WISCONSIN STANDARDS OVERSIGHT COUNCIL

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NRCS 380 Windbreak-Shelterbelt Establishment and Renovation Standard Update Team MEETING NOTES

Wednesday, May 25, 2022 ▲ 1:00pm – 3:30pm ▲

Online meeting

1:00 Welcome & Introduction (Kate, Allan)
Goal: Welcome and review today's meeting objective.

Attendance: Kate Brunner (SOC Program Manager), Allan Braun (Team Leader) – NRCS Mic Armstrong, Matt Wilson, Michael Demchik, Drew Zelle, Mike Stanek, Tony Johnson, Eric Hurley, Jeremiah Auer

Absences: Roy Diver, Shannon Rohde, Peter Wisniewski

Guests: Richard Straight, USFS

Notes Review (Kate)
Goal: Review and approve 4/27/2022 draft meeting notes.

Draft meeting notes from April meeting were emailed to the team for review.

- 2 Action Items retained related to future meetings – Mic and Jeremiah will present on nursery stock and seedlings at a future meeting, and Shannon will host field tour on July 27.
- No other questions or comments to the notes were raised by the team, so Kate will post online as final.

Technical Standard Language Review (Allan)
Goal: Review federal standard language and identify changes for new WI standard.

At our last meeting, the Team started editing the federal standard to make it more Wisconsin-specific. Today, the Team continues to review the standard file on-screen starting with Additional Criteria sections and makes some changes together. The Additional Criteria sections should each have a corresponding Purpose statement (some additional criteria sections apply to >1 purpose).

Language is edited on-screen together. Some key points of team discussion:

- Team leaves in the CPS 612 reference – this is listed for use "as needed" to provide the option but is not required for all sites. Team likes to have referrals like this to provide the user more "how to" information.
- On a related issue, CPS 612 includes some pest control statements. Team not sure if it is conservation pest management in consideration of least impact on water quality (CPS 595); Allan will review CPS 612 and confirm.
  [*After the meeting: Allan reviewed CPS 612 and noted that it directs planners to use integrated pest management, but does not cite CPS 595. The CPS 612 is in review at a national level, and first drafts show that CPS 595 will be called out in the new national version*.]
- Snow distribution – accumulated snow can create problems including excess moisture from snowmelt, very late melting of piles, snow weight causing damage to buildings. This could be an extended problem if design takes into account the 20-year height but the trees keep growing and snow drifts keep moving. The standard doesn't mention what happens after 20 years and NRCS doesn't have a mechanism to continue involvement that far into the future.
- Future edit/discussion: there is a purpose about transpiration and evaporation losses. Are there corresponding criteria for this purpose?

Windbreaks as Shelter for Animals, Structures, and Humans (Richard Straight, USFS)
Goal: Learn about windbreak usage for shelter. Team Q&A.

The team is joined by Richard Straight, the Technology Transfer Leader for the U.S. Forest Service National Agroforestry Center.

He presents on the usage of a windbreak as a shelter for animals and structures. Some key points of presentation and team discussion:

- Windbreak design elements that we have control over: heights, density (solid portion), orientation, length, width, continuity.
- Windbreaks influence a lot of other factors: wind speed, soil moisture, air temp, soil temp, relative humidity, evaporation, crop yield.
- The vegetation breaks up the density of the wind and creates greater turbulence in some areas.
- Different windbreaks can have different purpose—can be to stop snow and create drifts, or to distribute snow farther down. That can affect design.
- Windbreak gaps can cause enhanced damage downwind and can create a harsh microclimate. Continuity is important.
- This presentation focuses on 3 Purposes from the standard: Manage snow deposition, Provide shelter for structures, animals and people; Reduce energy use.
- In addition to the primary resource concerns, there are other issues that windbreaks can impact like heat stress or cold wind impact to livestock (or

producer), producer access to livestock and facilities, feedlot management, energy requirements, etc.

- To achieve a good level of density, especially important for feedlot/livestock: usually at least 3 rows (typically 5 rows) so there is some storage within the windbreak, at least 1 row conifers. Windward row as shrub provides a lot of benefit with center for taller trees.
- Spacing also needs to consider the equipment the producer has to maintain it, especially for early growth. Closer spacing provides effective windbreak sooner but farther spacing allows some storage within the windbreak and often has better longevity since no competition for resources (rooting space, sunlight, water). Alternating spacing can be useful to avoid having diagonal rows across the windbreak which would channel the wind and snow.
- Snow is dumped 2-5H – take into account this relative to where livestock, fencing, and buildings are. An L shape can help divert snow.
- Consider a secondary windbreak to help with storms from atypical directions (other side of protection area or L shaped). This is typically less dense.
- Consider the drainage as part of design – trap snow outside of livestock feeding area and provide channel for snow melt. Min 20 ft of leeward row for drainage and snow storage.
- Can protect from energy, snow, wind damage, dust, odor, noise. Benefits are smaller for odor and noise. Odor in particular is still being researched to use design for better deposition of dust particles that transport odor and disperse/dilute odors.
- Saving energy – windbreaks can reduce heating and reduce/remove snow removal costs. For snow removal, at least 10 times long as high. Three to 5 rows evergreens will provide 60-80% density.
- For snow deposition, position windbreak perpendicular to prevailing winter wind. Setback 100-200 ft from protected area.
- For snow distribution, multiple windbreaks spaced 10H to 15H.
- Drifts grow and move with multiple storms.
- Height of the windbreak should be higher than the thing you are trying to protect. Barns and center pivot irrigation tends to be very tall.
- Use caution with windbreaks protecting buildings near roads—keep distance so windbreak doesn't dump snow on the road, block traffic visibility, and shade can cause more problems with snowmelt.
- Some input specific to WI standard edits:
    - Include the soils, species and storm events specific to our growing areas. Species should be allowed to change across a windbreak if the soil changes.
    - Purpose related to transpiration/evaporation and irrigation could be broken into 2 purposes. Wind effect the irrigation system different from reducing water efficiency. Wind only effects center pivots at the very edge of field. Team will consider adding some Additional Criteria related to this purpose or maybe pulling irrigation efficiency out of the standard.

- There is frequent debate on whether you design a windbreak for the worst-case scenario or the most common scenario. There is a "sweet spot" with minimum of 2-5H up to 10H-15H.

Review of Technical Standard Considerations (Allan)
Goal: Review federal standard considerations language and identify changes for new WI standard.

See notes above.

Next Meeting Topics and Plan of Action (Kate, Allan)
Goal: Identify priority topics and goals for next meeting. Review Action Items.

Next meeting will be **online**, on **June 29** from 1:00 -4:00 pm. Team will continue to make adjustments to the text and perhaps hear from an expert on odor and particulate trapping.

Action Items developed today:

1. Continued from last meeting:
    a. Mic and Jeremiah prepare presentation on stock and seedlings. This is more related to guidance document so not urgent.
    b. Shannon will host the team at Hancock ARS on July 27 for field tour for some windbreaks. Kate will assist with planning logistics and provide drinks/snacks.
2. **Allan** will review CPS 612 and confirm it includes referral to least impact to water quality (e.g., a CPS 595 referral). [*After the meeting, Allan reviewed CPS 612 and noted that it directs planners to use integrated pest management, but does not cite CPS 595 directly. CPS 612 is in review at a national level, and first drafts show that CPS 595 will be called out in the new national version*.]
3. **Kate**: finalize and post meeting notes from 4/27.
4. **Kate**: draft 5/25 meeting notes and sent to **Team** for review and comment. Kate will send absent team members a recording of Richard's presentation.
5. **Allan** and **Kate:** prepare agenda for 6/29 meeting and send to team one week prior to meeting. Agenda expected to consist of continuing on with language in the standard, with possible presentation regarding odor and noise.

3:30 *End*