

Submerged Gravel Wetland Construction Checklist

This checklist has been developed for BMPs designed in accordance with the Delaware Sediment and Stormwater Program's Post Construction Stormwater BMP Standards and Specifications. Submit interim versions of this construction checklist to the approval agency weekly with the Certified Construction Reviewer report. Submit the final completed checklist with the PCVD.

PROJECT INFORMATION

Project Name/BMP Name: _____

Project Approval Number: _____ NOI number: _____

Location: _____

Contractor: _____

Construction Reviewer: _____

Supervising P.E.: _____

For each checklist item, enter in the blank the date (MM/DD/YY) the item is completed and verified by the construction reviewer. If an item is not applicable, enter "N/A" in the blank for that checklist item.

I. Pre-Construction

A. _____ Submerged gravel wetland field meeting with responsible person and person completing construction checklist.

B. _____ Submerged gravel wetland location staked out.

C. _____ Equipment on the site large enough to excavate submerged gravel wetland from the sides of the facility.

D. _____ Pervious areas draining to the submerged gravel wetland stabilized in accordance with the approved plans.

E. _____ Pipe and appurtenances on-site and dimensions and properties checked and confirmed to be in accordance with the approved plan.

i. _____ Discharge pipe

ii. _____ Overflow/outlet control structure

iii. _____ Inspection port(s)/cleanouts(s) *if applicable*

iv. _____ Underdrain pipe

v. _____ Other; list: _____

F. _____ Materials on-site and dimensions and properties checked and confirmed to be in accordance with the approved plan. ***Submit materials invoice or delivery tickets to approval agency as part of PCVD for the following items:***

Effective March 2023

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- i. _____ Gravel substrate, clean, washed gravel (max dia. 2.5", min dia. 0.5", max 2.0% passing #200 sieve)
- ii. _____ Clean, washed gravel (nominal 0.25" max 2.0% passing #200 sieve)
- iii. _____ Wetland soil (15% min. organic material, 15% max. clay content)
- iv. _____ Impermeable liner thirty mil (minimum) PVC Geomembrane *if applicable*
- vi. _____ Clay pond liner, 6 inch thick *if applicable*
- vii. _____ Other; list: _____

II. Excavation and Grading

- A. _____ Submerged gravel wetland excavated to dimensions and at location as per the approved plan.
- B. _____ Submerged gravel wetland excavated to design bottom elevation.
- C. _____ Sides of submerged gravel wetland below gravel substrate surface excavated vertically.
- D. _____ Side slopes above gravel substrate surface excavated no steeper than 3:1.
- E. _____ Impermeable liner placed as specified on the approved plan.
- F. _____ Pretreatment and energy dissipation provided at submerged gravel wetland inlets as specified on the approved plan.
- G. _____ Forebay provided at submerged gravel wetland major inlets as specified on the approved plan. Pretreatment types constructed:
 - i. _____ Forebay excavated to dimensions and at location as per the approved plan.
 - ii. _____ Forebay excavated to design bottom elevation.

III. Structural Components

- A. _____ Discharge pipe installed from overflow/outlet control structure to discharge point.
- B. _____ Rock outlet protection provided at all points of discharge and riprap stone size and dimension confirmed.
- C. _____ Overflow/outlet control structure installed at elevations as specified on the approved plan.
- D. _____ Inspection port(s) installed.

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- E. _____ Gravel substrate (clean gravel) placed with the depth of stone in accordance with the approved plan.
- F. _____ Gravel (nominal 0.25") placed with the depth of stone in accordance with the approved plan.
- G. _____ Wetland soil placed with the depth of stone in accordance with the approved plan.
- H. _____ Underdrain piping laid flat or with positive slope toward outlet.
- I. _____ Discharge elevation of underdrain 4" below wetland surface.
- J. _____ Placement of minimum 3" of stone under the underdrain piping.
- K. _____ Constructed so there is 15' separation between inflow and underdrain outlets.
- L. _____ Photo documentation of construction of structural components taken. **Submit photo documentation to approval agency as part of PCVD.** (Photo #: _____)

IV. Vegetative Stabilization

- A. _____ Vegetated side slope areas have completed the following items. **Submit soil test report, lime, fertilizer, and seed tickets to approval agency as part of PCVD.**
 - i. _____ Soil testing.
 - ii. _____ Side slopes scarified to a minimum depth of 3 inches prior to placing topsoil
 - iii. _____ Application of topsoil to a minimum depth of 4 inches.
 - iv. _____ Application of soil amendments including lime and fertilizer in accordance with the recommendations of the soil test or the approved plan.
 - v. _____ Application of seed to the soil surface using approved methods.
 - vi. _____ Mulch applied in accordance with the approved plan.
- B. _____ Application of soil stabilization matting used on side slopes in accordance with approved plan.
- C. _____ Turf cover established on side slopes if called for on the approved plan.
- D. _____ Areas to be vegetated inside of the submerged gravel wetland surface have been completed in accordance with the approved plans. **Submit planting tags from a certified wetland nursery to approval agency as part of PCVD.**

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E. _____ Photo documentation of landscaping components taken. ***Submit photo documentation to approval agency as part of PCVD.*** (Photo #: _____)

V. Erosion and Sediment Control

A. _____ Sediment prevented from entering submerged gravel wetland by keeping it off-line or using perimeter controls as specified on the approved plan.

B. _____ Drainage area and side slopes stabilized in accordance with the approved plan.

C. _____ Sediment controls removed once drainage area meets final stabilization standard

VI. Maintenance Access

A. _____ Maintenance access to the perimeter of the submerged gravel wetland and forebay (including outlet structure) has minimum width of 15 feet.

B. _____ Profile grade of maintenance access does not exceed 10H:1V.

C. _____ Minimum 10H:1V cross slope on maintenance access.

D. _____ Maintenance set-aside area located and dimensioned per approved plans

E. _____ Depth of set-aside area does not exceed 1 foot.

F. _____ Slope of set aside area does not exceed 5%

VII. Post Construction Verification

Owner shall submit post construction verification documents to demonstrate that the submerged gravel wetland practice has been constructed within allowable tolerances in accordance with the Approved Sediment and Stormwater Management Plan and accepted by the approving agency.

A. _____ Constructed top bank elevation at or above design elevation confirmed after ESC controls are removed.

B. _____ Constructed submerged gravel wetland surface area confirmed equal to or greater than 90% of the design surface area once ESC controls are removed.

C. _____ Constructed volume of the submerged gravel wetland storage confirmed equal to or greater than 90% of the of the design.

D. _____ Constructed elevation of all structures confirmed to be within 0.15 foot of the design elevation for:

i. _____ Discharge pipe

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- ii. _____ Overflow/outlet control structure
- iii. _____ Inspection port(s)/cleanouts(s) *if applicable*
- iv. _____ Underdrain pipe
- v. _____ Other; list: _____

VIII. BMP Acceptance

- A. _____ Final BMP construction review complete.
- B. _____ All BMP punch list items addressed.
- C. _____ Submerged gravel wetland is online (stabilized drainage area is entering submerged gravel wetland).
- D. _____ As-built survey.
- E. _____ PCVD submitted to approval agency for review and approval. Submit the following pieces of PCVD documentation to the approval agency:

- Materials invoice or delivery tickets
- Photo documentation
- Soil test report
- Lime, fertilizer, and seed tickets
- As-built survey
- Final, completed BMP Construction Checklist