



# Standards Oversight Council (SOC)

Developing effective technical standards that protect Wisconsin's natural resources

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## NRCS Stream Restoration Standards Team

### MEETING NOTES

Wednesday, July 28, 2020 ▲ 9:00am – 12:45pm ▲

Remote Meeting (online)

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#### 9:00 Welcome & Notes Approval (Kate, Team)

Goal: Welcome, attendance, meeting goals, approve 6/24/20 draft meeting notes.

Confirmation of attendance:

Attendance: Kate, Mike, Faith, Jeff H, Ken, Marty, Joe, Seth, Steve, Nate, Ben, Jeff S, Bob,

Absent: Bart, Stacy

Meeting goal: identify the groups of issues and team roles for adjustments to the standards.

A draft of the 6/24/20 Meeting Notes was emailed to the team for review. The team had no comments or questions. **Kate** will finalize and post these notes publicly on our team website within a week.

Steve provided some context on other NRCS areas:

- Payment schedule updates underway.
- When is it a resource concern? An NRCS state subcommittee is looking at determining what is natural stream migration and when streambank erosion is bad enough for NRCS to get involved.

#### Breakout Group Report (Marty, Stacy, Ben)

Goal: 20 min review of redline text for Additional Criteria for Stream Restoration; 10 min Q&A

Flow charts for risk assessment and general design decisions that they presented last meeting haven't been taken further, though they may still return to this. This could be a useful tool to guide the decisions on where/when to apply the practice.

Focus on process vs outcome - The goal was to avoid a standard that was too prescriptive so they've focused more on process to develop a restoration.

This group presents stand-alone stream restoration language, that could fit within the Open Channel tech standard. They also scanned through the other standards on this team to identify where cross referencing would be appropriate. This isn't

- Clear purpose, with reference to the NEH 654 stream restoration manual. They provided their context
- Condition Where Practice Applies – referencing other standards, incorporating regional goals
- Criteria – Should be scientifically justified, so their work identified sources/references for each item
  - Existing Conditions Assessment – they added a comprehensive list but it can be pared down
    - watershed assessment, including geology and land use
    - hydrology
    - fluvial geomorphology
    - riparian condition
    - hydraulics
    - question raised on a soil investigation – when needed/appropriate, where to bore? and how deep? (Should be for structural treatments or other larger project design, but where to draw the line on the greater risk). The standards would ensure some minimum requirement and the professional engineer stamping the design would make professional judgement.
  - Proposed Design Conditions
    - Plan form geometry
    - Longitudinal profile
    - Cross section geometry
    - Streambed treatments
    - Streambank treatments
    - Analysis: hydrology, hydraulics, sediment competence, sediment transport
- Considerations – developing performance and design criteria, passive approaches including beavers and “Stage 0” restoration
- Drawings and Specs – list of what to include in each

Parking lot items from this discussion (largely points brought up in chat box):

1. With regard to assessments: Should the standard require a Rosgen (or other) classification? Should we require a description or classification of the evolutionary stage?
2. There's an important place for soil borings in the restoration standard. Reasons = 1) the variable glacial deposits that we have in the state and that they really define the alluvial channels, 2) potential bed material load contributions that affect the channel geometry, 3) gw/sw interactions in the springfed channels, importance of baseflow/water table that comes from the soil boring data. Think beyond bank

stability but vertical/bed contributions and larger setting. Some of this is in the surficial geology section at the existing conditions assessment. Need a bit more of a geological influence -- not just engineering perspective.

3. Hydrology analyses - look at mapping tools that help set the hydrologic setting and design flows for ungaged streams. There is a lot going on here that may help standardize the approach -- USGS Streamstats tool at <https://streamstats.usgs.gov/ss/> Does this mapping tool fit into a standard?
4. Should look at the "risk" and the amount of risk that would govern what detailed analysis needs to be done. We have hundreds of miles that are stable from work that has been done in the past (without all this detailed analysis), but we do have high risk areas in upper watersheds and where some of our work hasn't held up.

**Breakout Group Report (Jeff and Joe)**

Goal: 20 min review of redline text for laws & regs; 10 min Q&A

They prepared a list of key permits, rules and regs and procedures and who is responsible. There aren't many changes since the last meeting though there is a short narrative to introduce the lists and provide context. They also added some more of the complicating factors added since last time – joint permits, land use agreement when working on state land, floodplain and zoning permits.

Some key points of discussion:

- This list will need a disclaimer that this isn't full comprehensive and the rules and procedures are subject to change.
- There may also be county ordinances or even local requirements (like zoning) to consider.
- A list of pertinent rules and regs and permits isn't typical in an NRCS standard. Rather than set a new precedent, this list could instead be a companion document which could be referred to in the Considerations section. The standard could list the appropriate agencies and even departments in those agencies for a higher elevation list of where to look. Anyone involved with stream projects already knows the agencies and process; however, newer people could use a basic list. Department name is more useful since knowing where to go is an important starting point.
- Permits are landowner's responsibility and not the designer.

Jeff and Joe will next prepare a summary statement of the agencies or departments for the Considerations section.

**Breakout Group Report (Nate and Jeff H)**

Goal: 20 min review of redline text for Stream Habitat Improvement (395) standard; 10 min Q&A

This group presents a spreadsheet that addresses habitat investigation issues. They also got input from others on the team and some colleagues, including some DNR fish biologists. Their

goal is to keep the process simple while also addressing a lot of different concerns. They used notes from last meeting and the issues identified by the team early on. Some key points:

- Fish species present and are they at or under carrying capacity?
- Stream classifications (and what about streams with no classification?)
- Limiting factors (like overhead cover, sediment, lack of spawning/riffles, invasive species, veg. mgmt., etc.)
- Habitat tools recommended – carrying capacity for brook trout, brown trout, smallmouth bass, etc.

Next steps for this group – take the details from this form and figure out where this language would be applied (Condition where Practice Applies, Criteria, Considerations). This work product wouldn't be quite as useful as a companion document.

**Breakout Group Report (Mike and Bob)**

Goal: 20 min review of redline text for Streambank and Shoreline Protection (580); 10 min Q&A

580 is being revised on national level now so their starting point may actually change but they started with the current national standard. The current WI standard is not nearly as concise with additional detail on site assessment and other topics and some of this needs to be added back in, though this breakout group suggests changes.

Logistically, wordsmithing the national language is a little more complicated. The new system allows for adding new language. Steve will work the language changes into the NRCS system and request variances if needed.

Key points of the presentation and discussion:

- Both national and previous state considerations are included in their work.
- Streambank site assessments in the past were divided into smaller and larger projects. A lot of this work really applies to all projects so they moved around some requirements. Standard may also create a limit to circumvent a requirement by doing a smaller project.
- When does a project expand from streambank protection or get kicked into stream restoration? The projects have changed over the years but large-scale restorations really aren't as common.
- Shoreline site assessments
- Design procedures might be more helpful and consistent to have a common set of references rather than mixing and matching criteria.
- Minimum design flow – they propose to use 100 yr consistently for all land uses.
- Buffers aren't a requirement but vegetation management is incorporated.

- Groundwater fed streams are common across the state and criteria should include this possibility of seeps – affect geometry and bank protection and possibly habitat considerations.
- Design methods for sizing rock based on subcritical flow, straight reaches, and factors for stress on curves. Hydraulically steep slopes would be separate issue.
- Add provisions on hydraulically steep slopes (and slopes+curve)
  - What % to use as “steep” slope? 2% is very, very few projects so lower is suggested but there may be current reference. There is a calculated engineering standard of care for supercritical flow when Froude >1.
  - Steep slopes need more modeling and further considerations for stress on rocks. Energy slope on steep slopes isn’t best approach.
  - Spring-fed stream issues also apply to steep slopes that get pop-out failures from groundwater seeps, so perhaps it could be listed under “3. bank and bed composition”, where the bank composition would include some check of seeps regardless of height and angle.
- Clarified some definitions – they’d like feedback, specifically “bankfull”
- Because of the large number of spring-fed channels the team should consider something in site assessment to identify spring seeps. This affects the hydraulic geometry and bank protection.
- Opposite of a bend, should there be a review of a point bar or similar to be evaluated. Hydraulics at that specific cross-section need to be considered.

This breakout group requests **team feedback**. They ask the rest of the team to review the version on the team website and get in touch with Mike and Bob to discuss any questions or comments.

### **Breakout Group Report (Ken and Seth)**

Goal: 20 min review of redline text for Channel Bed Stabilization (584) standard; 10 min Q&A

They want to be sure the requirements are not creating too much extra cost to be prohibitive to implement.

They are working on a redline of the standard and they present some specific questions where they’d like input. The summary focused on big issues:

- Flow modeling ranges from simple (USGS flood freq) to more intensive (HecRAS). They are looking to refine when is it necessary to elevate to HEC-RAS modelling. When is it worth the effort? What is the quality of input data for HEC-RAS?
- What to use for design flow for best level and consistency – 100-yr or bankfull flow?
- Depth of cutoff
  - 3’ min depth,
  - calculate scour depth and perform streambed sieve analysis to understand scour (is the quality of data worth extra cost to landowner?). Where sieve analyses may be too detailed for a project, landowner could do visual field

texture analyses with sand card and standard cheap gravelometer. Sieve only needed if project is complex enough to require HEC-RAS.

- what is min. width? 4'?
- Rock sizing depends on depth and length of scour hole
- Sizing – size of structure and size of rock both depend on depth and length of scour hole,
- Structure Type – this group is focusing on loose rock structures for the design criteria, but acknowledge there are other structures (like cutoff walls, rigid drop structures, channel linings)
- Assessment – the standard applies for both natural channels and “constructed” drainage. Is more in depth assessment warranted for larger streams and/or larger of watershed?
- Height of the structure could raise the channel bed elevation and suffocate out habitat. Ensure bed stabilization structure doesn't raise hydraulic grade line too much (in MN, no more than the 0.5ft is floodplain requirements? need DNR input)
- This group considered the crossover of 584 to 395 (habitat concerns). Stream crossings wouldn't use EITHER of these.
- This group is still working on plan drawing requirements, O&M, referral criteria.

**Breakout Group Report (Bart and Faith)**

Goal: 20 min review of redline text for Open Channel (582) standard; 10 min Q&A

Faith reviews the work for this group and presents a redline of the 582 national standard. Some key points of the summary and team discussion:

- Channel capacity – proposing to add definition of channel types (e.g. drainage type channels with no bed movement and low sediment transport, alluvial channels, and sand bed channels).
- Channel design approaches – regime methods, analytical method using depth and sediment transport,
- Include assessment of hydrologic setting to understand bigger picture.
- Some issues this group is looking into – which flows are most important for stable channels, how to incorporate uncertainty and climate change, soil borings are helpful to understand bed materials but more costly, in-channel aquatic vegetation effects.
- Restoration hasn't been addressed much yet, but they will do that next.

**Next Meeting Topics and Plan of Action (Kate, Steve)**

Goal: Identify goals for next meeting. Review Action Items.

Synthesize and pull together the most important comments and drop it into the rigid format of NRCS Conservation Practice Standards. Easier to review and take comments and if we keep an eye to the end product.

Get the best draft possible to Kate and Steve ASAP. Steve will review each and mark up; he invites others on the team to do the same.

Action Items

- Kate: finalize 6/24 notes and post online.
- Kate: prepare 7/27 draft meeting notes, Steve reviews, then full Team reviews.
- Kate and Steve: prepare agenda for 8/18.
- Team: more breakout group work. Kate will follow up with some comments from chat box. Send files to Kate for posting (your group, or comments to others).

**Parking Lot** for future team discussion (includes issues from previous meetings)

1. 582
  - a. Possible issues with encouraging a meandering stream: Not all landowners are amenable, especially if they are losing cropland. Permitting would also need to be on-board with straight-to-meandering type of channel adjustment.
  - b. What happened to the national reference to the 1 square mile drainage area in the Wisconsin standard? Can we could change this from National to Wisconsin standard?
2. 584
  - a. For floodplain wide weirs, is this a problem to include in a "channel" specific standard?
  - b. Raising stage seems to cause a problem in permitting which has a requirement of not raising the 100 yr stage (might be simplifying this)
  - c. Is there precedent in other states that use Channel Bed Stabilization for natural streams? If so, we could use their language as an example.
3. Multiple stds
  - a. Definitions and applications of different factors: OHWM, bankfull discharge, effective flow, channel-forming flow (relative to 580 and 582 at min.)
  - b. as built and aged definitions,
  - c. can meander belt width be worked into the terminology for resource concern (Fluvial Erosion Hazard)
  - d. With regard to assessments: Should the standard require a Rosgen (or other) classification? Should we require a description or classification of the evolutionary stage?
  - e. There's an important place for soil borings in the restoration standard. Reasons = 1) the variable glacial deposits that we have in the state and that they really define the alluvial channels, 2) potential bed material load contributions that affect the channel geometry, 3) gw/sw interactions in the springfed channels, importance of baseflow/water table that comes from the soil boring data. Think beyond bank stability but vertical/bed contributions and larger setting. Some of this is in the surficial geology section at the existing conditions assessment. Need a bit more of a geological influence -- not just engineering perspective. The standards would ensure some minimum requirement and the professional engineer stamping the design would make

professional judgement. Standard could establish when needed/appropriate, where to bore? and how deep?

- f. Hydrology analyses - look at mapping tools that help set the hydrologic setting and design flows for ungaged streams. There is a lot going on here that may help standardize the approach -- USGS Streamstats tool at <https://streamstats.usgs.gov/ss/>  
Does this mapping tool fit into a standard?
- g. Should look at the "risk" and the amount of risk that would govern what detailed analysis needs to be done. We have hundreds of miles that are stable from work that has been done in the past (without all this detailed analysis), but we do have high risk areas in upper watersheds and where some of our work hasn't held up.

12:45 *End*