

The background of the slide is a photograph of a riverbank. In the foreground, there are several blue flowers with yellow centers, likely asters, growing on a rocky or sandy bank. The river is visible in the middle ground, with gentle ripples on its surface. The sky is not visible, but the overall scene is bright and natural.

The Minnesota River Basin Sediment Initiative

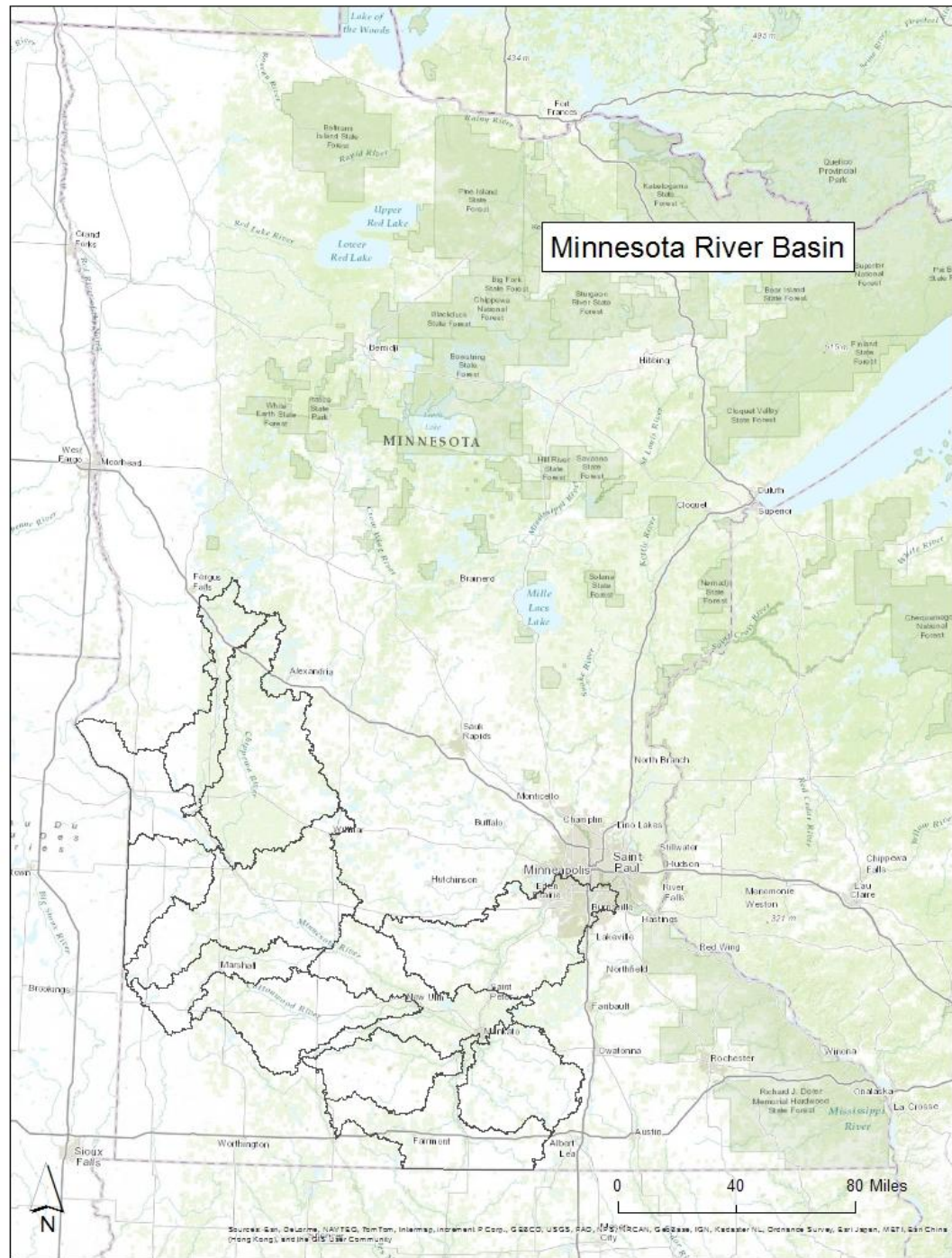
Larry Gunderson, MPCA
Dr. Joe Magner, MPCA and
University of Minnesota

Upper Midwest Stream Restoration Symposium
February 26, 2013

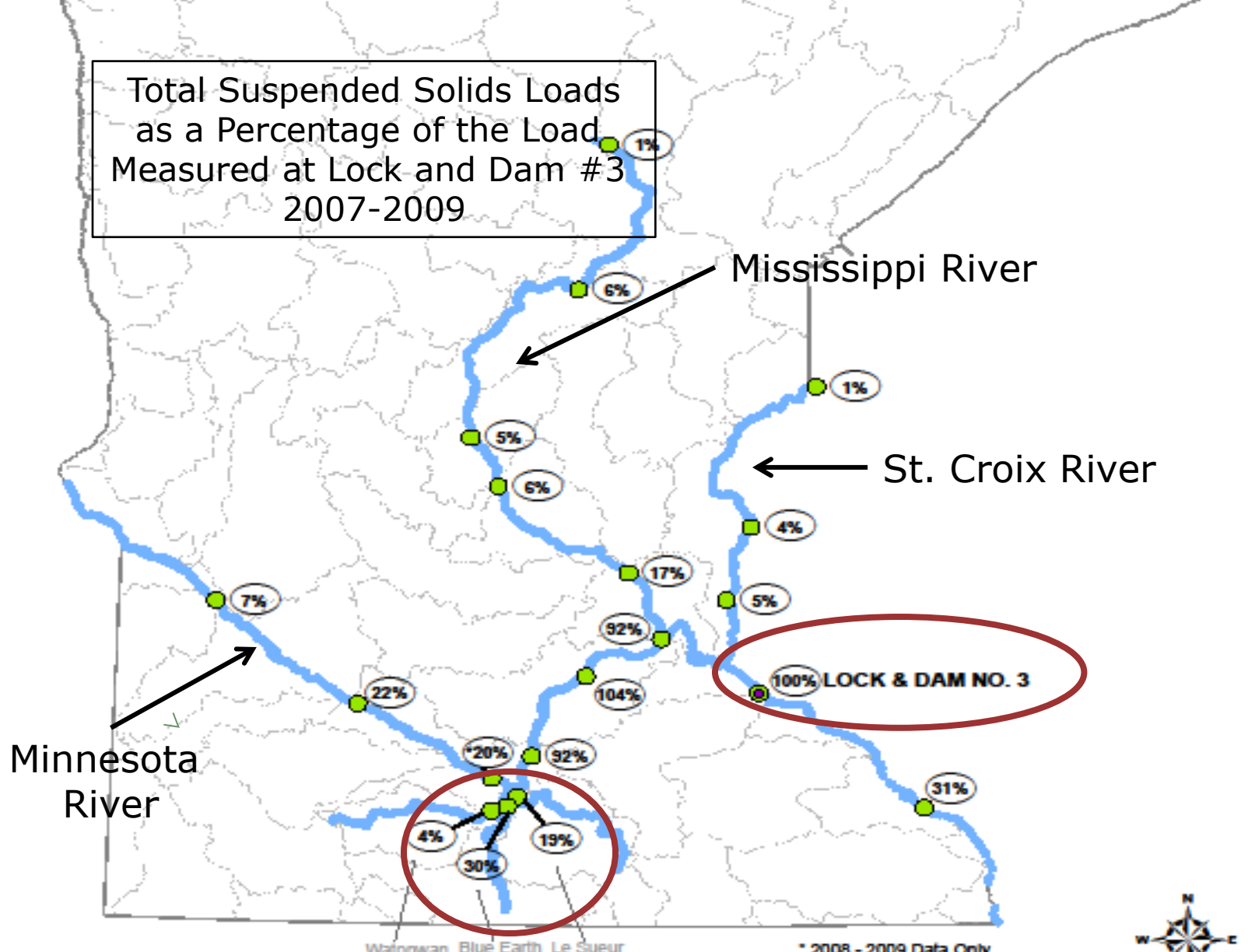
Outline

- Impairments
- Targets
- Sediment sources
- Implementation practices
- Future considerations

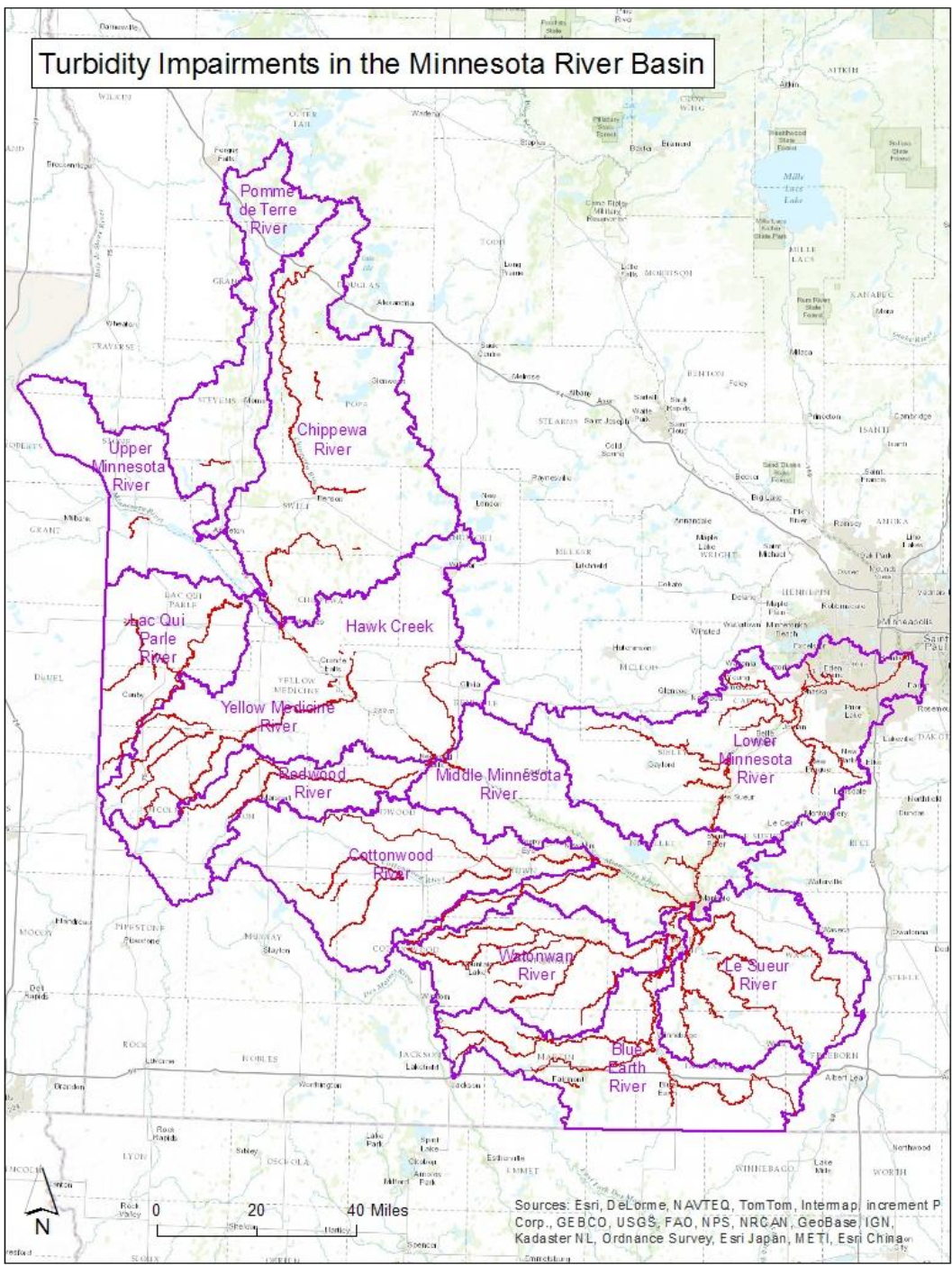




Total Suspended Solids Loads
as a Percentage of the Load
Measured at Lock and Dam #3
2007-2009

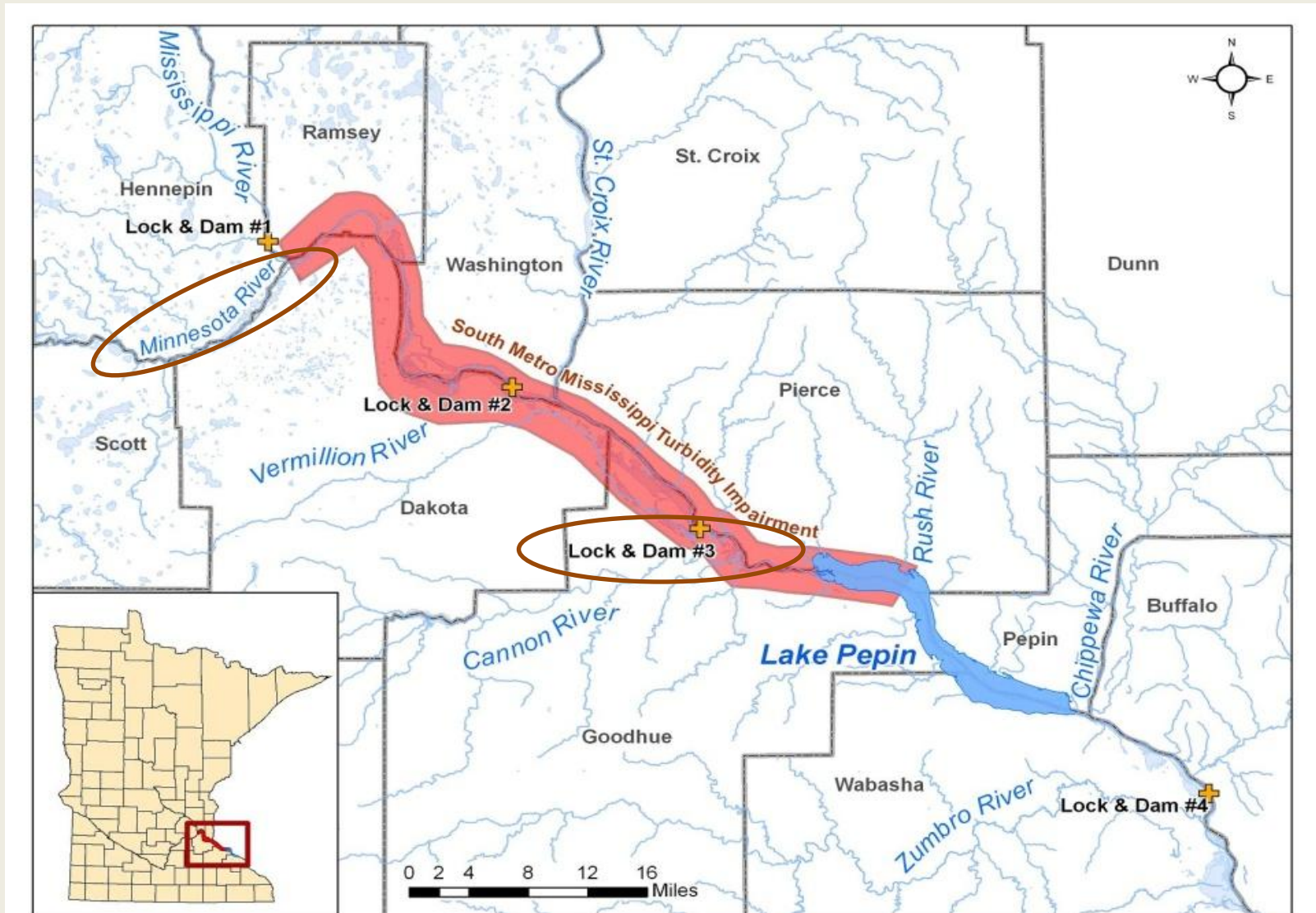


Turbidity Impairments in the Minnesota River Basin



Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GedBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China

South Metro Mississippi impaired by total suspended solids from St. Paul to Frontenac



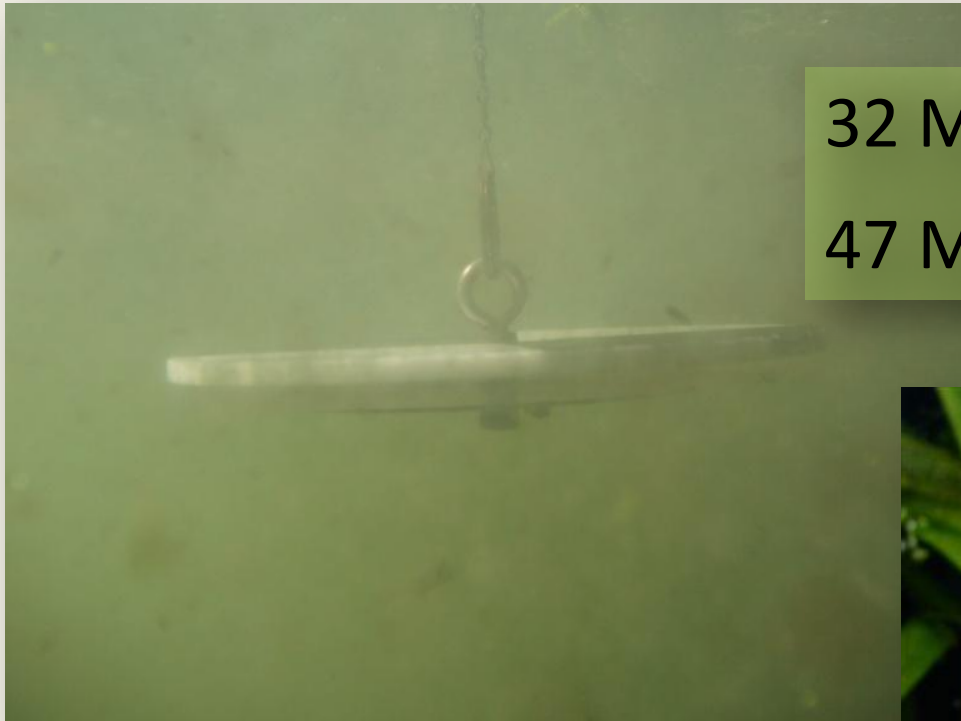
Civic Engagement



6-22-10: MPCA board approved site specific standard for Total Suspended Solids

32 Mg/L summer average

47 Mg/L current summer average



Goal for main stem of Minnesota River



Western watersheds	50 mg/l
Redwood & Cottonwood	70 mg/l
Southern watersheds	90 mg/l



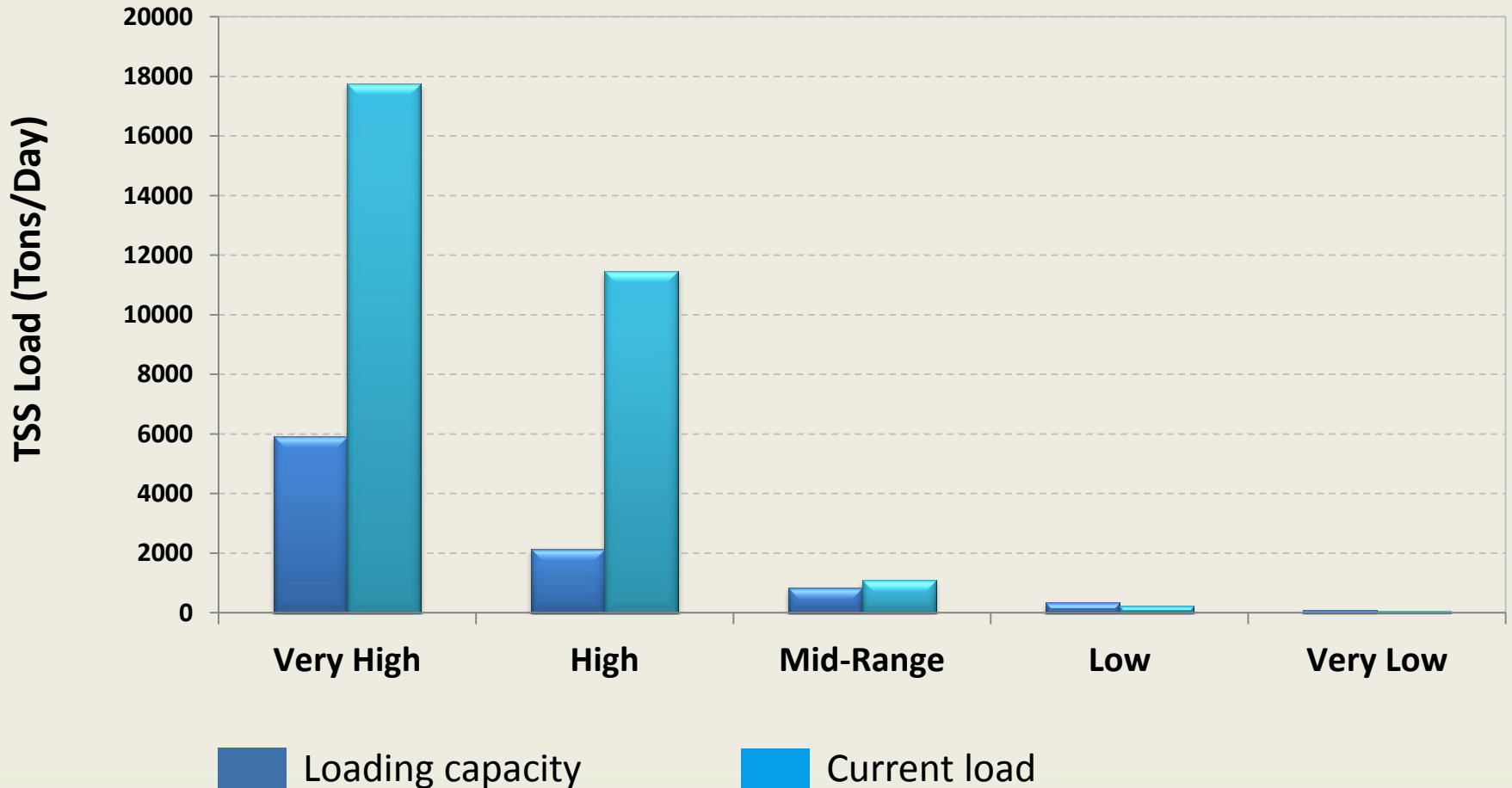
TSS load varies with flow

(Example: Le Sueur River Load Duration Curve)

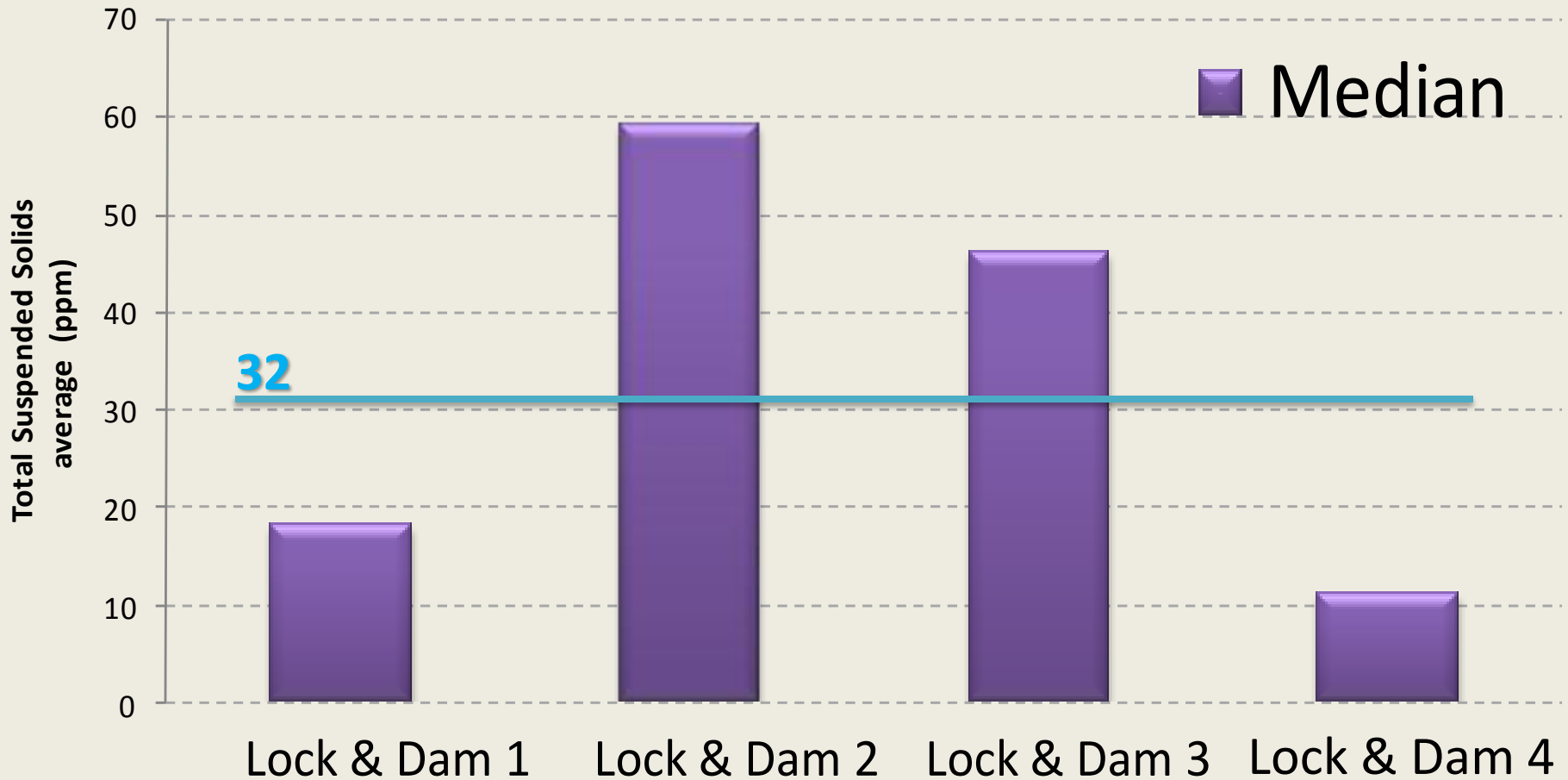


Capacity versus current load

Minnesota River at Jordan



South Metro Mississippi degree of impairment



Understanding sediment sources

Sediment
fingerprinting

St. Croix Watershed
Research Station

Ravines, bluffs,
streambanks

U of M Study

LeSueur River
sediment

National Center for
Earth-surface Dynamics

Sediment loading

MPCA and
MSU-Mankato



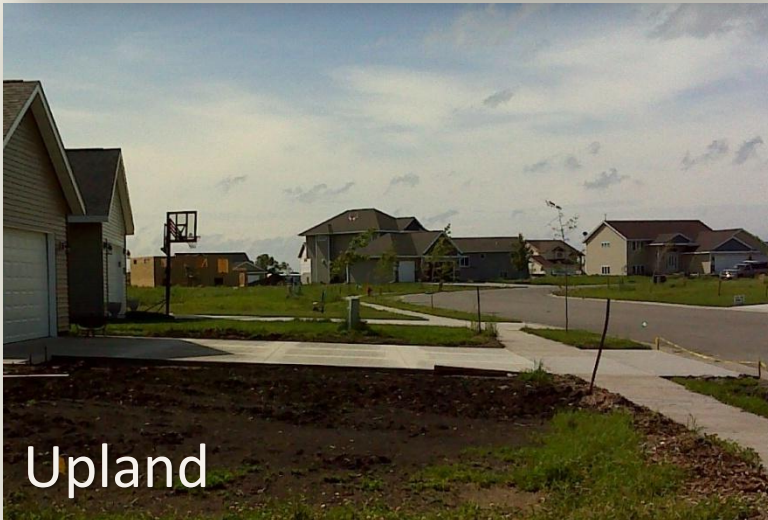
Sources of sediment



Ravines



Banks/Bluffs



Upland



Upland

Implementation choices/alternatives

Examples

2011

2040

Crop residue

Stormwater

Perennial vegetation
at watershed mouths

Ravine BMPs

In-line ditch
treatment

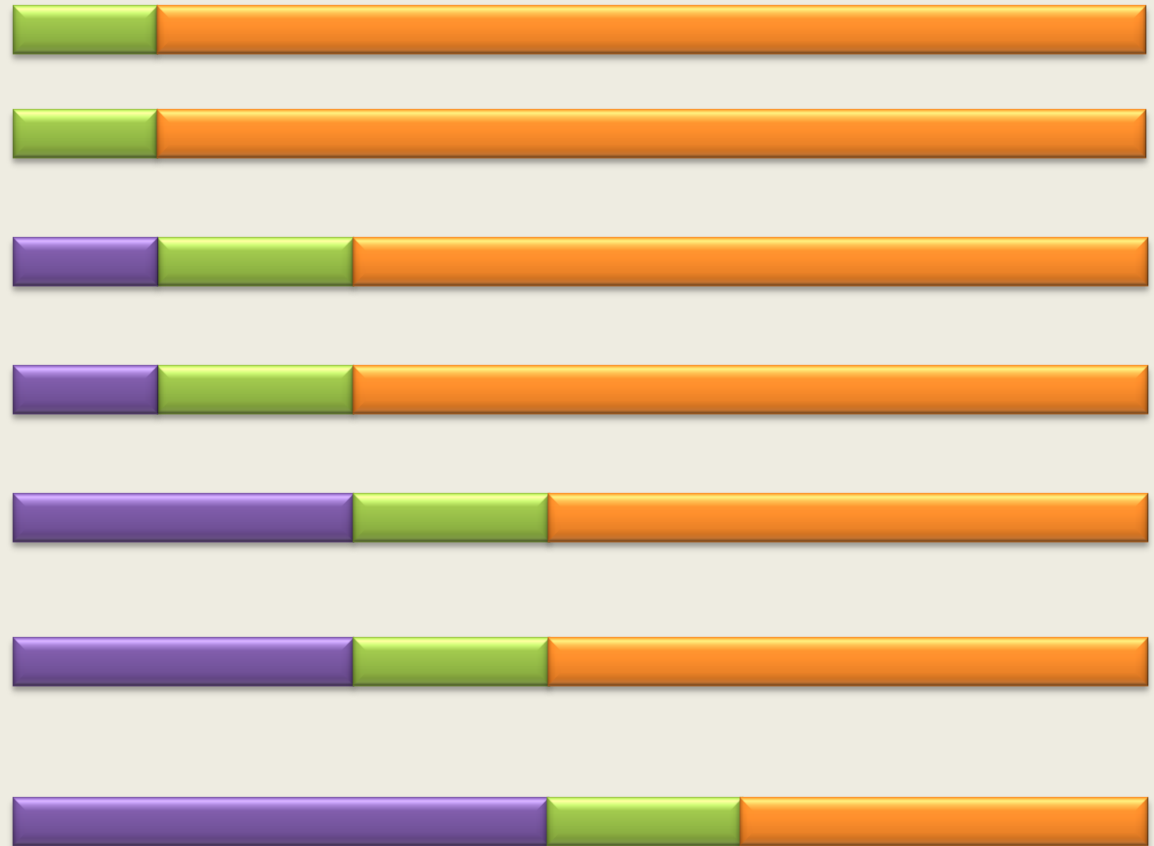
Water storage/
infiltration

Channel stability/
Rehabilitate bluffs

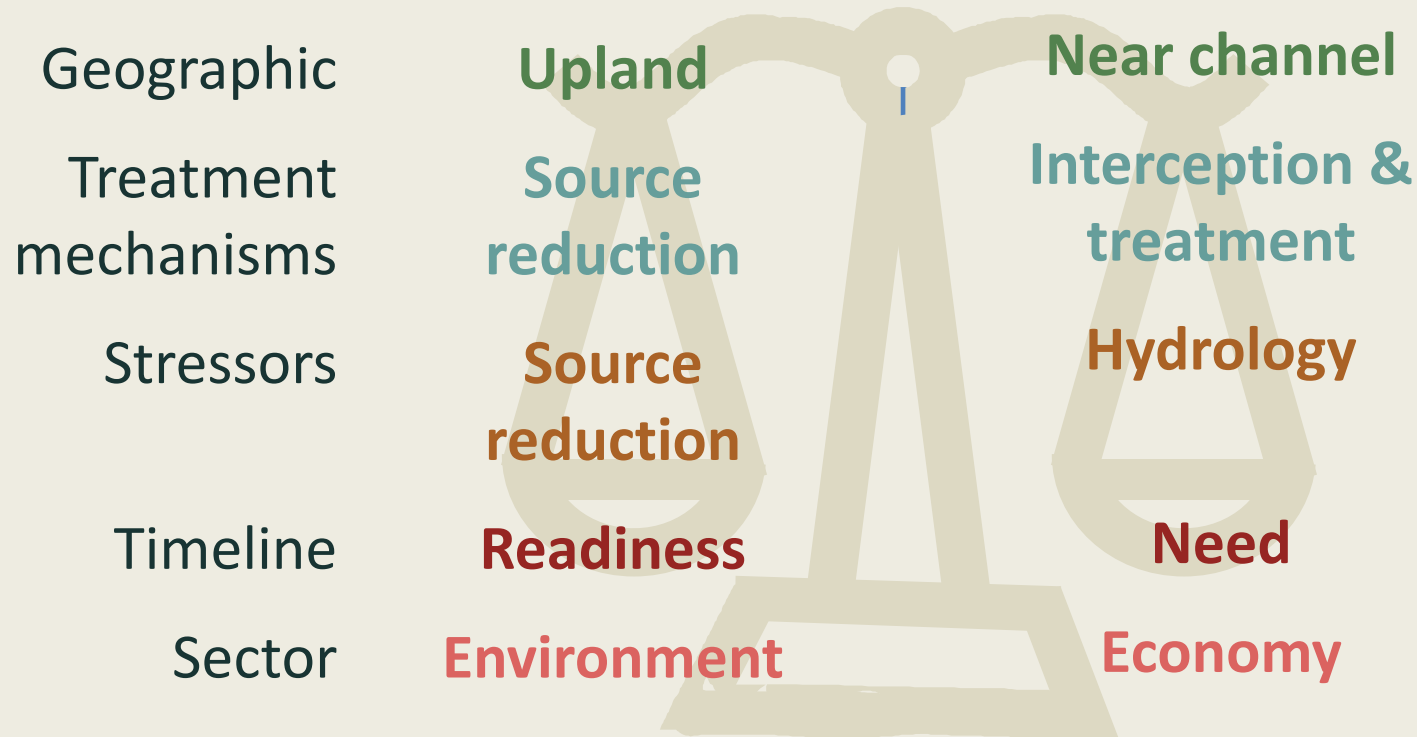
R & D

Implementation

Continued implementation



The larger community must settle on some critical balances



Questions to consider

- How does stream restoration fit in?
- Focus of implementation activities – uplands, within the channel, both?
- To reduce flow - is it best to have lots of smaller water storage areas or fewer larger areas?
- Is it flow volume or peak flows?
- How to prioritize areas to target within the channel?



Source: ©Pictometry International Corp. April 2009

View from East to West





Courtesy Todd Kolander, DNR

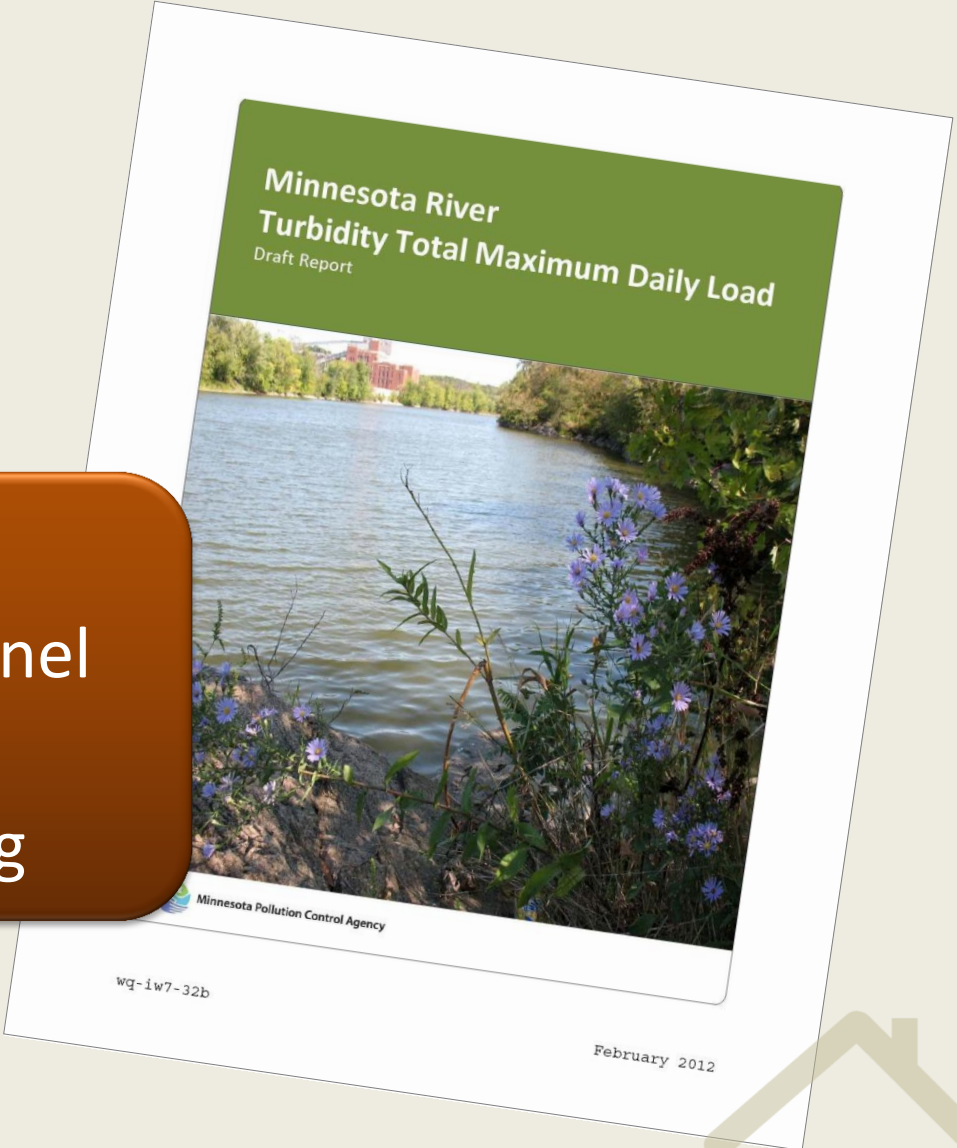


Courtesy Todd Kolander, DNR

Mississippi & Minnesota River Plans



Flow
Near-channel
sources
Targeting



Questions?

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