

**State of Wisconsin  
Department of Natural Resources**

**Responses to Comments  
Construction Site Soil Loss and Sediment Discharge Calculation Guidance  
Soil Loss and Sediment Discharge Calculation Tool**

**Guidance #3800-2015-06**

**June 2015**

On March 30, 2015, the Wisconsin Department of Natural Resources (Department) issued a public notice regarding the proposed “Construction Site Soil Loss and Sediment Discharge Calculation” guidance and the associated “Soil Loss and Sediment Discharge Calculation Tool”. The Department received several comments on the proposed guidance and tool. This document represents the Department’s response to the written comments on the guidance and tool.

**Comments by Wisconsin Public Service (WPS)**

1. WPS commends the WDNR for recognizing that calculations are not appropriate to establish compliance for utility trench excavations within a construction site. However, WPS feels that the guidance should be clarified so it is clear that prescriptive compliance is appropriate for all linear utility projects. The current language could be misinterpreted to only apply to utility service connections that are a small portion of a larger project.

Often a utility project is large enough by itself to be over an acre and may require its own WDNR construction site storm water discharge permit coverage. Unlike a typical single location development site, these sprawling linear projects will traverse an ever-changing landscape including various slopes and soil types. This past year WPS had a 14-mile pipeline project where the soil type changed 176 times between 15 predominate soil types. It is not practical to require a public utility to calculate soil loss when the factors that are used in the calculation are that erratic.

WPS recommends that this guidance document clearly state that compliance for all impacts associated with linear overhead and underground utility projects should be established by designing and including appropriate measures in the erosion and sediment control plan rather than calculation of soil loss and sediment discharge.

**Response:**

The “Prescriptive Compliance” section will be revised to include additional criteria for underground and overhead utility construction.

**Comments by US Environmental Protection Agency (USEPA)**

1. **Section A., Page 2** - We recommend that in the last sentence in this section the word "can" should be replaced with the word "should" or "must." This is based on our

understanding that owner/operators seeking to get NPDES permit coverage for a construction site will be required to submit documentation created in accordance with the guidance.

**Response:**

Permit applications will require submittal of documentation to verify compliance with the sediment performance standard. However, the guidance document and associated calculation tool are intended to provide the path of least resistance for applicants to verify compliance and obtain permits. Applicants can potentially use other methods to verify compliance and risk delays during plan review and permitting. The “Background” section of the guidance document will be revised to clarify the purpose.

2. **Section B., Page 2, Third Paragraph** - We recommend that the last two sentences be in this paragraph be reworded to state more affirmatively that submittal of the required documentation will be a condition for having permit coverage. For example:

*Applications for permit coverage -- either a Notice of Intent to obtain coverage under the general permit or an application for an individual permit -- must include documentation demonstrating compliance with the NR 151 performance standard. The documentation must be developed in accordance with Section D of this guidance.*

We also recommend that when the general permit for storm water discharges from construction sites is reissued, that this requirement be incorporated into the permit.

**Response:**

The “Background” section of the guidance will be revised to clarify the documentation requirement. Sediment discharge performance standard documentation requirements will be included in the construction site storm water discharge general permit when re-issued.

3. **Section D., Page 3** - We recommend that the following sentence be further explained: "Trial and error will typically be required to establish the representative worst case condition." Is the idea to run the soil loss equations for various parts of the site to see where the most loss would occur? This was not clear to us in the text in the document.

**Response:**

The “Representative Worst Case” section of the guidance will be revised to clarify the process and options for selecting the representative worst case condition(s).

4. **Section D., Page 4** - The section on Prescriptive Compliance sets out that for specific locations within the site that soil loss and sediment discharge calculations are not

appropriate. It makes sense that for these specific types of areas appropriate control measures should be specifically identified in the erosion and sediment control plan. However, it is not clear in the text how the soil lost from these areas will be integrated into the determination of the total soil loss from the site. Shouldn't soil loss from these areas be added to the estimated losses from other areas in determining if the 5 tons per acre per year standard is being met?

**Response:**

The practices and/or schedules associated with prescriptive compliance are assumed to meet the 5 tons/acre/year sediment performance standard without the need for calculations. The "Prescriptive Compliance" section of the guidance will be revised to provide clarification.

5. **Section D., Page 8** - The last paragraph on this page notes that weather conditions and other factors can alter construction projects as they move forward in such a way that that the initial soil loss and sediment discharge calculations and construction schedule may no longer represent the actual site conditions. The guidance says, "In these cases, soil loss and sediment discharge calculations *may* need to be re-evaluated and erosion and sediment control plans and/or construction schedules adjusted accordingly." We recommend that the word "may" be struck from that sentence. It would seem if there are major changes from what was originally planned (and which formed the basis for demonstrating compliance with the NR 151 performance standard), that the discharge calculations definitely should be re-evaluated.

**Response:**

A "Re-Verification of Compliance" section will be added to the guidance.

**Comments by Northeast Wisconsin Stormwater Consortium (NEWSC)**

1. **Guidance (page 3)** – Please add the following statement at the start of the section: "This guidance document is effective January 1, 2016 or 6 months after the signature date identified on the cover page, whichever is later. This time delay will provide permit applicants with time to incorporate the soil loss calculations into their project planning and contracts, such that permit applications submitted after January 1, 2016 can include the soil loss calculations."

We hope the WDNR recognizes that the 80% TSS or 5 ton/acre/year performance standard has been in NR 151.11 for over 12 years, but the spreadsheet tool was only recently released by WDNR. It took 12 years to develop the spreadsheet tool. As such, we feel it is reasonable and appropriate to provide an implementation delay for permit applicants, municipalities, engineers, and contractors. State-wide training is needed on this topic.

**Response:**

The "Background" section of the guidance will be revised to state that submittal of the documentation described in this guidance will be optional until January 1, 2016.

2. **Guidance (page 3)** – Please add instructions to prevent technical difficulties with the spreadsheet. For example, consider identifying the minimum version for MSExcel. Also, consider adding instructions for resetting your computer’s security setting such that the MSExcel macros are enabled and work properly.

**Response:**

Appendix B and the spreadsheet Help Page include a “Troubleshooting” section. Instructions for enabling active content and the version of Excel the spreadsheet was last modified on are available in that section.

3. **Guidance, Step 1, a) Representative Worst Case (page 3)** – Please clarify that the permit applicant can elect to also subdivide the site into smaller areas, rather than use the worst case condition. The draft guidance implies the permit applicant needs to use the worst case condition in an effort to be conservative. Please clarify that this is not a requirement, but rather a suggestion. It will likely be more difficult to meet the 5 tons/acre/year standard if one worst case condition is selected for the entire construction site.

**Response:**

The “Representative Worst Case” section of the guidance will be revised to clarify that it is not necessary to select a single representative worst case condition to represent the entire site.

4. **Guidance, Step 1, a) Representative Worst Case (page 3)** – In the second last sentence on page 3, please delete the phrase “DNR or jurisdictional municipality” and replace with “DNR and jurisdictional municipality”. The DNR may not agree with the jurisdictional municipality’s plan review and the jurisdictional municipality may not agree with the DNR’s plan review. As such, the permit applicant should talk to both regulatory entities, rather than assume that one entity can speak on the other’s behalf. Both entities issue permits.

**Response:**

The DNR doesn’t currently conduct plan review for all sites. The “Representative Worst Case” section of the guidance will be revised to read “DNR and/or jurisdictional municipality”.

5. **Guidance, Step 1, b) Prescriptive Compliance (page 4)** – In the third sentence of the first paragraph in section b), please delete the phrase “and channel erosion matting”. The Wisconsin DOT PAL does not require erosion matting for all drainage swales. Erosion matting is only required if seed and mulch is not adequate to prevent erosion.

**Response:**

The “channel erosion matting” example will be removed from the “Prescriptive Compliance” section of the guidance document. However, it should be noted

that the WisDOT PAL is not a DNR guidance document. The DNR Mulching (1058) technical standard indicates that mulching is generally not appropriate in areas of concentrated flow. Erosion matting may not be required in all concentrated flow applications but it is the most appropriate practice in many cases.

6. **Guidance, Step 1, b) Prescriptive Compliance, Table 1 (page 5)** – Please modify the Table 1 header and section iv. text. NR 151.11 does not contain a maximum period of bare soil exposure for slopes exceeding 20%. The draft guidance implies that the maximum periods contained within Table 1 are a new regulatory requirement. Below are the only references to a maximum number of days identified within NR 151.11:

- NR 151.11(6m) requires that the permit applicant prevent or reduce the discharge of sediment eroding from soil stockpiles existing for more than 7 days.
- NR 151.11(8) requires temporary stabilization when land disturbing construction activities have temporarily ceased and will not resume for a period exceeding 14 calendar days.

**Response:**

The prescriptive compliance approach was specified for slopes exceeding 20% due to questions regarding the validity of soil loss calculations for steep slopes. However, it is known that soil loss increases with increasing slope steepness. With this in mind, the intent of Table 1 is to establish specific criteria for steep slopes where compliance with the 5 tons/acre/year sediment performance standard can be reasonably assumed.

7. **Guidance, Step 2, b) Determine Compliance Period (page 5)** – The first sentence of the second paragraph in Step 2 discusses a “consecutive 12 month period”. Historically, NR 151.11 and NR151.12 provide numeric TSS performance standard that was based on an annual average basis or calendar year, rather than a “consecutive 12 month period”. Please clarify if NR 151 allows for a “consecutive 12 month” interpretation, rather than a “calendar year”.

**Response:**

NR 151.11 (i.e., construction site performance standard) does not include a reference to “calendar year”. However, the sediment performance standard language indicates that the standard is applicable “from initial grading to final stabilization”. This implies that the compliance period should be associated with the actual period of construction.

8. **Guidance, Step 5, Table 2 (page 7)** – Please modify the erosion control efficiency for sod to 100%. Also, please add a new row to Table 2 for gravel, pavement, and roofs. Please identify these surfaces as 100% erosion control efficiency.

**Response:**

The erosion control efficiency for sod (i.e., C-factor of 0.01) is consistent with the value found in the Universal Soil Loss Equation (USLE) reference documents indicated in Appendix B. Table 2 of the guidance will be modified to add impervious surfaces with erosion control efficiency of 100%.

9. **Guidance, Step 5, Table 3 (page 7)** – Please add two new rows to Table 3 that identify a sediment removal efficiency that is higher than 80% for a sediment basin with polymer and a sediment trap with polymer.

**Response:**

The DNR sediment basin (1064) and sediment trap (1063) technical standards provide alternative sizing criteria when water applied polymer is used. Although increased removal efficiency is possible with polymer addition, DNR is not prepared to establish removal efficiency credits for polymer addition at this time.

10. **Guidance, Step 5, Table 3 (page 7)** – In the last row, please delete the phrase “sediment trap” and “1063”. Sediment traps are already identified in row two of Table 3. Based on Table 3, a ditch check practice is rated at 30% sediment removal and a sediment trap is rated at 80% sediment removal. In its current form, the last row contradicts the second row.

**Response:**

The DNR sediment trap technical standard indicates that ditch checks may be considered sediment traps (i.e., ditch check sediment trap) for drainage areas less than 1 acre. However, the removal efficiency for ditch check sediment traps was downgraded considering that the 3-ft deep sediment storage area associated with a sediment trap is not provided by a ditch check.

**Comments by Hi-Crush Proppants LLC**

1. The tool is easy enough to use and probably gives pretty realistic results.

**Response:**

Providing a calculation tool that is relatively easy to use and provides reasonable results is the goal.

2. The tool only covers a small portion of a project. And it is only applicable to sheet and rill flow applications which should be the easiest to control erosion on. So while this is a good tool it has a minimal impact on design. Good erosion control plans come from experience, coordination with DNR review staff, and coordination with the contractors.

**Response:**

The tool is intended to support the compliance verification procedure described in the guidance. Although the tool does not directly consider channel flow, it does consider lands draining to channels or other conveyance systems and ultimately to sediment control practices (e.g., sediment basin) that provide treatment for the majority of a site.

3. The tool doesn't appear to adequately model or recommend the use of interceptor swales needed on steep slopes and channel erosion. However, it is very good at open graded areas, seed and mulch, and silt fence applications.

**Response:**

Steep slopes and channel erosion is addressed in the "Prescriptive Compliance" section of the guidance.

4. The tool did not appear to be able to calculate BMPs in series. For example a stock pile that flows first through silt fence and then into a sediment pond. It looks like you have to pick either silt fence OR sediment pond.

**Response:**

Evaluating practices in series requires routing of particle size distributions from upstream practices to downstream practices to avoid "double counting". This is a complex procedure that can't be conducted by the tool at this time.

5. Overall, it is a good tool, but in no way replaces good design, good review, and good implementation.

**Response:**

The tool is only intended to support the compliance verification procedure. The compliance verification procedure will influence erosion and sediment control plan development and implementation.

**Comments by Waukesha County Department of Parks and Land Use**

1. **Guidance** - In Example 1 in Appendix A doesn't make any sense, even if it is intended to be hypothetical: the BMP is silt fence located in the middle of an area that is either being actively graded, having something constructed, or is being matted / mulched.

**Response:**

Example 1 will be revised to be more realistic.

2. **Guidance** - Please list the assumptions that are made in the USLE calculations. For example, what is the assumption regarding C / ground cover during the winter, when the ground may or may not be frozen or snow-covered?

**Response:**

Appendix B includes brief descriptions of each USLE variable and references are provided for more information regarding USLE. The Land Cover Factor (C-Factor) does not consider frozen ground or snow cover. However, the Rainfall Factor (R-Factor) is low during the winter months, limiting the expected erosion rate.

3. **Guidance** - We question whether the seeding deadlines referenced from NRCS Agronomic Tech Note 6 are appropriate in this context. For example, it gives a 9/1 deadline for seeding with annual rye, while our experience has been that annual rye generally can be successfully seeded well into October.

**Response:**

The seeding dates are considered recommendations.

4. **Tool** - Recommend changing column 1 title to “Activity” as activities like applying sod do not seem to be consistent with land disturbing activity.

**Response:**

“Land Disturbing Activity” will be replaced with “Activity”.

5. **Tool** - At top, suggest adding more space for project title. Current limit is about 50 characters. If multiple subwatersheds are modeled, name may get long.

**Response:**

More space for the project name will be provided.

6. **Tool** - We recommend making spreadsheet available in Excel 2013. Current version is in 2010. Users with more-recent versions of Excel will have compatibility issues.

**Response:**

DNR is currently using Excel 2010. Newer versions of Excel should be able to open and use files from earlier versions and run in compatibility mode if necessary.

7. **Tool** - Land Activity Drop Down List:

- a. In appendix B table, there is no explanation corresponding to “mulch or erosion control matting”. Assuming this refers to a temporary application, add “temporary” to the title.

**Response:**

“Apply mulch” will be replaced with “Mulch or erosion mat” and a sentence will be added to describe erosion matting. “Temporary” is omitted from several titles to keep the descriptions brief.

- b. Re-order the list to a logical construction sequence. “End” falls in the middle of the list.

**Response:**

Lists in alphabetical order are required when referenced by Excel lookup functions.

- c. Suggest making the listed items verbs, for example “Begin grading” to replace “bare ground,” and “Apply seed and mulch”....

**Response:**

The listed items are brief so that the spreadsheet can be printed on a single, letter-sized sheet.

The final guidance was approved on June 19, 2015.

Prepared by:

Peter Wood, Water Resources Engineer

Runoff Management Section, Wisconsin Department of Natural Resources



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April 17, 2015

Wisconsin Department of Natural Resources  
101 S. Webster Street  
Madison, WI 53703

To Whom it May Concern:

Wisconsin Public Service Comments regarding the Proposed Construction Site Soil Loss and Sediment Discharge Calculation Guidance

Wisconsin Public Service (WPS), an Integrys Energy Group company, appreciates the opportunity to comment on the the Wisconsin Department of Natural Resource (WDNR) proposed Construction Site Soil Loss and Sediment Discharge Calculation Guidance.

WPS commends the WDNR for recognizing that calculations are not appropriate to establish compliance for utility trench excavations within a construction site. However, WPS feels that the guidance should be clarified so it is clear that prescriptive compliance is appropriate for all linear utility projects. The current language could be misinterpreted to only apply to utility service connections that are a small portion of a larger project.

Often a utility project is large enough by itself to be over an acre and may require its own WDNR construction site storm water discharge permit coverage. Unlike a typical single location development site, these sprawling linear projects will traverse an ever-changing landscape including various slopes and soil types. This past year WPS had a 14-mile pipeline project where the soil type changed 176 times between 15 predominate soil types. It is not practical to require a public utility to calculate soil loss when the factors that are used in the calculation are that erratic.

WPS recommends that this guidance document clearly state that compliance for all impacts associated with linear overhead and underground utility projects should be established by designing and including appropriate measures in the erosion and sediment control plan rather than calculation of soil loss and sediment discharge.

If you have any questions, please feel free to contact me at (920) 433-2290.

Sincerely,

A handwritten signature in black ink that reads 'Rick Moser'.

Rick Moser  
Integrys Business Support  
Environmental Consultant

**From:** [Jeff Johnson](#)  
**To:** [DNR Guidance Documents](#)  
**Subject:** Comment on "Soil Loss and Sediment Discharge Calculations for Construction Sites"  
**Date:** Monday, April 13, 2015 7:54:51 AM

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WDNR-

A few comments to consider on the proposed guidance item:

Storm Water: Soil Loss and Sediment Discharge Calculations for Construction Sites.

- The tool is easy enough to use and probably gives pretty realistic results.
- The tool only covers a small portion of a project. And it is only applicable to sheet and rill flow applications which should be the easiest to control erosion on. So while this is a good tool it has a minimal impact on design. Good erosion control plans come from experience, coordination with DNR review staff, and coordination with the contractors.
- The tool doesn't appear to adequately model or recommend the use of interceptor swales needed on steep slopes and channel erosion. However, it is very good at open graded areas, seed and mulch, and silt fence applications.
- The tool did not appear to be able to calculate BMPs in series. For example a stock pile that flows first through silt fence and then into a sediment pond. It looks like you have to pick either silt fence OR sediment pond.
- Overall, it is a good tool, but in no way replaces good design, good review, and good implementation.

Jeff Johnson, P.E.  
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
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APR 16 2015

REPLY TO THE ATTENTION OF:

WN-16J

Mr. Peter Wood  
Water Resources Engineer  
Wisconsin Department of Natural Resources  
9531 Rayne Road, Suite 4  
Sturtevant, WI 53177

Re: Comments on WDNR Proposed Guidance Document - Soil Loss and Sediment Discharge Calculations for Construction Sites

Dear Mr. Wood:

The U.S. Environmental Protection Agency has reviewed the proposed guidance document on Soil Loss and Sediment Discharge Calculations for Construction Sites that is posted on WDNR's proposed program guidance webpage. Our overall observation is the document and the spreadsheet-based tool will be very helpful for evaluating compliance with the NR 151 performance standard. It is evident a great deal of good engineering work went into the development of the guidance and the spreadsheet-based tool.

We have a number of comments on the text in the guidance document. Our comments are included as an Enclosure with this letter.

We see this guidance as being closely related to the NPDES storm water program, but issuance of the guidance is not a change to the State of Wisconsin's NPDES permitting program and therefore EPA approval of the guidance is not required. We appreciate the opportunity to review the proposed guidance and would appreciate a copy of the final guidance when it becomes available.

Thank you for the good work of WDNR staff on this guidance. If you have any questions, please contact Bob Newport of my staff. Mr. Newport can be reached at (312) 886-1513.

Sincerely,

A handwritten signature in black ink, appearing to read "Patrick Kuefler".

Patrick Kuefler, Chief  
Section 2, NPDES Programs Branch

## Enclosure A

### U.S. EPA Comments and Recommendations regarding the Proposed Guidance Document - Soil Loss and Sediment Discharge Calculations for Construction Sites

1. Section A., Page 2 - We recommend that in the last sentence in this section the word “can” should be replaced with the word “should” or “must.” This is based on our understanding that owner/operators seeking to get NPDES permit coverage for a construction site will be required to submit documentation created in accordance with the guidance.
2. Section B., Page 2, Third Paragraph - We recommend that the last two sentences be in this paragraph be reworded to state more affirmatively that submittal of the required documentation will be a condition for having permit coverage. For example:

*Applications for permit coverage -- either a Notice of Intent to obtain coverage under the general permit or an application for an individual permit -- must include documentation demonstrating compliance with the NR 151 performance standard. The documentation must be developed in accordance with Section D of this guidance.*

We also recommend that when the general permit for storm water discharges from construction sites is reissued, that this requirement be incorporated into the permit.

3. Section D., Page 3 - We recommend that the following sentence be further explained: “Trial and error will typically be required to establish the representative worst case condition.” Is the idea to run the soil loss equations for various parts of the site to see where the most loss would occur? This was not clear to us in the text in the document.
4. Section D., Page 4 - The section on Prescriptive Compliance sets out that for specific locations within the site that soil loss and sediment discharge calculations are not appropriate. It makes sense that for these specific types of areas appropriate control measures should be specifically identified in the erosion and sediment control plan. However, it is not clear in the text how the soil lost from these areas will be integrated into the determination of the total soil loss from the site. Shouldn't soil loss from these areas be added to the estimated losses from other areas in determining if the 5 tons per acre per year standard is being met?
5. Section D., Page 8 – The last paragraph on this page notes that weather conditions and other factors can alter construction projects as they move forward in such a way that that the initial soil loss and sediment discharge calculations and construction schedule may no longer represent the actual site conditions. The guidance says, “In these cases, soil loss and sediment discharge calculations *may* need to be re-evaluated and erosion and sediment control plans and/or construction schedules adjusted accordingly.” We recommend that the word “may” be struck from that sentence. It would seem if there are major changes from what was originally planned (and which formed the basis for demonstrating compliance with the NR 151 performance standard), that the discharge calculations definitely should be re-evaluated.