Minnesota’s DRAFT Nutrient Reduction Strategy

Rebecca Flood
Minnesota Pollution Control Agency Assistant Commissioner Interagency Coordination Team Chair
What is Hypoxia?

- Nutrient-rich water causes excessive algae growth
- When algae die, oxygen is depleted from the water as algae sink and decompose
- Not enough oxygen to support aquatic life
- Reduce hypoxia by reducing nutrients
Reduce nutrients to ensure healthy waters
Start of the strategy discussion

- Call for action
- Commissioners’ support
- EPA grant award
- Strategy development kick-off Nov 2012
- Release draft Oct 2013
Foundation

- Partner with stakeholders
- Use current data
- Assess new technology/research
- Work within regulatory framework
- Fit into existing programs
- Set realistic goals and milestones
- Seek quantifiable results
Purpose

Guide state-level programs to reduce nitrogen and phosphorus
We rely on data
Southern Minnesota high priority

Phosphorus priorities

Nitrogen priorities
Data identify nutrient sources

**Phosphorus**
- Agricultural: 40%
- Streambank erosion: 11%
- Point sources: 8%
- Natural sources: 18%
- Misc: 17%

**Nitrogen**
- Agricultural: 78%
- Streambank erosion: 2%
- Point sources: 10%
- Natural sources: 9%
- Misc: 1%
We work within regulatory framework & existing programs

<table>
<thead>
<tr>
<th>In-state local &amp; regional WQ standards</th>
<th>Downstream &amp; out-of-state Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Lake eutrophication &amp; turbidity/TSS standards in place</td>
<td>• Nitrate drinking water standards in place</td>
</tr>
<tr>
<td>• River eutrophication standards expected by 2015</td>
<td>• Nitrate aquatic toxicity standards under development</td>
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</tbody>
</table>
We set goals and milestones

**Goals**
Long term target that complements existing state level water quality approaches

**Milestones**
Interim achievable plans of progress
Reduction goals based on basin plans

35% TP reduction to the Mississippi by 2025
20% TN reduction to the Mississippi by 2025
We have a plan to reach the milestones

1. Use BMPs to address priority sources in key watersheds
2. Identify load reductions and scale of actions needed
3. Task programs to step up to support reductions
4. Create new programs, initiatives, and incentives
5. Leverage local watershed planning & implementation
6. Track progress through adaptive management
Milestone

Reduce P in Mississippi River by 35%
<table>
<thead>
<tr>
<th>Source</th>
<th>Agricultural</th>
<th>Wastewater</th>
<th>Miscellaneous</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 2000 Baseline Load</td>
<td>29%</td>
<td>37%</td>
<td>34%</td>
<td>100%</td>
</tr>
<tr>
<td>Progress Since Baseline (Load Reduction)</td>
<td>-8%</td>
<td>-19%</td>
<td>-0%</td>
<td>-27%</td>
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</tbody>
</table>
## Phosphorus Reduction Milestone

### Progress Since Baseline (Load Reduction)

<table>
<thead>
<tr>
<th>Source</th>
<th>-8%</th>
<th>-19%</th>
<th>-0%</th>
<th>-27%</th>
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</thead>
<tbody>
<tr>
<td><strong>Increasing Fertilizer Use Efficiencies</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Recommended fertilizer rates</td>
<td>-3%</td>
<td></td>
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<td></td>
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<tr>
<td>- Placement and timing of application</td>
<td></td>
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<tr>
<td>- Reducing soil P levels</td>
<td></td>
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<td></td>
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<tr>
<td>- Livestock feed management</td>
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<tr>
<td><strong>Increase and Target Living Cover</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Cover crops</td>
<td>-2%</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>- Perennial buffers</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Hayland and pasturing</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>- Perennial energy crops</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Conservation easements and land retirement</td>
<td></td>
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<tr>
<td><strong>Field Erosion Control</strong></td>
<td></td>
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<tr>
<td>- Conservation tillage and residue management</td>
<td>-1%</td>
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<tr>
<td>- Terraces/grassed waterways</td>
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<tr>
<td>- Sediment control basins</td>
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<tr>
<td><strong>Urban Stormwater + Other Sources</strong></td>
<td></td>
<td></td>
<td></td>
<td>-1%</td>
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<tr>
<td><strong>Wastewater Treatment</strong></td>
<td></td>
<td></td>
<td>-1%</td>
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</table>

### Milestone Reductions

<table>
<thead>
<tr>
<th>Source</th>
<th>-14%</th>
<th>-20%</th>
<th>-1%</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-35%</td>
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Milestone
Reduce N in Mississippi River by 20%
### Nitrogen Example

#### Increasing Fertilizer Use Efficiencies
- Recommended fertilizer rates: -13%
- Placement and timing of application
- Nitrification inhibitors

#### Increase and Target Living Cover
- Cover crops: -3%
- Perennial buffers
- Hayland and pasturing
- Perennial energy crops
- Conservation easements and land retirement

#### Drainage Water Retention and Treatment
- Constructed wetlands: -2%
- Controlled drainage
- Bioreactors
- Two stage ditches

#### Wastewater Treatment
- -2%

#### Milestone Reductions
- -19%  -1%  0%  Total -20%
Lake Superior Milestone

- 3% reduction by 2025 for phosphorus
Red River Milestones

- 10% reduction by 2025 for phosphorus

- 13% reduction by 2025 for nitrogen
Watershed Approach

- Intensive Watershed Monitoring
- Model development
- WRAPS with TMDLs
- Local Water Plan Integration
Mississippi River goals & milestone Progress Evaluation

<table>
<thead>
<tr>
<th>Nitrogen reductions</th>
<th>Short term</th>
<th>Long term</th>
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<tbody>
<tr>
<td>0%</td>
<td>-20%</td>
<td>-45%</td>
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<tr>
<td>-20%</td>
<td>-30%</td>
<td>-45%</td>
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<tr>
<td>-30%</td>
<td>-45%</td>
<td></td>
</tr>
<tr>
<td>2000 / Baseline</td>
<td>2014</td>
<td>2025</td>
</tr>
<tr>
<td>2014</td>
<td>2025</td>
<td>2035</td>
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<tr>
<td>2025</td>
<td>2035</td>
<td>2045</td>
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<td>2035</td>
<td>2045</td>
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<tr>
<td>2045</td>
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</table>

| Phosphorus reductions | 0% | -25% | -35% | -45% | Progress strategy focus | New research enables future milestones |

Progress strategy focus
New research enables future milestones
We’re accelerating existing strategies.

- Increase agricultural BMP adoption
- Fully integrate watershed approach
- Trading
- Accountability
...and developing new ideas

- Track industry-led BMP implementation
- Develop markets/technologies for use of perennials
- Explore nutrient focused crop yield insurance program
- MAWQCP
Conversation starts now

- Oct 7: Finalize for public review
- 60-day public review
- Present to legislature
- Public outreach
- Address comments
- End of 2013
- Release final

Present to legislature by Oct 7 for 60-day public review, followed by public outreach and address comments by the end of 2013. Release the final.
Acknowledging

Interagency Coordination Team
• Minnesota Pollution Control Agency
• Minnesota Department of Agriculture
• Minnesota Department of Natural Resources
• Minnesota Board of Water and Soil Resources
• Minnesota Department of Health
• USDA Natural Resources Conservation Service
• Metropolitan Council
• University of Minnesota
• Minnesota Public Facilities Authority
• United States Geological Survey
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