

EROSION CONTROL PLANNING

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Spring 2014 Storm Water Workshop

- ▣ **State Standards**
- ▣ County Standards & Guiding Principles
- ▣ Review Checklists & Plan Requirements

NR 151

State Performance Standards

- ▣ Purpose:
 - Establish performance standards for non-agricultural facilities and practices that cause or may cause runoff pollution.
 - Intended to limit nonpoint runoff pollution in order to achieve water quality standards.

What are the Standards?

- ▣ Sites < 1 acre – NR 151.105
- ▣ Prevent or Reduce:
 - Soil tracked onto roads
 - Discharge of sediment into storm water inlets
 - Discharge of sediment into waters of the state
 - Discharge of sediment from drainage ways flowing off the site
 - Discharge of sediment by dewatering activities
 - Discharge of sediment eroding from topsoil piles
 - Transport of chemicals, cement or other compounds to waters of the state

What are the Standards?

- ▣ Sites > 1 acre – NR 151.11
 - Same as sites < 1 acre plus:
 - ▣ Discharge of sediment from erosive flows at outlets and in downstream channels
 - ▣ Transport by runoff into waters of the state of untreated wash water from vehicle and wheel washing

Sediment Performance Standards

- ▣ NOI received within 2 years after 1/1/11
- ▣ All erosion control plans shall ... reduce 80% of the sediment load carried in runoff, on an average annual basis, as compared with no sediment controls, until the site is stabilized.

Sediment Performance Standards

- ▣ NR 151 Update
- ▣ NOI received 2 years or more after 1/1/11
- ▣ All erosion control plans shall ...discharge no more than 5 tons per acre per year, or to the maximum extent practicable, of the sediment load carried in runoff from initial grading to final stabilization.
- ▣ No state approved tools (RUSLE2) at this time, continue to use 80% reduction until then
- ▣ Stay tuned for something official to roll out

- ▣ State Standards
- ▣ **County Standards & Guiding Principles**
- ▣ Review Checklists & Plan Requirements

Waukesha County Performance Standards

- ▣ EC plan shall describe how the permit holder will minimize, to the maximum extent practicable, soil erosion and the transport of sediment from land disturbing activities to waters of the state or other property.

Waukesha County Performance Standards

- ▣ What are the standards?
 - All EC plans & BMPs shall comply with the planning, design, implementation & maintenance requirements of the ordinance
 - Plans shall achieve, to the maximum extent practicable, an 80% reduction of the sediment load carried in runoff, on an average annual basis, as compared to no controls
 - Plans that comply with the Guiding Principles... and the specific EC plan requirements... shall be determined... as meeting the 80% sediment reduction goal

“Presumptive Compliance”

Waukesha County Guiding Principles

- ▣ Fit grading to the terrain
- ▣ Minimize time disturbed soil is exposed
- ▣ Minimize soil compaction
- ▣ Locate BMPs upstream of where runoff leaves sites or enters sensitive areas
- ▣ Prevent soil detachment and transport first, and reduce soil deposition, second

- ▣ State Standards
- ▣ County Standards & Guiding Principles
- ▣ **Review Checklists & Plan Requirements**

Waukesha County Checklists

Erosion Control

- ▣ Two types:
 - Site plan (base map)
 - Erosion control plan
- ▣ Standard list of issues to address and show on the plans

Checklist #1 – Site Plan

- ▣ All permit applications, regardless of size/scope, must include a site map drawn to scale
- ▣ Use the site plan as the base for other maps included in the erosion control and storm water plans

Checklist #1 Site Plan Map Requirements

The following existing and proposed site features must be provided for all permit applications. Items listed below must be shown on the site and within 50 feet in each direction of the site boundaries. The county storm water ordinance requires a **Preliminary Review Letter** from the Land Resources Division (LRD) for projects that: a) Disturb a total land surface area of 1 acre or more; b) Involve the construction of a new public or private road of any length; c) Ultimately result in the addition of 0.5 acres or greater of impervious surfaces or; d) Other projects that may have significant negative impacts on adjacent properties or water resources due to soil erosion or storm water runoff.

All items on this list are required for the Preliminary Review Letter. Additional items must be shown on erosion control plans (see checklist #2) and storm water management plans (see checklist #3). A site plan map and supporting data of site conditions at a scale of 1 inch equals no more than 100 feet (unless otherwise noted) shall delineate or display the following applicable items:

Note: In addition to a paper copy, provide site map items in a digital format georeferenced to the State Plane Coordinate System, Wisconsin South Zone, NAD 27, NGVD-29.

- ___ 1. Development title, graphic scale and north arrow;
- ___ 2. Property location description by public land survey system (1/4 section, section, township, range, county);
- ___ 3. Location map (smaller scale) showing the site location within a public land survey section or subdivision, oriented the same as par. 4 below;
- ___ 4. Ownership boundaries, bearings, lengths and other survey references that will accurately identify the site location, in accordance with s. 236 Wisconsin Statutes and county mapping standards for all land divisions;
- ___ 5. Lot numbers and dimensions, including outlots for all land divisions;
- ___ 6. Name and complete **contact information** for the applicant, landowner, developer and project engineer or planner;
- ___ 7. Surveyor's certificate, signed, dated and sealed for all land divisions;
- ___ 8. **Sheet numbers and revision dates on every page;**
- ___ 9. Existing **site topography** at a contour interval not to exceed 2 feet, including **spot elevations** for physical features such as culvert (invert elevations), retaining walls, road and ditch centerlines and topographic high and low points;
- ___ 10. Location and name, if applicable, of all lakes, streams, channels, ditches, and other **water bodies** or areas of **channelized flow** on or adjacent to the site;
- ___ 11. Location and name, if applicable, of all **wetlands** and identification of source of delineation. **For final land divisions, these boundaries shall be field verified;**
- ___ 12. Boundaries of **shoreland zones** and the ordinary high water mark (OHWM) for any navigable water body as defined by the Waukesha County Shoreland and Floodland Protection ordinance. For final land divisions, the OHWM boundaries shall be field verified;
- ___ 13. Boundaries and elevation of the **100-year floodplains, flood fringes and floodways**, as defined by the Waukesha County Shoreland and Floodland Protection ordinance. For final land divisions, these boundaries and elevations ~~shall be field verified;~~
- ___ 14. Boundaries and soil symbol for each **soil mapping unit** and the identification of all **hydric soils** as defined by the USDA-Natural Resources Conservation Service;

- ___ 15. Locations of all soil borings and **soil profile evaluations** with unique references to supplemental data report forms;
- ___ 16. Location of **primary and secondary environmental corridors**, as defined by the Southeastern Wisconsin Regional Planning Commission. For final land divisions, these boundaries shall be field verified;
- ___ 17. Location and description of **isolated natural area** boundaries as defined by the Southeastern Wisconsin Regional Planning Commission, **woodland areas**, as defined in the storm water ordinance and other **vegetative cover types**;
- ___ 18. Location and descriptive notes for **existing and proposed structures** within 50 feet of the property boundaries and their proposed use, including, but not limited to buildings and foundations, roads, parking areas, fence lines, access lanes, culverts (include size and type), above ground utilities and retaining walls;
- ___ 19. Location and descriptive notes for other known **existing site features** including, but not limited to, rock outcrops or other karst features, tile drains, buried utilities, ~~jumps, landfills, manure or other waste storage facilities;~~
- ___ 20. Boundaries and descriptive notes for all applicable setbacks and for **“protective areas”** (see ordinance or checklist #3 for more information);
- ___ 21. Location and descriptive notes for any **existing or proposed easements**, right-of-ways, vision corners or other known site restrictions. Road right-of ways and building setbacks shall be in compliance with all applicable administrative codes, adopted plans and ordinances;
- ___ 22. Location and descriptive notes for **existing and proposed public dedications** of parcels or right-of-ways;
- ___ 23. Location and descriptive notes for **preplanned building or waste disposal sites**, when limited by site features;
- ___ 24. Location and documentation of any **existing well** and delineation of any applicable **regulatory setbacks**, in accordance with ch. NR 811 and 812 Wis. Admin. Code (i.e. 100 foot from infiltration basins, etc.);
- ___ 25. Notes describing ~~source documents, date and measure of accuracy~~ for all applicable mapping features noted above;
- ___ 26. Other site information that the LRD determines is necessary to administer this ordinance.

Note: *If necessary items should be displayed on more than one map to ensure clarity. Each map must include proposed structures, setbacks, easements, right-of-ways, etc.*

Checklist #2 - Erosion Control Plan

- ▣ Final Erosion Control Plan
 - ▣ Area to be disturbed
 - ▣ Existing & proposed site topography (2')
 - ▣ Woodlands & Wetlands to be lost with individual trees 8" or larger within 20 feet of grading boundaries
 - ▣ Current vegetation types
 - ▣ Location of BMPs
 - ▣ Detailed construction notes

Checklist #2 - Erosion Control Plan

- ▣ Final Erosion Control Plan cont'd
 - ▣ Temporary site stabilization
 - ▣ Final site stabilization
 - ▣ Measures to keep public roads clean
 - ▣ Accounting for periods of inactivity
 - ▣ Plan must be stamped by a PE if it includes any structural BMP that requires calcs
 - ▣ Project narrative

Checklist #2 Erosion Control Plan Requirements (>1 Acre)

Under county ordinance, significant grading activity may trigger the need for a storm water permit for construction site erosion control. An erosion control plan is designed to protect downstream water resources and property owners from water pollution and other damage caused by sediment runoff from construction sites. Erosion control plans designed to meet the requirements of the county ordinance shall, to the maximum extent practicable, adhere to the following guiding principles:

- 1) Propose grading that best fits the terrain of the site, avoiding steep slopes, wetlands, floodplains and environmental corridors;
- 2) Minimize, through project phasing and construction sequencing, the time the disturbed soil surface is exposed to erosive forces;
- 3) Minimize soil compaction, the loss of trees and other natural vegetation and the size of the disturbed area at any one time;
- 4) Locate erosion control BMPs upstream from where runoff leaves the site or enters waters of the state and outside of wetlands, floodplains, primary or secondary environmental corridors or isolated natural areas;
- 5) Emphasize the use of BMPs that prevent soil detachment and transport over those aimed to reduce soil deposition (sedimentation) or repair erosion damage.

Preliminary Erosion Control Plans must include (for Preliminary Review Letter):

- ___ 1. A **site map** in accordance with Checklist #1. Digital submittal required.
- ___ 2. A **brief narrative** describing the proposed land disturbing activity, **construction timeline** and sequencing, and a general review of the **major erosion and sediment control BMPs** proposed to be used to minimize off-site impacts during the construction phase and to stabilize the site following construction.
- ___ 3. Delineation of the following on the site map under #1 above: a) the area and size (in acres) of the proposed land disturbance; b) the woodland and wetland areas, and the size (in acres) of each that is proposed to be lost during construction and a general description of the current vegetation types and tree sizes; c) the general **location of major BMPs**.

Final Erosion Control Plans must include (for Permit):

- ___ 1. A **site map** in accordance with Checklist #1. Digital submittal required. All other map elements listed below shall be delineated and labeled at a scale of 1 inch equals no more than 100 feet, unless otherwise noted.
- ___ 2. North arrow, graphic scale, draft date, name and **contact information** for project engineer or planner and designation of source documents for all map features;
- ___ 3. Proposed site topography at contour intervals not to exceed two feet, proposed percent slope for all open channels and side slopes and all runoff **discharge points** from the site;
- ___ 4. Proposed building envelopes and other **land area to be disturbed** and size in acres;
- ___ 5. All **woodland areas**, those proposed to be lost or transplanted during construction and acres or numbers of each. For woodlands proposed to be lost, show individual trees larger than eight (8) inches in diameter that are located within twenty (20) feet of proposed grading boundaries;
- ___ 6. Temporary **access drive** and specified surface material (3 to 6 inch clear or washed stone), minimum depth (minimum 12 inches) and minimum 50 feet long;
- ___ 7. Temporary **flow diversion** devices for upslope or roof runoff until site is stabilized;
- ___ 8. Temporary **sediment trapping** devices for site perimeter and inlets to culverts and storm drains;
- ___ 9. Temporary settling basin or other BMP to be used for **site dewatering** during utility or other subsurface work;
- ___ 10. Temporary **soil stockpile sites** indicating setbacks (minimum 25 feet) from channelized flow, nearby water resources or environmental corridors and the proposed erosion protection methods;
- ___ 11. **Detailed drawings** and **cross sections** for any sediment traps, basins or other major cut or fill areas showing side slopes and elevations;

- ___ 12. Final **stabilization measures** for open channels and erosion protection for pipe and channel inlets, outlets and emergency spillways;
- ___ 13. Location of **proposed utilities**, including standard cross-section for buried utilities, associated easements, labeling the type of utility and notes on erosion control and restoration plans;
- ___ 14. Final **site stabilization instructions** for all other disturbed areas, showing areas to be stabilized in acres, depth of applied topsoil (minimum 4 inches), seed types, rates and methodology, fertilizer, sod or erosion matting specifications, maintenance requirements until plants are well established, and other BMPs used to stabilize the site;
- ___ 15. Detailed **construction notes** clearly explaining all necessary procedures to be followed to properly implement the plan including estimated starting date of grading, timing and sequence of construction or demolition, any construction stages or phases, utility installation, dewatering plans, refuse disposal, inspection requirements, and the installation, use and maintenance of BMPs in the plan;
- ___ 16. Location of soil borings and **soil profile evaluations** with surface elevations and unique references to supplemental soil evaluations report forms. Also show estimated seasonal water table depths, which may be shown on a separate map, with sufficient references to the proposed site plan;
- ___ 17. Other items specified by the Land Resources Division as necessary to ensure compliance with the ordinance.

Provide Supporting Information:

- ___ 1. A **narrative summary** of the erosion control plan, briefly explaining the overall plan and, any unique information that led to the selection of BMPs and how the plan meets the guiding principles above.
- ___ 2. ~~Summary of design data for any structural BMP such as sediment basins or sediment traps. A~~ professional engineer, licensed in the State of Wisconsin, shall stamp and sign a statement approving all designs and certifying that they have read the requirements of this ordinance and that, to the best of their knowledge, the submitted plans comply with the requirements.
- ___ 3. Open channel design and stabilization data to support the selected BMPs for stabilization.
- ___ 4. **Soil profile evaluation reports** with unique references and elevations that match the map above.
- ___ 5. Estimated time soil stockpiles will exist to support the selected BMPs for erosion control.
- ___ 6. Documentation that proposed utility locations and installation scheduling has been coordinated with the affected utility companies.
- ___ 7. Documentation of any other calculations used to demonstrate compliance with the performance standards in this section.
- ___ 8. Identification of the **primary contacts** for:
 - ___ a. Conducting erosion control **inspections** and how they will make the inspection logs available to the Land Resources Division.
 - ___ b. Completing site grading and temporary **erosion control practices**.
 - ___ c. Completing final site restoration and stabilization.

Note: The LRD may identify other items necessary to ensure compliance with the ordinance. A similar form may be sent to you by the plan reviewer to indicate missing items.

Summary of Erosion Control Plan Technical Requirements (Ordinance Excerpts)

1. **Access Drives and Tracking.** Provide access drive(s) for construction vehicles that minimize tracking of soil off site using BMPs such as stone tracking pads, tire washing or grates. Minimize runoff and sediment from adjacent areas from flowing down or eroding access drive.
2. **Diversion of Upslope Runoff.** Divert excess runoff from upslope land, rooftops or other surfaces, if practicable, using BMPs such as earthen diversion berms, silt fence and downspout extenders. Prevent erosion of the flow path and the outlet.
3. **Inlet Protection.** Protect inlets to storm drains, culverts and other storm water conveyance systems from siltation until the site is stabilized.
4. **Soil Stockpiles.** Locate soil stockpiles away from channelized flow and no closer than 25 feet from roads, ditches, lakes, streams, ponds, wetlands or environmental corridors, unless otherwise approved by the LRD. Control sediment from soil stockpiles. Any soil stockpile that remains for more than 30 days shall be stabilized.
5. **Cut and Fill Slopes.** Minimize the length and steepness of proposed cut and fill slopes and stabilize them as soon as practicable.
6. **Channel Flow.** Trap sediment in channelized flow before discharge from the site using BMPs such as sediment traps and sediment basins. Stabilize open channels in accordance with LRD standards as soon as practicable.
7. **Outlet Protection.** Protect outlets from erosion during site dewatering and storm water conveyance, including velocity dissipation at pipe outfalls or open channels entering or leaving a storm water management facility.
8. **Overland Flow.** Trap sediment in overland flow before discharge from the site using BMPs such as silt fence and vegetative filter strips.
9. **Site Dewatering.** Treat pumped water to remove sediment prior to discharge from the site, using BMPs such as sediment basins and portable sediment tanks.
10. **Dust Control.** Prevent excessive dust from leaving the construction site through construction phasing and timely stabilization or the use of BMPs such as site watering and mulch – especially with very dry or fine sandy soils.
11. **Topsoil Application.** Save existing topsoil and reapply a minimum of 4 inches to all disturbed areas for final stabilization, unless otherwise approved by the LRD, such as for temporary seeding or storm water infiltration BMPs. If adequate topsoil does not exist on the site to meet this requirement, it shall be imported or a topsoil substitute such as compost may be used, upon approval by the LRD.
12. **Waste Material.** Recycle or properly dispose all waste and unused building materials in a timely manner. Control runoff from waste materials until they are removed or reused.
13. **Sediment Cleanup.** By the end of each workday, clean up all off-site sediment deposits or tracked soil that originated from the permitted site. Flushing shall not be allowed unless runoff is treated before discharge from the site.
14. **Final Site Stabilization.** All previous cropland areas where land-disturbing activities will not be occurring under the proposed grading plans, shall be stabilized within 30 days of permit issuance. Stabilize all other disturbed areas within 7 days of final grading and topsoil application. Large sites shall be treated in stages as final grading is completed in each stage. Any soil erosion that occurs after final grading or the application of stabilization measures must be repaired and the stabilization work redone.
15. **Temporary Site Stabilization.** Any disturbed site that remains inactive for greater than 7 days shall be stabilized with temporary stabilization measures such as soil treatment, temporary seeding or mulching. For purposes of this subsection, "inactive" means that no site grading, landscaping or utility work is occurring on the site and that precipitation events are not limiting these activities. Frozen soils do not exclude the site from this requirement.
16. **Removal of Practices.** Remove all temporary BMPs such as silt fences, ditch checks and sediment traps as soon as all disturbed areas have been stabilized.
17. **Site Drainage.** Site drainage plans shall comply with Checklist #3.

Erosion Control Plan Requirements

- ▣ Provide access drives & tracking pad
- ▣ Divert upslope runoff from entering site
- ▣ Soil stockpiles – location & stabilize
- ▣ Site dewatering
- ▣ Topsoil application – 4"
- ▣ Sediment cleanup
- ▣ Temporary & Final stabilization
- ▣ Site drainage issues
- ▣ BMP removal

Erosion Control Narrative

- ▣ Summarizes plan for reviewer
 - Construction timing/sequence/coordination
 - Assignment of responsibilities
 - EC inspector & log book location
 - BMPs - use & maintenance
 - Utility installation
 - Stockpile locations/stabilization
 - Temporary & Final site stabilization

Common Erosion Control Plan Omissions

- ▣ No plan narrative
- ▣ No construction sequence & timing (or bad)
- ▣ No utility plans
- ▣ Confusion between temporary erosion control & permanent site stabilization practices
 - Too much silt fence & straw bales
 - No plans/documentation for channel stabilization
- ▣ No contacts for plan implementation

Questions???