

**GREENVILLE COUNTY, SC
STORMWATER MANAGEMENT/SEDIMENT CONTROL CHECKLIST**

Please note that if we do not have or receive the correct information and/or support documentation, we cannot process your project submittal and you will be notified via email to re-submit for review.

Project Overview

1. GENERAL DOCUMENTS

Plan Submittals must include the following files **(All fees must be paid prior to acceptance of submittal)**

1. SCDHEC NOI Application – **must be combined and uploaded with the county application (PDF)**
2. Greenville County Application completed in its entirety - **must be combined and uploaded with the DHEC NOI (PDF)**
3. Stormwater Management / Sediment Control Checklist (PDF)
4. Primary Permittee Acknowledgement (PDF)
5. Transmittal Letter (PDF)
6. Road Review Checklist (if Combo Review) (PDF)
7. Remediation Certification Form (PDF)
8. Registered Engineer's Seal & Engineering Firm's Certificate of Authorization (On Plans and Report)
9. SWPPP / Stormwater Report (8.5x11 format) (PDF)
 - a) Table of Contents
 - b) Narrative
 - c) TMDL / 303d Impaired Waterbodies
 - d) Soils Report including maps
 - e) FEMA Map
 - f) Photography of site
 - g) 360 Pre and Post Development Maps **(Individual PDF's to be including in the report)**
 - h) All other maps in format other than 8.5x11 (PDF) (Explain)
 - i) Commercial Traffic Study (If required)
 - j) Calculations to support 80% trapping efficiency during construction (SEDCAD, Design Aids) (Provide PDF and software data files)
 - k) Calculations for peak rate analysis (Hydraflow, SEDCAD, etc.) (Provide PDF and software data files)
 - l) IDEAL Calculations to show how site will meet 85% of Total Suspended Solids (TSS) and Total Phosphorus in the Reedy River Watershed based on annual loading (IDEAL) (Detailed report and software data files must be included)
 - m) Manufacturers Information on MTD's, LID's, Underground Detention or other specialty BMP's. (PDF)
 - n) Calculations for all conveyance measures and stable channels (Provide PDF and software data files)
 - o) Calculations for all dissipater's and outlet protection (Provide PDF and software data files)

NOTE: All software data files (I.E.: Hydrology, Sedimentology and Post Construction Water Quality) must be uploaded to the designated folder provided on the permit portal.
10. **Construction Plans (PDF Portfolio Format)** *ALL Site Plan Sheets, Landscape, or Tree Protection Plan Sheets, require a one inch blank space (with a border) at the top of EACH plan sheet. Remember to also include the Approved FDP plan (if applicable) at the end of the construction plan set. Plans containing digital security or layers will need to be flattened through Bluebeam or Adobe prior to uploading to the permit portal. PDF's that are saved as PDF/A, PDF/X, or PDF/E are not accepted.*
11. **360 watershed maps for Pre & Post development, separate upload from report (See page 3 for details)**

Closeout Package Must Contain

 1. Certifications (PDF)
 2. As-Builts (PDF)
 3. Close Out Documentation (PDF)

2. PROJECT NARRATIVE

- Scope of project outlined, including a brief description of pre- and post-development conditions.
- Narrate how the key elements of the County Ordinance will be addressed and with what feature:
 - Peak Rate
 - Sedimentology – if disturbing more than 5 acres, narrate phases and transition of phases
 - Post Construction Water Quality
- Include a summary table of pre- and post-development flows (at least 2-year, 10-year, 25-year and 100-year 24-hour storm events)
- If internal drainage system designed for the 10-yr storm, narrate how stormwater up to the 100-yr storm will be conveyed to the stormwater feature.
- Narrate downstream impact.

- Narrate TMDL/303d information.
- Include Stormwater Facility Ownership and Maintenance Information, including maintenance requirements for each feature
- Existing flooding problems in the surrounding area described.
- If outside agency permits are required (SCDHEC, ACOE, etc.), narrate scope of permit with respect to the project
- If LID methods used, outline method used, identify the LID method and its benefits and impacts
- Include disturbed area calculations included for subdivision projects or LCP disturbing 1 or more acres in the narrative and on the plans

For subdivisions - If the site is not to be mass-graded, the following formula should be used to determine the amount of disturbance:

- Amount of Disturbance = 2[Max Restricted Building Size][Number of Lots] + Right of Way (ROW) areas {ROW areas include clearing for roads, utilities, easements etc.}
- If this equation is used, include a note on the plans stating: "The site is not to be mass-graded. Only 2 times the footprint is to be cleared as the lots are developed. The assumed disturbance on each lot is _____ sq. ft."

NOTE: If lots are septic tank lots, please include an additional 9400 sq ft per lot for disturbance.

3. TMDL/303d IMPAIRED WATERBODIES

- List the nearest S.C.DHEC Water Quality Monitoring Station (WQMS) that the site's stormwater discharges drain to and the waterbody on which it is located (_____), and provide 303d map of site area.
- Qualitative and quantitative assessment (described in Section 3.4C of SCR100000), if nearest WQMS listed on the most current 303(d) List of Impaired Waters **and** if site's stormwater construction discharges contain the pollutant of impairment **and** if site disturbs 25 or more acres.
- Evaluation of selected BMPs if nearest WQMS listed on the most current 303(d) List of Impaired Waters **and** if site's stormwater construction discharges contain the pollutant of impairment **and** if site disturbs less than 25 acres
- For Impaired Waters discharge compliance (for sites disturbing 25 or more acres), the IDEAL model used to calculate the annual loading for the pollutant of concern for pre-developed conditions as a baseline **and** for developed conditions (with no increase)
- If Approved TMDL developed for nearest WQMS **and** if site's stormwater construction discharges contain the pollutant of impairment, show the measures and controls on SWPPP met assumptions and requirements of TMDLs (may need to contact Watershed Manager for assistance).
- For monitoring stations with an Approved TMDL, IDEAL model used to demonstrate that the annual pollutant of concern loading for the site in developed conditions was reduced by the respective amount as compared to the pre-developed conditions.
- Pollutants of concern include TURBIDITY, BIO (Macroinvertebrate), TP (Total Phosphorus), TN (Total Nitrogen), and Chlorophyll-A.
- For TURBIDITY, BIO(Macroinvertebrate) consider inclusion of BMPs to reduce sediment load such as: sediment traps and basin designed to meet 85% sediment removal efficiency (regardless of size), additional measures to stabilize site, limited clearing and grading
- For TP (Total Phosphorus), TN (Total Nitrogen), and Chlorophyll-A consider inclusion of BMPs to reduce nutrient load. This could include limited clearing and grading, soil samples for to determine nutrient requirements during grassing

Note: Contact staff for guidance on selection of BMPs based on pollutant of impairment

Site Maps

4. PLANS

- Location Map
 - North arrow and scale.
 - Scale not less than 1" = 1 mile.
 - Adjoining lakes, streams or other major drainage ways and associated floodplains.
 - Outlined project location.
 - Labeled road names adjacent to the site.
- Construction Plans
 - Scale no more than 1" = 50'
 - North arrow and bar scale.
 - 24" x 36" Sheets

5. USGS TOPOGRAPHIC SITE MAP & COUNTY GIS• **USGS**

- Project boundary outlined
- Route of runoff from site to nearest waterbody shown
- Road names adjacent to site labeled

• **County GIS**

- Project boundary outlined with 4 foot contour
- Route of runoff from site to nearest waterbody shown
- Road names adjacent to site labeled

6. SOILS INFORMATION

- Project boundary outlined
- Predominate soil types found at the site identified on the plans or on a separate map

Note: Soils information is available from the Natural Resource Conservation Service through their website:

<http://websoilsurvey.nrcs.usda.gov/app/>

7. FLOODWAY MAPS/FEMA FLOOD INSURANCE MAP

- Provide plan and profile sheet for all utilities to be installed within the limits of the floodplain. Any land disturbance within the floodplain requires a floodplain permit.
- Note on the plans all locations where land disturbance will take place within the floodplain. This area must be included in your limits of disturbance.
- If floodplain is located on or adjacent to the parcel of land being disturbed, provide on the plans the FEMA panel number and effective date, show the floodplain boundary and label the flood zone(s). Also provide the base flood elevations along the floodplain boundary. For all proposed structures in or adjacent to the floodplain, provide the proposed lowest floor elevation.

8. Hydrology Input Data Maps, the "360" Watershed Maps & Hydrology Input Data

- 24" x 36" format "Areal 360" Watershed Map with all adjoining properties around site (see: Areal Hydrology 360 Watershed Map format on LDD website under the permitting and forms tab) (Legible/scalable)
- Pre and Post Developed site conditions maps (at a measurable scale)
- On the 360 map provide an analysis point for the outfall of the site for pre and post development, also provide on the 360 map the overall watershed analysis point that was elected in the pre design meeting for pre ad post development.
- The site and overall watershed analysis point was modeled and is consistent with hydrology model and watershed maps.
- On the 360 map show delineated drainage areas and flow paths/network diagrams that area scalable/measurable.
- 360 Drainage area maps that clearly correspond to the calculations (pre- and post-development)
- Provide a chart on the map that encompasses the following information: CN's, TC, slopes, contours, flow path segment, Drainage Area Boundary (pre and post developed). Sheet flow no greater than 100 feet.
- Naming conventions must be consistent throughout network diagrams, models, narrative and plans
- Photography

Sedimentology**9. SEDIMENTOLOGY**

- Provide Drainage Area Map outlining the area contributing to each sediment basin, trap or rock sediment dike
- Sediment basins required for sites with 5 acres or more disturbed acres draining to one point
- Trapping efficiency calculations showing that all sediment basins/traps are capable of achieving a sediment trapping efficiency of at least 80% for the 10-year, 24-hour storm event under disturbed conditions, disturbing more than 1 acre or more. Designers should use 0% dead space when using Baffles.
- Sediment basins provide storage for the 10-year, 24-hour storm event for disturbed conditions
- Sediment basins provide 3600 ft³/total storage per acre draining to the basin
- Sediment traps are only used for drainage areas of less than 5 acres
- Sediment trap provide 1800 ft³/total acre draining to each trap below the spillway
- The County requires installation of sediment forebays at each outfall into the multi-purpose basins.
- For sediment traps, provide peak outflow, q_{por} , calculations ensuring 80% trapping efficiency for the 10-year, 24-hour storm event for construction conditions and not overtopping the trap's spillway

- Curve Number for construction analysis needs to reflect construction/ disturbed conditions. Curve Numbers for newly-graded areas are:
 - Hydrologic Soil Group “A”: 77
 - Hydrologic Soil Group “B”: 86
 - Hydrologic Soil Group “C”: 91
 - Hydrologic Soil Group “D”: 94
 - Sediment basins and traps designed for total area draining to them
 - Copies of figures used to determine V15 (SV-1) and trapping efficiency, if Design Aids are used to determine trapping efficiency (See Design Manual)
 - Sediment basins must dewater via an outlet structure that pulls water from the surface. Options for this include skimmers and flashboard risers. Surface dewatering is not required for traps.
 - During construction, mass graded sites disturbing 10 acres or more must follow “Peak Rate Attenuation During Construction Policy”
 - For **temporary sediment basins**:
 - Utilize a temporary sediment basin riser configuration.
 - Design a primary riser consisting of a solid riser with no staged discharges or low flow orifices.
 - Design the basin so stormwater runoff enters the primary riser by overtopping the riser structure and through a Floating Skimmer.
 - Design the riser to have a Floating Skimmer attached to the bottom of the riser dewatering the runoff volume below the top elevation of the riser in a time period ranging between 24 to 72 hours.
 - Provide calculations or design aids showing that this basin will meet a minimum 80% trapping efficiency.
 - Design a stabilized Emergency Spillway that safely passes the 100-year 24-hr storm event with a minimum one-foot of freeboard from the 100-year 24-hour water surface elevation to the top of the dam.
 - Provide stable conveyance for 2, 10, 25, and 100 yr storm flows from sediment basin
 - Porous baffles must be provided in sediment basins and traps. Designers should use 0% dead space. Minimum of 3 rows.
 - Public Safety should be taken into consideration as a factor in design of sediment basins. Alternative BMPs must be utilized where a construction site limitations would preclude a safe design
- Note:** Consult the Greenville County Stormwater Design Manual for information on the design of these and other devices
- Note:** The Design Aids in the BMP Handbook cannot be used to determine trapping efficiencies for structures in series. If the flow for the 10-year, 24-hour storm for construction conditions overtops the structure or the structure's spillway, then the Design Aids cannot be used.
- Note:** If multiple soil types are in the area draining to the structure, then the soil type with the smallest D15 for the appropriate depth should be used to determine the settling velocity, V15; an average D15 should not be used.
- Note:** SEDCAD users please refer to the memo regarding the input of outlet structures (<http://www.scdhec.gov/environment/water/docs/SedCad4.pdf>)
- Note:** Silt fence only used in areas with drainage areas of less than ¼ acre per 100 LF of fence and not used in areas with concentrated flows
- Note:** 80% trapping efficiency is to be met by treating sediment laden stormwater prior to entering buffer areas

10. FLOW CONTROL

- Control stormwater volume and velocity within the site during construction to minimize erosion within the site
- Control stormwater rates and volume at outlets during construction to minimize erosion to downstream channels and stream banks

Peak Attenuation Hydrology

11. HYDROLOGIC ANALYSIS

- Post-development discharges must be less than pre-development discharges for each outfall point for the 2, 10, and 25-year storm events (if not, then see "Detention Waiver" section below); analyze the 100 year storm for downstream impact at each outfall point (Gilder Creek Watershed – attenuation to the 50-year storm required; City of Mauldin – attenuation to the 100-year storm required Freeboard criteria is the same for all required storm events).
- Pre- and post-developed, with and without detention, hydrologic analysis calculations for the 2, 10, 25, 50 and 100 year, 24-hour storm events at each outfall point
- Network Diagram and Calculations that clearly corresponds to the information in Section 8. drainage area maps (pre- and post-development)
- Analysis points for comparing runoff rates for the site and overall watershed should not change from pre to post development.

- Drainage areas in watershed have not shifted
- Analysis performed using SCS 24-hour storm (Rational method is not acceptable)
- Rainfall Data from Greenville County Design Manual used in all calculations

12. DETENTION ANALYSIS/DESIGN

• **Analysis**

- Existing and planned drainage patterns, including offsite areas that drain through the site
- Pond routing using a volume-based hydrograph for the 2, 10, 25, 100 year storm as required, SCS 24-hour storm event (SedCAD, HYDRFLOW, etc. perform full pond routings; TR55 does not perform a full pond routing; rational method cannot be used)
- Hydrologic and hydraulic calculations necessary to determine the impact of hydrograph timing modifications of the proposed land-disturbing activity, with and without the detention structure (results of analysis will determine the need to modify the detention design or eliminate the detention requirement see note 2 below)
- Inputs and outputs from analysis program
- Summary table of the peak inflows, peak outflows, discharge velocities, and maximum water surface elevations (WSE) for the 2, 10, 25 and 100-year, 24-hour storm events for each detention structure
- Stage-storage-discharge relationship for the outlet structure of each detention structure

Note: SEDCAD Users, please refer to SEDCAD memo: <http://www.scdhec.gov/environment/water/docs/SedCad4.pdf>

Note: The County will determine the overall area of analysis during the pre-design meeting. An example would be using the 10% rule in performing analysis. The hydrologic analysis should be conducted for the larger drainage area, where the site in question encompasses 10% of the total drainage area. For example, if your site is 10 acres, then the hydrologic analysis should be performed at a point downstream where the contributing drainage area, including your drainage area, is approximately 100 acres.

Note: The curve number for open water, marshes, retention / detention areas, and gravel should be 98 to 100

• **Design**

- Design calculations for structures and storm drainage system
The Construction Detail of outlet control structure and cross-section of the dam/berm, including elevations and dimensions must correspond to the calculations, stage-storage volumes and elevations for the Water Quality, and for Water Quantity for the 2, 10, 25, and 100-year storm events.
- Orifice constructability should be considered (do not specify orifice diameters with increments of less than 1/4")
- Maximum WSE for the 25-year storm event below the emergency spillway with 0.5-ft of freeboard between maximum WSE for the 25-year storm and the emergency spillway Freeboard criteria is the same for all required storm events. (or the required attenuating storm for that site)
- Maximum WSE for the 100-year storm event below the embankment with 1-ft of freeboard between maximum WSE for the 100-year storm and the embankment Freeboard criteria is the same for all required storm events.
- Dewatering time calculations for the 25-year storm event (dry ponds must drain completely within 72 hours)
- Provide a flat maintenance shelf/berm with a minimum width of 10-foot around the perimeter of the basin. The pond berm must provide load bearing capability for industrial maintenance mowers.

Note: Small orifices (those less than 3") are prone to clogging

Note: All water control dams must meet dam safety requirements

For **Multi-purpose basins** (basins that will be used during construction for sediment control and for both post construction water quality and quantity control):

- Utilize one permanent riser and outlet barrel configuration for both phases of the project that is based on post-construction water quality and quantity control.
- Design the riser to have a Floating Skimmer attached to the bottom of the riser (typically the post construction water quality low flow orifice) during the construction phase of the project to dewater in a time period ranging between 24 to 72 hours.
- Design the riser with orifices/weirs to provide peak flow rate control reduction.
- Provide calculations or design aids showing that the basin will provide calculations showing that the basin is designed to meet pre-construction peak flow rates for the 2-year, 10-year, and 25-year storm events. (50-year for Gilder Creek Watershed; 100-year for City of Mauldin) as well as meet a minimum 80% trapping efficiency for sedimentology.
- Design a stabilized Emergency Spillway that safely passes the 100-year 24-hr storm event with a minimum one-foot of freeboard from the 100-year 24-hour water surface elevation to the top of the dam.
- Provide a Forebay area.

Post Construction Water Quality**13. PERMANENT WATER QUALITY REQUIREMENTS**

- Permanent water quality addressed for all projects that disturb over 10,000 SQ Ft. at each outfall.

Note: Compliance with water quality standards must be demonstrated for each outfall individually. An outfall is considered any point where concentrated flow leaves the property or enters waters of the State.

- The preferred method is to size permanent water quality capture devices to trap 85% of total suspended solids based on annual loadings by particle class.
- For site that discharge into Impaired Waterbodies, use IDEAL model to run the water quality benefits of the chosen design for pre-developed and post-developed pollutant load (array of pollutant removal and/or impact). All input data must be supplied.
- 85% TSS trapping efficiency calculations with most **current** IDEAL Model has met Greenville County permanent Water Quality requirements.
- Infiltration Practices designed to accept, at a minimum, the first 1" of runoff from all impervious areas and designed in accordance with Greenville County Infiltration Policy
- For areas not draining to a pond or infiltration practice, show how permanent water quality requirements were addressed
- Water quality orifices should be a size that is conducive to proper operation and maintenance. Orifices less than 3" in diameter are prone to clogging
- Waters of the U.S./State are not used for permanent water quality control (alternative means of treatment must be used if an existing pond is to be used for water quantity control)

Note: Commercial and Industrial floor drains shall not be connected to storm drainage system without approved pre-treatment.

Note: Other non-traditional stormwater controls such as Bioretention areas, constructed wetlands, etc. may be used. See the Greenville County Stormwater Design Manual for information.

Note: Pre-fabricated or proprietary treatment devices are approved on a case-by-case basis if adequate removal efficiency can be demonstrated. Provide pollutant removal efficiency data, approved by EPP ETV's or NJCAT's program. Type of system selected should be based on the ability to remove the pollutants of concern in that area/situation (bacteria, hydrocarbons, etc.).

Hydraulics**14. CONVEYANCE MEASURES AND STABLE CHANNEL**

- All channels and diversion ditches able to handle the 25-year storm event with non-erosive velocities of less than 5 feet per second during construction (use appropriate CN for disturbed areas) and post-construction (if velocity exceeds 5 ft/s, then permanent measures to reduce the velocity to a non-erosive rate must be provided)
- For all portions of the drainage system which are expected to carry over 50 cubic feet per second (cfs) for the 100-year storm, the 100-year plus one foot flood elevation analysis shall be required if one of the following criteria apply:
 - Provide hydrology and hydraulic data and information to show how stormwater will be safely conveyed for the 100 year storm event. (All municipalities included)
 - The estimated runoff would create a hazard for adjacent property or residents
 - The flood limits would be of such magnitude that adjacent residents should be informed of these limits.
- For all portions of the drainage system which are expected to carry 150 cfs or more for the 100-year storm, the 100-year plus one foot flood elevation analysis shall be done and flood limits shall be shown on the drainage plans.
- Drainage Maps showing areas draining to designed channels, structures, storm drainage systems, catch basins (if subdivision with road drainage system)
- Design calculations of planned channel, cross section and methods to stabilize
- Design calculations for structures and storm drainage system
- Design calculations, cross sections and methods of stabilization of existing and planned channels.
- Design calculations input and output data sheets for subdivision roadway catch basin drainage system (if combo review)

NOTE: Final plats, summary plats and easement plats shall be used for property having an easement or other type of applicable acquisition of land. (See section 4.5 in the Design Manual)

15. ENERGY DISSIPATERS/OUTLET PROTECTION

- All outlets stabilized with appropriately sized riprap apron or other structure (provide calculations)
- Design calculations of energy dissipaters below culverts and storm sewer outlets
- All channelized flows in a stable conveyance and energy dissipated prior to entering surface waters
- Note that appropriate outlet protection and energy dissipation is also required for post-construction

Site Plan Requirements

16. GENERAL SITE PLAN FEATURES:

- Location map with site outlined on first plan sheet (map should have enough detail to identify Surface Waters of the State within 1 mile of the site)
- Legend
- Streams, lakes, ponds, drainage ways, dams, wetlands, flood ways, and 100 year floodplain limits.
- Proposed improvements on the site (including any future development planned)
- Planned and existing building's location and elevation.
- Planned and existing road's location and elevation.
- Existing and planned drainage patterns (including off-site areas that drain through project)
- Existing and proposed easements.
- Property lines and adjacent landowners' names
- Existing and proposed contours for entire disturbed area
- Limits of disturbed area
- Locations of off-site material, waste, borrow, or construction equipment storage areas, excluding roll-off containers (Note: Hauling waste soil offsite may only go to a permitted site. Some off-site disturbed areas may require a separate application for NPDES coverage)
- Location of Concrete Washout and other Pollution Prevention Measures
- Location and identification of any stormwater discharges associated with industrial activity (not construction)
- Delineation of WoS, including wetlands (see checklist item 18) and blue line streams.
- Road profiles with existing and proposed ground elevations (if no contours are shown on the plans)
- Construction details with installation and maintenance requirements for temporary and permanent BMPs/structures and storm drainage system
- Location of temporary and permanent BMPs/structures
- Use most current Greenville County specifications and details on plans.
- If No Greenville County specification available use SCDHEC Standard notes – see **current SCDHEC Design Checklist**
- Registered engineer's signed and dated seal
- Engineering Firm's Certificate of Authorization seal
- If the SWPPP has been developed by a Registered Professional Engineer, Registered Landscape Architect or Tier B Land Surveyor, the following statement must be included on the site plans:

"I have placed my signature and seal on the design documents submitted signifying that I accept responsibility for the design of the system. Further, I certify to the best of my knowledge and belief that the design is consistent with the requirements of Title 48, Chapter 14 of the Code of Laws of SC, 1976 as amended, pursuant to regulation 72-300 et seq. (if applicable), and in accordance with the terms and conditions of SCR100000."

17. NAVIGABLE WATERS

- Extra plan sheet showing impacts to navigable water and description of activity included if S.C. Navigable Waters (SCNW) crossing and separate SCNW permit has not been obtained for all activities

Note: For NOI's initially submitted to delegated entities, if project has SCNW crossing and if separate SCNW permit has not been obtained for this crossing, then this item will be reviewed by S.C. DHEC before NPDES coverage will be granted

18. WATERS OF THE STATE, INCLUDING WETLANDS

- Delineation of all waters of the State (WoS), including wetlands, shown and labeled on plans (delineation not required if a 100-ft undisturbed buffer can be maintained between the WoS and all land-disturbing activities)
- Additional, separate plan sheet that shows all WoS on the site and the impacted areas with a description of the activity(s), whether it is permanent or temporary, and any other relevant information
- If impacts to WoS, outlined areas of impacts and labeled that no work can begin in this area until all necessary USACOE permits and SCDHEC 401 certifications have been obtained.

Note: It is required that a minimum 25-foot buffer between a sediment trap/basin and WoS be used.

19. STORMWATER MANAGEMENT FACILITY

- Construction details for facilities, structures and storm drainage system
 - Bottom of all multipurpose basins graded to have a slope of not less than 2% or provide an underdrain.
 - County requires the riser to have a designed trash rack and anti-vortex device.
- Permanent maintenance access to all permanent detention structures (easements may be needed for structures surrounded by lots)
- Provide a detail of outlet structure and cross-section of the dam/berm or pond bank, including elevations and dimension that corresponds to the calculations, stage-storage volumes and elevations for the Water Quality, 2-, 10-, 25-, 50-, and 100-year storms
- Note:** Emergency spillways should not be built on fill slopes
Emergency spillways should be a minimum of 20' from principle outlet control structure.
- Note:** The County recommends a maximum slope of 3: 1 on pond embankments to allow for ease of maintenance. Dry Detention Ponds that pond water over 2 feet deep and have side slopes steeper than 3:1 must have a 4 foot safety fence.
- Note:** The County requires phase sequence and verification for all permanent BMP's.

20. PHASED SEDIMENT & EROSION CONTROL PLANS

- Phased Sediment and Erosion Control Plans are not required when land-disturbance is 5 acres or less
- For land-disturbance between 5 and 10 acres, a two-phased stormwater management and sediment and erosion control plan is required for all non-linear projects. Each phase must be shown on a separate plan sheet. Plans should address the transition between phases.
 - Phase 1 – Initial Land Disturbance – Must include perimeter sediment and erosion control BMPs required prior to initial/mass clearing and other appropriate BMPs needed to maintain compliance with the permit. On some sites, this may include appropriate BMPs for demolition of existing structures
 - Phase 2 – Stabilization - Sediment and erosion control BMPs required during the remainder of grading and construction. Must also include appropriate BMPs for stabilization – grassing, inlet protection, etc.
- For land-disturbance greater than 10 acres, a three-phased stormwater management and sediment and erosion control plan is required for all non-linear projects. Each phase must be shown on a separate plan sheet. Plans should address the transition between phases.
 - Phase 1 – Initial Land Disturbance – Must include perimeter sediment and erosion control BMPs required prior to initial/mass clearing and other appropriate BMPs needed to maintain compliance with the permit. On some sites, this may include appropriate BMPs for demolition of existing structures
 - Phase 2 – Construction - Sediment and erosion control BMPs required during the majority of grading and construction activities.
 - Phase 3 – Stabilization - Sediment and erosion control BMPs required near the completion of the construction project. Must also include appropriate BMPs for stabilization – grassing, inlet protection, etc.
- If the pond is to be used for sediment control during construction, temporary horseshoe-shaped riprap berm in front of any low level outlets provided during construction and shown on the pond detail
- Low Impact Development measure, bioretention cells, infiltration, and other post-construction practices should be installed only after the drainage area to these practices has been stabilized
- Clean-out stake, marked at ½ the designed sediment storage depth, provided in all sediment basins/sediment traps
- Rock check dams provided in temporary diversions
- Installation detail for erosion control blanket (ECB) or turf reinforcement matting (TRM) if ECBs or TRMs to be used
- Stabilization of conveyance channels is to be completed within 7 days of channel construction
- Temporary conveyance channels should be utilized to divert concentrated stormwater flows from running onto and within the disturbed area
- Provide a minimum of 3 rows of Baffles in the basin. At least one row of Baffles will be placed between the riser structure and all pipes or channels discharging to the Basin.

Note: A detention facility which has been certified and accepted for post construction water quality cannot be used for sedimentology for subsequent phases of work

Note: The County requires phase sequence and verification for all stormwater features.

21. BUFFERS

- Provide and maintain a minimum of 100' buffer when surface waters or waters of the US are located on or immediately adjacent to the construction site and no wetland delineation has been provided.
- Double row of silt fence required in all areas where 35' undisturbed buffer cannot be maintained between the disturbed area and surface waters

- Minimum of 35' maintenance buffer provided between the last row of silt fence and the surface waters, or, if buffer not provided, then statement from P.E. on plans indicating how silt fence will be installed and maintained without impacts to surface waters (if an AJD is provided, you may be able to encroach beyond the 35' buffer)
- All channelized flows in a stable conveyance and energy dissipated prior to entering surface waters
- Clearly mark/delineate with flags, tape, or similar marking device, the buffer area to ensure buffer areas visible
- Location of any buffers or protected strand of trees (as identified in the Tree Protection Plan if applicable)

Note: The buffer area can not be used to treat sediment laden stormwater

Note: On single family residential lot permits, the County Engineer may grant permission on site specifics and history.

22. SLOPES AND/OR EMBANKMENTS

- All slopes must be stabilized
- Divert concentrated flows around steep slopes using slope drains or temporary diversions. Slope drains designed in accordance with the Greenville County Stormwater Design Manual
- Slope drains provided where concentrated flows discharge onto a fill slope and onto steep slopes
- For all slopes steeper than 1.5:1, identification of stabilization practice (e.g., ECB, TRM)
- Minimize Disturbance to Steep Slopes (3H:1V) or greater
- Utilize appropriate measures to prevent erosion (erosion control blankets, surface roughening, terracing, etc.)

Note: Measures, in addition to grassing or hydro-seeding, include synthetic or vegetative matting, diversion berms, temporary slope drains, etc.

Note: If retaining walls or fill slopes are to be constructed at the downstream property line, the County recommends a 10' buffer to allow for construction and maintenance. If a 10' buffer is not provided, then provide permission from the adjacent property owner for possible land-disturbing activities on his property

23. UTILITY LINES

- Limits of disturbance include areas necessary for installation of all utilities (cable, electrical, natural gas, water and sewer), as appropriate
- For instances where the location of cable, electric, and natural gas has not been determined at the time the SWPPP is developed, SWPPP preparer may include a note that the installation of these is to be within the permitted limits of disturbance and that installation outside of these areas will require a modification to the permit
- Inlet protection provided at all existing inlets that receive flows from the disturbed areas; also add this as a note on the plans
- For all utility lines crossing WoS, narrative and detail showing sediment and erosion control measures provided on plans
- Note for construction entrances to be provided at all locations where construction traffic accesses a paved roadway

24. INLET PROTECTION

- Provided at all inlets (existing and proposed)
- Hay bales cannot be used
- Steel posts and buried fabric shown for filter fabric inlet protection
- Inlet protection details provided for pre-paving and after roadways have been paved

Note: The County recommends that an inlet not have more than one (1) acre draining to it.

25. DISCHARGE POINTS

- Storm drainage or pond outfalls carried to an existing drainage outfall such as a pipe, ditch, etc.
- No new point discharges onto adjacent property where there was not a point discharge previously, unless written permission from the adjacent property owner is provided
- Level spreaders, plunge pools, etc. provided when the proposed outlet is near the property line and not directed to an existing outfall, such as a creek or ditch
- Twenty (20)-foot minimum buffer and level spreader and 100-year peak rate attenuation is provided between the property line and the discharge point if an easement is not granted.
- Outlets shall not discharge on fill slopes
- Riprap detail shows apron dimensions and stone sizes for each pad or each pipe diameter
- Filter fabric installed beneath all riprap
- Construction details of energy dissipaters below culverts and storm sewer outlets

26. VEGETATIVE STABILIZATION

- Phasing plan for stabilization
- Areas and acreage to be vegetatively stabilized
- Planned vegetation with details of plans, seed, mulch and fertilizer
- Greenville County Specifications for permanent and temporary vegetation
- Greenville County grassing and stabilization specifications (temporary and permanent) included on plan.
- Greenville County Specification for seeding mixes and rates, type of sod, seedbed preparation, time and fertilizer applications
- Greenville County Mulching and related data
- Tree Protection/Planting Plan – (will forward to the Zoning department for review)

27. CONSTRUCTION SEQUENCE

- Construction Sequence should accurately reflect the nature and timing of construction activities for the site
- Schedule and sequence of construction operations (identify all phasing).
- Location of temporary sediment control and sequencing if phased
- Construction sequence related to sediment and erosion control (included installation of critical measures prior to initiation) of the land disturbing activity and removal of measures after areas are stabilized.
- Sequence should begin with the installation of perimeter controls and end with the removal of sediment and erosion control measures once the site has been finally stabilized
- Construction sequence (implementation of all stormwater and sediment controls in the first phase of construction; ensure that basins, traps, ponds, etc. can be installed before the area draining to them is cleared and grubbed)
- Engineer certification for all permanent BMP's for volume, topography and dimensions
- Address conversion of any temporary sediment control structures to permanent measures (i.e., conversion of a sediment basin to a permanent detention basin)
- Sequence should reflect implementation and transition between each phased plan (see Section 20)
- Construction Sequence should include the following line items:
 - Maintain all sediment and erosion control features throughout the life of the project
 - Inspections to be every 7 calendar days and within 24 hours after each rainfall event that produces 1/2-inches or more of precipitation
- Construction sequence bar chart with applicable time units.

Other Agency Compliance Requirements

28. USACOE's Jurisdictional Determination (if applicable) 308. USACE's Section 404 Permits (if applicable)

- Provide a copy of the permit application and approval letter for PJD or AJD depending on County requirements.

29. SCDHEC 401 Water Quality Certification (if Applicable)

Note: If there are proposed impacts to WoS, then it is advised that you contact USACOE (866-329-8187) and/ or S.C.

DHEC Water Quality Certification, Standards & Wetlands Programs Section (803-898-4300) to determine additional requirements before submitting the Notice of Intent (NOI).

Note: If WoS are to be impacted, work cannot be performed in these designated areas until all necessary permits have been acquired.

Note: If a USACOE permit is required for construction of or access to a temporary or permanent stormwater management structure, NPDES permit coverage cannot be granted until the USACOE permits and S.C. DHEC 401 Section certifications are obtained.

30. SCDHEC CGP Requirements

Current SC DHEC NOI Application - completed in its entirety.

Pre-Construction Conferences

Inspection Requirements, Inspection Logs & Reports

Maintenance Polices & Reports

Record Keeping Requirements, Rainfall Records, Additional Site Logs and Reports

Note: If work will be performed within a designated floodplain required certification and permits will be required for the Floodplain Manager prior to approval of the Land Disturbance Permit

Acceptance and Maintenance

31. MAINTENANCE FOR PERMANENT STORMWATER MANAGEMENT FEATURE

- Signed Stormwater Management Facility Maintenance Agreement from the responsible party accepting ownership and maintenance of the structure(s)
- Description of maintenance plan for each type of feature (to be used in restrictive covenants) – See Greenville County HOA/POA Restrictive Covenant Language Document
- Schedule of maintenance procedures

Example of Typical maintenance items to be addressed for a pond:

- Grass to be mowed
 - Trees to be removed from within the pond and on the embankment
 - Trash and sediment to be removed from inside of and around the pond outlet structure
 - Orifices to be cleaned and unclogged
 - Outlet pipe to be cleaned, inspected, and repaired
 - Sediment accumulation to be removed from pond
 - Pond bottom to be regraded to provide proper drainage towards the outlet discharge point
 - Energy dissipater to be cleaned and repaired
 - Emergency spillway, if applicable, to be inspected and repaired
 - Maintenance schedule with exhibits for each stormwater feature permitted and include in maintenance agreement.
 - Erosion on side slopes, if present, to be addressed
 - The County must be notified in writing of any changes in maintenance responsibility for the stormwater devices at the site (include this statement in agreement).
- Detailed or manufacturer-specific maintenance items for proprietary control devices (oil-water separators, etc.), underground detention structures, exfiltration systems and non-traditional stormwater controls (constructed wetlands, bioretention, etc.) in report and on plans with model numbers. (Can be used for commercial/industrial sites only; prohibited in residential subdivisions.) Model number and type for Manufacture Treatment Device(s).

— The following language must be present as a note on both the final plat (if applicable) **AND** all sets of the storm water plans: “As owners of property which is designed to drain to a particular storm water management facility in any phase of development in _____ Subdivision, each property owner shall be equally responsible for inspection, maintenance, and repair of that storm water management facility to which their lot is designed to drain in _____ Subdivision, as shown / found on the approved storm water plan for _____ Subdivision and / or recorded storm water management facility maintenance agreement Instrument # _____, Dated _____. This is in the absence of a Homeowner’s or Property Owner’s Association.”

Note: If the entity or person with maintenance responsibility changes, then a new maintenance agreement, signed by the new person responsible for maintenance, must be provided to the County at closeout or at 50% build-out. If a new, signed maintenance agreement is not provided to the County, then the entity/person who signed the most recent maintenance agreement on file with the County may be considered the responsible entity.

Note: SEDCAD users please refer to the memo regarding the input of outlet structures, design calculations for structures, and storm drainage system

Note: Maintenance requirements for each BMP should be listed on the detail

I, as the SWPPP Preparer, understand and have read all the instructions and selected the applicable items and have included all the information requested for this “Plan Submittal Package”.

Printed Name of SWPPP Preparer

Signature of SWPPP Preparer

Date

Please check the appropriate person: Engineer Tier B Land Surveyor Landscape Architect

*** NOTES:**

- All plan submittals uploaded to the permit portal will be logged into the permit system for review on the next business day.
- The Provisions of all required information is not a guarantee of approval. The approving authority may reasonably require supplemental reports, data and additional information.
- Standard review times may not apply if additional staff research time is necessary in the review of innovative design alternatives. County staff will provide a status report regarding review progress at the 10 business day period.
- For Plan Submittal inquires, please email the Permit Coordinator @ muhrinek@greenvillecounty.org