



**PAG-01  
AUTHORIZATION TO DISCHARGE UNDER THE  
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
GENERAL PERMIT FOR DISCHARGES OF  
STORMWATER ASSOCIATED WITH SMALL CONSTRUCTION ACTIVITIES  
FACT SHEET**

In compliance with the provisions of the Clean Water Act, 33 U.S.C.A. §§ 1251 – 1387 and Pennsylvania's Clean Streams Law, as amended, 35 P.S. §§ 691.1 – 691.1001, the Department of Environmental Protection (DEP) is authorizing the discharge of stormwater associated with small construction activity to surface waters of the Commonwealth under the PAG-01 General Permit. The purpose of this document is to explain the basis for the terms and conditions of the PAG-01 General Permit, in accordance with 25 Pa. Code § 92a.53 (relating to documentation of permit conditions). The PAG-01 General Permit is a new NPDES General Permit, which DEP is issuing for eligible small construction activities whose stormwater discharges are considered to pose a low risk for environmental harm and can be managed in accordance with 25 Pa. Code Chapter 102 through the use of prescribed BMPs.

DEP published notice of the availability of a draft PAG-01 General Permit in the *Pennsylvania Bulletin* on September 28, 2019 [49 Pa.B. 5642]. A 30-day comment period was provided, and interested parties were directed to submit comments to DEP's eComment system or by e-mail to [ecomment@pa.gov](mailto:ecomment@pa.gov). The comment period ended on October 28, 2019. DEP received comments and questions from 12 different individuals and organizations during the comment period, and has developed a separate comment-response document. The *Pennsylvania Bulletin* noticed provided the public with an opportunity to request a public hearing in accordance with 25 Pa. Code § 92a.84(b); however, no requests for a hearing were received.

DEP has decided to issue the PAG-01 General Permit for a five-year term, effective March 1, 2022 and expiring February 28, 2027.

## **SCOPE**

The PAG-01 General Permit is intended to provide NPDES permit coverage for stormwater discharges associated with small construction activities in satisfaction of state (25 Pa. Code § 102.5(a) and 25 Pa. Code § 92a.1(b)) and federal (40 CFR § 122.26(b)(15)) regulations, subject to the eligibility requirements specified herein. The term "stormwater discharge associated with small construction activities" means the discharge of stormwater from construction activities including clearing, grading, and excavating that result in earth disturbance of greater than or equal to one acre and less than five acres. As explained below, stormwater discharges associated with earth disturbance activities less than one acre may be eligible for coverage under PAG-01 as well. The PAG-02 General Permit or an individual NPDES permit may be used for NPDES permit coverage if a project is not eligible for PAG-01 coverage.

Discharges from a project site may receive coverage under the PAG-01 General Permit when the standards contained in the Eligibility Criteria, Authorized Discharges, and Discharges and Activities Not Authorized sections of the NOI Instructions (3800-PM-BCW0404a) and the General Permit are met.

All projects greater than or equal to one acre must obtain NPDES coverage for earth disturbance activities. The PAG-01 General Permit has been developed specifically to cover eligible projects that discharge stormwater associated with small construction activities (less than 5 acres of disturbance). No lower threshold of earth disturbance has been placed on the use of PAG-01 because any earth disturbance may be designated under federal regulations as needing NPDES permit coverage based on the potential for contribution to a violation of a water quality standard or for significant contribution of pollutants to waters of the United States, even disturbances less than one acre (see 40 CFR § 122.26(b)(15)(ii)). For those projects less than one acre that may be designated under federal regulation, DEP will grant coverage under the PAG-01 in lieu of an individual permit, if all of the General Permit conditions are met, for ease in processing and to alleviate potential costs for permittees.

Another general permit – the PAG-02 General Permit – is available to cover stormwater discharges associated with all eligible construction activities that must obtain NPDES permit coverage. In the event that a small construction activity is ineligible for PAG-01 General Permit coverage, an applicant may submit an NOI for PAG-02 General Permit

coverage for that activity, if eligible for PAG-02. A chart illustrating the differences between PAG-01 and PAG-02 is presented in **Attachment A**.

A permittee may not commence a new discharge under this General Permit until the following conditions have been met:

1. A pre-application meeting or call has been held unless waived by DEP/CCD, in writing.
2. The applicant has submitted a complete NOI package (3800-PM-BCW0404b and required attachments) in accordance with the requirements of the General Permit and the NOI instructions.
3. The applicant has received written approval of coverage under PAG-01, signed by the appropriate DEP or delegated county conservation district (DEP/CCD) manager or supervisor.
4. All other permits and approvals relating to the earth disturbance activities reported in the NOI, including but not limited to sewage planning approval required by the Pennsylvania Sewage Facilities Act (Act 537 of 1965), if applicable, have been obtained.
5. A pre-construction meeting has been held unless waived by DEP/CCD, in writing.

Please refer to the PAG-01 NOI Instructions for an explanation of the administrative process involved with the submission of a PAG-01 NOI package, including review periods.

Notice of each approval of coverage under the PAG-01 General Permit will be published by DEP in the *Pennsylvania Bulletin*.

## **NOI REQUIREMENTS**

Applicants with eligible projects seeking coverage under the PAG-01 General Permit must submit a complete NOI at least 30 or 60 calendar days (depending on the applicable review period as set forth in the NOI Instructions) prior to the planned date for commencing any new discharge. An applicant authorized to discharge under an individual NPDES permit who is seeking coverage under the General Permit may continue to discharge in accordance with the individual permit while DEP/CCD reviews the NOI and associated documents for coverage under this General Permit. A complete NOI consists of the completed NOI form (3800-PM-BCW0404b) and all required attachments as referenced in the NOI checklist (3800-PM-BCW0404c).

The Erosion and Sediment Control (E&S) Module 1 ([3800-PM-BCW0406a](#)) must be completed by all applicants for PAG-01 coverage, which serves as part of the applicant's E&S Plan under 25 Pa. Code § 102.4(b). An applicant may identify the standard construction details or figures in DEP's *Erosion and Sediment Pollution Control Program Manual* ([363-2134-008](#)) (E&S Manual) that will be used for construction. Applicants must include E&S Plan Drawings to show, among other things, the locations of E&S BMPs in the earth disturbance area. If standard construction details or figures are not identified for selected E&S BMPs, site-specific E&S BMP design details must be submitted for those BMPs.

In accordance with 25 Pa. Code §§ 102.4(b)(5)(xiv) and 102.8(d), DEP is approving the use of a combined plan to satisfy consistent requirements for E&S and Post-Construction Stormwater Management (PCSM) Plans. The submission of E&S Module 1 will satisfy the requirement to prepare and submit a PCSM Plan because:

- The required contents of a PCSM Plan in 25 Pa. Code § 102.8(f) will be addressed by E&S Module 1 with the exception of §§ 102.8(f)(4), 102.8(f)(6) – 102.8(f)(11), and 102.8(g) (note that § 102.8(f)(14) relating to riparian forest buffer management plans is not applicable to this General Permit).
- §§ 102.8(f)(4) (relating to an identification of the net change in volume and rate of stormwater), 102.8(f)(6) (written description of the location and type of PCSM BMPs), 102.8(f)(8) (supporting calculations), and 102.8(g) (relating to a stormwater analysis) are satisfied through a general stormwater analysis and establishment of technical criteria and standards for PCSM BMPs, as discussed further below.
- §§ 102.8(f)(7) (relating to the sequence of PCSM BMP implementation), 102.8(f)(10) (long-term operation and maintenance schedule), and 102.8(f)(11) (recycling or disposal of materials) may be satisfied through the use of notes on PCSM Plan Drawing(s), which satisfy § 102.8(f)(9).

Other required NOI attachments include municipal and county notification forms, which serve to notify the municipality and county where the project is located and collect information on the presence of Act 167 stormwater management plans and municipal stormwater management ordinances, ultimately determining the length of the review period for DEP/CCD, and a PNDI receipt documenting that the project will have No Impact, Conservation Measures, Avoidance Measures that are accepted by the applicant, or Potential Impact that is cleared through follow-up correspondence with jurisdictional agencies. All of these documents must be submitted at the time the NOI is submitted or the NOI will be deemed incomplete.

Applicants, unless exempt from fees, must submit a \$500 administrative filing fee (per 25 Pa. Code § 102.6(b)(1)) to the delegated CCD with the NOI package, as well as any additional fees the CCD requires (per 25 Pa. Code § 102.6(b)(3)). Applicants must also submit a fee in the amount of \$100 for each disturbed acre to DEP (per 25 Pa. Code § 102.6(b)(1)). In the event that a project is located in a county without a delegated CCD (i.e., Forest County or Philadelphia County), both the disturbed acre fee and the administrative filing fee will be submitted to DEP.

### **ELIGIBILITY CRITERIA**

The following eligibility requirements have been established for the PAG-01 General Permit based on state and federal requirements and judgment on the types of earth disturbance activities that are expected to pose low environmental risk.

#### **A. Project and Site Characteristics.**

The project must meet all of the following:

1. Total earth disturbance is less than five (< 5) acres, including any portion, part, or during any stage of a larger common plan of development or sale.
2. The project does not involve earth disturbance associated with the construction, installation or repair of a transmission pipeline, gathering line, or local distribution or service line that will, or is intended to, transport hazardous liquids, natural gas, or natural gas liquids to refining, storage, or processing facilities, or for further distribution by large volume customers such as factories, power plants, public utilities, or institutional users within or outside of Pennsylvania.
3. Stormwater runoff from the project site will not discharge to surface waters, including wetlands, with a designated or existing use classified as High Quality Waters (HQ) or Exceptional Value Waters (EV) under 25 Pa. Code Chapter 93 (relating to water quality standards).
4. The applicant is not in violation of any DEP or U.S. Environmental Protection Agency (EPA) enforceable document, including any permit, schedule of compliance, consent assessment of civil penalty, or order at the project site or other sites or facilities owned or operated by the applicant in Pennsylvania, and has not shown a lack of ability or intention to comply with laws administered by DEP or EPA as indicated by past or continuing violations.
5. The Pennsylvania Natural Diversity Index (PNDI) receipt indicates either: (1) "No Impact"; (2) "Conservation Measures"; (3) "Avoidance Measures" that have been agreed to by the applicant; or (4) "Potential Impact" or "Avoidance Measures" not agreed to by the applicant but clearance letters from jurisdictional agencies are attached to the NOI. If the PNDI receipt indicates either "Avoidance Measures" in which the applicant has not agreed to implement the recommendations, or "Potential Impact", clearance letters from the appropriate jurisdictional agencies must be attached to the NOI to qualify for PAG-01 coverage.
6. Soils in the disturbed area must meet one of the following: a) environmental due diligence (as defined in the General Permit) conducted of the disturbed area reveals no evidence of a spill or release of a regulated substance, or b) analytical testing demonstrates that soils in the disturbed area are not contaminated at pollutant levels exceeding residential medium-specific concentrations (MSCs) in 25 Pa. Code Chapter 250.

**NOTE** – The PAG-01 General Permit establishes thresholds for soil contamination that are based on the residential direct contact and soil to groundwater medium-specific concentrations (MSCs) under the

regulations implementing the Act 2 Land Recycling Program (Chapter 250). Residential MSCs are used as thresholds to ensure the maximum level of protection under PAG-01. However, analytical testing is unnecessary if the application of environmental due diligence results in no evidence of a spill or release of a regulated substance.

7. Projects must be located on the same or contiguous tax parcels, with the exception of off-site construction support activities (off-site support activities). Off-site support activities are activities providing support for construction and earth disturbance activities covered by the General Permit, including but not limited to concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas (spoil), borrow areas, stockpiling of topsoil, transfer of topsoil to other locations, and turnaround areas.

## B. Design Requirements.

1. In order to use the PAG-01 General Permit for NPDES permit coverage, applicants must demonstrate compliance with the technical criteria for Best Management Practices (BMPs) summarized below.

- a. Erosion and Sediment Control (E&S) during construction.

Applicants must select E&S BMPs to control stormwater runoff during earth disturbance activities that will be designed, installed, and maintained in accordance with DEP's *Erosion and Sediment Pollution Control Program Manual* (363-2134-008) (E&S Manual), as amended, with the exception of sediment traps (compost sock sediment traps are allowable) and sediment basins, which cannot be utilized under this General Permit. In addition, applicants are not authorized to use alternative E&S BMPs unless authorized to do so by DEP in writing (i.e., DEP's list of approved alternative E&S BMPs).

The introduction of chemicals to stormwater during construction is prohibited.

- b. Post-Construction Stormwater Management (PCSM).

Applicants must select PCSM BMPs from Part A I.C.2 of the PAG-01 General Permit to control stormwater runoff after earth disturbance activities. Alternative PCSM BMPs are not authorized under this General Permit. Each selected PCSM BMP must be designed, installed, and maintained in accordance with DEP's *Pennsylvania Stormwater Best Management Practices Manual* (363-0300-002) (BMP Manual), as amended, except where otherwise authorized in writing by DEP.

**Rationale** – DEP is specifying the PCSM BMPs that must be used under PAG-01 to streamline development of PAG-01 NOI packages and DEP/CCD reviews. See the discussion of the Concentrated Flow and Sheet Flow Standards in **Attachment B** of this fact sheet.

PCSM BMPs are prohibited in areas of known sinkholes or surface depressions. The applicant must demonstrate that areas designated for PCSM BMPs under the Concentrated Flow and Sheet Flow Standards are clear of known sinkholes and surface depressions as identified through the interactive geology map published by the Pennsylvania Department of Conservation and Natural Resources (visit [www.dcnr.pa.gov/Geology/GeologicHazards/Sinkholes/Pages/default.aspx](http://www.dcnr.pa.gov/Geology/GeologicHazards/Sinkholes/Pages/default.aspx)), or other published data.

2. The total area of impervious surface following construction must be:
  - a. Less than or equal to thirty thousand square feet ( $\leq 30,000$  sf) (within the area of disturbance), and
  - b. Less than or equal to twelve percent ( $\leq 12\%$ ) of the total project site area.

**Rationale** – As discussed in the PCSM BMPs section of this fact sheet, DEP is limiting the area of impervious surface that can be covered under the General Permit so that treatment of impervious surfaces can be accomplished predominantly through vegetated, low maintenance BMPs.

3. No stormwater from off-site areas (i.e., outside the project site boundary) may flow into PCSM BMPs implemented under the Concentrated Flow and Sheet Flow Standards. Stormwater runoff from areas originating outside of the project site must be diverted around PCSM BMPs to qualify for PAG-01 coverage.

4. Stormwater discharges (during or after construction) may not be directed to a combined sewer system.
5. Regulated fill requiring a Waste Management permit may not be used for projects requesting coverage under this General Permit. Refer to DEP's *Management of Fill Policy* ([258-2182-773](#)) for the definition of regulated fill.

C. Change in Conditions.

If a discharge approved for coverage under the General Permit subsequently exhibits a condition that renders the discharge ineligible for coverage as set forth in the General Permit, the permittee is not authorized to discharge stormwater under the General Permit. The permittee shall promptly take action to restore eligibility, to notify DEP or CCD in writing of the condition, and, if eligibility cannot be restored, to submit an individual NPDES permit application or NOI for an alternative general permit to DEP or CCD. DEP or CCD may pursue enforcement action and shall revoke coverage under this General Permit should the discharge of stormwater continue to not be eligible for the Permit and/or if potential or actual adverse impacts to water quality occur as a result of the permittee's discharge(s).

D. Denial of Coverage.

DEP will deny coverage under the General Permit when one or more of the following conditions exist:

1. Stormwater discharges that, individually or in combination with other similar discharges, are or have the potential to be a contributor of pollution, as defined in the Pennsylvania Clean Streams Law, which is more appropriately controlled under an individual permit. (25 Pa. Code § 92a.54(e)(1))
2. The discharger is not, or will not be, in compliance with any one or more of the conditions of the General Permit. (25 Pa. Code § 92a.54(e)(2))
3. The applicant and/or operator has failed and continues to fail to comply or has shown a lack of ability or intention to comply with a regulation, permit, schedule of compliance or order issued by DEP or CCD. (25 Pa. Code § 92a.54(e)(3))
4. Stormwater discharges that contain pollutants for which a change has occurred in the availability of demonstrated technology or practices for the control or abatement of the pollutants. (25 Pa. Code § 92a.54(e)(4))
5. Categorical point source effluent limitations are promulgated by the U.S. Environmental Protection Agency (EPA) for those point sources covered by the General Permit where such limitations are not incorporated into the General Permit. (25 Pa. Code § 92a.54(e)(5))
6. Stormwater discharges that are not in compliance or will not result in compliance with an applicable effluent limitation or water quality standard. (25 Pa. Code § 92a.54(e)(6))
7. Stormwater discharges from a facility for which an individual permit is required for other point source discharges, and issuance of both an individual permit and authorization for coverage under a General Permit for the facility would constitute an undue administrative burden on DEP. (25 Pa. Code § 92a.54(e)(7))
8. Stormwater discharges that DEP or CCD determines require an individual NPDES permit to ensure compliance with the Federal Clean Water Act, Pennsylvania's Clean Streams Law or DEP regulations. (25 Pa. Code § 92a.54(e)(8))
9. Stormwater discharges to surface waters, including wetlands, with designated or existing uses classified as High Quality Waters (HQ) or Exceptional Value Waters (EV) under 25 Pa. Code Chapter 93 (relating to water quality standards). (25 Pa. Code § 92a.54(e)(9))

**Rationale** – These conditions correspond to reasons DEP may deny an NPDES permit application under 25 Pa. Code §§ 92a.54(e)(1) – (9) of its regulations.

## **AUTHORIZED DISCHARGES**

### **A. Authorized Stormwater Discharges.**

The following stormwater discharges associated with construction activity are authorized under the PAG-01 General Permit provided that the appropriate stormwater controls are designed, installed, and maintained by the permittee in accordance with applicable laws, regulations and guidance administered by DEP or EPA:

1. Stormwater discharges associated with small construction activity, including stormwater runoff, snowmelt runoff, and surface runoff and drainage, as defined at 40 CFR § 122.26(b)(15).
2. Stormwater discharges designated by DEP as needing permit coverage under 40 CFR § 122.26(a)(1)(v), 40 CFR § 122.26(b)(15)(ii) or the Pennsylvania Clean Streams Law that are associated with construction activity resulting in an earth disturbance of less than five acres.
3. Stormwater discharges from off-site construction support activities (off-site support activities) including but not limited to concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas (spoil), borrow areas, stockpiling of topsoil, transfer of topsoil to other locations, and turnaround areas, provided that:
  - a. The off-site support activity is part of the same common plan of development or sale required to have permit coverage for stormwater discharges.
  - b. The area of the off-site support activity, in combination with the project site it supports (i.e., the same common plan of development or sale), involves less than five acres of earth disturbance in total.
  - c. The off-site support activity is not a commercial operation, nor does it serve multiple unrelated construction sites.
  - d. The off-site support activity does not continue to operate beyond the completion of the construction activity at the project site it supports and will be restored to approximate original condition, as defined in the PAG-01 General Permit.

If an off-site support activity does not meet these four guidelines, the off-site support activity will require independent NPDES permit coverage unless the earth disturbance will be less than one acre, in which case an E&S Plan must be developed, implemented and maintained in accordance with § 102.4(b).

### **B. Authorized Non-Stormwater Discharges.**

The following non-stormwater discharges associated with small construction activity are authorized under the PAG-01 General Permit provided that, with the exception of water used to control dust and to irrigate vegetation in stabilized areas, these discharges are not routed to areas of exposed soil on the project site and the operator complies with any applicable requirements for these discharges under the General Permit:

1. Discharges from emergency fire-fighting activities.
2. Fire hydrant and waterline flushings that do not contain measurable concentrations of Total Residual Chlorine (TRC).
3. Landscape irrigation water.
4. Water used to wash vehicles and equipment where cleaning agents are not used.
5. Water used to control dust.
6. External building washdown where cleaning agents are not used and external surfaces do not contain hazardous substances.
7. Pavement wash waters, provided spills or leaks of toxic or hazardous substances have not occurred and where cleaning agents are not used if such wash waters are directed to a BMP.

8. Uncontaminated air conditioning or compressor condensate.
9. Uncontaminated, non-turbid discharges of groundwater or spring water.
10. Foundation or footing drainage where flows are not contaminated with process materials such as solvents or contain pollutants from groundwater.
11. Construction dewatering water that complies with the construction dewatering discharge requirements of the PAG-01 General Permit.

These non-stormwater discharges are considered incidental to stormwater associated with small construction activity and may be discharged from project sites under the PAG-01 General Permit; however, DEP/CCD may require cessation of such discharges if determined necessary to protect public health and the environment. These non-stormwater discharges are generally consistent with the U.S. Environmental Protection Agency's (EPA's) construction general permit, issued in January 2017.

### **DISCHARGES AND ACTIVITIES NOT AUTHORIZED**

The following discharges and activities are not authorized by the PAG-01 General Permit:

- A. Stormwater discharges from project sites where PCSM BMP(s) will be located within areas of known sinkholes or surface depressions.

**Rationale** – DEP believes that the installation of PCSM BMPs in areas of known sinkholes or surface depressions is a public safety risk where increased stormwater runoff is directed to these features. Such projects warrant a more detailed review than is intended under PAG-01. If, however, an applicant's plan identifies how known features will be avoided for PCSM BMPs, a project site in the vicinity of such features may be eligible for PAG-01.

- B. Stormwater discharges associated with small construction activities from project sites on tax parcels that are not contiguous, with the exception of off-site support activities.

**Rationale** – This requirement seeks to establish that regulatory requirements relating to permit coverage are based on earth disturbance activities at project sites, and – for the purpose of the PAG-01 General Permit – that project sites exist on the same or contiguous tax parcels. Off-site areas that support project sites may also be covered by the same permit as the project site, although they may not be contiguous to the project site.

- C. Stormwater discharges to combined sewer systems (i.e., sewers where both sanitary waste and stormwater are conveyed).

**Rationale** – New discharges to combined sewer systems may be in conflict with the owner or operator's Long-Term Control Plan under EPA's combined sewer overflow (CSO) regulations. Discharges to municipal separate storm sewer systems (MS4s) and private storm sewers may, however, be authorized under PAG-01. There should be no increases in the rate, volume, or pollutant loads (affecting water quality) to storm sewers when the PCSM BMPs available under PAG-01 are implemented.

- D. Earth disturbances and/or stormwater discharges that would adversely affect a listed endangered or threatened species or its critical habitat. (25 Pa. Code § 102.6(a)(2))

**Rationale** – In general, DEP will not authorize new discharges to waters with Potential Impact to threatened or endangered species, unless cleared by jurisdictional agencies.

- E. Discharges of any waste streams other than stormwater associated with small construction activity and authorized non-stormwater discharges.



- F. Projects in which fill material that is determined to be regulated fill in accordance with DEP's *Management of Fill Policy* ([258-2182-773](#)) is imported to, exported from, or otherwise utilized on the project site, and utilization of the regulated fill requires a permit from DEP's Waste Management Program.

**Rationale** – Only fill material that is considered clean fill may be imported to a project site covered by PAG-01, to reduce the complexity of the General Permit.

- G. Stormwater discharges that would contain toxic or hazardous pollutants as defined in sections 307 and 311 of the Clean Water Act (33 U.S.C.A. §§ 1317 and 1321) or any other substance that – because of its quantity, concentration, or physical, chemical or infectious characteristics – may cause or contribute to an increase in mortality or morbidity in either an individual or the total population, or pose a substantial present or future hazard to human health or the environment when discharged into surface waters. (25 Pa. Code § 92a.54(a)(5))

**Rationale** – An applicant may not propose to discharge wastewater under PAG-01. In addition, an applicant may not treat stormwater with chemicals under PAG-01.

It is noted that DEP is not limiting discharges to impaired surface waters under PAG-01. DEP has evaluated the potential for small project sites to cause or contribute to surface water impairments and has concluded that the eligibility requirements to use PAG-01 significantly reduce the possibility of stormwater discharges covered by PAG-01 to cause or contribute to an impairment.

## **PART A – EFFLUENT LIMITATIONS**

The effluent limitations established in PAG-01 consist of both technology and water quality-based requirements. The technology-based requirements are largely based on federal regulations at 40 CFR § 450.22, which are incorporated by state regulations at 25 Pa. Code § 102.11(c). Where state regulations are more stringent, the requirements of Chapter 102 are used in lieu of federal requirements. For example, requirements related to temporary and permanent stabilization (25 Pa. Code § 102.22) and the development and implementation of Preparedness, Prevention and Contingency (PPC) Plans (25 Pa. Code § 102.5(l)) are more stringent and are used in place of 40 CFR § 450.22.

The PAG-01 General Permit establishes water quality-based effluent limitations through the requirement for permittees to implement E&S and PSCM BMPs in accordance with 25 Pa. Code §§ 102.4(b) and 102.8.

All discharges must comply with all applicable requirements established in accordance with 25 Pa. Code Chapters 91-96, 102, and 105 of DEP's rules and regulations. For all permittees covered under the General Permit, DEP/CCD may, upon written notice, require additional BMPs or other control measures to ensure that the water quality standards of the receiving waters are attained.

The permittee may not intentionally introduce pollutants to stormwater discharges unless otherwise authorized by DEP.

In addition, the permittee may not discharge the following, which are narrative effluent limitations used to implement specific provisions of DEP's regulations:

1. Floating solids, scum, sheen or substances that result in observed deposits in the receiving water, and foam or substances that produce an observable change in the color, taste, odor or turbidity of the receiving water. ([25 Pa. Code § 92a.41\(c\)](#))
2. Substances in concentration or amounts sufficient to be inimical or harmful to the water uses to be protected or to human, animal, plant or aquatic life. ([25 Pa. Code § 93.6\(a\)](#))

## **PART A – SELF-MONITORING, REPORTING AND RECORDKEEPING**

These requirements identify the following key elements of monitoring, reporting and recordkeeping under the General Permit that are generally required by state and federal regulations:

- Upon receipt of written notification from DEP, the permittee must perform the required stormwater monitoring. Representative sampling requirements, records retention requirements, recording of results, analytical test procedures, and quality assurance and control, as applicable. In addition, DEP may require monitoring of



stormwater discharges for Total Suspended Solids (TSS), turbidity or other pollutants when DEP suspects the discharge of pollutants from an earth disturbance activity with coverage under this General Permit.

- **Inspection and Oversight Requirements** – visual site inspections must occur throughout the duration of construction and until the Notice of Termination (NOT) has been submitted by the permittee and approved by DEP/CCD, unless the permittee completes permanent stabilization of disturbed areas prior to NOT approval. Three types of inspections are required: 1) routine inspections (at least weekly); 2) post-storm event inspections (within 24 hours of each 0.25 inch or greater storm event or the occurrence of snowmelt sufficient to cause a discharge; and 3) corrective action inspections, which must be conducted anytime the permittee observes a deficiency in implementing the E&S and PCSM Plans. Each inspection must be documented on DEP's Chapter 102 Visual Site Inspection Report or an alternative with identical information. Site inspections must be performed by personnel that are trained and experienced in E&S and PCSM and are familiar with the site plans. A rain gauge or local weather station that is representative of the project site location is required to determine when post-storm event inspections must be performed.
- **Licensed Professional Oversight of Critical Stages** – a licensed professional or a designee shall be present on-site and be responsible for oversight of critical stages of implementation of the PCSM Plan, in accordance with 25 Pa. Code § 102.8(k). Critical stages may include the installation of underground treatment or storage BMPs, structurally engineered BMPs, or other BMPs as deemed appropriate by DEP/CCD. The licensed professional or designee must document findings related to implementation of critical stages on an inspection report.
- **Signatory requirements and other reporting requirements**, including planned changes to physical facilities, unanticipated non-compliance or potential pollution reporting and other non-compliance.

## **PART B – STANDARD CONDITIONS**

In general, these requirements are used in DEP's PAG-02 General Permit and individual NPDES permits for stormwater associated with construction activities, and identify other state and federal responsibilities of permittees, including:

- Requirement for compliance with the General Permit.
- Procedures for permit modification, termination or revocation and reissuance.
- Duty to provide information to DEP/CCD.
- Proper operation and maintenance.
- Duties to mitigate to prevent discharges, sludge use or disposal.
- Penalties and liabilities for violating permit conditions or limitations, or falsifying information.
- Provisions to provide entry to DEP and EPA to the facility, have access to records, and inspect and monitor facility operations at reasonable times.
- Procedures for transferring, amending, and terminating coverage under the General Permit, and co-permittee requirements for operators.
- Clarification that property rights are not conveyed by coverage under the General Permit.
- Duty to reapply if a permittee wishes to remain covered under the General Permit.

## **PART C – SPECIAL CONDITIONS**

The following describes the special conditions in Part C of the PAG-01 General Permit:

- **Pre-Construction Meeting and Notification** – A pre-construction meeting must be held prior to commencing construction, unless waived in writing by DEP/CCD. In addition, the permittee must provide written or verbal

notification to DEP/CCD upon completing the installation or stabilization of all perimeter E&S BMPs and at least three days prior to proceeding with the bulk earth disturbance activities.

- **E&S Plans** –The E&S Plan, including construction sequencing and operation and maintenance of BMPs, must be implemented at all times. The permittee shall maintain the E&S Plan on-site during earth disturbance activities at all times and shall make the plan available for inspection by DEP/CCD upon request.
- **PCSM Plans** –The PCSM Plan, including construction sequencing and operation and maintenance of BMPs, shall be implemented at all times. The permittee shall maintain the PCSM Plan on-site during earth disturbance activities at all times and shall make the plan available for inspection by DEP/CCD upon request.

The PAG-01 identifies earth disturbance activities that are functionally equivalent to site restoration or reclamation projects under 25 Pa. Code § 102.8(n). Such activities are required to prepare and submit a PCSM Plan under 25 Pa. Code § 102.8(n) since site restoration is a PCSM BMP; however, site restoration plans do not need to include a stormwater analysis and do not need to propose use of the Concentrated Flow and/or Sheet Flow Standards, as discussed in Attachment B. The types of projects identified as meeting this standard include the following:

- Projects that will restore the area of earth disturbance to approximate original condition and runoff condition or will otherwise involve no change or a decrease in the area of pre-construction impervious surfaces.
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects.
- Slope stabilization projects not associated with a road maintenance activity.
- Slope flattening, not associated with a road maintenance activity, that changes the grade of the site, but does not significantly change the runoff characteristics.
- Spoil or borrow areas that will be covered with vegetation equivalent to a meadow in good condition or will be forested/wooded.
- Land clearing and grading for the sole purpose of creating vegetated open space such as parks and fields, excluding projects that alter hydrology from pre- to post-construction conditions.
- Athletic fields (natural grass) that do not alter hydrology from pre- to post-construction conditions.
- Demolition projects where vegetation will be established and no redevelopment is planned.
- **Long-Term Operation and Maintenance (O&M) of PCSM BMPs** – This section identifies the requirements of § 102.8(m). The permittee must, within 45 days of approval of PAG-01 coverage, record an instrument with the recorder of deeds which will assure disclosure of the PCSM BMPs and the related obligations in the ordinary course of a title search of the subject property. In addition, DEP is clarifying that the permittee must provide proof of the recording at the time a permit is transferred or, if not transferred, any time prior to submission of the NOT.
- **Clean Fill and Site Contamination** – This condition establishes that all fill material imported to the site must meet the definition of clean fill. The permittee must conduct environmental due diligence to verify that fill imported to the site is considered clean fill. If evidence of a release to fill material is discovered, the permittee must test the material to verify the material is clean fill and must complete a Certification of Clean Fill form.
- **Implementation of General Permit Requirements** – This condition establishes minimum requirements for permittees to ensure that personnel conducting earth disturbance activities are made aware of the General Permit and the procedures necessary to comply with the General Permit and to implement the approved E&S and PCSM Plans.

- **Other Requirements:**

- **Cessation of Earth Disturbance Activities** – The permittee shall cease earth disturbance activities resulting in stormwater discharges during construction upon written notification from DEP/CCD in the form of an order or inspection report, and may not resume such activities until authorized to do so by DEP/CCD.
- **Waste Management** – This condition requires compliance with pertinent state and federal laws and regulations for the handling, recycling and/or disposal of collected screenings, slurries, sludges, and other solids at a project site.
- **Non-Stormwater Discharges** – Establishes that discharges of non-stormwater are not authorized unless identified in the “Authorized Non-Stormwater Discharges” section of the General Permit, and the permittee must cease any authorized non-stormwater discharge upon receipt of written notification from DEP/CCD. Cessation of authorized non-stormwater discharges may apply when such discharges are found to contain pollutants that may affect water quality.
- **Off-Site Support Activities** – Establishes the conditions by which permittees may utilize off-site construction support activities under the General Permit: 1) the activities must be identified in the NOI and satisfy the requirements of the “Authorized Stormwater Discharges” section of the General Permit; 2) if the activities are not identified in the NOI, the permittee has notified DEP/CCD of the identification of the activities and their locations and DEP/CCD has approved a minor amendment of the permittee’s General Permit coverage; and a written E&S Plan has been implemented and maintained if the earth disturbance is greater than or equal to 5,000 square feet.
- **Off-Site Discharges** – E&S and PCSM BMPs must be installed and maintained for all off-site discharges to areas other than surface waters.
- **Corrective Action** – This condition establishes that all deficiencies in E&S or PCSM Plan implementation identified by the permittee must be documented on Site Inspection Reports along with the corrective action that will be taken. In addition, the permittee must implement corrective action immediately upon becoming aware of any deficiency that results in an incident causing or threatening pollution to waters of the Commonwealth, and shall notify DEP in accordance with the immediate reporting provisions of the General Permit. For all other deficiencies, the permittee must implement corrective action as soon as possible but no later than seven days following identification of the deficiency, unless otherwise approved or required by DEP/CCD.
- **Archaeological Specimens** – This condition establishes that the permittee and its agents must visually inspect for archaeological specimens, as the term is defined in the Pennsylvania State History Code (37 Pa. C.S.A., Section 101 et seq.), during earth disturbance activities, and must immediately cease earth disturbance activities upon discovery of archaeological specimens.
- **Threatened and Endangered (T&E) Species Protection** – This condition requires compliance with an approved Habitat Conservation Plan, if applicable; implementation of avoidance or mitigation measures or other measures determined necessary by jurisdictional agencies in a clearance letter to protect T&E species; and requires ongoing compliance throughout construction with federal and state laws for protecting T&E species.
- **Wetland Protection** – The permittee must conduct a wetland determination if hydric soils are present on a project site, and submit with the determination with the NOI, identify wetlands on plans, and take necessary precautions during construction to protect wetlands.
- **Infiltration BMPs** – The permittee must protect infiltration areas from soil compaction and, if these areas are compromised during construction, the permittee must conduct soil testing to assure design infiltration properties are maintained or restored.

## ATTACHMENT A

### DIFFERENCES BETWEEN PAG-01 AND PAG-02

The following table illustrates the differences between the PAG-01 General Permit and the reissued PAG-02 General Permit in terms of the criteria and process to obtain and maintain coverage.

Difference	PAG-01	PAG-02
Scope	Eligible earth disturbance activities with earth disturbance less than 5 acres.	Eligible earth disturbance activities with earth disturbance greater than or equal to one acre with no maximum threshold.
NOI Submission Deadline Prior to Planned Construction	30 or 60 calendar days depending on the presence of county plans and municipal ordinances and certification of the project's consistency with the local plans and ordinances.	60 calendar days.
Certified Mail	PAG-01 NOIs must be submitted by certified mail or other means that document the date received by DEP/CCD.	No certified mail submission requirement for NOIs.
PNDI Clearances	If PNDI receipt indicates Potential Impact or Avoidance Measures that are not agreed to, applicant must submit clearance letters at the time of NOI submission.	PNDI clearance letters may be submitted after NOI submission; DEP/CCD will not approve coverage until letters are received.
Pre-Application Meeting	Required unless waived by DEP/CCD in writing.	Encouraged but not required.
Sinkholes / Closed Depressions	May not be used when PCSM BMPs will be within an area of known sinkholes or closed depressions.	No specific prohibitions on sinkholes or closed depressions although proposals for PCSM BMPs in these areas may prompt further technical review.
Contaminated Soils	If <u>residential</u> MSCs in Chapter 250 are exceeded, soils may not be disturbed under PAG-01.	Soils with concentrations exceeding residential and non-residential MSCs in Chapter 250 at residential and non-residential construction sites, respectively, may not be disturbed unless a site-specific standard has been met or evidence is provided of naturally occurring contamination.
PCSM Plan	E&S Module 1 and PCSM Plan Drawing(s), which include locations of PCSM BMPs, satisfy PCSM Plan requirements under 25 Pa. Code § 102.8.	PCSM Module 2, PCSM Plan Drawing(s) and supporting calculations (or spreadsheet) satisfy PCSM Plan.

Difference	PAG-01	PAG-02
PCSM Stormwater Analysis	None.	Volume reduction and peak rate calculations must be submitted, except for site restoration projects. DEP PCSM Spreadsheet may be used. Water quality analysis is required and DEP PCSM Spreadsheet – Quality Worksheet must be submitted, except for site restoration projects.
PCSM BMPs	The Concentrated Flow and/or Sheet Flow Standards must be met through prescribed PCSM BMPs (unless the project qualifies for site restoration) and alternative BMPs are not allowed.	There are no prescribed PCSM BMPs except that non-discharge alternatives or ABACT BMPs must be utilized for discharges to sediment or nutrient-impaired waters, and alternative BMPs may be used when approved by DEP/CCD.
E&S Supporting Calculations	Supporting calculations must be completed but do not need to be submitted.	Standard Worksheets from the E&S Manual or other supporting calculations must be submitted.
E&S Plan Drawings	Site-specific E&S Plan Drawings must be developed, submitted and approved but E&S BMP design details do not need to be included if standard figures or details from the E&S Manual are used.	Site-specific E&S Plan Drawings must be developed, submitted and approved.
Discharges to Impaired Waters	No special requirements for discharges to impaired waters.	Non-discharge alternatives or ABACT E&S and PCSM BMPs must be used when waters are impaired for siltation, suspended solids, turbidity, water/flow variability, flow alterations/modifications, or nutrients. If there is a TMDL with WLA(s) for the discharge, plans and calculations must demonstrate how WLA(s) will be met.

## ATTACHMENT B

### BASIS FOR PCSM BMPs REQUIRED BY PAG-01

#### Overview

DEP, in consultation with its technical contractor, has developed a technical approach for PAG-01 that addresses the stormwater analysis requirements of 25 Pa. Code § 102.8(g) and satisfies certain components of a PCSM Plan for all applicants through standardized PCSM BMPs. Please refer to the PCSM BMPs section of the NOI Instructions (3800-PM-BCW0404a) for the requirements associated with the Concentrated Flow Standard (to manage stormwater from roofs and other concentrated flows) and the Sheet Flow Standard (to manage stormwater from sheet flow).

The general approach to these Standards is to use the characteristics of vegetated flow paths to reduce the increased stormwater runoff and improve water quality from small areas of development to avoid impacts to the overall health of the receiving waters and watershed. Some states provide flexibility for low density development with respect to post-construction stormwater management. For example, North Carolina allows developers in certain areas to avoid traditional structural PCSM BMPs and use Low Impact Development approaches when the “built-upon areas” (impervious surfaces) do not exceed 12%. This percentage of impervious is generally consistent with thresholds of imperviousness in a watershed found by many studies to affect the health of surface waters.

DEP has therefore selected a maximum of 12% imperviousness on a project site as an eligibility criterion for PAG-01. Any impact that could result from 12% imperviousness will be mitigated by:

- Requiring that all flows off impervious surfaces are well distributed across vegetated areas as sheet flow and shallow concentrated flow; and
- Requiring PCSM BMPs that have been demonstrated to manage or eliminate the net change in volume, water quality, and rate up to the regulatory design storms identified at 25 Pa. Code §§ 102.8(g)(2) and (3).

DEP has also selected a maximum impervious area of 30,000 sf as the upper practical limit on impervious disconnection practices (i.e., a maximum of 2,000 sf per rooftop disconnection, providing up to 15 disconnections, or a maximum of 1,000 sf per roadway disconnection, providing up to 30 disconnections).

Vegetated filter strips were selected as the fundamental PCSM BMP for PAG-01 due to DEP’s desire to simplify the stormwater analysis using vegetated, low maintenance and resilient BMPs to maximize infiltration, evapotranspiration, and water quality treatment due to the ease of integration into the natural landscape. The composition of vegetation, the sequence of construction, and the maintenance of vegetated filter strips should be in accordance with the BMP Manual, as amended. However, the size and slope of filter strips must be in accordance with the Concentrated Flow and Sheet Flow Standards as specified in the NOI Instructions (3800-PM-BCW0404a) and General Permit. DEP’s technical contractor ran numerous stormwater modeling simulations to determine appropriate size and slope to manage or eliminate the net change in volume and peak rate based on contributing impervious area. The modeling also assumed that soils in the vegetated filter area will be consistent with HSG B soils (or better); where HSG C or D soils predominate, the soils may be amended using sand to a depth of 8 inches (C) or 20 inches (D) to meet HSG A/B infiltrative soil properties under the guidance of a soils professional. The upper threshold of infiltration for HSG B soils was assumed in the modeling to take into account a certain degree of compaction during construction activities. If soils will be amended, the use of a professional soils scientist will be necessary in lieu of infiltration testing to determine the adequacy of the amendments due to the lack of published methods to verify in-situ infiltration on amended soils.

Where runoff will be concentrated, the flows must be dispersed as sheet flow across the width of the vegetated filter strip through a level spreader. For roadways or parking lots with sheet flow, a 12-inch gravel verge or diaphragm is needed at the edge of pavement to maintain dispersed flow. For roofs, the applicant may elect to install a dry well consistent with the BMP Manual, as amended, prior to the level spreader and vegetated filter strip to increase the area of impervious surface that can be treated by a vegetated filter strip. A maximum of 100 cubic feet of volume reduction may be applied to dry wells, providing a credit in the range of 300 – 500 sf toward impervious reduction, depending on the 2-year/24-hour storm event depth for the project site location. The credit is calculated through a formula provided in the PAG-01 NOI Instructions and General Permit. In addition, all downspouts connected to the dry well must have leaf filter guards that prevent leaves and other large debris from entering the dry well. Overflows from dry wells must be to a level spreader to be dispersed to a vegetated filter strip.

Following the vegetated filter strip, an additional BMP is necessary to manage the net change in volume and peak rates under Chapter 102. For impervious areas up to 1,000 sf, if sufficient land area (500 – 800 feet, depending on the area of impervious disconnection) is available between the end of the vegetated filter strip and the property boundary or closest surface water or conveyance to a surface water (e.g., storm sewer, channel, swale, etc.), this land area, if vegetated and sloped at less than or equal to 5%, may serve as the additional BMP. Note that this vegetated area for overland flow is considered a PCSM BMP that must be recorded in the instrument with the Recorder of Deeds. If sufficient land area does not exist, a berm may be constructed along the downstream width of the vegetated filter strip at a height that is at least 2% of the filter strip length (up to 6 inches) to slow runoff. For areas of impervious up to 2,000 sf, a berm is insufficient to manage the net change in volume and peak rates. For these large areas of impervious, a rain garden that is sized at least 12.5% of the contributing impervious area must be constructed following the filter strip. The rain garden should be designed consistent with the BMP Manual, as amended. The rain garden is a PCSM BMP that must be recorded in the instrument with the Recorder of Deeds.

### Stormwater Analysis

The following is an example of the modeling simulations conducted to determine appropriate sizing of the PCSM BMPs and ensure the net change in volume and peak rates will be managed. Additional information on the stormwater analysis for PAG-01 may be obtained by contacting DEP's Bureau of Clean Water. EPA's Storm Water Management Model (SWMM) was selected for this analysis in part because it provides for the routing of runoff to pervious surfaces. NOAA-14 rainfall depths and distributions were used to provide simulation of the 2-, 10-, 50-, and 100-year/24-hour storm events. In addition, a 1.5-inch/2-hour storm was simulated to evaluate the "first flush" of pollutants. It is well documented that the first 1 – 1.5 inches of precipitation results in the highest pollutant loads in stormwater runoff, and one objective of the analysis conducted for PAG-01 development was to maximize treatment of pollutants.

The model was run on its default parameters unless stated otherwise (visit [www.epa.gov/water-research/storm-water-management-model-swmm](http://www.epa.gov/water-research/storm-water-management-model-swmm) for additional information on this model). The Green and Ampt equation was used to model infiltration with the following parameters for pervious area: suction head of 3.5 in, saturated hydraulic conductivity of 0.57 inches per hour, and initial moisture deficit of 0.25. The saturated hydraulic conductivity of 0.57 inches per hour is the lowest saturated hydraulic conductivity rate associated with a HSG B soil. The Manning's equation's roughness coefficient, or n-value, for pervious areas was modeled as 0.1 to conservatively represent short grass. The impervious area was modeled without depression storage for a 1.5-inch/2-hour storm event such that all rainfall is converted to runoff.

Three impervious surface area scenarios (A:  $\leq 500$  sf, B:  $> 500$  sf and  $\leq 1,000$  sf, and C:  $> 1,000$  sf and  $\leq 2,000$  sf) were considered and modeled as strips from the impervious cover to the pervious area. The impervious area was modeled as a strip with a width equal to the level spreader (or gravel verge) and a length that provided an area equal to 500 sf, 1000 sf, and 2000 sf for A, B, and C scenarios, respectively (see **Figure 1**).

Scenario A has two sub-scenarios for the treatment of  $\leq 500$  sf of impervious area:

- A.1) a vegetated filter strip with 2% slope (sized:  $L = A_{imp} * 0.05$ ,  $W = L * 0.5$  or span of roadway, where  $A_{imp}$  is impervious area) followed by a 500-ft length of overland vegetated path; and
- A.2) a vegetated filter strip (sized the same as A.1) followed by a 6-inch berm.

Scenario B has three sub-scenarios for the treatment of  $> 500$  sf and  $\leq 1,000$  sf of impervious area:

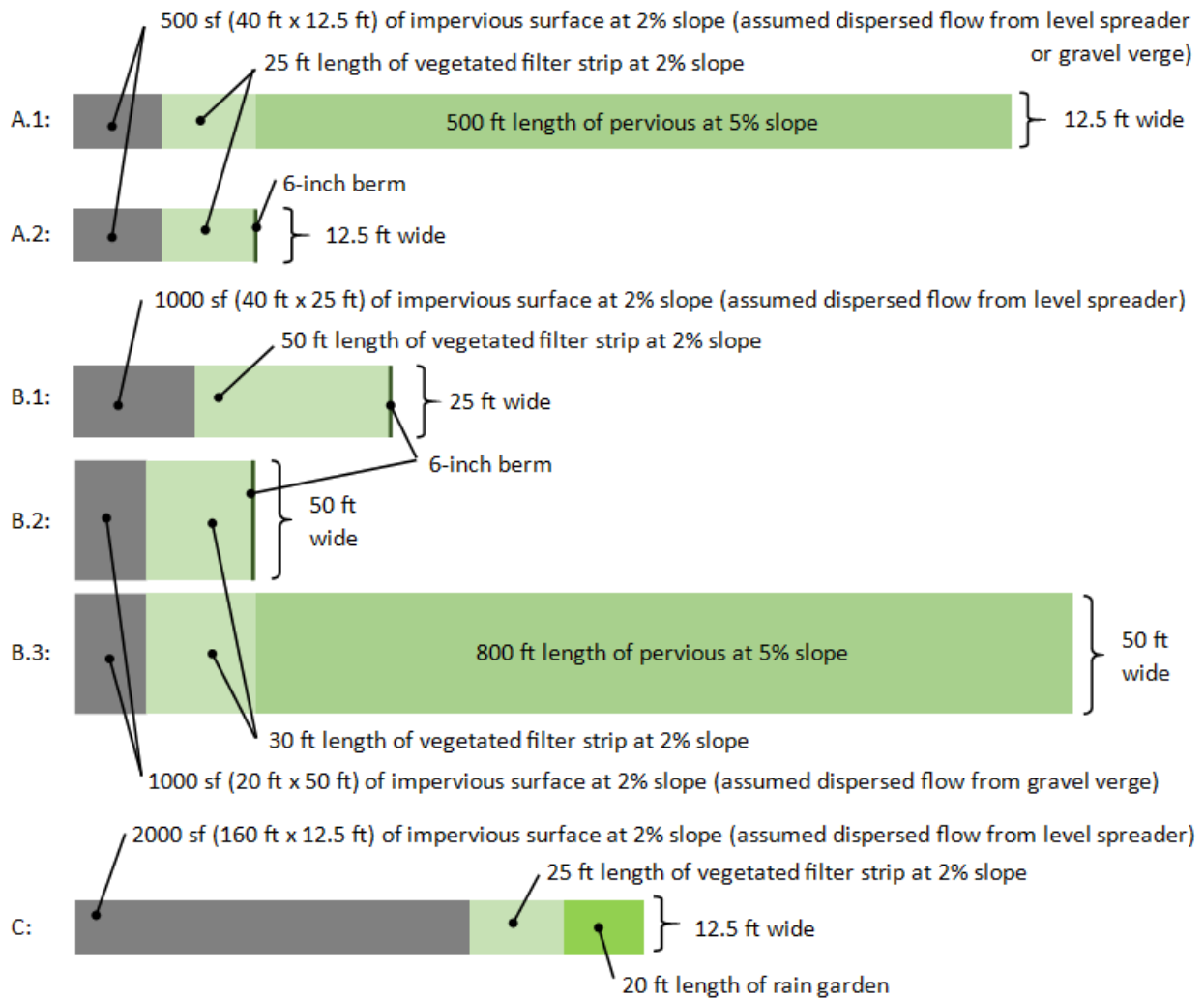
- B.1) a vegetated filter strip (sized:  $L = A_{imp} * 0.05$ ,  $W = L * 0.5$ ) followed by a 6-inch berm;
- B.2) a 30-ft length vegetated filter strip with 2% slope with a width equal to the span of roadway followed by a 6-inch berm; and
- B.3) a 30-ft length vegetated filter strip with 2% slope with a width equal to the span of roadway followed by a 800-ft length of overland vegetated path.

Scenario C, involving the treatment of  $> 1,000$  sf and  $\leq 2,000$  sf of impervious area, consists of a vegetated filter strip with 2% slope (sized:  $L = A_{rg} * 0.1$ ,  $W = L * 0.5$  where  $A_{rg}$  is rain garden area) followed by a rain garden (sized:  $A_{rg} = A_{imp} * 0.125$  where  $A_{imp}$  is impervious area) with a 10-inch ponding depth.

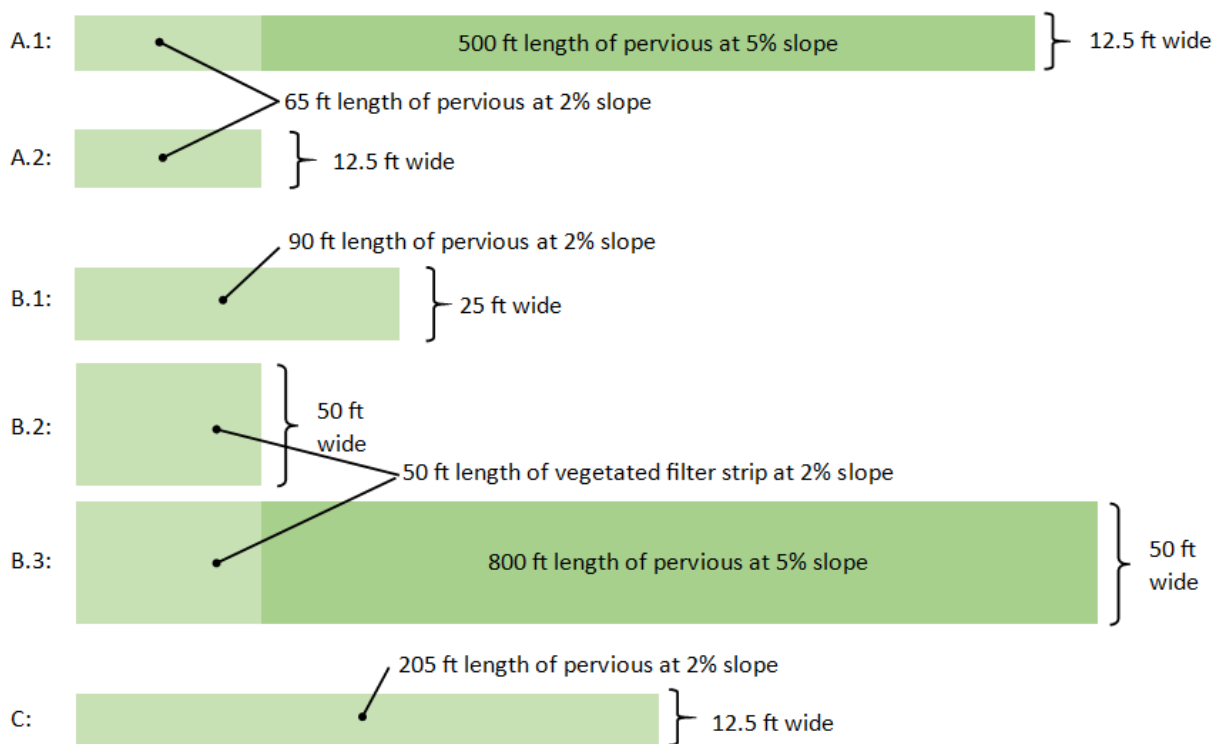


All scenarios were compared to pre-construction conditions. Pre-construction conditions were modeled with pervious area for the combined area of impervious cover, vegetated filter strip, and rain garden (only applicable to Scenario C) (see **Figure 2**). All other parameters used for pre-construction conditions were the same as post-construction conditions.

**Figure 1: Post-Construction Scenarios**



**Figure 2: Pre-Construction Conditions**



**Table 1** below summarizes the differences in volume (and corresponding water quality) between the pre- and post-construction conditions for the 2-year/24-hour storm event, and **Table 2** presents these differences in terms of peak rates for the 2-, 10-, 50- and 100-year/24-hour storm events, for the scenarios identified in Figures 1 and 2. The results from 2-year/24-hour storm event illustrate minor increases of 5% and 0.3% in volume in the post-construction condition compared to the pre-construction condition for scenarios A.1 and B.3, respectively. All other scenarios experienced some volume reduction for the 2-year/24-hour storm event. Peak rates for the 2-year/24-hour storm event increased negligibly for scenario B.3 and decreased or remained the same for all other scenarios. Increases to peak flows of 6% were determined for the 100-year/24-hour storm for scenarios B.2 and B.3, but only represent an increase of 0.01 cfs, which is not considered significant.

The minor increases determined by this modeling are generally within the expected rate of error and may be also affected by rounding. Through this effort DEP believes that the Concentrated Flow and Sheet Flow Standards that must be used for impervious surfaces under PAG-01 if site restoration is not selected are technically sound and will result in the management of net changes to volume, rate and water quality at design storm events.

As illustrated in Table 1, there are multiple post-construction scenarios in which surface runoff volume will decrease in comparison to pre-construction conditions. This volume (i.e., the net change) is generally expected to reach surface waters through lateral interflow in the soil instead of overland flow and is not expected to result in the diminution of water resources.

**Table 1: Comparison of Pre- and Post-Construction Conditions for Volume**

Scenario	2-Year/24-Hour Storm Event Runoff Volume (cf)		
	Pre-Construction	Post-Construction	Difference
A.1 ( $\leq 500$ sf impervious)	504	531	5%
A.2 ( $\leq 500$ sf impervious)	63	54	-14%
B.1 ( $> 500$ and $\leq 1,000$ sf impervious)	189	108	-43%
B.2 ( $> 500$ and $\leq 1,000$ sf impervious)	225	153	-32%
B.3 ( $> 500$ and $\leq 1,000$ sf impervious)	2709	2718	0.3%
C ( $\leq 2,000$ sf impervious)	189	126	-33%

**Table 2: Comparison of Pre- and Post-Construction Conditions for Peak Rates**

Scenario	Storm Event			
	2-Year/24-Hour Difference	10-Year/24-Hour Difference	50-Year/24-Hour Difference	100-Year/24-Hour Difference
A.1 ( $\leq 500$ sf impervious)	0%	1%	0.4%	0%
A.2 ( $\leq 500$ sf impervious)	0%	3%	0%	0%
B.1 ( $> 500$ and $\leq 1,000$ sf impervious)	-43%	0%	0%	0%
B.2 ( $> 500$ and $\leq 1,000$ sf impervious)	-14%	-9%	0%	6%
B.3 ( $> 500$ and $\leq 1,000$ sf impervious)	1%	0%	0%	6%
C ( $\leq 2,000$ sf impervious)	-43%	1%	0.4%	0%