

Designing an Erosion and Sediment Control Plan for your SWPPP

The following guidance is to help you design the erosion and sediment control plan portion of the SWPPP document. Site plans are arguably the most important piece of the SWPPP, as they directly communicate to the contractor how to manage stormwater and control the release of pollution from the site.

Site Maps, Plans and Details Sheet:

- Attach a general location map. You may utilize the City of Springfield's GIS Viewer program to create a general location map: http://www.springfieldmo.gov/maps/publicviewer_disc.html.
- Attach an Erosion and Sediment Control (ESC) Plan including features listed below.
- All sites over 10 acres shall submit a phased (ESC) Plan showing phased installation of BMPs. Sites <10 acres may require additional ESC plan sheets depending on the complexity of the work.
- Phased construction is encouraged to limit the area of disturbance and can be used to reduce the use of other structural BMPs.
- Attach an Erosion and Sediment Control (ESC) Plan for associated Public Improvement Plans including features listed below.
- Attach BMP Details* sheet with Phasing of Construction Activities Table** in the ESC Plan sheet.
- Attach the stormwater infrastructure site plan.
- Attach the landscape plan including tree preservation and new plantings.
- Attach a tree preservation plan if applicable.

The erosion and sediment control site map(s) must include the following features:

- Limits of disturbance
- Property lines
- Labeled outfall(s)
- Geologic features (springs, sinkholes and caves)
- Locations of all waters of the state (including wetlands)
- Locations where stormwater discharges to surface water and all waters of the State (including wetlands)
- Specify where existing vegetation and trees will be preserved where practical and show protective fencing for these areas.
- Indicate other protected features: buffer strips, steep slopes, surface waters, sinkholes, stream buffers, Stormwater Control Measures (SCMs), etc
- Drainage patterns and slopes anticipated before and after major grading activities are completed
- Additional BMPs may be required for steep slopes. A steep slope is greater than 3:1 (three feet horizontal to one foot vertical) or greater than 3% AND greater than 150 feet in length.
- Areas of soil disturbance and areas that will not be disturbed (perimeter control options: are there any areas where perimeter control could be substituted with a vegetated buffer?)
- Existing and planned streets, buildings and parking lots
- Existing and proposed Stormwater Sewer System and if applicable Sanitary Sewer System
- Location and phase of permanent Stormwater Control Measures (SCMs), including permanent erosion control
- Location and phase of installation of temporary structural and non-structural Best Management Practices (BMPs)
- A sedimentation basin will be provided for each drainage area with 10 or more acres disturbed at one time. The basin shall be sized to treat a local 2-year, 24-hour storm. Include design specifications for each basin including volume, dimensions and outlet structure. Sediment basins must also utilize outlet structures that withdraw water from the surface unless infeasible. Temporary and permanent sedimentation basins must have a stabilized spillway to minimize the potential for erosion of the spillway or basin embankment.

- Sites <10 acres still need to control stormwater runoff. Depending upon the area of disturbance and slopes on-site, temporary sediment traps may be required to control the volume and velocity of stormwater runoff across the site. Include a detail for the trap including a design for the emergency spillway.
- Temporary sanitary facility and trash receptacles
- Material storage areas, vehicle/equipment fueling, batch plants, maintenance areas, concrete wash-outs and spill kits
- Locations of stockpiles and off-site borrow/fill areas
- Areas of stabilization and description of stabilization method: hydroseed, seed/straw, sod, mulch, rock, paved, etc
- A legend which includes all symbols

***Details Sheet:**

- The BMP design detail, description and narrative notes are to be provided on the erosion and sediment control details sheet and listed on the phasing plan.
- Use the City’s newest BMP details found online here: <https://www.springfieldmo.gov/2122/Best-Management-Practices>

****Phasing of Construction Activities:**

- Describe the intended sequence and timing of activities that disturb soils at the site. For each phase of construction, include the following information:
 - Installation of stormwater filtering or damming, structural or non-structural Best Management Practices (BMPs);
 - Beginning and duration of earth-disturbing activities, including clearing and grubbing, demolition, mass grading, site preparation (i.e., excavating, cutting and filling), final grading, and creation of soil and vegetation stockpiles requiring stabilization;
 - Cessation, temporarily or permanently, of construction activities on the site, or in designated portions of the site;
 - Final or temporary stabilization of areas of exposed soil. The dates for stabilization must reflect applicable deadlines.
 - Make sure that the phases for installation of each BMP are consistent with installation sequencing.
 - You determine how many phases are appropriate.
 - **COMBINE ALL TYPICAL BMP DESIGN DETAILS WITH PHASING TABLE ON ESC DETAIL PLAN SHEET.**

Example of BMP Phasing Table to be printed on ESC Plan Details Sheet:

Phase	BMP	Date Installed/ Removed
Pre-Construction	1. Permit Sign 2. Staging Yard 3. Portable Toilet 4. Trash Dumpster 5. Construction Exit 6. Perimeter control 7. Ditch Check 8. Tree protection fencing 9. Inlet protection for existing inlets 10. Temporary Sed Basin	
Phase 1: Demo	1. Natural Buffer Preservation 2. Dust Control	
Phase 2: Grading	1. Install Permanent Basin with Outlet Protection 2. Erosion Control Matting for Basin Slopes 3. Hydroseed Basin Slopes 4. Grade and Stabilize: one half of site at a time	

	<ol style="list-style-type: none"> 5. Stock Pile Containment 6. Street Sweep 7. Dust Control 	
Phase 3: Storm System	<ol style="list-style-type: none"> 1. Inlet Protection 2. Ditch Checks 3. Check Dams 4. Stream Diversion 5. Stream Crossing 6. Dewatering Pump 7. Chemical Wash-Out Pit 	
Phase 4: Construction	<ol style="list-style-type: none"> 1. Plastic Lined Masonry area 	
Phase 5: Stabilization	<ol style="list-style-type: none"> 2. Sod Channels 3. Turf Reinforcement Matting 4. Hydroseed 	

For more information regarding SWPPP requirements, refer to the Missouri State Operating Permit issued through the Missouri Department of Natural Resources:

<https://dnr.mo.gov/env/wpp/permits/issued/docs/RA00000.pdf>

MISSOURI STATE OPERATING PERMIT

REQUIREMENTS

1. This permit is to ensure the design, installation and maintenance of effective erosion and sediment controls to minimize the discharge of pollutants. At a minimum, such controls must be designed, installed and maintained to:
 - a. Control stormwater volume and velocity within the site to minimize soil erosion;
 - b. Control stormwater discharges, including both peak flow rates and total stormwater volume, to minimize erosion at outlets and to minimize downstream channel and stream bank erosion;
 - c. Minimize the amount of soil exposed during construction activity;
 - d. Minimize the disturbance of steep slopes;
 - e. Minimize sediment discharges from the site. Design, install and maintain erosion and sediment controls that address factors such as the amount, frequency, intensity and duration of precipitation, the nature of resulting stormwater runoff, and soil characteristics, including the range of soil particle size expected to be present on the site;
 - f. Provide and maintain natural buffers around surface waters as detailed in 8.f, direct stormwater to vegetated areas to increase sediment removal and maximize stormwater infiltration and filtering, unless infeasible; and
 - g. Minimize soil compaction and, unless infeasible, preserve topsoil.
 - h. Capture or treat a 2-year, 24-hour storm event. A 2-year, 24-hour storm event shall be determined for the project location using the National Oceanic and Atmospheric Administration's National Weather Service Atlas 14 which can be located at <http://hdsc.nws.noaa.gov/hdsc/pfds/>.

Site Map: The SWPPP must contain a legible site map showing the site boundaries and outfalls and identifying:

- 1) Direction(s) of stormwater flow and approximate slopes anticipated after grading activities;
- 2) Areas of soil disturbance and areas that will not be disturbed (or a statement that all areas of the site will be disturbed unless otherwise noted);
- 3) Location of major structural and non-structural BMPs identified in the SWPPP;
- 4) Locations where stabilization practices are expected to occur;
- 5) Locations of off-site material, waste, borrow or equipment storage areas;
- 6) Locations of all waters of the state (including wetlands);
- 7) Locations where stormwater discharges to a surface water; and
- 8) Areas where final stabilization has been accomplished and no further construction-phase permit requirements apply.

The SWPPP shall provide the following information for each specific instance where a BMP is to be installed:

- 1) Whether the BMP is temporary or permanent;
- 2) Where, in relation to other site features, the BMP is to be located;
- 3) When the BMP will be installed in relation to each phase of the land disturbance procedures to complete the project; and
- 4) Site conditions that must be met before removal of the BMP if the BMP is not a permanent BMP.