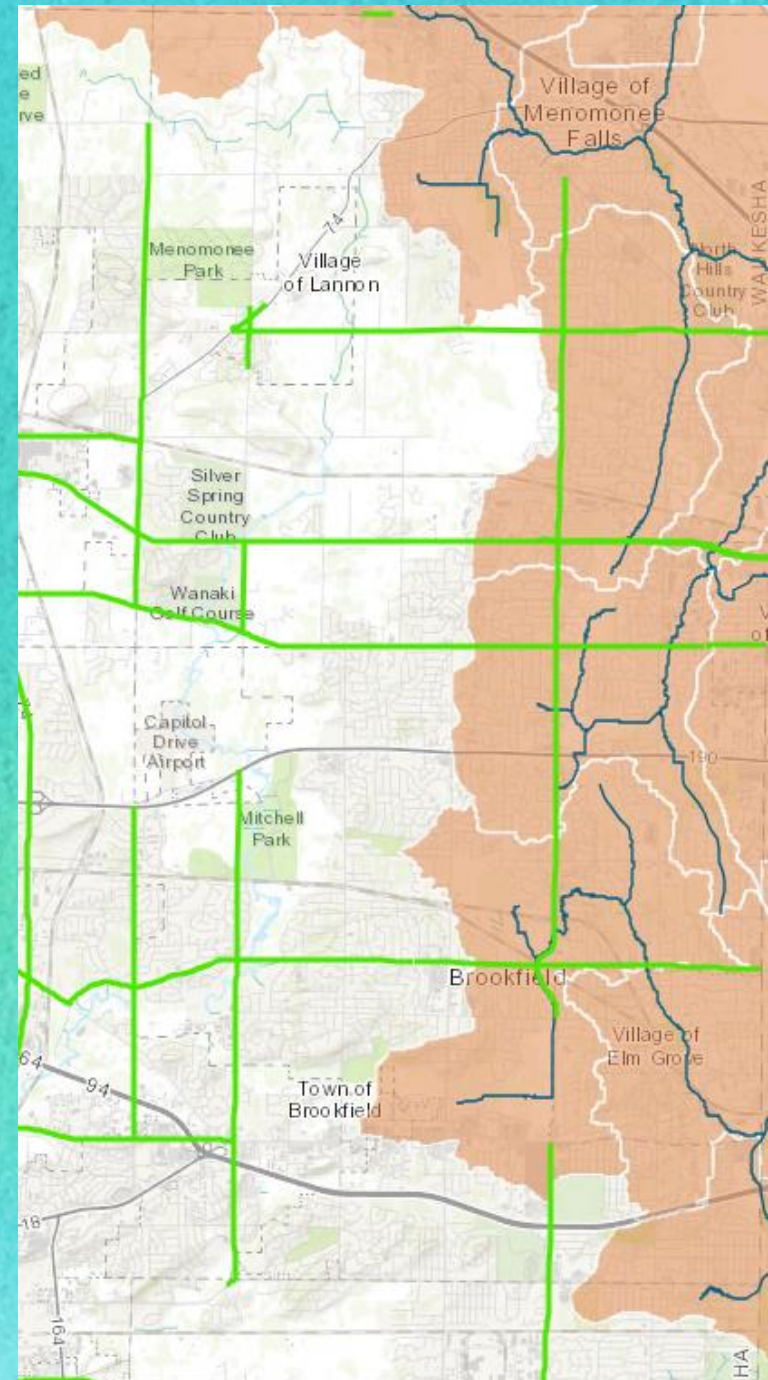


Water Quality Trading for TMDL Compliance

Leif Hauge, Waukesha County Land Resources Division

Goals

- County MS4 permit requires compliance with MKE River TMDL
- County MS4 in MKE watershed is entirely highways
- County does not own any other property in watershed (parks, schools,...)
- TMDL within County comprises 8 reachsheds
- County has MS4 in 7 of the reachsheds, with TSS and TP treatment shortfall in all 7



- County evaluated
 - Available selection of BMPs (street sweeping, basins...)
 - Effectiveness, cost
 - Feasibility, available locations to construct BMPs
- Issues
 - Street sweeping is too limited in effectiveness to achieve compliance, in most cases, regardless of cost
 - Much of highway system is not curb-and-gutter – no sweeping
 - Highways generally have a discharge point every ¼ mile, while network totals 20 miles
 - Almost no available land for BMP construction in built-out watershed, County Admin ruled out land purchases
- Conclusions
 - In 3 reachsheds, County demonstrated compliance through increased street sweeping and planned BMP improvement in ROW
 - In 4 reachsheds, had to look for other means of compliance

Evaluation Process

Reviewed 2020 Water Quality Trading guidance

Looked initially at ag trading, but

- There was upstream ag land in only one reachshed, in Washington Co, and
- Could not find a farmer to partner with, after evaluating about 60 candidate properties

Appendix F details streambank stabilization process

Did inventory of reachsheds using GIS and field surveys, and located at least one section of streambank in each of the four reachsheds that

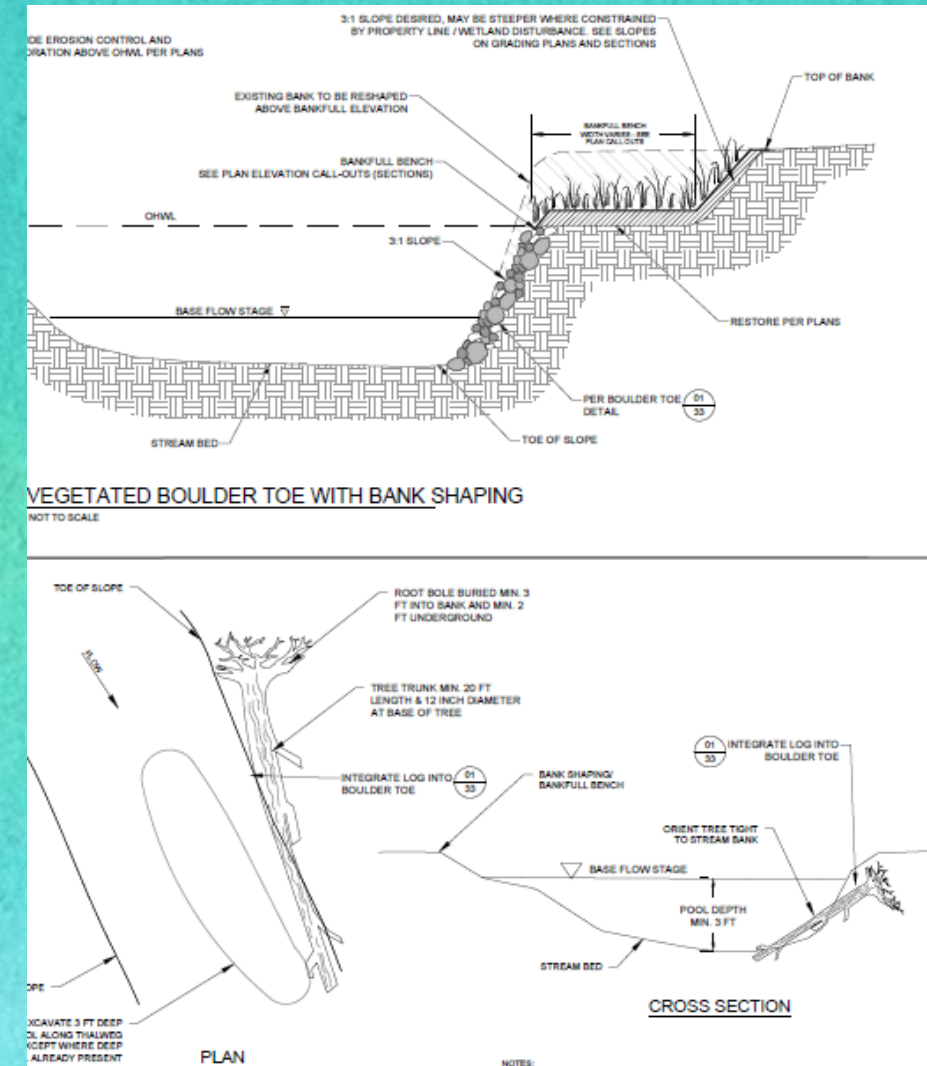
- Showed significant, measurable bank erosion through comparison of historic air photos, and
- Was located on accessible, municipally-owned land

Sites on receiving water bodies are eligible for stabilization credit. MS4 conveyances (e.g. ditches) are not, per MS4 guidance.

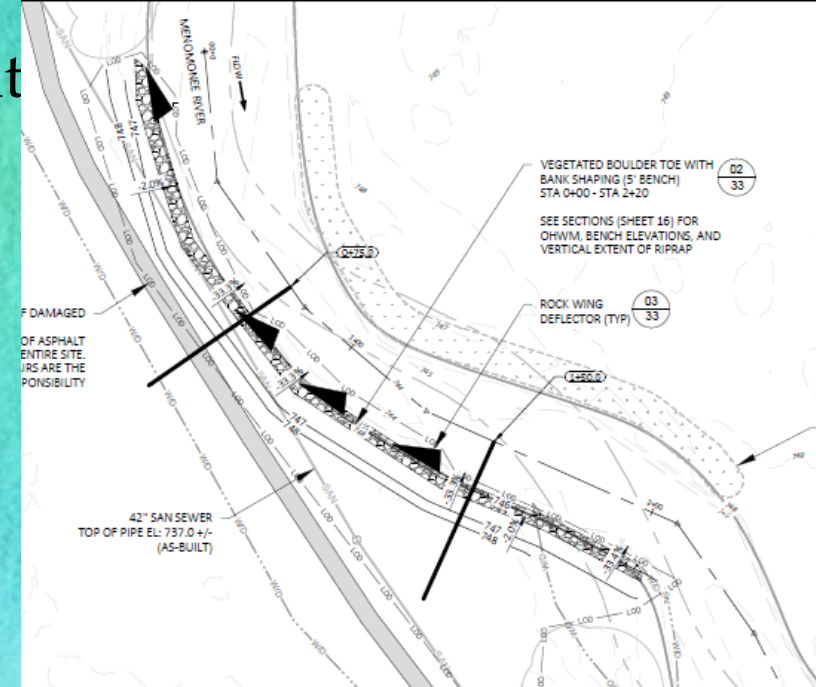
WQ Trading Evaluation

- Generated cost estimates
- Obtained ARPA funding
- Reached out to the four potential municipal partners with offer to pay for and manage projects in exchange for access and sharing of load reductions – all accepted
- Signed agreements and submitted NOIs for trading
- Did soil sampling and prelim field work
- Updated TMDL compliance plan
- Produced WQ Trading Plans and submitted to DNR
- Hired design consultant
- Started waterway and wetland permitting, DNR, ACOE
- Municipal permitting
- Two rounds of design updates – DNR comments
- Bid out construction as a six-project bundle
- Construction expected to start in April

Implementation



- Used air photo comparison to assess bank erosion rates instead of pounding rebar, due to time constraints
- Plans are mostly for boulder toe, with banks sloped back for storage and revegetated
- Used toe wood on one project and embedded trees on another, for habitat credit and to meet tree re-use req't in Ch 30 permit
- Met other habitat credit req't's through rock wing deflectors
- Initially aimed to use more toe wood, but either lacked trees to re-use or steep bank / low water made it difficult
- Incorporated access steps on two sites
- Each project is one side of stream only. On two sites opposite bank is being planted with trees / shrubs to mitigate bounce-back



Notes on Process

- Total streambank length = 1,000 ft
- Total construction bid = \$500,000 = \$500 / ft
- Design = \$80,000
- Reductions before uncertainty factor and sharing:
- 5-year TSS reduction = 70,000 lbs = \$8 / lb
- 5-year TP reduction = 75 lbs = \$8,000 / lb

Numbers