1.3 Stormwater Pollution Prevention Plan (SWP3)

Description

A Stormwater Pollution Prevention Plan (SWP3) documents a construction activity's compliance with Ohio's water pollution laws (Ohio Revised Code Section 6111.04) and water quality standards (Ohio Administrative Code Chapter 3745-1). It does so by directing operators (owners, contractors, and subcontractors) to implement Best Management Practices (BMPs) and housekeeping measures that protect surface waters from polluted stormwater runoff. Every construction project and its potential to discharge pollutants is different. Therefore, a SWP3 must be individually crafted for each project covered under Ohio EPA's construction general permit (CGP). This chapter offers guidance on preparing an effective SWP3 for construction activity and a SWP3 template for voluntary use.

SWP3 Writer Qualifications

A professional who is proficient in the design and implementation of erosion controls, sediment controls, and stormwater management practices may write a SWP3. A basic understanding of pollution prevention principles, soils, hydrology, and civil engineering along with knowledge of regulatory requirements are requisites. Construction field experience is critical to understanding how and when pollutant-producing activities may occur. Various trainings may help develop SWP3 writing skills, some of which offer professional credentials. Use credentials with caution as components of a SWP3 may constitute the practice of engineering. Ohio Revised Code Section 4733 requires an Ohio registered Professional Engineer perform any engineering work.

Writing an Effective SWP3

Writing a SWP3 involves more than just aiming to supply the content needed for permit approvals. Creating an effective SWP3 demands gaining a deep understanding of the site's characteristics and potential pollution sources to identify all the ways to reduce the project's impact on water resources. The strategy outlined below will help the writer prepare a compliant and effective SWP3.

- Assess the site to figure out how stormwater will interact with it so that proper BMPs may be planned. While much can be learned from an evaluation of online data resources, a walk-through of the entire site is strongly recommended to accurately assess drainage patterns and other characteristics that may not be apparent in coarse desktop data.

- Develop a SWP3 that reflects the changing conditions of a construction site. Generate separate site maps and drawings for each of the distinct phases of construction, applying BMPs appropriate for the conditions and topography expected during that phase. Supplying separate plans for pre- and post-grading conditions may be sufficient for a simple project. More complex grading may necessitate additional SWP3 maps of interim conditions. Use an understanding of these site changes to minimize the amount of soil exposed at any given time and plan stabilization of idle or finished area.
- Communicate clear and specific directives regarding BMPs and other pollution prevention measures to on-site operators so they may plan and budget accordingly. Use narrative, maps, and drawings to convey the type, location, and timing of planned BMPs as well as the elevations, dimensions, materials, and other design details needed to implement them. The SWP3 does not need to direct the work of contractors but puts conditions on their work to implement specific BMPS at specific times.
- Document in the SWP3 that structural BMPs comply with design and placement criteria. Depict the drainage areas to BMPs on maps in the SWP3 and provide sizing calculations to validate the plan.
- Assemble a manageable document that on-site operators can easily reference and efficiently shows that Ohio EPA's construction general permit (CGP) criteria are met. A concise, well-organized SWP3 is not only likely to be more effective but will speed up the review process. The SWP3 must be a stand-alone document, meaning it has all the required information without the need to consult other reports or material.

A well-prepared SWP3 is also a valuable planning document that ensures construction will proceed in the most cost-effective manner. When properly implemented, an effective SWP3 will both minimize the potential for polluted discharges and save operators the time, money, and effort associated with improper, ineffective, and unnecessary BMPs. It also limits the potential for costs and delays caused by permit or water quality violations.

After Construction Starts

An effective SWP3 is adaptable to the unexpected changes that come with a construction project. Records that document compliance including BMP inspection reports are logged into the SWP3 during construction. If those inspections find changed site conditions or work activities call for new or added BMPs or that existing BMPs need maintenance or are ineffective, revise the SWP3 to reflect the changes. Modifying structural BMPs or other significant revisions require consultation with the SWP3 preparer and re-approval from regulating authorities.

SWP3 Template

This chapter includes an optional template to help assemble a SWP3. Modify the template to the needs of the project by replacing placeholder text and expanding, adding, and/or removing various contents (for example, adding material to comply with any local stormwater regulations). Brief section-by-section guidance follows.

Cover and Section 1 – Contact Information

List basic project contact information, adding contacts if needed.

Section 2 – Site and Construction Activity Assessment

Document an assessment of the project by subsection.

2.1 Identify the location of the project. It may be advisable to insert a map if a street address is not applicable or to distinguish the work from other nearby projects or sections within a development.

2.2 Inventory and evaluate the current site characteristics, taking note of the existing use and drainage patterns. Note opportunities to preserve high-quality site features or restore degraded features including compacted soils or culverted streams. Understanding drainage patterns aids in both BMP placement and as preserving critical flow paths that dry the site during and after construction.

Next, describe the types of soil on site, evaluating their characteristics and limitations. The presence of hydric (wetland) soil, highly erodible soil, and flood-prone soil can reveal potential challenges. It may be necessary to evaluate properties such as water table depth, infiltration capacity, and topsoil depth to aid BMP design. List the soil map units in the table and show them on the maps and drawings in Appendix B. If there is a potential for contaminated soil on site, develop a plan to prevent their discharge.

Lastly, evaluate on-site and nearby surface waters. Use this information to determine if construction will need to avoid drainage maintenance easements, setbacks, or otherwise protected areas or if their unavoidable disturbance will require approval from the Army Corps of Engineers, Ohio EPA, and/or the local authority. Locating interior surface waters will help pinpoint sediment control locations and opportunities to address prior channelization, bank instability, head cuts, floodplain access, or other issues before they pose a threat to the proposed infrastructure.

The soil survey is useful as a planning tool to compare soil properties over broad areas and to predict the potentials and limitations of soils, but it seldom contains the detailed, site-specific data necessary for most engineering applications. According to USDA "on-site data is required when the focus is on a specific parcel of land."

Soil survey data cannot replace an onsite soil investigation, but it can facilitate planning onsite investigations and provide estimates where acquiring onsite data is simply not feasible.

2.3 Use the table to identify each surface water that will potentially receive run-off from the project site in the table. If the project discharges to surface waters through a municipal separate storm sewer (MS4), identify the owner or operator of that storm drainage system.

2.4 Detail the construction activity in this section. Include any support activities related to construction (for example, concrete or asphalt batch plants, staging areas, material storage areas, and off-site borrow or spoil areas) to be covered under the NOI and SWP3. Do not include commercial/industrial support operations that serve multiple unrelated construction projects and operate beyond the completion of the construction activity.

2.5 Evaluate the potential for authorized non-stormwater discharges and how they will be controlled.

2.6 A BMP implementation schedule sets a timetable for installing BMPs in coordination with the project's construction schedule. The schedule will help evaluate the potential effects of seasonal weather on each activity. Where possible, schedule operations to 1) minimize the area of soil exposed at any given time, 2) minimize soil exposure during wet periods such as early spring, and 3) ensure stabilization of idle areas occurs during the growing seasons. The template includes a table, but a numerical list or a bar chart may be substituted.

Table 1.3.1 provides a sample BMP implementation schedule. The timeline in the first column shows the sequence of construction operations by noting an estimated start and completion timeframe. The BMPs to implement with each construction operation are ordered in the second column, taking note of items that need to be performed at a specific time in the sequence, for example, to install an infiltrating post-construction practice after the drainage area is stabilized.

Table 1.3.1 Example BMP Installation Schedule

Estimated Timeline	Construction Operation and Associated BMPs
May 1 to May 15, 2024	**Site Preparation** 1. Construct stabilized construction entrance & staging area (see section 4) 2. Install tree protection and riparian buffer protection barriers (see section 2) 3. Establish sanitary facilities and trash dumpsters (see section 8) 4. Install storm drain inlet protection on Johnson Street and Sixth Avenue (see section 6) 5. Install perimeter silt fences (see section 6) 6. Construct the sediment settling pond (Section 6) 7. Construct and stabilize vegetated swale diversion to sediment settling pond along the north perimeter (see section 5)
May 15 to July 1, 2024	**Mass Grading** 1. Conduct clearing and grubbing operations 2. Remove and stockpile topsoil (see section 4) 3. Install silt fences around stockpiles and stabilize stockpiles (see section 6,) 4. Conduct site grading operations 5. Stabilize disturbed areas where construction will cease for more than 14 days (see section 2)
July 1 to Aug 15, 2024	**Utility & Storm Drain Installation** 1. Install storm drains, sanitary sewers, water services, and utilities 2. Install storm drain inlet protection (see section 6)
July 15 to Oct 15, 2024	**Structural Construction** 1. Construct a temporary concrete washout area (see section 8) 2. Begin construction of building foundation and structure 3. Parking lot paved, exterior building constructed 4. Implement winter stabilization procedures (see section 3)
Sept 30 to Oct 15, 2024	**Paving** 1. Install gutters, curbs, and prepare pavement subgrade 2. Remove the temporary concrete washout area (see section 3) 3. Remove inlet protection
Oct 15 to Nov 15, 2024	**Landscaping and Final Stabilization** 1. Finalize pavement activities 2. Convert the sediment pond to a permanent bioretention area 3. Install infiltration trench, porous pavers, and tree box filters 4. Remove all temporary control BMPs and stabilize any areas disturbed by their removal with erosion controls 5. Prepare final seeding and landscaping 6. Monitor stabilized areas until final stabilization is reached

Section 3 – Preservation Methods

Describe how operators are to preserve the existing natural conditions to the extent feasible, detailing the specific BMPs to do so in the table provided. Soil restoration, stream setback, and wetland setback are common preservation BMPs that are prepopulated in the table but the planned BMPs may differ. Show the planned preservation BMPs on the site maps and construction drawings provided in Appendix B.

Section 4 - Erosion Controls & Soil Stabilization

Describe the erosion control and soil stabilization practices operators are to implement in this section. Detail vehicle trackout controls in section 4.1 and fugitive dust controls in section 4.2. Construction entrance and street sweeping are common trackout controls that are prepopulated but the planned BMPs may differ. Section 4.3 includes separate BMP tables for permanent and temporary soil stabilization measures that reflect permit requirements. A third table is supplied for other stabilization BMPs. Conveyance channel, outfall, soil stockpile, and slope stabilization are common erosion controls that are prepopulated but the project's BMPs may differ. Detail the planned BMP on the site maps, construction drawings, and construction specifications provided in Appendix B.

Section 5 - Runoff Controls

Describe the measures operators are to implement that direct runoff to the receiving watercourse or that divert runoff away from disturbed areas or critical areas in a non-erosive manner. Check dams, temporary diversions, and outfall velocity dissipation are common runoff controls that are prepopulated in the table but the planned BMPs may differ. Show the planned runoff controls on the site maps and construction drawings provided in Appendix B.

Section 6 – Sediment Controls

Describe the plan for sediment controls detailing the BMPs in the table provided. Sediment barrier, sediment pond, temporary diversion, and storm drain inlet protection are common sediment controls that are prepopulated in the table but the planned BMPs may differ. Note the design values for the sediment pond in the table in section 6.1. Replicate the table if multiple sediment ponds are planned. Detail the BMPs and their drainage areas on the site maps, construction drawings, and construction specifications provided in Appendix B and the design calculations in Appendix C.

Section 7 – Post-Construction Stormwater Management

Identify the post-construction stormwater management practice(s) selected to address pollutants associated with the final land use over the life of the project and the rationale for the choice. Include design drawings for the practice(s) in Appendix B, design calculations in Appendix C, and an operation, and maintenance plan in Appendix K.

Section 8 – Other Pollutant Controls

Describe pollutants generated by construction activities that have the potential to comingle with stormwater in the table in Section 8.1. Use the tables in sections 8.2 through 8.10 to specify BMPs that address those pollutants. Detail planned BMP on the site maps, construction drawings, and construction specifications in Appendix B.

Section 9 – Inspection, Maintenance, and Corrective Action

The plan for the inspection of BMPs and ensuing maintenance or corrective actions may be modified to meet the needs of the project. Place BMP-specific maintenance instructions in the BMP tables in sections two through eight.

Sections 10 – Certification

This section includes the certification statement signed by the operator(s).

Appendix

Place reference documents in Appendices A through L. Optional forms and document templates are included where appropriate. Add appendices as needed but avoid making the SWP3 unwieldy by including unnecessary items, for example, a copy of the CGP.

References

Ohio Environmental Protection Agency. 2023. Ohio EPA Permit No. OHC000006. General Permit Authorization for Storm Water Discharges Associated with Construction Activity Under the National Pollutant Discharge Elimination System.

U.S Department of Agriculture (USDA). 2016. Soil Survey Uses and Limitations. Available at: https://lafayette.extension.wisc.edu/files/2020/11/Soil-Survey-Wisconsin-Uses-and-Limitations.pdf

U.S. Environmental Protection Agency. 2007. Developing Your Stormwater Pollution Prevention Plans, A Guide for Construction Sites. EPA-833-R-06-004