadership role on water quality issue](#)
- Duluth News Tribune: [Local View: Boundary Waters a priceless treasure](#)
- ABC Newspapers: [ECM Editorial: Change critical in maintaining safe, ample water supply here](#)

## **BEYOND MINNESOTA**

- The Topeka Capital-Journal: [Kansas leaders tackle aquifer conservation](#); ideas worth considering - creating LEMAs and WCAs to recharge aquifers and managing aquifer use
- Governing: [Why Water in Schools Is So Susceptible to Lead Poisoning](#); Congress didn't ban lead in plumbing until 1986, so schools built before then likely have lead pipes; plus, service lines are usually longer allowing longer residence time and increasing the chance for contamination; and schools often have old water coolers with lead parts
- EPA's [letter to Governors](#) and [letter to state health officials](#) to follow-up on implementing the lead and copper rule, which is being revised
- MPR: [Canadian oil spill threatens drinking water](#)
- phys.org: [Cleaner air may be driving water quality in Chesapeake Bay](#); reductions in atmospheric nitrogen deposition as a result of air quality regulations have been a primary driver of water quality improvements in the Upper Potomac River Basin
- Engadget: [Solar-powered machine turns urine into drinkable water](#)
- US Water Alliance: [Clean Water Services: Brewing Innovation](#); converting pee to beer
- EPA's National Environmental Justice Advisory Council: [Environmental Justice and Water Infrastructure Finance and Management](#); NEJAC is the council that consults with the EPA on matters regarding pollution and well-being in poor and minority communities; they have been asked to study options for financial aid for water infrastructure; Joel Beauvais, deputy assistant administrator at the EPA Office of Water, at a council meeting on July 20<sup>th</sup> said: "Affordability is not an excuse for not doing the right thing for low-income communities"; they will discuss identifying communities needing help, what challenges they face in providing clean water, how to develop their capacity to manage and maintain water systems, and how to form community partnerships
- Strib: [6 more Michigan public workers charged in Flint water crisis](#) and [The Latest: Workers charged in Flint water crisis suspended](#)

## **MEETINGS**

### **AN URBAN STORMWATER TREATMENT LEADER**

Last Friday, a ribbon cutting was held for the new St Anthony Regional Stormwater Treatment and Research System in St Anthony Village. Despite the heat, over 50 people came to learn how the \$1.6M investment by the Mississippi Watershed Management Organization (MWMO) will treat stormwater from a 600-acre, fully-developed, urban drainage area. This drainage area collects stormwater from almost 40% of the city and represents about 25% of the catchment area served by the adjacent trunk storm sewer that drains to the Mississippi River. The underground treatment facility was constructed in a remnant piece of county right-of-way and it uses multiple technologies to treat stormwater. First, stormwater enters a swirl chamber that separates heavier grit from the water. The water then flows through a baffle wall where floating debris and pollutants are collected. Next, the water receives secondary filtration, either in an iron enhanced sand filter chamber or by flowing into a chamber filled with StormFilter cartridges that contain filter media to remove fine and dissolved pollutants. The system can fully treat stormwater from rain events up to 0.6" in 24 hours. Larger storm events treat the initial flows in the first chamber, after which water bypasses the system through diversion structures. Monitoring equipment has been installed to measure pollutant reductions by each treatment method to determine the cost-effectiveness and longevity of each technology.

This project was 10 yrs in the making. Reuse options were infeasible due to a lack of storage space and recharge was infeasible due to impermeable nature of underlying soils. Partners in this project were the MWMO (funding and long-term monitoring), WSB Engineers (design), Contec (StormFilter cartridges), U of MN St Anthony Falls Laboratory (monitoring design assistance) Hennepin County (owns the right-of-way), City of Minneapolis (the device is located in Mpls, which was responsible for permitting) St Anthony Village (operations & maintenance), and St Paul Utilities. Engineering estimates conclude that 169 MG of stormwater

will be treated each year, reducing annual sediment loads by 39 tons (63%) and reducing phosphorous by 176#/yr (47%). Annualized O & M costs are estimated to range be \$18K/yr.

[St Anthony Village](#) (SAV) Mayor Jerry Faust’s excitement for the project was a reflection of their environmental, economic, and social sustainability goals. Even though they were one of the first Green Step cities, he said adding the word “sustainable” to their mission statement has changed the way they do business. This past June, SAV received LMC’s [Sustainable City Award](#). The city also reuses stormwater to irrigate their ball fields at its city center, treats Silver Lake with alum to control excess nutrients, and partners with faith-based organizations to establish raingardens.

*The underground facility during construction, but once completed, only access hatches & a electronics station hint at what’s below:*



### CONSERVATION IN ACTION IN SE MN

Last Friday, the MN Farm Bureau hosted a tour of Fillmore and Houston counties, highlighting native seed production, stream bank stabilization, results from the Root River Field to Stream Partnership’s edge-of-field and in stream monitoring, and the use of drones in agriculture. The presence of underlying limestone and sandstone bedrock in this part of MN creates a strong surface water-groundwater connection, with travel times for water that can be as short as hours-long. This geology is the reason SE MN has world class trout streams, but it is also why groundwater there is highly vulnerable to contamination.

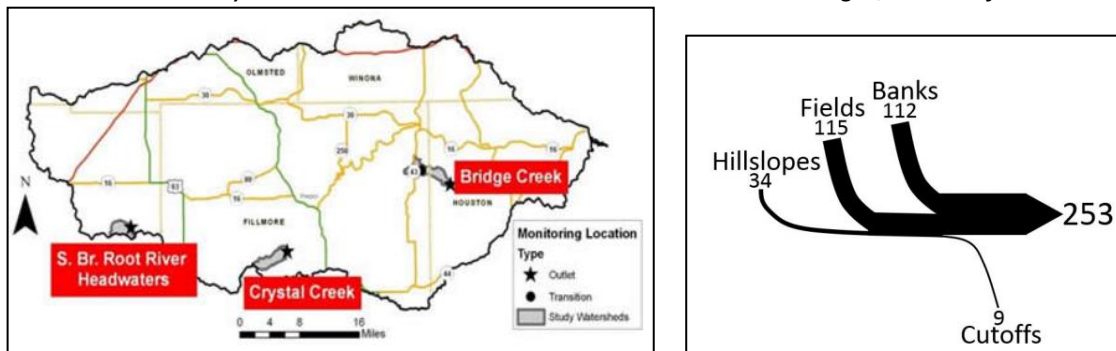
**Shooting Star Native Seeds** near Spring Grove is one of only 3 large-scale producers and processors of native grasses, wildflowers, sedges and rushes in the midwest. They have over 1,000 acres in production, both from their local growing plots and with contracted growers throughout the midwest. They manage their crops and weeds both with annual prescribed burns and herbicides. Harvesting is done with traditional equipment and by hand, followed by multi-step processes to clean the seeds. Their customers are people and organizations who are doing acre-scale (not yard-scale) plantings of single species or prescribed and customized seed mixes for many uses, including: roadsides, buffers, conservation reserve program (CRP) easements, and raingardens. As people have come to understand the value of native plantings in preventing soil erosion, harvesting nutrients from stormwater, and creating pollinator habitat, the demand for seeds has grown. Since 1989, Shooting Star continues to grow to meet the demand.



Root River SWCD (Houston County) showed how they have been using **cedar tree revetments** to stabilize the banks of Riceford Creek. Revetments are devices placed on streambanks in a manner that absorbs the energy of flowing water to reduce bank erosion and allow sediment deposition and vegetative growth. Most commonly, they are made of rip rap (\$225/LF) or tree trunks (\$13/LF). With Clean Water Fund money, support from the MN Corn Growers Association and Trout Unlimited, and labor from the MN Conservation Corps, they have been able to install 3,000LF of revetments so far. With no cost-share required, landowners are in line to wait for a project on their property.

Next stop: Johnson's Rolling Acres farm, where 1,100 cows are milked daily, 10,000 hogs are finished/year, and 2,500 acres grow crops. Because they are a large livestock manager, they also contract with area farmers to deliver manure as a field-applied fertilizer. This 6-partner, 28-employee farm is also one of MDA's [Root River Field-to-Stream](#) Partnership's (RRFSP) **edge-of-field monitoring** sites. The Root River watershed was selected for the RRFSP project because of its diverse landscape and predominance of agricultural land use. Within the 1.06M acre watershed, 3 sub-watersheds were selected for intensive study: the South Branch Headwaters in the upland glacial till area, Crystal Creek in the karst zone, and Bridge Creek in the bluffslands. Together, these 3 subwatersheds contain over 11,000 acres and 53 farms. The Johnson farm is in the Bridge Creek study area, where changes in elevation are highest. Unique to this project is the monitoring of both edge-of-field sites and stream sites across an entire watershed to determine where and why landscapes and conservation practices are assimilating nutrients and sediment in runoff and how conservation practices effect improvements. The project started in 2009 and has just completed the 6-yr Phase 1 baseline monitoring stage. Staff have just completed walk-overs of 52 of the 53 farms and identified >400 potential conservation practices, of which 88 are high priorities. In the first year of implementation, 20 projects have been completed and 20 are on deck; some are cost-shared and some are funded entirely by the landowner. Johnson's have already begun experimenting with cover crops and they have improved their grass waterways and added news ones. The are also adopting a variety of technologies to more efficiently manage their operations, including individual livestock movement monitors, cameras, and precision ag computers in their equipment. (Note that fully utilizing technology is limited by the absence of rural broadband.) Monitoring will continue as practices are installed to measure their effectiveness. MDA staff said this project has also taught them that a key to adding conservation on the landscape is having strong, trust-based relationships with individual farmers (which can take years to build) and understanding the various service delivery methods that work for each operation. The July issue of The Farmer contained these articles about this project: [Time to target farm field walk-throughs](#), [Small watersheds tell big story](#), and [Observations from the Root River Watershed](#). The MDA has posted [Runoff Lessons: Field to Stream Partnership 5 yrs \(2010-2014\)](#) and other information about the project on their [project website](#), including a link to a related project: [An Integrated Sediment Budget for the Root River, Southeastern Minnesota](#).

*Subwatershed Study Areas in the Root River Watershed Sediment Budget/Sources for the Root R. Watershed*



**Drones** (unmanned arial vehicles) are an emerging technology for collecting and transmitting data to enable precision agriculture applications. In anticipation of the growth of this technology, Caledonia Future Farmers of America students are learning how to use drones. One of the chapter members demonstrated how a drone is controlled, the view they provide the controller, and how the data is collected.



Mark Deutchman gave an overview of the **Root River Watershed One Watershed One Plan** process. He said the Root River Field-to-Stream Partnership early results were not used to inform the 1W1P because they are still in the baseline monitoring phase. He did talk about the need to engage ag service providers in the development of plans and the delivery of conservation practices.

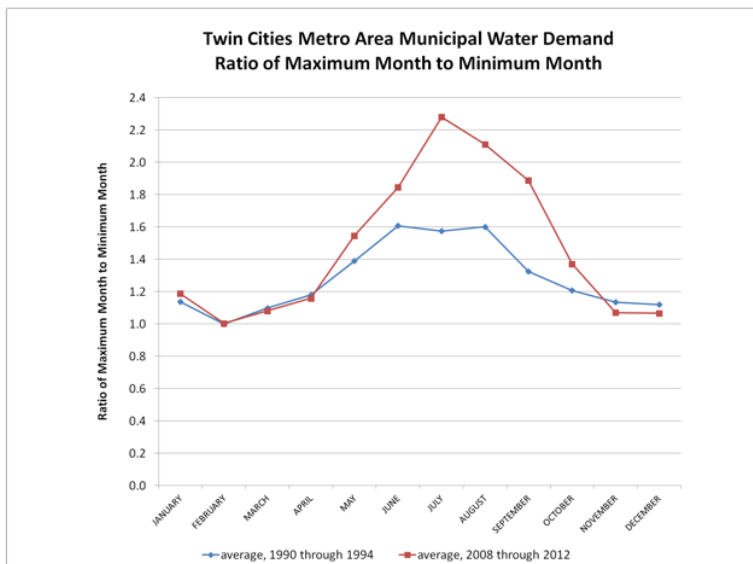
Kevin Papp, MFB president, closed the day with a call to engage farmers by looking forward, not dwelling on the past or pointing fingers.

## WATER CONSERVATION TRACKING

The Alliance for Water Efficiency has released their latest version of a [water conservation tracking tool](#) that can be used by water suppliers to quantify and track their conservation efforts. It is available at no cost to AWE members; for non-members, the cost of the tool is the same as membership. DNR is investigating options for tracking water conservation in MN, using an approach that benefits local water supplier, but also enables the state to assess the implementation status of water conservation plans and to aggregate data geographically.

## MAWSAC

The Metropolitan Area Water Supply Advisory Committee met this week. They received an informational report about the partnership between the Met Council and the U of MN to find ways to **reduce water use on Twin Cities lawns through assessment, research, and demonstration**. Lawn and landscape watering substantially increases a community's water use during the summer months and that trend has been increasing (see figure below comparing 1990-1994 & 2008-2012). Met Council estimates that changing summer watering behavior could reduce water use by 29%! The U of MN developed a survey to learn how to catalyze more efficient residential irrigation in the 7 county metro area. If you are Metro, please take this [survey](#).



Julie Ekman, DNR, gave a presentation explaining **the background and process that led to the Lake Michigan water diversion decision for Waukesha, WI**. Key steps in Minnesota's review process included:

- Experts review the Waukesha application documents
- Public listening session held in Duluth
- Compared application with Compact requirements
- Submitted questions to the Originating Party (WDNR)
- Participated in all Regional Body meetings to issue and vote on the Declaration of Finding
- Participated in the Compact Council meeting to vote

Overall, the commenters' issues fell into three broad areas: Does Waukesha really need a diversion?, Is Waukesha's proposed service area too large and does it meet the definition of a community?, and Could this

set a precedent for approving other diversion applications? Minnesota's primary issues and concerns were these:

- The proposed service area vs. Compact definition of "community within a straddling county"
- Accountability and mechanisms to enforce the conditions if the proposal is approved
- Physical and water quality impacts to the Root River and Lake Michigan
- The public process throughout the Regional Body and Compact Council process.

Finally, DNR staff had these ideas to improve the review process: recess for some time to deliberate between the final Declaration of Finding and the decision on its issuance, consider ways to better address the public's call for more opportunities to participate, and establish Minnesota's process for future applications.

Mark Maloney, City of Shoreview, explained their **WaterSmart water conservation initiative**. Since that has been described in earlier updates, the information won't be repeated here.

MAWSAC members then addressed several **business items**: receiving an update on the Technical Advisory Committee's formation and July 20<sup>th</sup> meeting, approving the TAC charter, and discussing preliminary ideas for the format and contents of the 2/15/17 report that will be submitted to Met Council, the LWC and other legislators, as per MN Stat [473.1565](#). More to come on this report in future meetings.

## **REPORTS**

### **STATE OF MN WATER**

- 7/26 [Stream Flow Report](#)
- 7/26 [Drought Monitor](#), finally some relief for west central MN

### **BOLD IDEAS TO IMPROVE WATER QUALITY**

The Nature Conservancy and U of MN Institute on the Environment have just released [Financing Change: Five Bold Ways to Revive the Dead Zone & Rebuild Soils](#). Authors assessed 32 practices to come up with their top 5 recommendations for application in IA, IL, IN and OH, but the principles could also apply in MN. Here's the condensed version of the top 5 recs:

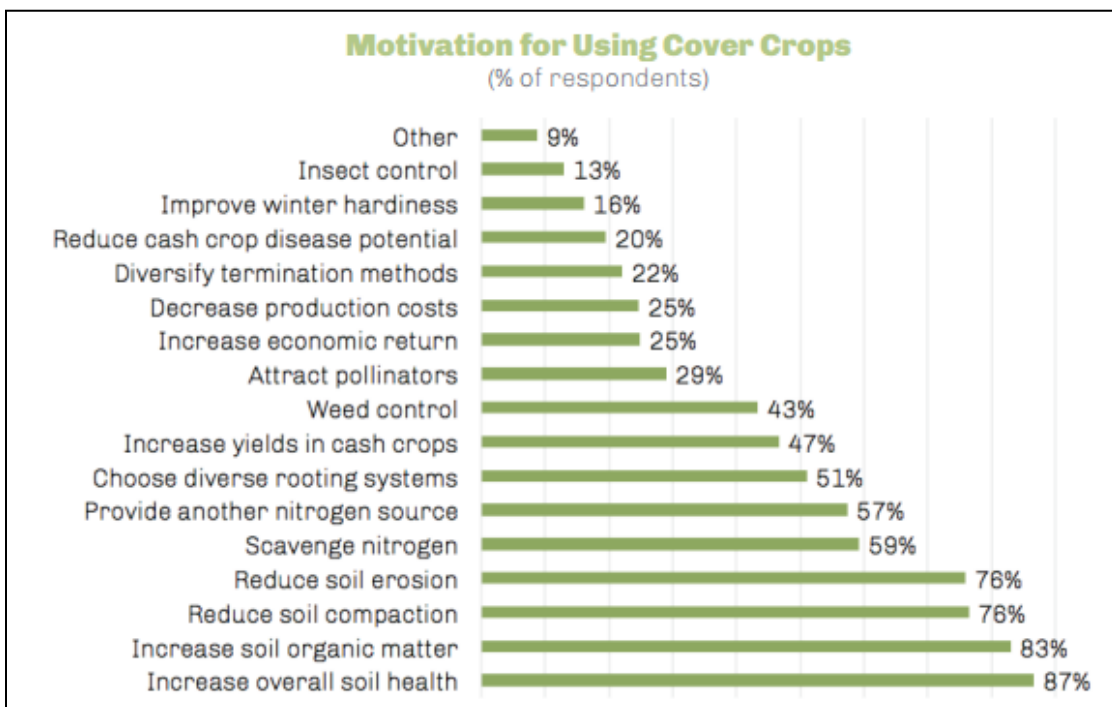
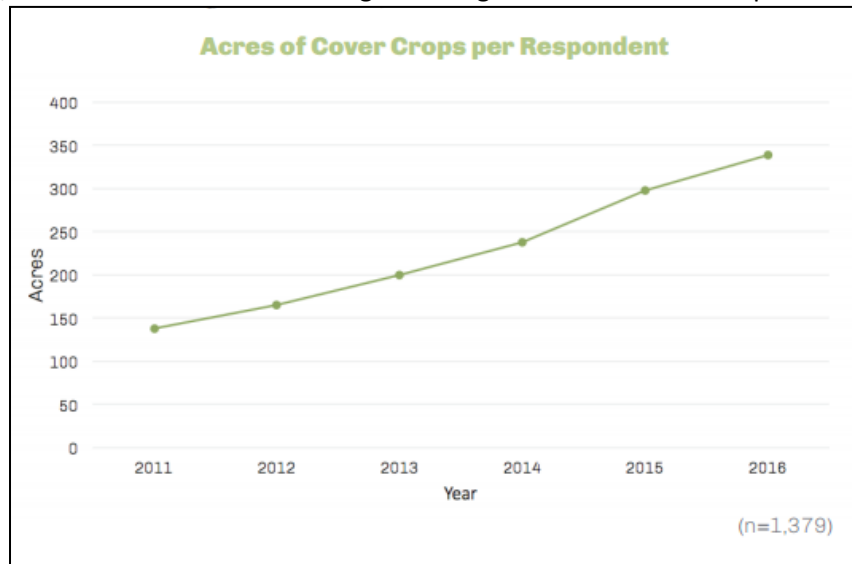
1. Couple crop insurance premium subsidies with adoption of beneficial practices for nutrient, water and soil outcomes; modify the Federal Crop Insurance Program to create a sliding scale with higher premium subsidies provided to farmers adopting beneficial practices.
2. Enable private service providers to drive targeted adoption of beneficial practices by training and incentivizing private service providers to support farmer adoption of precision technology and targeted use of beneficial practices in high impact areas.
3. Expand and target Farm Bill funding of beneficial practices in high impact areas for reductions in nitrogen loss and soil carbon improvement by:
  - a. directing at least \$500M/yr in new funds to the Mississippi River Basin Healthy Watersheds Initiative (MRBI)
  - b. targeting existing Conservation Reserve Program (CRP) funds to high impact areas as existing contracts expire
  - c. redirecting at least \$500M/yr of existing funds from the Environmental Quality Incentive Program (EQIP), CRP, and the Agricultural Conservation Easement Program (ACEP) to the MRBI
4. Drive ballot initiatives or legislative actions to develop new state funds that support adoption of beneficial practices in high impact areas for reductions in nitrogen loss and soil carbon improvement
5. Direct post-disaster federal funds towards restoration in high impact areas for reductions in nitrogen loss, flood risk, and soil carbon improvement by providing science and building capacity for federal, state, and local agencies to support and target floodplain management and reconnection, buyouts, and habitat restoration (wetland, oxbow, forest, etc.) in high impact areas

## COVER CROPS GAINING GROUND

The Conservation Technology Information Center has released their [Annual Report 2015-2016 Cover Crop Survey](#). The survey showed yield benefits after the use of cover crops as follows:

- Corn yields rose an average 3.4 bushels/acre (1.9%)
- Soybean yields increased 1.5 bushels/acre (2.8%)
- Yield increases rose to 8.3 bushels/acre of corn after cover crops had been used for >4 yrs
- Yield increases rose to 2.4 bushels/acre of soybeans after cover crops had been used for > 4 yrs

Over 2,000 farmers completed the survey, showing an increase in cover crop acreage (see figure below), despite the economic downturn in agriculture. As can be seen in the 2<sup>nd</sup> figure below, reasons for using cover crops varies widely, but erosion control and nitrogen management are near the top of the list.



Other survey highlights included:

- Cereal rye was the top species of cover crop planted by survey respondents

- 52% of respondents reported that their soybean yields always or often rise after a cover crop of cereal rye
- 82% of farmers reported that cereal rye helped with weed management, including herbicide-resistant weeds
- Crimson clover was the most widely planted legume cover crop
- Oilseed radish was the most common mustard family cover crop species
- Tax credits and getting a crop insurance premium discount would be strong motivators to get farmers to adopt cover crops or increase their use
- Cover crop mixes are gaining popularity

## **UPCOMING EVENTS**

- Aug 2: **GNP Water Reuse Tour**, Cold Spring; by invitation only (which you received directly from GNP; I plan to attend)
- Aug 3: **Farmfest water panel** at 1:15 pm; 28269 Hwy 67 near Morgan in the Wick Building; advance tickets \$8 (purchase [online](#)) or \$12 at the gate; schedule details can be found [here](#)
- Aug 3: Minnehaha Creek Watershed District's **Nonpoint-source Education for Municipal Officials (NEMO) Workshop on Lake Minnetonka**, focusing on MCWD's comprehensive plan update; \$20; RSVP to [www.minnehahacreek.org/boat-tour](http://www.minnehahacreek.org/boat-tour) or contact Larisa Jenrich @ 651/480-7732 or [jenri001@umn.edu](mailto:jenri001@umn.edu)
- Aug 10: **Faribault County Multipurpose Drainage and Soil Health Field Day**; 9 am to 3 pm; 4-H Building (270 White Oak Rd, Blue Earth); for more information, go [here](#)
- Aug 13 – Sept 25: **Smithsonian's Water/Ways and We Are Water MN** exhibits and activities at the [Nicollet County Historical Society](#) in St. Peter
- **Aug 17: Legislative Water Commission all day field tour (details to come)**
- Aug 23: **MnTAP Intern Symposium**; 1-5 pm: Johnson Great Room and Ski-U-Mah Room @ McNamara Alumni Center, U of MN; reports on projects that include helping companies reduce water use; the agenda can be found [here](#); [register here](#).
- Aug 24-25: **BWSR Tour**, East Grand Forks, more details to come
- Aug 31: **NEMO Workshop on the Lower MN River**, focusing on sediment pollution; no cost, but registration is required before 8/22 at [z.umn.edu/nemominnesotariver](http://z.umn.edu/nemominnesotariver)
- Sept 7-9: **International Drainage Symposium**, \$400, The Commons Hotel (615 Washington Ave SE, Minneapolis), registration [here](#)
- Sept 14: **NEMO on the St. Croix River Workshop**, focusing on the National Scenic Riverway rules and policies and adopting Minimum Impact Design Standards by the riverside communities; registration info to come
- Sept 17: **Buffer Field Trip** (in conjunction with the U of MN Buffer Science and Design Symposium on 9/16); registration link to come [here](#)
- Sept 20: **Water Technology Summit**, focusing on the Agriculture, Food and Beverage Sector; US Bank Stadium; more details to come
- Sept 20-23: **American Water Works Association – Minnesota Section Annual Conference** (their 100<sup>th</sup> anniversary); Duluth; details [here](#)
- Sept 22: **Clean Water Summit - Green Infrastructure for Clean Water - Rethinking Redevelopment and Retrofits**; MN Landscape Arboretum; \$80; 9 am to 4:30 pm; info & registration [here](#)
- Sept 29: **NEMO Lessons Across the Landscape Workshop**; land-based tour focused on urban stormwater practices in Minneapolis, led by the Mississippi Watershed Management Organization; registration info to come
- Oct 18-19: **MN Water Resources Conference**; agenda to come; cost and registration information [here](#)
- Oct 24-26: **BWSR Training Academy**; Cragun's in Brainerd (registration will begin in August)