Standards Oversight Council (SOC)

Developing effective technical standards that protect Wisconsin's natural resources

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1010 Proprietary Filtration Devices Standard Team
MEETING NOTES

Wednesday, March 20, 2019 ▲ 9:00am – 3:00pm ▲
DNR Service Center, 3911 Fish Hatchery Road, Glacier Room, Fitchburg, WI

9:00 Introduction, Notes Approval (Kate)

Goal: Welcome, adjust 2/13/19 notes as necessary and approve.

SOC Annual Report handed out—please share with your colleagues and network to get the word out about SOC.
Review some team rules – Please listen to other team members, and don't interrupt. Avoid side conversations.
Non team members are allowed to observe but may not participate unless asked.
We discuss draft notes from 2/13 meeting. Notes will be finalized Friday; team will contact Kate before Friday if they have any comments or edits.

Review/Critique Simplified Model (Eric)

Goal: Follow-up review of the generic modelling concept presented at 11/28 and 2/13 meetings. Review questions and clarifications raised during further evaluation.

- *Chris confirmed calculations of simplified model presented at last meeting. Pitt email indicated he looked at generic modeling similarly.*
- *Team discusses baseline assumptions in the proposed generic sizing formula.*
- *Of note: filtration efficiency doesn't take into account maintenance frequency, though sizing affects maintenance needs.*
- *Our standard would include a sizing formula that takes into account sedimentation and maintenance requirements. Size of the site and pretreatment are also considerations to affect cost and maintenance. User can decide cost effectiveness of device sizing vs maintenance though >12 month frequency is preferred.*
- *Team discusses possibility of establishing min & max floors (%TSS reduction for a GULD approved filter).*
- *WinSLAMM has considered adding some kind of generic device evaluation to model though not any time soon due to funding/staffing issues.* [Some additional information was received from WinSLAMM after the meeting—see attached.]
- *Slides 6-9 were pulled directly from Bob Pitt's paper that he recently emailed to team – percentage flow treated with comparison of different sizing factors. The Default Peak Flow to Average Flow Ratio in WinSLAMM was selected as a good match when compared with many actual rainfall events from mainly parking source areas.*

TAPE Use of Phosphorus and Applicability for WI (Adrienne)

Goal: Presentation summarizing review of WA Technical Evaluation Reports, including phosphorus data, percent reduction P, and particle size distribution. Team discussion on applicability to WI standard.

- *Three WA TAPE reports were reviewed. Content was different for all 3, more comprehensive and better organized for the more recent report.*
- *Phosphorus (total, dissolved, ortho) was analyzed but not necessarily at both inlet and outlet, sometimes just inlet. Samples were all composites.*
- *Dissolved and ortho P are usually pretty similar concentrations.*
- *Particle size was determined by different methods (sieve or Coulter counter). Some reported just TSS, some both TSS and SSC. Though the curves we looked at previously showed gap for particles less than 4 microns, the smaller particle size data is commonly included in the report attachments.*
- *They tested only 3 particle size groupings, only for 3 qualifying storms.*
- *Once a filter is approved by WA state, it appears to be approved for life (unless a program change)*
- *If there are beneficial things for WI to add beyond the WA TAPE (e.g. >3 storms, both inlet and outlet sampling), we could recommend it but we can't expect thousands of dollars be spent on devices that already have GULD approval.*

PSD Adjustment for NURP (Roger/Eric)

Goal: Present suggestions for use of existing TAPE particle size distribution (PSD) data relative to NURP. Team to discuss options for standard.

- *USGS research sites show that influent TSS, dissolved P and total P are highly variable. The influent concentrations were variable across different parking lot sites but also on same site across different storms.*
- *Roger looked at Contech TAPE report and field testing from 3 studies. Device effectiveness varied depending on concentration. Devices can't get to 80% TSS reduction when influent is below 100 mg/L. Higher load can more easily get higher % reduction.*
- *Team reviews a draft NURP PSD adjustment calculation. Team discusses possible changes.* ***Eric*** *will test out adjustment formula with some actual PSD results.* ***Team*** *will the review the formula with data input at next meeting.*
- *Standard could also include a form the manufacturer would complete with their adjustments or data summary so onus is on manufacturer. Standardized submittals would simplify and standardize DNR review.*

- *Some concerns on PSD adjustment: filter test clogging prematurely, filters are very sensitive to PSD and concentrations (and influent levels vary by storm), tests were sometimes excessive SSC influent concentration (> 200 mg/L), TAPE PSD is typically coarser than NURP.*
- *Generally filter TSS clogging, flow reduction occurs before TP removal is spent.*
- *Team will consider having minimum and/or maximum TSS reduction allowable in using TAPE report for WI.*

Maintenance Requirements & Other Misc. Requirements (Eric/Jake)

Goal: Presentation of current requirements in MN, WA and NJ. Team discussion to clarify and define minimum requirements for maintenance and appropriate sizing.

- *Modeling doesn't take into account maintenance frequency.*
- *NJ requires maintenance with a 10% drop in flow and they have to measure periodically.) However, for some filters, being spent **doesn't** result in flow rate change but the concentration increases (typically would be spent for TSS, not P).*
- *WA typically has a maintenance schedule in their approval letter. The ODOT testing facility for TAPE has ability to test device to failure to have data supported when maintenance would be needed (though not all TAPE approvals go through this facility)*
- *Herrera presentation last time acknowledged that they had premature clogging during field testing for TAPE approval. It was believed to be organics, though not known and filter could still be approved with very fast clogging. Some filters are approved in TAPE with condition for specified maintenance.*
- *Rather than create new maintenance criteria, our standard could indicate we'd want devices maintained by NJDEP requirements or something similar, already in place.*
- *In NJ lab testing, they weigh the mass of sediment at the failure point (10% flow drop) to assess maintenance frequency.*
- *Contech has specific visual indicators for recommended maintenance: >1/4" sediment atop filter, >4" sediment in bottom of vault and for P, retained water on filtration disk*
- *Generally filter replacement needed within 2 or 3 years.*
- *Used filter disposal depends on the type, but typically the filter gets dumped in the vault and the whole thing gets vacuumed out.*
- *Pretreatment:*
    - *MN has requirements for pretreatment with rating of suitability of different pretreatment practices. Pretreatment down to 100 microns.*
    - *Some pretreatment methods are more maintenance heavy than others.*
    - *Pretreatment is more cost effective to maintain and install than filters.*
    - *Team agrees by vote of 9 that pretreatment should be required in our standard. We will include gross solids and consider hydrocarbons.*

- *Maintenance discussion – key points:*
  - *In other similar WI standards, maintenance on some frequency is required, though they are not checking up on this after installation. Some municipalities keep track and require documentation. Some municipalities do the maintenance themselves then charge it back to the owner.*
  - *Specify inspection frequency with documentation in writing, to include: date, person conducting, indicator of filter life identified, maintenance actions taken or identified.*
  - *Specify maintenance task and frequency, like "clean out sump and filter every 12 months or on an as needed basis if inspections indicate."*
  - *Could also include provision for maintenance based on manufacturer recommendations. Can we require a maintenance contract?*
  - *Consider more frequent maintenance the first year? For example quarterly for 1 year, then annual thereafter (or more frequently as determined by inspections?).*
  - *We could specify something like "During inspection, verify device is operating as designed." We may need to define "inspectors".*
  - *Modelling can be used to predict maintenance frequency; we could incorporate this into standard*

TAPE Phase-In/Long Term Acceptance (Eric)

Goal: Decisions on which TAPE tier to accept, and which certifications. If we allow an interim procedure, define details.

WA TAPE had tiers of approval. GULD, CULD or PULD. TAPE GULD is good start for us.
If there is outlier data or issue of concern, DNR could reduce % reduction in the NURP PSD adjustment (and therefore credit).
Field data is preferred by team over lab data, though having lab data (like in NJ) to support is helpful.
TAPE certification means treatment performance goals are met, but doesn't necessarily include long-term performance or maintenance.
We can't expect additional testing of devices already approved. We could include a consideration to encourage devices in future approvals include additional testing.
Can we accept phosphorus approvals from TAPE GULD or additional requirements for P credit?

Review Possible Team Recommendations

Goal: Review topics from last meeting and vote on formalizing recommendations.

At the February meeting the team raised two issues for potential recommendations. We didn't have a high enough attendance for a quorum but we made a partial vote. We discuss need for official recommendation

1. DNR uses Madison's 1981 average annual rainfall. Madison rainfall file requires a larger treatment device than the other rainfall files (Superior, Green Bay, Milwaukee, and Minneapolis). DNR does not have plans to update rainfall data file. However, Roger indicates he has performed modelling with different storm files and presented on this in another context. **Roger** could share this presentation which showed evaluation of newer datasets and impact to modeling (for example, small vs large pond, no detention).
2. Line between proprietary vs non-proprietary filtration devices –DNR believes that reviewing existing MN research (re: iron filings) is outside of this team's scope.

Next Meeting Topics and Plan of Action (Kate, Eric)

Goal: Identify and understand the topics, concerns, and goals for next meeting. Meeting currently scheduled for April 10 at DNR Fitchburg—will we be ready in 3 weeks? Review Action Items and prepare agenda items for next meeting.

*Take April off – meeting originally scheduled 4/10 is **cancelled***
Some team members have double calendar entries. Kate will delete all invitations and reset them starting on May 8, date of the next meeting.
Eric will start putting language together for the standard for us to review on May 8. Eric will email the draft to the team before May 3 (about a week before the next meeting) so team can review in advance and be prepared to discuss potential issues.

3:00 End

After the meeting, the team received some additional information on modeling from a WinSLAMM representative:

- A device-specific data grid or equation type and coefficient grid could be added, with removal performance as a function of particle size and flow rate variables, to the model in a format similar to the proprietary hydrodynamic device currently in WinSLAMM.
- Loss of flow with accumulated solids can be added to determine maintenance needs.
- The input could be incorporated as part of the "Other Device" in WinSLAMM.
- The data that would be used to model the device performance would need to be provided by the device manufacturer through appropriate testing determined by the standard team, and reviewed and compiled by the DNR to fit the requirements we decide upon.
- Hydraulic routing through the device would not be modeled.
- Bypass would be determined by the maximum flow rate allowed through the device; any bypass flows would be assumed to be untreated.