Greater Blue Earth River Basin Turbidity TMDL
Presentation Goals

- Definition of TMDL and Turbidity
  - Impaired waters, Jurisdiction Rights, and Legal Authority
- Examples of turbid waters
- What can I do?

- Optional - Load Duration Curves
- Optional - Stakeholders and concerns
What is a TMDL? Why are they done?

- TMDL stands for total maximum daily load. A TMDL is a study to determine how much of a certain pollutant the system can hold before it is in violation of the federal standards.

- The federal Clean Water Act (CWA) requires states to adopt water-quality standards to protect waters from pollution. Section 303(d) of the Clean Water Act requires states to:
  - Assess all waters of the state to determine if they meet water-quality standards
  - List waters that do not meet standards (also known as the 303d List) and update every even-numbered year
  - Conduct TMDL studies in order to set pollutant reduction goals needed to restore waters.

- A water body is “impaired” if it fails to meet one or more water quality standards.
Pollutant of Concern: Turbidity

- Turbidity of water is caused by suspended and dissolved matter such as clay, silt, organic matter, algae and color.
Why is this a problem?

- Turbidity limits light penetration and inhibits healthy plant growth.

- Aquatic organisms may have trouble finding food, gill function may be affected, and spawning areas and other habitat may be covered.

- It is recognized as an indicator of water quality – the greater the turbidity the greater the pollution.
Our Area:

- As compared to other Minnesota River major watersheds, the Blue Earth, Le Sueur, and to a lesser extent, Watonwan rivers, have been shown to contribute disproportionately high pollutant loads to the Minnesota River.

- For these reasons, initiating this TMDL was a priority at both the local and state level.
The project process:

- Develop lists of major stakeholders and ask them to become involved in the project
  - Urban community
  - Agricultural community
  - Special interest groups
  - Federal, state and local government units.

- Compilation and review of existing monitoring and permit data.

- Review existing studies and project related to the pollutant and project area.

- Calculate necessary reductions of pollutant of concern to meet water quality standards.
Work with area projects relating to sediment/turbidity

- An Integrated Sediment Budget for the Le Sueur River Basin, - Minnesota National Center for Earth Surface Dynamics, U of M, Science Museum of Minnesota, MSU

- Sediment Fingerprinting - Science Museum of Minnesota St. Croix Research Station, MSU

- Ravines, Bluffs, and Stream banks - University of Minnesota

- The Influence of Watershed Hydrology and Stream Geomorphology on Turbidity, Sediment, and Nutrients in Tributaries of the Blue Earth River, Minnesota, USA - Chris Lenhart and Ken Brooks

- Improved Water Quality Monitoring Using Airborne Remote Sensing - Bryce Hoppie, MSU

- Mapping and Estimating Priority Ag Lands for TMDLs - Adam Birr – MN Dept. of Agriculture

- Using regression analysis to determine sediment sources - Pat Baskfield – MPCA, local watershed project staff, MSU
Our goal:

- To produce a TDML report that not only exceeds all EPA and MPCA requirements, but also acts as a compilation of all area research and provides useful research and results for area professionals and citizens.
Impaired waters, Jurisdiction Rights, and Legal Authority

- EPA’s regulations for implementing section 303(d)
  - Water Quality Planning and Management Regulations at 40 CFR Part 130, specifically at sections 130.2, 130.7, and 130.10.

http://www.epa.gov/owow/tmdl/sediment/pdf/sediment.pdf
## Turbidity Standards

- **MPCA criteria for listing streams as being impaired**
- MN Rules chapter 7050.0221 to 7050.0227 set specific standards of quality by associated used classes.
  
  - Class( and descriptions) related to 303(D) list use support:
    | Turbidity (NTUs) |
    |------------------|
    | 1B- drinking water | 10 |
    | 2A- cold water fishery, all recreation | 10 |
    | 2B-cool and warm water fishery, all recreation | 25 |
    | 2C-indigenous fish, most recreation | 25 |
What does water with high turbidity look like?
What does water with high turbidity look like?
What does water with high turbidity look like?
Algae a part of Turbidity
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What are some sources of turbidity? - Urban
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Some sources include:
- Urban run-off
- Agriculture run-off
- In-stream loading and stream bank instability
- Ravine erosion
- Construction sites
- Excess nutrients in the water
Who are the stakeholders?

- We all are stakeholders.
  - No group should ignore the role that they play, and no group should blame other groups. All action and landscape changes have an effect.

- Major groups of stakeholders:
  - Urban community
  - Agricultural community
  - Special interest groups
  - Federal, state and local government units.
What can I do?

- Individual
  - If you agree or disagree, get informed on the issues as much as you can.
  - Write letters, talk leaders in your communities (from local to federal).
  - Attend local, county, state and other meetings.
  - Attend the TMDL workgroup meetings.
  - Prepare well thought out, researched opinions and ideas.
What can I do?

- **Group**
  - Talk to your local group representative, or work to become one yourself.
  - Inform the groups you are associated with of the study.
  - Make sure a representative is present at all the meetings to record what was discussed, where things are headed, and express the ideas and opinions of the group.
What can I do?

- STAY INVOLVED

Any questions?
Thank you.

- Scott Bohling
  Water Resources Center
  184 Trafton Science Center S.
  Minnesota State University - Mankato
  Mankato, MN 56001
  Email: scott.bohling@mnsu.edu
  Phone: (507) 389.2355
  Fax: (507) 389.5493

- Paul Davis
  Minnesota Pollution Control Agency
  1230 South Victory Drive
  Mankato, MN 56001
  507-389-6974 (phone)
  507-389-5422 (fax)
Stakeholders

- Efforts and concerns
Urban Communities Efforts

- **Enhanced Wastewater Improvements**
  - Waste water, Treatment plant upgrades & extensions.

- **Controlled Runoff Management Practices**
  - Development of storm water retention ponds, or other methods of treating storm water.
  - Sustainable development

- **Established Local Regulations**
  - Storm water Program for Municipal Separate Storm Sewer Systems (MS4) – For communities of 10,000 or more or communities designated by the rules.

- **Participation and Education**

- **Enforcement of Local & State Regulations**
Urban Community Concerns

How do the urban communities propose to fix the problem? What are the areas of concern?

- Public Education and Participation
- Cost Effective Solutions
- Shared Responsibility & Commitment
- Basin wide Compliance
- Resource Enhancement
- Science Based Strategy
Agricultural Community Efforts

- Conservation programs
- The view from 50,000 feet
- Livestock and manure management
- Water management
- Residue management
- Nutrient management
- Research
Agricultural Community Concerns

- How do the agricultural communities propose to fix the problem? What are the areas of concern?
  - Property rights
  - Attainable goals
  - Strategic research
  - Climate change and background
  - Education
Federal, State and LGU Efforts

- Education / Outreach
- Action/Funding
- Partnerships
- Watershed Monitoring
- Mindset Change
- Wastewater Treatment
Federal, State and LGU concerns

- Adequate Stable Funding
- Ag Non-point
- Water Management
- Federal Farm Bill
- Program Delivery & Accountability