



Storm Water Sediment Control Questions and Answers

Sediment Settling Ponds

The NPDES construction general permit (CGP) requires effective control measures be designed, installed, and maintained to minimize the discharge of sediment throughout the course of earth disturbing activity. These control measures may include sediment settling ponds as detailed in Part III.G.2.d of the CGP. Following are answers to common questions regarding sediment settling ponds.

Is a sediment settling pond required to be installed on all construction activities disturbing one or more acres?

No, but most activities covered under the CGP will need at least one sediment settling pond (i.e. sediment basin or sediment trap). Part III.G.2.d.ii of the CGP outlines the specific conditions that require a settling pond for sediment control, including storm water runoff discharging from storm sewers or ditches commonly installed with construction activities.

The permit also requires sediment ponds where drainage areas exceed the capacity of either sediment barriers or inlet protection. Both sediment barriers and inlet protection have limited capacity to handle large volumes of run off and concentrated flow. Sediment barriers are limited to landscapes that produce runoff as sheet flow. Surface runoff from drainage areas exceeding those given in Table 3 of the CGP can concentrate into erosive rills or gullies (USDA) and is best controlled with a sediment pond, often a sediment trap. Although less common, where the area draining to an individual storm inlet (i.e. curb-opening or catch basin) exceeds one acre, a sediment trap should be used at that inlet. A sediment pond, however, does not eliminate the need for sediment barriers or inlet protection. Strategically placing these and other controls including soil stabilization, check dams, etc. in conjunction with a sediment pond at the outlet can maximize pollutant removal.

Is a skimmer required on a sediment settling pond?

The answer depends if the proposed sediment pond is a sediment basin or sediment trap. In accordance with the non-numeric effluent limits in Part II of the CGP, a sediment basin must withdraw water from the surface where feasible (Ohio EPA believes the circumstances where it is not feasible to install a skimmer on a sediment basin are rare – consult with your district storm water staff prior to proposing an alternative outlet). This is typically achieved by affixing a “skimmer” or equivalent type of dewatering device to the outlet of the sediment basin.

A sediment trap utilizes a section of graded stone fill as an outlet rather than a skimmer device and is less effective at capturing suspended sediment (U.S. EPA). The stone section provides extended settling time during less frequent, larger storm events due to the limited control of discharge through the outlet.

Does the size or type of skimmer matter?

Any type, model, or brand of skimmer device may be used; however, the skimmer usually includes a flow-limiting orifice which must be properly sized to meet the minimum 48-hour drawdown of the required dewatering volume. Sizing guidance is provided in *Rainwater & Land Development*. Proprietary skimmers sized according to the manufacturer’s recommendations should be checked against the CGP requirements.

Can a sediment trap be used as a sediment pond?

Yes, under the proper conditions. *Rainwater and Land Development* specifies a sediment trap is a **temporary** structure limited to areas draining **less than five acres** and removed once the drainage area is at final grade and permanently stabilized.

A sediment trap typically receives and discharges flow at the surface and should not be used where a typical riser or drop outlet is installed, to which a skimmer could be affixed, and where the pond will remain as a post-construction control. They are commonly used to address short-term conditions due to initial topography or interim grading prior to the installation of the permanent storm water collection system; particular locations along a sediment barrier where runoff tends to concentrate; as well as sites planning to install infiltration, bioretention, or underground post-construction practices.

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When should the sediment pond be built?

The CGP specifies sediment ponds must be in place and functional prior to grading and within seven days from the start of grubbing, which is typically the first earth disturbing activity. Construction of sediment settling ponds should not be delayed solely to coordinate grading cuts and fills unless an interim basin or trap is installed. A sediment basin is functional when the skimmer dewatering device is in place and runoff is directed to the basin. Immediately stabilize the banks and area surrounding a sediment trap or basin.

When can a sediment pond be converted into the permanent post-construction storm water control?

A sediment pond must be functional throughout the course of earth disturbing activity and until the upslope area is stabilized with permanent cover. Conversion to a post-construction control, typically an extended detention pond, should be the last step in the construction schedule and so indicated in the Storm Water Pollution Prevention Plan. If extended gaps in the construction schedule occur, consult with the local MS4 or Ohio EPA on the best course of action.

To meet the approved post-construction plan, the sediment basin should be carefully dewatered so all accumulated sediment can be removed and any erosion damage repaired. Temporary outlet modifications, including the skimmer or baffle walls, must be removed and the design water quality control outlet (i.e. orifice) installed. Additional work may be necessary such as installing a forebay and micropool. Prior to conversion, some MS4 communities may require storm sewer flushing, street sweeping, inspections, or an as-built survey be completed.

What if a bioretention or infiltration post-construction practice is planned?

Avoid using a bioretention facility or infiltration practice site as a sediment trap or basin. Sediment-laden runoff from actively eroding sites will cause premature failure of the practice that may be costly, if not impossible to repair. If it must be used to capture construction site sediments, excavation should leave the sediment pond bottom at least 12 inches higher than the planned infiltration or bioretention practice's bottom elevation to protect the infiltration capacity of the underlying soils. Bioretention filter media, underdrain and other components should not be installed as sediment barriers or geotextile fabric covers may not sufficiently protect the filter media from fine sediment. After the drainage area is stabilized, an infiltration practice may be excavated down to the final elevation, removing the sediment-clogged soil.

What if an underground post-construction storm water system is planned?

It is unlikely that a proper outlet and sediment storage zone can be properly installed and operate within an underground detention system. Furthermore, the ability to fully extract deposited construction sediment, especially from gravel void storage or any geotextile fabrics, prior to conversion to a post-construction control is not practical. The open excavation for an underground facility could temporarily serve as a sediment pond and the permanent detention infrastructure installed after permanent stabilization is achieved. Where this is not possible, a temporary sediment trap is likely needed at each surface inlet to the underground detention facility (see *Rainwater and Land Development*, Chapter 6, Page 38). Inlet protection should be in place throughout the later stages of construction when base courses and other soil stabilization measures are in place.

References

USDA. 2010. Chapter 10 Time of Concentration. In National Engineering Handbook, Part 630 Hydrology. 210-VI-NEH. Washington, D.C.

U.S. EPA. 1993. Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters. 840-B-92-002. Washington, DC.

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