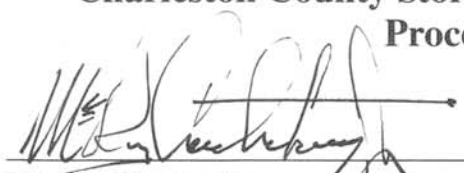
Charleston County Stormwater Program

Permitting Standards and Procedures Manual

CHARLESTON COUNTY
SOUTH CAROLINA

October 2007

Charleston County Stormwater Program Permitting Standards and Procedures Manual approval.



11-9-07

Mack Canterbury
Charleston County Administrator

Date

CITY OF FOLLY BEACH

The City of Folly Beach hereby adopts the Charleston County Stormwater Program Permitting Standards and Procedures Manual per the City's Ordinance #23-07. The duties of the Building Official as defined in the City's ordinance are to be administered by the Charleston County Public Works Director.

Toni W. Connor-Rooks
City Administrator

November 9, 2007
Date

CITY OF ISLE OF PALMS

The City of Isle of Palms hereby adopts the Charleston County Stormwater Program Permitting Standards and Procedures Manual per the City's Ordinance # 2007-16. The duties of the Building Department Director as defined in the City's ordinance are to be administered by the Charleston County Public Works Director.

Linda Lovvorn Tucker
City Administrator

11/9/07
Date

TOWN OF LINCOLNVILLE

Pursuant to the Town's Ordinance # 07-0905 adopted on September 5, 2007, the Town of Lincolnville adopts the Charleston County Stormwater Program Permitting Standards and Procedures Manual.

TOWN OF SULLIVAN'S ISLAND

The Town of Sullivan's Island hereby adopts the Charleston County Stormwater Program Permitting Standards and Procedures Manual per the Town's Ordinance 2007 - Chapter 25 Section 18-55. The duties of the Building Official as defined in the Town's ordinance are to be administered by the Charleston County Public Works Director.

Andy Benke

Andy Benke
Town Administrator

November 9, 2007

Date

Revisions

Date	Revision
November 2007	1st Edition – Charleston County Stormwater Program Permitting Standards and Procedures Manual

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CHAPTER 1 GENERAL INFORMATION

1.1 Purpose

It is the purpose of this Manual and the Stormwater Management Ordinance (Ordinance) to protect, maintain, and enhance water quality and the environment of Charleston County and the short-term and long-term public health, safety, and general welfare of the citizens of Charleston County. This Manual and the Stormwater Management Ordinance is also designed to minimize property damage by establishing requirements and procedures to control the potential adverse effects of increased stormwater runoff and related pollutant loads associated with both future development and existing developed land. Proper management of stormwater runoff will further the purpose of this Manual and the Stormwater Management Ordinance to ensure a functional drainage system, reduce the effects of development on land and stream channel erosion, attain and maintain water quality standards, enhance the local environment associated with the drainage system, reduce local flooding, maintain where necessary pre-developed runoff characteristics of the area in terms of flow rate, volume and pollutant concentration, and facilitate economic development while mitigating associated pollutant, flooding, erosion, and drainage impacts.

This Manual is for stormwater management purposes only, and the requirements herein are specific to the stormwater management program and do not preclude the Planning and Building Services Departments from performing their permit, plan review, inspection or other related duties and collecting applicable fees.

This Manual describes the policies and procedures used by the Public Works Director to implement the Stormwater Management Ordinance and the County's Stormwater Management Program (SWMP). These standards and procedures will:

1. Describe the construction activity application requirements and approval process as it relates to stormwater management;

2. Convey the technical design standards to the engineering community, to include standards which address flow rates, runoff volume, and pollutant load/concentration, as well as specific standards during construction and for long-term performance;

3. Provide information on avenues to improve water quality, prevent illicit discharges, and minimize stormwater runoff impacts due to development and re- development;

4. Convey other protection provisions related to stormwater discharges such as wetlands and watercourse conservation;

Every effort has been made throughout this Manual to cover the common conditions and information needed by those involved in construction activities, however, these design standards and the County Ordinances should be reviewed carefully to ensure that all requirements are being met. Developments may also be impacted by state and federal requirements. For projects that require coverage by the State NPDES General Permit for Stormwater Discharges from Large and Small Construction Activities (CGP), the County will not issue approvals until notice of coverage from South Carolina Department of Health and

Environmental Control (SCDHEC) under the CGP is received by the Public Works Director. Those projects not subject to NPDES requirements must comply with applicable County standards.

1.2 Scope

The scope of this Manual is limited to the requirements related to stormwater management as reviewed and approved by the Charleston County Administrator. This Manual is not intended as a textbook or a comprehensive engineering design reference. It was instead developed under the assumption that the user possesses a basic understanding of stormwater control design, construction, or land development depending on the user's particular area of expertise. References to guidance documents from federal, state, and local agencies, as well as commercial products are given throughout this Manual to provide additional information to users. Two common examples are the Natural Resources Conservation Service's (NRCS) TR-55 and SCDHEC's Best Management Practices (BMP) Manual.

The design standards are not intended to restrain or inhibit engineering creativity, freedom of design, or the need for engineering judgment. When shown to be applicable, it is encouraged that new methods, techniques, and innovative stormwater BMPs be submitted with supporting documentation. However, the use of such approaches should be substantiated with submitted documentation by design professionals showing that the proposed design is equal to, or exceeds the traditional procedures in terms of performance and economic feasibility.

On projects that require site specific designs pertaining to stormwater management and water quality, site plans, details, calculations, construction specifications, and other technical documents must be designed and sealed by a professional engineer, landscape architect, or Tier B Land Surveyor that is registered in the State of South Carolina, with sufficient knowledge and experience to accomplish all design elements of the site plan. Users who are not justly qualified by education or experience in the fields of stormwater control design, construction, or land development should consult with a qualified professional in one or more of these areas prior to planning for construction activities.

1.3 Manual Organization

The design standards are divided into five chapters, organized to present recommended technical and engineering procedures along with criteria obtained from local, state, and federal requirements. The remainder of this chapter provides information on the County's authority to develop and enforce design requirements along with several legal matters, some background information on stormwater management and its importance, and definitions for terms used throughout this Manual. Chapter 2 describes the application process for obtaining a construction permit. Chapter 3 contains specific design criteria and the site design credit system. Chapter 4 describes the inspection and enforcement process. Chapter 5 contains references for designing components of the stormwater management system.

1.4 Authorization

This Manual has been prepared under the direction of the Public Works Director, who has been granted the authority to develop engineering design standards and enact programs and policies to ensure compliance with state and federal laws for the purposes described above. A detailed description of the stormwater related laws, regulations, and assigned authorizations to Charleston County are provided below.

1.4.1 Clean Water Act

Federal Water Pollution Act, as amended by the Clean Water Act (CWA) requires the reduction of water pollution and gave EPA the congressional authority to develop programs to improve the health of navigable waters. EPA in response developed regulations that created a program of discharge permits as part of the NPDES to regulate point source from a variety of discharges. The 1987 amendments to the CWA extended NPDES permits to industrial discharges, including stormwater runoff associated with land disturbing activity. The 1987 CWA Amendments also require NPDES permitting for stormwater runoff from urbanized areas. A municipal separate storm sewer system (MS4) NPDES permit is required based on population. Authority to administer the NPDES permit program was delegated to state agencies, such as SCDHEC, by the EPA.

1.4.2 South Carolina Pollution Control Act

The South Carolina Pollution Control Act (PCA) was originally enacted in 1950 and was last amended in 1970. It was written very broadly and is applicable to essentially any activity that could negatively impact the environment by requiring attainment of a permit and implementation of measures to mitigate potential impacts.

1.4.3 South Carolina Stormwater Management and Sediment Reduction Act

The South Carolina Stormwater Management and Sediment Reduction Act was enacted to address the increase in stormwater runoff rate and quantity, the decrease of rainwater infiltration, and the increase in erosion associated with the extensive urban development occurring throughout the state. The Act gave legislative authority to SCHEC to enact programs to meets its purpose.

1.4.4 NPDES Permit for Stormwater Discharges Associated with Industrial Activity

All stormwater runoff from “industrial activities” is considered an illegal discharge without an NPDES discharge permit. These permits require certain industries to develop and implement a Stormwater Pollution Prevention Plan (SWPPP), which must include appropriate BMPs to minimize pollution to the receiving natural waterbodies. There are two general types of industrial activity permits: “construction related” and “other.” The requirements for obtaining and complying with this type of permit are the general focus of these design standards.

1.4.5 NPDES MS4 General Permit SCR0300000

Charleston County is required to have a NPDES MS4 permit to discharge stormwater. Because construction activities contribute to the discharge of pollutants, the NPDES MS4 permit requires that Charleston County encourage, promote, and implement certain practices, programs, and procedures for the purpose of reducing or limiting discharge of pollutants to Waters of the State. The permit requires that Charleston County develop and implement a Stormwater Management Program to control the discharge of pollutants from its MS4 to the maximum extent practicable (MEP). The SWMP has several components that must be met and this Manual provides compliance with several, including construction and post-construction management, and public education. The MS4 permit can be found in Appendix B.

1.4.6 Charleston County Ordinances, Regulations, and Standards

Charleston County has developed and adopted ordinances and standards, largely based on state and federal regulations, specifically to address concerns associated with uncontrolled stormwater runoff. The principal ordinances and standards for the County that affect the land development selection of stormwater control measures are:

1. Stormwater Management Ordinance: Established the engineering design standards and procedures for obtaining a construction permit within Charleston County. Public Works Director was authorized by this ordinance to develop all necessary regulations, as detailed in this Manual for properly controlling stormwater runoff and mitigating existing and future impacts;

2. Zoning and Land Development Regulations Ordinance: Issues that may be impacted by this Ordinance when designing stormwater management systems include but are not limited to: limits on building density, buffer and setback requirements, parking lot islands, required parking spaces, tree protection, planting species selection, and screening requirements for ponds and other BMPs. Applicants should specifically check to make sure a desired development type is allowed in the planned location;

3. Building and Building Regulations: These regulations permit and enforce all applicable provisions of the building codes and floodplain management ordinances.

1.5 Updates to the Design Standards

This Manual is subject to updates. As design technology and criteria evolve or change or it becomes evident that additional measures are needed to ensure the public's general welfare, the Manual will be updated as needed. Updates will be approved by the County Administrator. Users of this Manual are encouraged to provide comments on the content of this Manual at anytime. This Manual can also be found on the Charleston County website at www.charlestoncounty.org and will be updated as necessary.

1.6 Stormwater Management

Development has the potential to alter the natural drainage patterns, flow rates, and volumes, and quality of the County's water resources. Traditional solutions have removed stormwater as efficiently as possible, while maintaining runoff quantity controls. The following sections discuss these impacts and the design considerations that are available and encouraged.

1.6.1 Effects of Development on Watershed Hydrology

Development and urbanization have the following impacts on receiving waterbodies:

- Changes to Stream Flow;
  - Increased runoff volumes;
  - Increased peak runoff discharges;
  - Greater runoff velocities;
  - Increased flooding frequency;
  - Lower dry weather flows (base flow);
  - Increase in floodplain elevation;
- Changes to Stream Geometry;
  - Stream channel enlargement;
  - Stream down cutting;
  - Changes in channel bed due to sedimentation;
- Degradation of Aquatic Habitat;
  - Degradation of habitat structure;
  - Decline in stream biological functions;
- Water Quality Impacts;
  - Reduced oxygen in streams;
  - Microbial contamination;
  - Hydrocarbons and toxic materials;
  - Sedimentation;
- Property Damage and Safety Concerns;
- Unsightly Aesthetic Stream Channel Conditions and Restricted Use of Recreational Waters.

1.6.2 Steps to Successful Stormwater Management Plans

Proper planning is necessary to ensure that stormwater management is considered and fully integrated at the various stages of the site-development process. This involves a comprehensive approach to site planning and a thorough understanding of the physical characteristics and resources associated with the project site. This planning includes addressing each of the following categories:

- Stormwater quantity controls;
- Erosion and sediment controls;
- Stormwater quality controls;
- Stormwater conveyance controls;
- Maintenance schedules for construction and post-construction activities.

The design of successful stormwater management plans involves adhering to the following principles, where applicable:

- Pre-submittal site meeting/site visit;
- Review of site development requirements;
- Detailed site analysis and supporting calculations;
- A thorough knowledge of the impact(s) the stormwater system may have on the watershed;
- Creation of a Stormwater Concept Plan;
- Design aspects of the stormwater management plans;
- Approval and completion of the land disturbance permit application.

In Chapter 2, the procedure for including the necessary documentation for a complete land disturbance application is provided.

1.6.3 Innovative Design Approach

When designing for land disturbance activities, the design must address the following four (4) categories of control: water quantity (flood control), design storm control (rate and volume), erosion prevention and sediment control, and pollution control (water quality standards, long-term). If an innovative stormwater design approach is to be used, the design professional should take the following considerations in mind, in addition to meeting these categories of control:

- Stormwater quantity and quality are best controlled at the source of the problem by reducing the potential maximum amount of runoff and pollutants. Source control will typically be

more economical in order to treat the first flush of a storm event since a simple BMP for a large area will only treat the first flush from the closest portions of the site;

- Best management practices (BMPs) implement stormwater management by using simple, structural and nonstructural methods along with or in place of traditional stormwater management structures when applicable;

- Equaling or exceeding traditional stormwater management designs in terms of performance (rate/volume attenuation, pollutant removal) and economic feasibility (long-term) are essential to a proposed concept's eventual approval.

Innovative approaches to site design focus on source control for stormwater runoff that limit the amount of runoff generated for a BMP to control.

1.6.4 Best Management Practices and Site Planning Process

The first step in addressing stormwater management begins in the site planning and design stage of the development project. By implementing BMPs during the site planning process, the amount of runoff and pollutants generated from a site can be reduced by minimizing the amount of impervious area and utilizing natural on-site treatments. The minimizing of adverse stormwater runoff impacts by the use of BMPs and site planning is a major consideration for a design professional.

The reduction of runoff volumes and stormwater pollutants decreases the total number and size of stormwater management controls that must be implemented under the guidelines set forth in this Manual. BMPs reduce the amount of total post-development impervious areas and maintain natural characteristics of the pre-development site conditions. Therefore, the post-development curve number and time of concentrations are maintained more closely to the pre-development conditions. This reduces the overall hydrologic and hydraulic impact of the development.

1.6.4.1 Maintaining Site Resources and Natural Undisturbed Areas

Conservation of site resources and natural undisturbed areas helps to reduce the post-development runoff volume and provides areas for natural stormwater management. Some examples are, but not limited to:

- Natural drainage ways;

- Vegetated buffer areas along natural waterways;

- Floodplains;

- Areas of undisturbed vegetation;

- Low areas within the site terrain;

- Natural forested infiltration areas;

- Wetlands.

1.6.4.2 Lower Impact Site Layout Techniques

Lower impact site layout techniques involve identifying and analyzing the location and configuration of structures on the site to be developed. Some options are, but not limited to:

- Fit the design layout to follow the natural contours of the site to minimize clearing and grading and preserve natural drainage ways and patterns;
- Limit the amount of clearing and grading by identifying the smallest possible area on the site that would require land disturbance;
- Place development areas on the least sensitive areas of the site and avoid steeply sloped areas when possible;
- Utilize nontraditional designs to reduce the overall imperviousness of the site by providing more undisturbed open space and minimizing clear-cutting;
- Consider the utilization of cisterns and rain barrels to collect stormwater for reuse;
- Level spreaders or other energy dissipation devices should be used at all discharge points. Level spreaders can be considered for discharge points into ponds and other basin-type BMPs. More information on these devices is provided in Chapter 3.

1.6.4.3 Minimization of Impervious Cover

The minimization of total impervious area directly relates to a reduction in stormwater runoff volume and the associated pollutants from a development site. The amount of impervious cover on a site can be reduced by the following techniques where applicable:

- Reduce building footprints by constructing some buildings as multi-story;
- Reduce parking lot areas and use porous/pervious pavement surfaces for desired overflow parking where feasible;
- Increase the amount of vegetated parking lot “islands” that can also be utilized for stormwater management practices such as bioretention areas;
- Disconnect impervious surfaces by directing runoff to adjacent pervious areas so that runoff can be filtered and infiltrated.

1.6.4.4 Utilization of Natural Features for Stormwater Management

Structural stormwater drainage controls are traditionally designed to quickly remove stormwater runoff from the site without utilizing any of the natural storage areas. These natural drainage areas may be considered as potential stormwater drainage systems. These natural areas can be utilized in the following ways where applicable:

- Vegetated buffers and undisturbed areas on the site are useful to control sheet flow (not concentrated flows) by providing infiltration, runoff velocity reduction, and pollutant removal;

- Various natural drainage ways may be maintained and not disturbed to provide a natural stormwater drainage system to carry runoff to an existing outlet. The use of natural drainage ways allows for more storage of stormwater runoff, lower peak flow rates, a reduction in erosive runoff velocities, and the capture and treatment of pollutants;

- Use vegetated swales instead of curb and gutter applications where applicable. This application allows for more storage of stormwater runoff, lower peak flow rates, a reduction in erosive runoff velocities, and the capture and treatment of pollutants which does not occur with curb and gutter systems;

- Where ditched roadways are not practical, curb and gutter systems may be combined with vegetated swales at outfalls to provide added water quality benefits versus the traditional piped outfall designs;

- When applicable, direct rooftop runoff to pervious natural areas for water quality treatment and infiltration instead of connecting rooftop drains to roadways and other structural stormwater conveyance systems.

1.6.4.5 Engineered/Proprietary Devices

Charleston County is aware of the potential benefit in using a number of stormwater engineered devices currently available on the market, such as baffle boxes, cartridge filters, bioretention, and sock and tube erosion control devices. The Public Works Director may evaluate any and all such devices specified for a given product and require for each appropriate drawings, specifications, and discussions as to the applicability of the product, expected performance, and required maintenance. The Public Works Director reserves the right to request that certain devices be installed and maintained.

1.7 Engineering Design Accountability

This Manual will assist engineers, plan reviewers, inspectors, and contractors in the design and layout of most land disturbance projects. However, this Manual does not replace or otherwise excuse the need for professional engineering judgment and knowledge. The user of this Manual is hereby cautioned that many aspects of engineering design must be considered, including but not limited to:

- Public health and safety;

- Site-specific conditions or unusual features of a project site that warrant special designs;

- Current versions of design texts, manuals, technical documents, and research.

The design engineer (with assistance from other design professionals as needed) is expected to thoroughly investigate field conditions and coordinate all design efforts with Charleston County.
For applicable projects, construction plans must be stamped and signed by a professional engineer, landscape architect, or Tier B land surveyor actively licensed in the state of South Carolina, unless otherwise stated in this Manual. The design professional must have sufficient education and experience to perform a complete and thorough design of each element shown on the construction plans, and must also have complete control to change or alter plans during the design phase. The professional's stamp is a public guarantee that his design has the highest regard for health and safety, protects the environment (air, soil, water) to the maximum degree possible, and serves the interests of the general public within Charleston County. Charleston County requires a level of design expertise for stormwater calculations and flooding analyses. Stormwater design criteria are based upon current scientific knowledge and engineering judgment. It should be realized by engineering designers that floods and flooding may occur at any time due to any number of factors beyond the reasonable control of Charleston County, such as: greater amounts of precipitation or different rainfall patterns than used in design storms, wet soil conditions, debris or blockage of key stormwater channels, high groundwater tables, etc.

1.8 Severability

If any provision of this Manual or its application to any circumstance is held by a court of competent jurisdiction to be invalid for any reason, this holding does not affect other provisions or applications of this Manual which can be given effect without the invalid provision or application, and to this end, the provisions of this Manual are severable.

1.9 Contact Information

The following Charleston County personnel should be contacted for any questions, clarifications, or other information related to stormwater management and this Manual.

Primary Contact for Stormwater Issues:

Stormwater Management Division
4045 Bridge View Drive
North Charleston, SC 29405-7464
(843) 202-7600
Fax: (843) 202-7601

General Stormwater Email: stormwater@charlestoncounty.org
Stormwater Community Service Line: (843) 202-7639
Office Hours: Monday-Friday, 8:00 a.m. - 5:00 p.m.

Submissions for Projects in Unincorporated Charleston County should be made to:

Charleston County Planning Department
4045 Bridge View Drive
North Charleston, SC 29405
(843) 202-7200
(843) 202-7222 (Fax)
Office Hours: Monday-Friday, 8:00 a.m. - 5:00 p.m.

Submittal Information for Projects in Municipalities

Town of Sullivan's Island
Design Review Board
Post Office Box 427 (Town Hall is located at 1610 Middle Street)
Sullivan's Island, SC 29482
(843) 883-3198
(843) 883-3009 (Fax)
www.sullivansisland-sc.com/

City of Isle of Palms
Post Office Box 508 (City Hall is located at 1207 Palm Blvd.)
Isle of Palms, SC 29451
(843) 886-6428 - main office
(843) 886-8005 (Fax)
Office Hours: Monday-Friday, 8:00 a.m. – 5:00 p.m.
www.isle-of-palms.sc.us/

Town of Folly Beach
Public Works Department
Post Office Box 48 (Town Hall is located at 21 Center Street)
Folly Beach, SC 29439
(843) 588–2447 ext. 4
(843) 588–7016 (Fax)
Office Hours: Monday-Friday, 8:00 a.m.- 4:00 p.m.
http://www.cityoffollybeach.com

Town of Lincolnville
Post Office Box 536 (Town Hall is located at 141 W. Broad Street)
Lincolnville, SC 29484
(843) 873-3261
(843) 873–3267 (Fax)

1.10 Definitions

The Public Works Director shall have the right to define or interpret any other word or term contained within this Manual. The rules of verbal construction found in the Stormwater Management Ordinance apply to this Manual.

1. Culvert: any structure not classified as a bridge which provides an opening under any roadway, including pipe culverts, and any structure so named in the plans.

2. Contour: an imaginary line, or its representation on a contour (topographic) map, joining points of equal elevation.

3. Detention: the collection and storage of stormwater runoff in a surface or sub-surface facility for subsequent controlled discharge to a watercourse or water body.

4. Development: the act of any person, or others who acts in his own behalf, that is required to submit an application for approval to disturb land or encroachment or site construction and is thereafter responsible for maintaining compliance with this Ordinance and conditions of the approved application.

5. Ditch: a drainage channel in earth created by natural or artificial means to convey surface and/or subsurface water, flowing continuously or intermittently.

6. Drainage: a general term applied to the removal of surface or subsurface water from a given area either by gravity via natural means or by systems constructed so to remove water, and is commonly applied herein to surface water.

7. Elevation: height in feet above a given known datum, such as mean sea level.

8. Embankment or Fill: a deposit of soil, rock or other material placed by man.

9. EPSC: Erosion Prevention Sediment Control

10. Grading: any displacement of soil by stripping, excavating, filling, stockpiling, or any combination thereof, including the land in its excavated or filled state.

11. Impervious Surface: a surface which has been compacted or covered with a layer of material so that it is highly resistant to infiltration by water. The term includes most conventionally surfaced streets, roofs, sidewalks, parking lots, and other similar structures.

12. Mean Sea Level (MSL): the average (mean) height of the sea or ocean, in reference to NAVD29 or NAVD88.

13. Outlet Facility: stormwater management facility designed to regulate the elevation, rate, and volume of stormwater discharge from detention facilities.

14. Owner/Operator: means the property owner, or any person who acts in his own behalf, that submits an application for approval to disturb land or vegetation or for encroachment, and the person, if so designated by default or on legal documents, as the responsible party for maintenance of a stormwater system(s) and facility(s). May be referred to as owner, owner/operator or agent. Certification signatures must be provided by this person.

15. Post-Development Conditions: those conditions which are expected to exist, or do exist, after alteration, of the natural topography, vegetation, and rate, volume or direction of stormwater runoff, (resulting from development activity).

16. Pre-Development Conditions: those conditions, in terms of the existing topography, vegetation and rate, volume or direction of stormwater runoff, which exist at the time the applicant submits an application form for a land disturbance permit or waiver.

17. Project: improvements and structures proposed by the applicant to be constructed on a defined site as part of a common plan of development.

18. Public Works Director: means the director of the Department of Public Works of Charleston County, South Carolina or an authorized representative or designee.

19. Rate: volume of water passing a point per unit of times, generally expressed in cubic feet per second (cfs).

20. Redevelopment: See Development.

21. Retention: the collection and storage of stormwater runoff without subsequent discharge to surface waters.

22. Retrofit: the process of altering an existing drainage system to function properly or more efficiently that currently exists. Retrofitting will be a common method used by the County to address TMDLs (retrofitting systems to include a water quality/runoff treatment device).

23. Runoff: that part of rainfall that is not absorbed into the sites but flows over the site as surface waters.

24. Sediment: fine, particulate material, whether mineral or organic, that is in suspension and is being transported, or has been transported, from its site of origin by water or air.

25. Sedimentation: the process which operates at or near the surface of the ground, or deposits soils, debris and other materials either on other ground surfaces or in the waterbody.

26. Sedimentation Facility: any structure or area which is designed to retain suspended sediments from collected stormwater runoff, to include sediment basins.

27. Site: any tract, lot, or parcel of land or combination of tracts, lots, or parcels of land which are in common ownership, or are contiguous and in diverse ownership where development is to be performed as part of a unit, subdivision, or project.

28. Site Construction: is considered the act or process or altering the natural cover or topography and alters the quality or quantity of stormwater runoff.

29. Special Protection Areas: designated areas within the County within which more stringent design standards have been established to address an existing problem, such as flooding or water quality. Construction activities occurring within these areas will be required to comply with the additional or more stringent design criteria.

30. Storm Frequency: rate of likely recurrence of a rainstorm.

31. Stormwater Management Plan: the plan to manage stormwater in terms of collection, conveyance, storage, treatment and disposal of stormwater runoff in a manner to meet the objectives of this Ordinance and its terms, including, but not limited to, measures that control the increased volume and rate of stormwater runoff and water quality impacts caused by man-made changes to the land. This plan is approved as detailed in this document and includes the engineering calculations and construction drawings.

32. Subdivision: all divisions of a tract or parcel of land into two or more lots, building sites, or other divisions for the purpose, whether immediate or future, of sale, lease, or building development, and includes all division of land involving a new street or change in existing streets, and includes re-subdivision which would involve the further division or relocation of lot lines of any lot or lots within a subdivision previously made and approved or recorded according to law; or, the alteration of any streets or the establishment of any new streets within any subdivision previously made and approved or recorded according to law, and includes combination of lots of record.

33. Vegetation: all plant growth, especially trees, shrubs, mosses, and grasses.

34. Wetlands: those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions and delineated as freshwater wetlands by the U.S. Army Corps of Engineers.

CHAPTER 2 STORMWATER PERMITTING PROCEDURES

This chapter provides developers, owners, engineers, contractors, and others with the information needed to obtain approval of a stormwater management plan from the Public Works Director as required for certain construction activities within unincorporated Charleston County and encompassed municipalities as authorized under intergovernmental agreements. This section describes conditions when a permit is needed, the types of applications used by the Public Works Director that apply to different situations, application package requirements, and when and if waivers of such requirements are applicable for certain exempted activities.

2.1 Duty to Comply

Unless otherwise allowed by the Stormwater Management Ordinance or this Manual, the surface of land in Charleston County shall not be disturbed or altered for any purpose whatsoever, nor any major drainage channel or component of the stormwater system impeded or encroached upon without approval from the Public Works Director. Site construction activities cannot commence prior to approval from the Public Works Director and issuance of a County Site Construction Permit.

2.2 Stormwater Permit Application and Approval Procedures

A permit is required for all new single family residential construction, new development, and redevelopment projects. Development and redevelopment projects are projects that disturb/alter 5,000 ft^2 or more of land/surface area. All site construction permit applications shall be made, as necessary, to the Charleston County Planning Department (see the contact information in Chapter 1, Section 1.9). Applications for review and approval under this chapter may be initiated by: (1) petition of all the owners of the property that is the subject of the application; (2) the owners' authorized operators; or (3) review and decision-making bodies. The application package will then be distributed to other necessary County departments for their review, which are typically the Planning Department, the Building Services Department, and the Public Works Department. The remainder of this Manual describes the procedures and application requirements of the Public Works Director. The submittal requirements of other County departments are not given in this Manual. Once a submittal is approved by the necessary departments, the Planning Department is notified and the permit can be issued. All permits will be issued through the Planning Department. The Public Works Director will require applicants that need permit coverage from any state or federal agency (such as but not limited to: NPDES permit for all projects that disturb one (1) acre or more, disturb one-half (1/2) acre or more and are within one-half (1/2) mile of a receiving waterbody, coastal zone consistency for all projects in the coastal zone, and 401 certifications from SCDHEC-OCRM, navigable waters permit (from the U.S. Army Corps of Engineers) to have such permits in hand prior to passing approval back to the Planning Department for County permit issuance.

The Public Works Director has established several categories of applications: single family residential structures (SFR) must submit for a site construction permit and certify that erosion control measures will be in place (See Section 2.2.11), Type I applications include minor construction projects for projects up to one (1) acre (See Section 2.2.12), Type II applications are for construction projects greater than 1 acre and

under five (5) acres (See Section 2.2.13), Type III applications are for projects greater than five (5) acres (See Section 2.2.14), a utility application for linear utility projects (See Section 2.2.15). Each category has a different list of submittal requirements. In general, the larger the project area and potential impact on the County's stormwater system and waters of the state, the more in-depth the stormwater management plan must be and hence the more information that must be submitted for review. These categories are used exclusively by the Public Works Director.

Utility companies are not exempt from NPDES requirements when applicable and Charleston County must regulate utility projects just as any other type of construction. However, since most utility projects are small, linear, and underground, there is often no long-term impact compared with other construction types. Therefore, these projects have been assigned their own application standards reflecting their potential impact on the County's stormwater system.

Applications required in this Manual shall be considered complete only if they are submitted in the required format and including all mandatory information. Any application that is determined to be incomplete shall be returned to the applicant along with an explanation of the application's deficiencies. No further processing of the application shall occur until the deficiencies are corrected. Once the deficiencies are corrected, the application may be resubmitted provided that it is resubmitted within six (6) months of the date that the application was returned to the applicant. Applications resubmitted more than six (6) months after the date that the application was returned is considered incomplete.

Whenever the procedures of the County expressly state that applications are to be submitted after a "pre-application conference," applicants shall be responsible for scheduling and attending such meetings. When pre-application conferences are required, an application shall not be accepted until the pre-application conference has been conducted, and any errors or omissions noted in review of the application for completeness have been addressed by the applicant. Pre-application conference will be scheduled in conjunction with the applicable Planning Department Pre-application conferences.

2.2.1 Final Approval

As mentioned, in **all** cases, one complete permit application for a construction project shall be submitted to the Charleston County Planning Department or if applicable, the municipal agency, or hand delivery (see contact information in Section 1.9) along with required components (Section 2.2.11-15). The permit application is given a brief review by the Planning Department at the time of submission to check for the required submittal components. Failure to provide all of the required information shall be considered an incomplete application and the package will be returned to the applicant. If mailed, the applicant will be notified by mail requesting further information needed to complete the package. In some cases, a new permit application package will have to be resubmitted. The Public Works Director will begin their review once the application package is received from the Planning Department, the Public Works Director has twenty (20) working days to either the approve, deny, review comments, or request for further information transmitted to the applicant.

If a Type III permit is being sought, the review will not begin until after it has been verified that the pre-submittal meeting was held or until the Stormwater Master Plan has been discussed with the Public Works Director. Plan review checklists for the various approval types are provided in Appendix G.

2.2.2 Site Construction and Project Closeout

Site construction cannot commence until the Site Construction Permit is issued to the applicant by the Charleston County Planning Department. Construction activities must adhere to the provisions agreed to in the permit. Any substantial revisions to the approved permit should be submitted in writing to the Public Works Director for review by the necessary departments. Such changes shall not be implemented until approval is given. Substantial revisions for stormwater management issues may include, but are not limited to, pipe size and grade altercations that affect hydraulic capacity, changes to easement boundary due to changes in the stormwater system components, or changes to the general grading plan of the site that affect the flow direction, rate, volume, or quality of stormwater runoff.

The owner/operator is required to maintain onsite at least one (1) copy of all approved permits, technical reports, and construction documents, available upon request by Charleston County. The Public Works Director will conduct inspections during the construction phase. Frequency and specific times and dates of these inspections will be done at the discretion of the Public Works Director. More information on inspections is given in Chapter 4. During construction, the owner or designated representative (contractor) must conduct inspections of all temporary erosion and sediment controls on the site in accordance with the submitted and approved maintenance schedule, and if applicable, the NPDES permit from SCDHEC-OCRM.

2.2.2.1 Permit Transfer

A site construction permit may be transferred from one owner/operator to another with notification to the Public Works Department. The most obvious example of this is when a developer readies a piece of property for a new neighborhood by performing grading activities, utility installation, the building of roads, then turns the property over to a homebuilder(s). In such cases, the applicant must make Charleston County and SCDHEC of plans to transfer ownership of the permit and associated stormwater management issues through completion of the permit transfer form in Appendix C within 5 business days. A transfer of permit coverage is also allowed for phases within a project. At the time of permit transference, Charleston County will issue the Notice of Termination for the current permit holder and issue a new permit to the new responsible party. If a permit transfer is not requested using the appropriate form, the current permit holder will continue to be held responsible for stormwater management issues at the site.

2.2.2.2 Closeout

At the conclusion of construction, the owner/operator is responsible for making sure a site is stabilized with vegetation established, paved areas and stormwater conveyances clean of debris and sediment, and stormwater controls working properly. Proof of these will be determined by a County inspector. Any problems found must be corrected by the owner prior to closing out a County permit. Upon confirming any such corrections are completed and the site is ready, the owner/operator will notify the Planning Department. The Public Works Director may require additional items in order to closeout a permit.

2.2.3 Exemptions

Per the Stormwater Management Ordinance, the provisions of this section shall not apply to:

1. Land disturbing activities undertaken on forestland for the production and harvesting of timber and timber products and conducted in accordance with best management practices and minimum erosion protection measures established by the South Carolina Forestry Commission. Land disturbance which includes the removal of the soil/root system is not exempt from these provisions.

2. Activities undertaken by persons who are otherwise regulated by the provisions of the South Carolina Mining Act.

3. Certain livestock, including beef cattle, sheep, swine, horses, ponies, mules, or goats, including the breeding and grazing of these animals; bees, fur animals, and aquaculture. The construction of an agricultural structure that requires the disturbance of one or more acres, such as, but not limited to, broiler houses, machine sheds, repair shops, and other major buildings shall require the submittal and approval of an application in accordance with the Manual prior to the start of the land disturbing activity.

4. Land disturbing activities on agricultural land for production of plants and animals, including but not limited to: forages and sod crops, grains and feed crops, tobacco, cotton, and peanuts; dairy animals and dairy products; poultry and poultry products; livestock, including beef cattle, sheep, swine, horses, ponies, mules, or goats, including the breeding and grazing of these animals; bees, fur animals, and aquaculture. The construction of an agricultural structure that requires the disturbance of one or more acres, such as, but not limited to, broiler houses, machine sheds, repair shops, and other major buildings shall require the submittal and approval of a Land Disturbance Application prior to the start of the land disturbing activity.

5. Overhead line installation (including poles and towers) along with associated vehicular access that does not result in significant soil/root system disturbance to include clearing of trees if the stumps are not removed. This exemption does not excuse those activities which impact another project and associated compliance conditions to County regulations.

2.2.4 Expiration of Permit

A site construction permit will remain valid for up to five (5) years from the date of issuance, provided that the project is in compliance with the Stormwater Management Ordinance and this Manual and is not inactive for a period of twelve (12) consecutive months. Construction activity must be initiated within 6 (6) months of issuance of the County permit. Failure to initiate construction will render the permit invalid at the end of the sixth (6) months.

2.2.5 Responsibility of Owner/Operator

During any construction operation, the owner/operator shall be responsible for carrying out the proposed work in accordance with the permit, approved plan, specifications, and time schedule; and in compliance with all requirements of the Stormwater Management Ordinance and this Manual.

2.2.6 Variances

The Public Works Director may grant a variance from the requirements of this Manual if exceptional circumstances exist such that strict adherence to the provisions of this Manual will result in unnecessary hardship to the owner/operator or person and will not fulfill the purpose of this Manual (Section 1.1) and the Stormwater Management Ordinance (Section 1.5).

Request for variance must be submitted in writing by the owner/operator. The request must provide details as to the nature and reason for the request and supporting technical documentation (recommend including applicable Manual sections). The owner/operator will include in writing the following information to support the request:

a. Demonstrate that the variance will not conflict with the purpose of this Manual, the Stormwater Management Ordinance or the regulatory requirements of Local, State, or Federal jurisdictions having authority;

b. Extraordinary and exceptional conditions pertaining to the particular project;

c. Conditions not generally apply to other property in the vicinity;

d. A variance will not be of substantial detriment to adjacent property or to the public good;

e. Technical documentation including testing, performance, or other data that supports the requested variance;

The Public Works Director shall render, in writing, a decision on the request within thirty (30) working days of the receipt of the written request for variance.

2.2.7 Appeals

An applicant may appeal the decision of the Public Works Director to the Charleston County Construction Board of Adjustment and Appeals within thirty (30) days after the date of the Public Works Director's response. The Public Works Director shall provide the petition form to the owner/operator.

a The petition must be accompanied with a $25.00 fee that will be used to partially defray the costs incurred in connection with the administration of petitions filed pursuant to this section.

b The Construction Board of Adjustment and Appeals shall hear the petition at the regularly scheduled meeting.

c The Construction Board of Adjustment and Appeals shall render a written decision on each petition that is heard, and such written decision shall be issued with twenty (20) calendar days from the day the Board heard the petition. The decision of the Construction Board of Adjustment and Appeals shall contain findings of fact and conclusions of law, and the decision shall be sent to the petitioner by first class mail.

d The decision of the Construction Board of Adjustment and Appeals shall be final unless the petitioner appeals the decisions to the circuit court in Charleston County within thirty (30) days after the date of the decision of the Construction Board of Adjustment and Appeals.

2.2.8 Encroachment Permits

An encroachment permit, which controls the impacts of traffic, storm drainage, and sediment entering a public road right-of-way, must be obtained from the SCDOT and/or the Charleston County Public Works Department before construction begins. Applicants should be aware of Charleston County requirements which may differ from SCDOT's.

A copy of an encroachment permit application(s) to SCDOT must be included in the site construction permit application package. This is allowed because SCDOT will not approve an encroachment unless the site construction permit has been approved. It is the applicant's responsibility to comply with all SCDOT encroachment permit application requirements. Approved encroachment permits are required prior to final approval from the Public Works Director.

2.2.9 Easement Ownership (Public)

The following section provides the required easement widths for various components of the stormwater system. This section applies to easements that are publicly dedicated and accepted by Charleston County Council. There will be an allowance for offset easements, in which the pipe, channel, or other stormwater system component does not have to be in the middle of the easement width, but may be offset to allow for certain construction needs. Proposed offset easements will be identified on the plans and additional width may be required as proscribed by the Public Works Director.

2.2.9.1 Storm Drain Pipe

Drainage easements shall provide adequate room for maintenance equipment to operate. Table 2.1 provides required minimum drainage easement widths for some of the more typical situations:

Table 2.1-Storm drain pipe easements

Pipe size (maximum)	Maximum depth to invert (ft)	Width of drainage easement (ft)
18" ≥ and ≤ 24"	5.0'	12' – 16'
24" < and ≤ 42"	5.0' – 7.0'	16' – 20'
42" < and ≤ 54"	7.0'	20' – 24'
54" < and ≤ 72"	7.0' – 9.0'	24' – 30'

Notes: (1) For depths greater than shown, add two (2) feet for each additional foot to the invert.
(2) For pipe sizes not specifically listed above, the easement width and depth to invert shall be that of the next size up, e.g., the easement width a thirty-six (36) inch pipe is the same as those for a forty-two (42) inch pipe.
(3) For larger pipe sizes and/or multiple lines of pipe easement width shall be as determined by the Director of Public Works.

2.2.9.2 Swales and Ditches

A minimum easement width for a swale type ditch is fifteen (15) feet and a maximum of twenty (20) feet. Maximum depth of the swale type ditch shall be two (2) feet where approved by the Public Works Director. The minimum easement width for trapezoidal ditch will be five (5) feet of shoulder area plus the top width of the ditch plus a twenty (20) foot maintenance shelf. When the depth of the ditch exceeds four (4) feet, the maintenance shelf shall be provided along both sides of the ditch. The minimum bottom width of the ditch shall be three (3) feet.

2.2.9.3 Detention Ponds

All detention facilities that require public maintenance shall be provided with access for maintenance via a constructed thirty (30) feet wide drainage right-of-way from the nearest road to the facility. Plans shall include a barrier structure at the primary road right-of-way to limit vehicular access. The detention facility or pond shall include a twenty (20) foot wide cleared shelf with easement around the top perimeter of the facility for maintenance access.

2.2.9.4 Other Stormwater Facilities & BMPs

All other structures used for the control of stormwater runoff (quantity or quality) not otherwise covered above, shall have an easement for access and maintenance that is a minimum of twenty (20) feet beyond the boundary of any such structure. The Public Works Director may request or allow other easement widths on a case-by-case basis given site constraints or special conditions.

2.2.9.5 Offsite Easements

Any required off-site easements shall be obtained prior to site construction permit issuance which would impact upon that area. Any work done without a proper and adequate easement(s) shall be at the owner's own risk. Non-subdivision projects shall provide validation of necessary easements before a site construction permit will be issued.

2.2.10 Stormwater Facility Ownership and Maintenance

2.2.10.1 Ownership (Private)

Residential: Ownership of all BMPs (water quantity and quality basins/devices/non-structural practices) in new and redevelopment projects belong to the owner/operator(s) of the parcel(s) or a Home Owners Association (HOA) of land under or on which BMPs exist.

Commercial: In new and redevelopment projects, ownership of the entire stormwater system (onsite conveyances, as well as all BMPs, ponds, etc.) belongs to the owner/operator.

For any project, the owner of a portion or the entire stormwater system shall be clearly designated before a site construction permit will be issued. Ownership requires maintaining the stormwater system, including all ponds and other BMPs used for controlling runoff quantity and quality. Ownership does not allow the owner/operator may in any way alter the size, or function of any component of the stormwater system without consent from Charleston County. Owner/operator found altering such components will be required to remove any alterations.

2.2.10.2 Maintenance

Each component of the stormwater management system (pipes, inlets, BMPs) shall have a maintenance plan (activities and associated schedule) as part of the application package for a site construction permit. The plan shall also cover temporary measures used during construction in addition to the long term maintenance of the system. Maintenance activities and recurrence intervals for water quality BMPs are discussed and referenced in Chapter 3.

The owner/operator or HOA must enter into a permanent maintenance agreement with Charleston County through the issuance of the operating permit. The operating permit is provided in Appendix C. The operating permit is prepared by the Public Works Director using information supplied by the owner and must be signed and executed prior to the termination of a site construction permit (Notice of Termination (NOT)). This permit allows for maintenance to be performed by a third party such as an operator or other contractor. The Public Works Director will provide oversight of the permits to ensure compliance. The Public Works Director may inspect a system to ensure maintenance is being performed in accordance with this permit. Chapter 4 provides the procedures for County inspection and enforcement procedures.

2.2.11 SFR/Commercial Application

All Single Family Residential (SFR) construction and commercial construction projects that disturb between 0 and ½ acre must complete the Erosion Protection & Sediment Control (EPSC) Certification that contains guidance on selecting, installing, and maintaining erosion prevention and sediment controls on site. SFR projects must apply for a building permit. This certification requires the owner/operator shall

certify that these measures will be installed and maintained to prevent the discharge of sediment-laden runoff and to prevent the construction from causing non-compliance for any adjacent construction projects that may be under another county, state, or federal permit. The application is to be filled out and signed to be considered complete.

2.2.12 Type I – Minor Application

Any new or redevelopment project for purposes disturbing ½ acre but less than one (1) acre must submit a Type I application. Each project must have a permit from the County prior to beginning construction activities. Guidance on selecting necessary erosion control measures is provided in Appendix A (EPSC Certification) and Appendix F (BMP Uses). An application must provide the following to be considered complete:

1. Application Form: This form as shown in Appendix A.

2. Site Narrative: The narrative shall describe the site, the purposes of the construction activity, potential problems with adjacent properties and waterbodies receiving stormwater runoff (existing and proposed). If applicable, wetland and waterbody disturbance issues shall be identified along with proof of permit coverage by the US Army Corps of Engineers (USACE) and SCDHEC-OCRM.

3. Construction Site Plan: A sketch of the project area must accompany the narrative showing new and existing features, and selected BMPs.

2.2.13 Type II – Intermediate Application

Any new or redevelopment project for purposes disturbing one (1) acre but less than five (5) acre must submit a Type II application. Each project must have a permit from the County prior to beginning construction activities. Guidance on selecting necessary erosion control measures is provided in Appendix F (BMP Uses). An application must provide the following to be considered complete:

1. Application Form: This form as shown in Appendix A.

2. Technical Report: One (1) copy of a technical report must be submitted as part of the application, prepared by a certified professional as defined by state law. This report shall contain of supporting design calculations for the proposed stormwater system, and erosion measures used during construction, to include, but are not limited to, the following sections:

    a. Maps: A map(s) of the project area must contain the following:

        i. Vicinity map of the proposed project showing project location in relation to roadways, jurisdictional boundaries, streams, rivers, and lakes and the boundary lines of the site to be developed,

        ii. Topographic information showing runoff patterns,

        iii. Soil types,

iv. Wetlands (fresh and saltwater),

v. All areas within the site that will be included in the construction activities shall be identified and the total disturbed area shall be calculated,

vi. Location of temporary and permanent stormwater management controls,

Note: This information may be provided in conjunction with the construction site plan.

b. Site Narrative: A narrative must be submitted with the permit application describing the site, purpose of the construction activity, topographic and soil information, adjacent properties and owners, waterbodies receiving stormwater runoff, summary table(s) of existing and proposed runoff flows, volumes, and pollutant loads, existing water quality and flooding issues, and potential impacts (quality, downstream structures, etc.) and benefits (open space, treatment, maintenance, etc.). If applicable, the narrative will contain justification for variances or other special conditions of the site. If applicable, wetland and water body disturbance issues will be identified and the status of necessary permits application to the USACE. If a TMDL(s) is in place for the receiving waterbody, the narrative must describe how the project will comply with the TMDL(s).

The narrative should identify the roles and responsibilities of all co-permittees and others involved in the construction project;

c. Hydrologic Design: Pre- and post-development hydrologic analysis that determines the existing stormwater peak flow rates, flow velocities, and pollutant loads for all delineated sub basin/discharge points. The existing condition will be the standard by which the stormwater plan for a construction project is evaluated. The stormwater plan must demonstrate control of runoff quantity and quality in accordance with design criteria provided in Chapter 3 (flow and volume control, maximum velocities, etc.);

d. Detention Design: calculations showing the flow rates from the proposed development do not exceed pre-development levels;

e. Hydraulic Design: calculations for all conveyances showing the ability to handle anticipated flows and volumes. Provide calculations showing that the project does not cause or increase any negative impact on downstream structures, and the upstream and downstream stormwater drainage system. The following computations shall be included: hydrographs, routing of hydrographs through system components, pipe and open channel capacity, velocity calculations, and water surface elevations. Calculations and discussion shall be provided energy dissipation and inlet and outlet protection. All system components shall have standard details and specifications;

f. If the project is located and/or in a Special Protection Area, a comprehensive evaluation of engineering calculations and analysis shall be included that demonstrate that the project will comply with state and federal conditions on stormwater discharges. More information is provided in Chapter 3;

g. Erosion and sediment control plan to include:

i. A description of the erosion and sediment control facilities selected,

ii. Map showing the location of all erosion and sediment control facilities,

iii. Design calculations of each measure, including trapping efficiencies. Each measure shall have a standard detail and specification,

iv. Explanation/identification of models used in the design.

h. Downstream analysis calculations showing the effect of post-development design flows on downstream stormwater conveyance systems and channels. More information is provided in Chapter 3;

i. Watershed delineation maps with consistent sequential notations;

j. Location map showing topography and waters of the state in relation to proposed project;

k. Discussion and calculation of any wetlands issues;

l. Presentation of existing and proposed contours of the development site;

m. General description of the adjacent property and description of existing structures, buildings, and other fixed improvements located on surrounding properties that can affect or be affected by storm events;

n. Discussion of site access issues and easements to be obtained and provided to the County.

3. Construction Site Plans: One (1) complete set of site construction plans are to be included as part of the permit application. The information required on the construction plans shall include, but are not limited to, the following list.

a. North arrow and scale;

b. Property lines, adjacent landowners' names, and land use conditions

c. Legend;

d. Registered engineer's seal;

e. Certificate of Authorization seal, as appropriate;

f. Existing and proposed contours and land uses (1' intervals);

g. Limits of disturbed area;

h. Delineation of wetlands and/or waters of the state;

i. Easements;

j. Stormwater system profiles with existing and proposed ground elevations;

k. Construction sequence (include implementation of all stormwater and sediment controls in the first phase of construction);

l. Locations of all temporary and permanent control measures;

m. Details for all temporary and permanent control measures;

n. Grassing and stabilization specifications and schedule;

o. Maintenance requirements (for temporary and permanent controls, grassing, etc.);

p. Construction entrance/exit;

q. Tree protection, preservation, and overall landscaping plan with appropriate species selection and screening for ponds and other components as required by the Landscaping Ordinance;

r. Details and specifications of all necessary construction components, to demonstrate compliance with applicable laws, codes, standards regulations and ordinances;

s. Location map;

t. The cover sheet shall contain, at the minimum, the following items:

   i. Project name,

   ii. Engineers contact information (name, mailing address, telephone, fax),

   iii. Contact information (name, mailing, address, telephone, fax) of the owner, operator or designated party,

   iv. Vicinity map, and,

   v. Table of contents.

u. The following standard notes will be shown on the plans. This list is not meant to be exhaustive and other notes may be included as necessary:

i. If necessary, slopes which exceed eight (8) vertical feet should be stabilized with synthetic or vegetative mats, in addition to hydroseeding. It may be necessary to install temporary slope drains during construction. Temporary berms may be needed until the slope is brought to grade.

ii. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than fourteen (14) days after work has ceased.

iii. It is recommended that all sediment and erosion control devices shall be routinely inspected every seven (7) days or after each rainfall occurrence that exceeds one-half (1/2) inch within twenty-four (24) hours of that storm event. No case shall exceed fourteen (14) days. A proposed schedule needs to be provided. Damaged or ineffective devices shall be repaired or replaced, as necessary,

iv. Provide silt fence and/or other control devices, as may be required, to control soil erosion during utility construction. All disturbed areas shall be cleaned, graded, and stabilized with grassing as soon as practicable after the utility installation,

v. All erosion control devices shall be properly maintained during all phases of construction until the completion of all construction activities and all disturbed areas have been stabilized. Additional control devices may be required during construction in order to control erosion and/or offsite sedimentation. All temporary control devices shall be removed once construction is complete and the site is stabilized,

vi. The contractor must take action to minimize the tracking of mud onto the paved roadway construction areas. The contractor shall daily remove mud/soil from pavement, as may be required,

vii. Residential subdivisions require erosion control features for infrastructure as well as for individual lot construction. Individual property owners shall follow these plans during construction,

viii. Temporary diversion berms and/or ditches will be provided as needed during construction to protect work areas from upslope runoff and/or to divert sediment laden water to appropriate traps or stable outlets,

ix. All waters of the State (WoS), including wetlands, are to be flagged or otherwise clearly marked in the field. A double row of silt fence is to be installed in all areas where a fifty (50) foot buffer can't be maintained between the disturbed area and all WoS. A ten (10) foot buffer should be maintained between the last row of silt fence and all WoS,

x. Litter, construction debris, oils, fuels, and building products with significant potential for impact (such as stockpiles of freshly treated lumber) and construction chemicals (concrete washdown areas, paint brush cleaners, etc.) that could be exposed to storm water must be prevented from becoming a pollutant source in stormwater discharges,

xi. Provide written proof that all off-site easements have been obtained.

Note: Some items may be included in other components of the permit application package, but should be adequately noted. Size D (24" X 36") Plan sheets/drawings are preferred.

4. Subdivision projects shall have a complete set of plans and specifications to include, but not limited to, the following items: lot layout/site plan and staking, acreage, road plan/profiles, storm drainage plan/profile, drainage areas (both on and off-site) with characteristics, sediment and erosion control, utilities (water and sanitary sewer), post-construction stormwater management facilities, and traffic patterns with temporary (construction) and permanent traffic signage. Plans shall provide existing and proposed contours with intervals of not more than one (1) foot. Contour lines should be extended beyond the site boundary lines. The lot layout sheet should show a tie distance from the primary entrance of the proposed project to the nearest existing intersection.

5. All available or used benchmarks shall be shown on this or other applicable sheet. At least one benchmark shall be available or established on/near (within survey instrument sight distance) the site. The benchmark shall be referenced to mean sea level (MSL.). If necessary, the Public Works Director will assist in locating the nearest established benchmark.

6. The applicant will provide a tentative construction time schedule for the development. Sediment and erosion control measures will be some of the first work at a site and such implementation will be demonstrated. The schedule will also provide for coordination with the responsibilities of all co-permittees and other contractors, including those installing utilities.

7. Specifications for all components of construction activities related to grading, utilities, sediment and erosion control, temporary and permanent vegetation, water quality BMPs, etc.

8. Maintenance Schedules and Operating Permits:

   The owner/operator responsible for maintenance must be identified in the application. The application shall include the maintenance schedule for the stormwater system components. When stormwater management facilities and system components are to be maintained by Charleston County, the County must concur and construction done in accordance with County standards.

9. Stormwater Pollution Prevention Plan (SWPPP):

   A SWPPP is a document that provides guidance to owners and contractors and co-permittees/subcontractors on the activities that shall be done during construction to reduce the risk of pollution. Construction projects are considered an industrial category and are required to prepare and implement a SWPPP to be submitted with the permit application package for Charleston County. The stormwater pollution prevention plan requirement applies to both development and redevelopment sites.

2.2.14 Type III – Medium/Large Construction Applications

This permit is needed for any project which disturbs an area that is five (5) acres or greater. A complete application is accomplished by submitting the items listed for Type II applications (Section 2.2.13, Items 1-9) plus some additional requirements detailed below.

2.2.14.1 Pre-submittal Meeting

The first step for Type III applications is to conduct a pre-submittal meeting by contacting the Stormwater Division. This meeting is intended to coordinate stormwater management needs. Design professionals are urged to see the site to understand existing runoff patterns and identify areas on the site that may require greater attention to meet the intent of the requirements. The Public Works Director may waive this requirement. Refer to Section 2.2 for details.

2.2.14.2 Stormwater Master Plan

For Type III applications, a Stormwater Master Plan is required to be submitted prior to the submittal of the complete package as detailed below. Special Protection Areas are areas within the County that require some additional stormwater management controls due to existing problems. Such problems can include but are not limited to flooding and state recognized water quality impairments. This master plan is to be created to give the design professional the opportunity to propose a site layout and proposed stormwater controls to the Public Works Director. The master plan should be submitted by hand or mail, and can be incorporated for discussion at the pre-submittal meeting. The Public Works Director may waive the requirement for a master plan for some permit applicants on a case by case basis.

The master plan can be a preliminary sketch of the site and shall contain the following items, when applicable:

1. Site layout showing buildings, roads, parking areas, utilities, and grassed or landscaped areas.

2. Vicinity map.

3. Pre- and post-development primary runoff patterns and discharge points.

4. Location/distances to Waters of the State and all other existing natural features such as wetlands, ponds, lakes, floodplains, and stream buffers.

In addition, the applicant should be prepared to discuss the following items, when applicable:

1. All modeling methodologies to be used.

2. Methods to show compliance with any adopted Total Maximum Daily Loads (TMDLs) or other waterbody impairments that may limit the allowable pollutant load that can be discharged.

3. Preliminary waiver or variance requests.

4. Others as requested by the Public Works Director.

Upon submittal and discussion of the Master Plan and related concerns, the applicant can create and submit a complete permit application (Section 2.2.13, Items 1-9).

2.2.15 Utility/Linear Applications

If SCDHEC does not issue a general permit to cover utility construction activities, Charleston County requires that companies performing utility installations (excluding water and sewer) must obtain County approval prior to beginning work. This must be done whether the utility installation is done for as part of another construction project (e.g., phone line extension) or an independent project (e.g., gas force main) or a linear site construction project (e.g., sidewalk construction) A complete application must include the following items:

1. Site Narrative: The narrative should describe the installation to be performed and the erosion control measures that will be used to erosion prevention and sediment control. Inclusion of typical design details is preferred, but simple sketches may be used. Details should include at a minimum temporary and final stabilization measures and silt fencing. Supporting calculations should be provided as necessary, but are required if disturbing greater than one acre.

2. If a waterbody crossing is necessary, a sketch of the proposed measures. If USACE permit is needed, a copy of the permit application should also be included. County approval will not be issued until USACE approval is obtained.

3. A signed certification agreeing to the conditions of the County approval and NPDES permit if applicable. The certification form is provided in Appendix C.

Charleston County is aware of the importance of coordinating utility installation, particularly when the installation is part of a larger project. The various parties are encouraged to work together to ensure that these installations do not impact the permit compliance of the larger project.

CHAPTER 3 DESIGN STANDARDS

3.1 Purpose and Intent

This chapter provides engineers, designers, developers, and others with the necessary information needed to design adequate systems that will control the rate, volume, and pollutant loads released from a new or redevelopment project where the Public Works Director has been authorized by law or agreement to enforce engineering standards. These design standards have been developed based on common engineering practice and reference state and federal requirements, engineering publications, and other municipal and academic guidance.

It is the goal of this chapter to provide a minimum set of design standards that will result in effective stormwater management to mitigate the impact of land development on existing/natural hydrologic and hydraulic processes, as well as attempt to prevent further degradation of the water resources in Charleston County through proper planning, design, installation, and maintenance. The design professional shall use all means necessary to develop land in a manner consistent with all County Ordinances and this Manual. Specific methods and applications not covered in this section can and should be discussed with the Public Works Director for applicability. The following section details the criteria that shall be followed in the absence of designated specific watershed master plan criteria.

3.2 General Design Standards

General requirements for all stormwater systems and facilities will include, but not limited to, the following:

1. Site designs shall minimize the generation of stormwater and maximize pervious areas by:

    a. Selecting portions of the site where the drainage pattern, topography, and soils are favorable for the intended use. Tracts of land vary in suitability for different uses. Knowing the major characteristics of the land area and kinds of soil helps in identifying and evaluating potential problems.

    b. Exposing the smallest practical area of land for the least possible time during development. This includes maintaining or creating buffers and preserving natural areas.

    c. Limiting the drainage area to all BMPs. Specific maximum contributing areas to BMPs are provided below.

    d. When feasible, retaining and protecting natural vegetation and saving topsoil, for replacing on graded areas.

    e. Using temporary plant cover, mulching, hydroseeding, or other stabilization methods to control runoff and protect areas subject to erosion during and after construction.

2. Annual groundwater recharge rates will be maintained to the maximum extent practical by promoting infiltration through the use of structural and non-structural methods.

3. Stormwater runoff generated from development shall be controlled to predevelopment and/or natural rates. The method for computing adequate control shall be a risk-based approach using several design storms. Greater detail is provided in the next section.

4. Stormwater runoff generated from development shall be treated through the use of structural and/or non-structural practices. It is presumed that sufficient treatment is provided by the proposed BMPs if they are:

   a. Designed according to the specific performance criteria outlined in this manual,

   b. Constructed properly, and

   c. Maintained regularly.

5. Stormwater discharges to special protection areas with sensitive resources or that have existing flooding or water quality problems [e.g., cold water fisheries, beaches, recharge areas, water supply reservoirs, Total Maximum Daily Loads (TMDLs), and 303(d) listings] are subject to additional performance criteria. Section 3.9 contains more specific information and design requirements and the areas that will receive this additional set of protection criteria.

6. All BMPs shall have an enforceable operation and maintenance agreement to ensure the system functions as designed. These agreements are referred to in this Manual as an operating permit. Chapter 2 contains more detail on these permits that are necessary to have a stormwater system or facility which discharges.

7. Redevelopment, defined as any construction, alteration or improvement exceeding 5,000 ft^2 of land disturbance on sites where existing land use is commercial, industrial, institutional, or multi-family residential, is governed by the same design criteria as new developments.

8. Sediment basins and/or other BMPs shall be used during construction to remove heavy sediment loads from runoff waters leaving the disturbed area. Design criteria are provided in sections below.

9. Clear cutting for installation of utilities and roads or for development shall be allowed, but limits have been established. The total disturbed area shall never exceed 10 acres unless otherwise approved by the Public Works Director. The Public Works Director may reduce the total area that may be disturbed at a given time. Project areas exceeding 10 acres must be phased to comply with this requirement. All clear cutting areas are to be clearly identified on construction documents. The decision to consider an activity as clear cutting shall belong to the Public Works Director, but will normally be defined as the removal of trees and stumps and all disturbances of surface vegetation and debris.

10. Permanent vegetative cover and the long-term erosion protection structures shall be installed as soon as practical in the development process.

11. If wetlands are suspected to exist on the property, they will be investigated and delineated by a qualified consultant. The US Army Corps of Engineers (USACE) must make a determination as to whether or not the wetlands fall under their jurisdiction. All efforts will be made to reduce or eliminate impacts such as using a buffer and/or installing a silt fence around the wetlands. If the wetlands fall under the jurisdiction of the USACE, a Section 404 permit is needed before any disturbance of the wetlands is allowed. Charleston County will accept certified delineations from qualified consultants, then Charleston County will consider the wetlands as waters of the US and require any applicable local, state or federal permit prior to disturbance.

12. Where existing wetlands are intended as a component of an overall stormwater management system, the approved plan for stormwater management shall not be implemented until all necessary federal and state permits have been obtained.

13. All stormwater management and sediment control practices shall be designed, constructed, and maintained with consideration for the proper control of mosquitoes and other vectors. Design criteria are provided in sections below.

14. For the purposes of hydraulic design, capacity of a system to transport stormwater runoff shall be based on the size of the contributing drainage basin or subwatershed (for that particular boundary), as outlined below.

    a. Minor Drainage Systems: 0 - <40 Acres

       All street drainage, curb and gutters, pipe systems, culverts, ditches and channels which drain less than 40 acres will be designed to carry flows resulting from a ten (10)-year frequency storm. Minimum allowable pipe diameter shall be fifteen (15) inches.

    b. Collector Systems: 40 - <100 Acres

       All drainage systems draining at least 40 acres but less than 100 acres shall be designed to carry flows resulting from a twenty-five (25) - year frequency storm.

    c. Major Drainage Channels: 100 - <300 Acres

       All drainage systems draining at least 100 acres but less than 300 acres, such as channel improvements, culverts or bridges along these channels, shall be designed to carry a flow resulting from a fifty (50)-year frequency storm. Encroachment upon Major Drainage Channels and the adjacent overflow land shall be avoided to the extent possible.

    d. Large Watersheds: 300 and more Acres

       Bridges and culverts being constructed in natural channels, creeks, or rivers draining more than 300 acres shall be designed to carry a flow resulting from a 100-year

frequency storm (precipitation event only). Encroachment upon these channels and the adjacent overflow land shall be avoided as much as possible.

The Floodplain provisions for Charleston County can be found in the Charleston County Flood Damage and Prevention Ordinance and any other applicable federal, state or local laws. The floodplain ordinance for Charleston County can be obtained from the Building Services Department.

The area outside a project area (e.g., offsite areas) that drains to a particular design point must be included in determining the appropriate design storm. All hydrological computations shall be based on the contributing watershed, not just the project area or disturbed area.

15. All development sites disturbing more than one (1) acre shall have an analysis performed of the drainage system to ascertain the function of the system during the 100-year storm event (precipitation only) or more specifically, determine that the project will not:

    a. Increase the likelihood of dwelling flooding and property damage.

    b. Increase water surface elevations or reduce system capacity in stormwater system and facilities upstream or downstream of the project.

    c. Impose any new or additional increase in stormwater runoff velocity on adjacent properties, discharge points, or downstream areas.

    d. Impose any new or additional increase in erosion and pollutant loads that would adversely impact waters of the state.

    If a master plan exists for the area/watershed which encompasses the project, criteria set by that plan shall be used for determining the extent of this analysis. Without an analysis, the analysis shall extend up to the top of the watershed and down to a water of the state or to a point in which the project comprises 10% of the total contributing area, whichever occurs first. In these cases, the analysis criteria shall include, but is not limited to:

    a. Existing land use curve numbers shall be used for all areas,

    b. Flows should be routed using an accepted hydrologic and hydraulic method, and

    c. Hydraulic step-backwater calculations using USACE's HEC-2 or HEC-RAS models, ICPR, or equivalent shall be provided. Other calculations may be required by the Public Works Director based on severity of potential impact and location of project.

    If the downstream analysis determines that the development of a particular site does contribute to flooding, pollution, or erosion problems, then the system design shall be changed or additional controls shall be included.

3.3 Hydrologic Computation Methods

All hydrologic computations shall be completed using volume-based hydrograph methods acceptable to the Public Works Director. The design storm duration for these computations shall be the 24-hour storm event utilizing a SCS Type III distribution with a 0.1-hour duration time increment. Typical hydrologic inputs include, but are not limited to the following:

- Rainfall depth or intensity,
- NRCS soil classification and hydrologic soil group,
- Land use,
- Time of concentration, and
- Initial abstraction/surface storage.

The remainder of this section will provide basic information for the hydrologic calculations. As discussed, the intent of the Manual is not to provide detail on every aspect of hydrologic computations, their limitations, assumptions, appropriateness of use, but rather general guidance on generally accepted standards. This Manual does, however, reference suggested materials as necessary for detailed discussions of related topics.

3.3.1 Inputs

A. The precipitation depths/intensities corresponding to various return periods to be used for projects in Charleston County are shown in Table 3.1.

Table 3.1: Design storm precipitation data for Charleston County, South Carolina

First-Flush	1-yr	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
1st ½", 1" or 1½" of runoff	3.8	4.6	5.9	7.0	8.0	8.9	10.2

Source: Or as revised by the South Carolina State Climatology Office

B. Soil types in Charleston County range from sands to sandy clays. Existing land use and corresponding runoff potential factors should be obtained from the site visit and other appropriate sources. Appropriate runoff potential factors can be found in several of the references listed in Chapter 5.

3.3.2 Drainage Design Methodologies

The Charleston County recommended methods and corresponding design circumstances are listed in Table 3.2 and 3.3 below. If other methods are used, applicant must obtain written approval by the Public Works Director. Complete source documentation must be submitted for approval.

Table 3.2: Recommended methodologies based on land disturbance area

Method	Size Limitations*	Comments
(Modified) Rational Method	0 – < 1 Acres	Acceptable for sizing individual culverts or storm drains that are not part of a pipe network or system. Not to be used for storage design.
"SCS Method" (TR-55)	0 – 2000 Acres	Used for estimating peak flows from urban areas.

***Size limitations refer to the subwatershed size to the point where a stormwater system component (e.g., culvert, inlet, BMP) is located.

Details of and guidance on the Rational Method and Modified Rational Method can be found in Chow (1988), ASCE (1996), USDA (1996), and Mays (2001). Documentation on the commonly used SCS (or NRCS) Method can be found on the US Department of Agriculture website (http://www.wcc.nrcs.usda.gov/hydro/hydro-tools-models-tr55.html). The USGS regression equations for South Carolina can be obtained from the US Geological Survey website (http://water.usgs.gov/osw/programs/nffpubs.html). Haan, C. T., Barfield, B. J., and Hayes, J. C. (1995) and USDT (1996, 2001) can also be referenced for greater detail on hydrology calculations and assumptions.

Table 3.3: Recommended hydrologic methods for designing various stormwater managment systems and controls

Method	Rational Method	SCS Method
Large Watersheds		+
Storage/Sedimentation Facilities		+
Outlet Structures		+
Gutter Flow and Inlets	+	
Storm Drain Pipes	+	+
Culverts	+	+
Small Ditches		+
Open Channels		+
Energy Dissipation		+

Methods for calculating the time of concentration and abstraction are numerous. However, a minimum time of concentration of six (6) minutes shall be used for all hydrologic calculations. See references given above for the suggested methodologies for information on these calculations.

3.3.3 Hydrographs

Hydrographs shall be used to evaluate entire systems by routing storm events through pipe or storage systems. The use of a hydrograph will provide modeling of the system performance rather than simply using the peak discharge. The Public Works Director will accept commonly used computer models. New models may be accepted with appropriate documentation.

3.4 Water Quality/Quantity Control Standards

Water quantity control is an integral component of overall stormwater management. Quantity control is effectively flood control, reducing potential damages and health risks, but because uncontrolled runoff can cause erosion, it can also be a form of water quality control. The following design criteria are established for water quantity control. All designs of storage facilities utilized for stormwater quantity control and required downstream analyses shall be submitted as part of the engineering calculations when applying for a Charleston County Site Construction Permit.

General Water Quality Criteria

1. Controls shall be designed by a traditional reservoir routing procedure.

2. All ponds shall have an emergency spillway designed to pass the design storm event if the storage capacity is exceeded.

3. All discharge points may be no closer than twenty (20) feet from property boundary, where applicable.

4. All quantity controls that are also used for quality control will have a forebay or screening vault for removal of debris and coarse sediments.

    a. Forebays shall be placed upstream of the main pond storage area.

    b. Unless a separate vault is to be used for the forebay, the forebay shall be separated from the larger detention area by barriers or baffles that may be constructed of earth, stones, riprap, gabions, or geotextiles. The barrier and/or baffles act as a trap for coarse sediments and minimize their movement into the main pond.

    c. Maintenance of forebays will be needed more frequently than the main storage area and all designs should consider this need.

Detention Ponds/Reservoirs

1. Ponds with vegetated embankments shall be less than fifteen (15) feet in height and shall have side slopes (inside and outside) no steeper than 3H:1V. Embankments protected with Erosion Control Blankets or Turf Reinforcement Matting shall be no steeper than 2H:1V. Geotechnical slope stability analysis is required for embankments greater than ten (10) feet in

height and have steeper slopes than those indicated above. Access inside a pond shall be provided with at least one side slope at 3H:1V or flatter.

2. A minimum freeboard of one (1) foot above the design storm high water elevation shall be provided for all impoundments.

3. The bottom of detention structures shall be graded towards the outlet structure(s) to prevent standing water conditions with a minimum 0.5% bottom slope.

4. The maximum depth of permanent storage facilities with a permanent pool shall be determined by site conditions, design constraints, and environmental needs. The facility should provide a permanent pool of water with a depth sufficient to discourage weed and mosquito growth without creating undue potential for anaerobic bottom conditions. A minimum depth of six (6) feet is reasonable unless County Mosquito Control requirements dictate otherwise. Aeration or other means shall be used as necessary to prevent anaerobic conditions for ponds less than one half (1/2) acres.

Underground Detention Devices

1. Underground detention facilities shall be designed using the following criteria:

   a. Underground detention systems are to be located downstream of other stormwater controls providing treatment of the water quality volume.

   b. The maximum contributing drainage area to be served by a single underground detention vault or tank is five (5) acres.

   c. All systems shall be designed and laid out to facilitate maintenance. Systems should be cleaned out (sediment removal) at least once a year, but more frequently, if necessary. As with all stormwater controls, a maintenance schedule shall be submitted.

   d. The minimum pipe diameter for underground detention tanks is thirty-six (36) inches or equivalent.

   e. Underground detention systems must meet structural requirements for overburden support and traffic loading if appropriate.

   f. Access must be provided over the inlet pipe and outflow structure. Access openings can consist of a standard frame, grate and solid cover, or preferably a removable panel.

   g. All underground detention systems should accommodate at least six (6) inches of sediment storage in the volume calculations.

   h. The feasibility of these devices for a given situation shall be evaluated by a soil scientist, geotechnical engineer, or other certified by the State of South Carolina in water table estimation.

i. Water table estimation done based on first occurrence of two chroma features.

2. Any development that uses a parking area or other feature for detention storage capacity shall clearly identify the limits and depths of the expected detention pool.

3. Basin configurations which create stagnant water conditions are to be avoided.

4. Post-development discharge rates shall not exceed pre-development discharge rates for the 2, 10, and 25-year frequency 24-hour duration storm events. The same hydrologic procedures shall be used in determining both the pre-development and post-development peak flow rates.

5. Post-development discharge velocities shall be reduced to provide non-erosive flow velocities from structures, channels or other control measures, or equal the pre-development 10-year 24-hour storm event flow velocities, whichever is less.

6. The volume within any structure used for water quantity control shall be drained from the structure within 72 hours.

Infiltration Devices

1. Infiltration devices shall be required on those sites which do not currently discharge stormwater runoff or have no existing outlet. In such cases, in the post-development condition, devices shall be designed to infiltrate the runoff volume equivalent to the 5-year storm event. For evaluating the 10-year and 25-year storm events, the discharge rate from the site shall be limited to (not exceed) that of a site of equivalent size and slope with a SCS Curve Number equal to 39. As with detention ponds, the response of the system to 100-year storm event must be analyzed, but only to the extent that no structure flooding or damage results. The following other criteria, based primarily on SC Code of Regulation Section 72-307.C requirements, shall be followed in the design of infiltration systems:

   a. Infiltration device design shall be based on soils characteristics of the first twelve (12) inches below the proposed bottom of the device (not necessarily the first twelve (12) inches below ground surface).

   b. Areas draining to these practices must be stabilized and vegetative filters established prior to runoff entering the system. Infiltration practices shall not be used if a suspended solids filter system does not accompany the practice. If vegetation is the intended filter, there shall be, at least a twenty (20) foot length of vegetative filter prior to stormwater runoff entering the infiltration practice. Forebays or other engineered devices for sediment removal may be prudent.

   c. Each system shall be designed to prevent clogging by fine material and for ease of maintenance.

   d. The bottom of the infiltration practice shall be at least 0.25 feet above the “zone of seasonal saturation” and infiltration interface.

e. The infiltration practice shall be designed to completely drain off water within 72 hours.

f. Soils must have adequate permeability to allow water to infiltrate. Infiltration practices are limited to soils having an infiltration rate of least 0.30 inches per hour. If the infiltration rate is greater than 0.30 inches but less than 2.0 inches per hour, then an underdrain system must be installed. Initial consideration will be based on a review of the appropriate soil survey, and proposed depths of excavation. The survey may serve as a basis for rejecting approval of using an infiltration device. On-site soil borings and textural classifications must be accomplished to verify the actual site and seasonal high water table conditions when infiltration is to be utilized.

g. Infiltration practices greater than three (3) feet deep shall be located at least twenty-five (25) feet from basement walls.

h. Infiltration practices designed to handle runoff from areas with a high runoff potential shall be a minimum of one hundred fifty (150) feet from any public or private water supply well.

i. The design of an infiltration practice shall have a properly sized overflow or bypass for larger storm events. Measures to provide a non-erosive velocity of flow along its length and at the outfall shall also be included as necessary. Additional control devices will typically be necessary prior to release to a watercourse to meet water quality requirements.

j. The slope of the bottom of the infiltration practice shall not exceed five (5) percent. Also, the practice shall not be installed in fill material as piping along the fill/natural ground interface may cause slope failure.

k. An infiltration practice shall not be installed on or atop a slope whose natural or existing angle of incline exceeds twenty (20) percent.

l. If an underdrain system is required, clean outs will be provided at a minimum, every hundred (100) feet along the infiltration practice to allow for access and maintenance.

2. In cases where such criteria or limitations make the use of infiltration devices inappropriate, but no discharge currently leaves a given site, runoff control must be provided by some other measure. The Public Works Director shall be contacted for guidance on the appropriate controls to employ or other mutually accepted best management practices.

General Information for Stormwater Detention

1. A project may be eligible for a waiver from the stormwater management requirements for water quantity control if the applicant can justly verify the items listed below. Final approval of a waiver request will be given at the discretion of the Public Works Director. A water quantity waiver doesn't excuse water quality considerations:

a. The proposed project will not create any significant adverse effects on the receiving storm water system downstream of the property, and

b. The imposition of peak flow rate or volume control for stormwater management would create, aggravate, or accelerate downstream flooding or cause a detrimental impact to the downstream ecosystem.

2. Construction shall conform to the latest version of SCDOT's *Standard Specification Manual for Highway Construction*, for publicly maintained systems.

3. Guidance on the design, installation, and maintenance of stormwater quantity facilities can be found in Paine, J., and Akan, A., (2001), ASCE & WEF (1994), and Mays (2001).

3.4.1 Accepted Quantity Controls

Detention structural controls are used for providing water quantity control and are typically used downstream of other minor structural controls. These structures are designed to provide channel protection, overbank flood protection, and protection against adverse downstream impacts that are related to the increase in peak flow rates and flow volumes from a land disturbing activity development. Structural detention stormwater controls accepted by Charleston County are shown in Table 3.4.

Table 3.4: Accepted quantity controls

General Structural Control	Description
Dry Detention/Dry Extended Basins	Dry detention basins and dry extended detention basins are surface storage facilities intended to provide temporary storage of stormwater runoff and releasing it at a designed flow rate to reduce downstream water quantity impacts. These structures are designed to completely drain to a dry condition within 72 hours.
Wet Storm Water Detention Basins • Wet Pond • Wet Extended Detention Pond • Micropool Extended Detention Pond • Multiple Pond System	Wet detention basins are constructed stormwater basins that have a permanent pool or micropool of water. Runoff from each rain event is detained above the permanent pool and released at a designed flow rate to reduce downstream water quantity impacts. Permanent pool depths must be ≥ 6 feet to prevent mosquito breeding.
Multi-purpose Detention Areas	Multi-purpose detention areas are used for one or more specific activities such as parking areas and rooftops. These areas are used to provide temporary storage of runoff. Some of the multi-purpose areas such as infiltration trenches or bio-retention cells may also be used for water quality purposes.

General Structural Control	Description
Underground Detention	Underground detention is used as an alternative to surface dry-detention basins. They are used in areas that are space-limited where there is not enough adequate land to provide the required detention volume. Underground storage utilizes tanks, vaults, and buried pipes to supply the required storage volume.
Infiltration Basins	Infiltration basins are used to remove runoff from the flow path into the ground. They are used in areas that currently do not discharge stormwater or create runoff only during large storm events.

3.4.2 Standard Design Procedures

This section provides the procedures for the design of stormwater quantity structures. The following items shall be required for the design of these structures and routing flows through them:

1. Compute the inflow hydrograph for the structure for the 2, 10, and 25-year 24-hour storm events for both the existing and proposed conditions. From this, determine peak flow rates for each storm. The hydrologic analysis and pond routing for the 100-year 24-hour storm event needs to be provided.

2. Compute a stage-storage relationship for the proposed structure. A stage storage-curve defines the relationship between the depth of water and storage volume within the detention facility.

3. Compute stage-discharge relationship of the outlet control structure(s). A stage-discharge curve defines the flow capacity of a structure at a given stage or elevation.

4. Perform routing calculations for the two (2), ten (10), and twenty-five (25) year 24-hour storm events. These may be done by hand, or may be done by using a storage routing computer model.

5. Determine the cumulative volume at the 24-hour point released from the facility.

6. Compare the two volumes and two peak discharges. The volume released from the pond after 24 hours will be at or below that for pre-development condition. The peak discharge rate from the pond will be at or below the peak discharge rate for the predevelopment condition for the two (2) and ten (10) year storm events, and a maximum 110% of the predevelopment peak discharge rate for the 25-year event. The discharge hydrograph from the design storm event does not overtop the banks of the facility.

7. Evaluate the control structure outlet flow velocity and provide velocity control and channel stabilization. Drawings and details shall be provided for outlet structures and basins.

8. Repeat Steps 1-7 for post-development condition until peak, volume, and velocity criteria are met.

9. Provide all calculations in the submittal package in a cohesive, organized, and easy to follow format.

Stage-storage and stage-discharge calculations shall be included in the engineering calculations. Common methodologies for stage-storage curves include the double end area method and the pyramid frustum method. Other methods will be considered pending review of the written request including any supporting technical justification.

Hand calculations are available for routing hydrographs through detention structures, however they are time consuming and inefficient when multiple designs are required to be evaluated. It is assumed that the design professional may use computer software packages available to perform storage routing calculations. All models/methodologies used must be approved by Charleston County. A list of accepted models to date includes:

- ICPR
- Drain:Edge,
- PondPack/Civil Storm,
- HEC-HMS,
- HYDRAFLOW

3.5 Water Quality Control Standards

Water quality control is now an integral and required component of overall stormwater management systems. New development and redevelopment projects must now include controls that treat or otherwise limit the discharge of pollutants. These requirements have been added due to new state and federal requirements, but also due to the need to improve and preserve the water resources in Charleston County. Background information and references are provided in the sections below, followed by the design standards for addressing water quality.

3.5.1 Characterization of Urban Storm Water Runoff Quality

This section provides background information on the major sources of pollutants commonly found in stormwater flows and those that impact County waterbodies. In Table 3.5, these sources and the pollutants most commonly associated with them are presented. This is followed by a detailed discussion of the most common pollutants found in stormwater discharges.

Table 3.5: Typical stormwater pollutants and sources

Pollutant Source	Pollutants of Concern
Erosion	Sediments and attached soil nutrients (numerous nitrogen and phosphorus forms), organic matter, and other adsorbed pollutants.
Atmospheric Deposition	Hydrocarbons emitted from automobiles, dust, metals, nutrients, and other chemicals released from industrial and commercial activities.
Roadways/Transportation related areas	Hydrocarbons emitted from automobiles, dust, metals,
Construction Sites	Sediment, metals, paint, and wood preservatives.
Manufactured Products (Industrial land uses)	Heavy metals, phenols, and oils from automobiles, Zinc and Cadmium from tire wear.
Lawn and Landscape Maintenance	Fertilizer and pesticides.
Plants and Animals	Plant debris, animal excrement.
Septic Tanks	Coliform bacteria, nitrogen, NO_3.
Non-Storm Water Connections	Sanitary sewage, industrial wastewater, commercial discharge, and construction activities.
Accidental Spills	Pollutants of concern depend on the nature of the spill.
Animal Waste Management	Coliform bacteria, nitrates, and phosphorus.
Pesticide Applications	Pollutants of concern depend on the pesticide being used and the type of crop or pest being treated.
Land Disturbance Agriculture	Sediment and attached soil nutrients, organic matter, and other adsorbed pollutants.
Fertilizer Applications	Nitrogen and phosphorus.

Source: U.S. Environmental Protection Agency, June 1992.

3.5.1.1 Suspended Solids

The most prevalent form of stormwater pollution is the presence of suspended matter that is either eroded by stormwater or washed off paved surfaces by stormwater. Suspended solids increase the turbidity of the receiving water, thereby reducing the penetration of light, resulting in decreased activity and growth of photosynthetic organisms. Also, elevated concentrations of suspended sediment alters stream nutrient biogeochemistry which impacts nutrient adsorption and desorption, processes very important to control over primary production and overall ecosystem health (Lee, 1996; Dent and Henry, 1999). The increased turbidity also detracts from the aesthetics of natural waters. In addition, the clogging of fish gills has been attributed to the presence of suspended solids. Combined sewer overflows typically contain high suspended solids concentrations. The solids that settle in the receiving water pose long-term threats resulting from their oxygen demand and gradual accumulation of toxic substances (Moffa, 1990), as well as reducing primary production. Sedimentation and other forms of physical separation are often an effective means of removing suspended solids from stormwater.

Sediment is derived from a variety of sources, including erosion from disturbed areas, washoff of sediment deposited on impervious areas, and detachment of sediment due to the increased stream power that comes from increased flow rates and flow durations with urbanization. A significant number of models are available to predict total suspended solids (TSS) contributions from "clean" sediment, but few of the models have parameters specific to urbanized areas. Most of the models were developed to deal with agricultural soils, and their application to urban areas is limited.

Models that do have capabilities that have been used for predicting urban sediment include SWMM, SWAT, and SEDPRO models. For the models to be effectively utilized in sizing BMPs, predictions must be made of time varying quantities as well as the size distribution. Those distributions must be of the aggregated particles, not just the primary particles.

3.5.1.2 Oxygen Demanding Matter and Bacteria

Sufficient levels of dissolved oxygen (DO) in the water column are necessary to maintain aquatic life, growth, and reproductive activity, as well as to maintain aerobic conditions. The introduction of stormwater containing oxygen-demanding organic matter can impair the receiving water quality by reducing the DO levels such that it is unable to sustain certain forms of aquatic life and can further cause the water to become foul. Bacteria enter the stormwater drainage systems typically from the washoff of animal feces and organic matter from the catchment surface, possibly even disturbed soil. Bacteria also may enter the stormwater system and ultimately natural waters through leaking sewer systems (lateral connections, manholes, and industrial or commercial drains, etc.) and malfunctioning septic systems, all of which are termed illicit discharges and illegal by the Charleston County Stormwater Management Ordinance. Organic matter, usually in the form of vegetation and detritus, is carried through the conveyance system by the stormwater. Pathogenic bacteria and viruses in stormwater discharges pose human health threats. The removal of pathogenic bacteria is achieved primarily through the process of biological decay and physical-chemical disinfection where practiced. Presence of such bacteria is assumed based on the detection of indicator bacteria such as fecal coliforms or E-coli. The reduction of bacteria in waters of the state has been the focus of TMDL efforts by SCDHEC to date.

3.5.1.3 Nutrients

Nitrogen and phosphorus are plant nutrients that promote the growth of plants and protista, such as algae, and are the second leading stressor of impaired rivers and streams and the leading stressor of impaired lakes (US EPA, 1997). Such nutrients contribute to the eutrophication of water bodies resulting in a list of associated liabilities, such as decreased oxygen supply, alteration of aquatic life, decreased recreational value (Novotny, 1985).

Nutrients are typically derived from agricultural runoff as well as runoff from chemicals applied to lawns in urbanized areas, runoff from industrial sites, municipal wastewaters (of more concern for combined sewer overflows), or atmospheric deposition onto impervious surfaces that is later washed into stormwater. Model studies indicate that the increase in nutrient loading due to increased imperviousness will be dramatic. For example, the increase in the Maryland Chesapeake Bay watershed due to increased urbanization is expected to range from 2 to 20 times the current load, depending on whether residential development is highly restricted or unrestricted (Houlahan, 1992). Nutrients can be removed from stormwater prior to discharge through biological uptake such as by plantings in stormwater quality control ponds.

Most models of nutrient loadings that have an extensive data base included have been based on agricultural and forest operations. These have applicability to washoff from fertilized lawns and forested areas but not to the impervious areas. Models of nutrient loading in urban runoff are typically based on washoff type calculations or user-defined loadings and concentrations, all of which require user-defined constants and are relatively simplistic. A relatively new model called IDEAL, has additional treatment procedures for nutrients loads and removal using isothermic relationships that define adsorbed to dissolved nutrient ratios.

3.5.2 Accepted Water Quality BMPs

In selecting a BMP(s), it is most important to know what pollutants need to be removed, how to remove them, and what degree of removal is needed to meet water quality goals. BMPs are expected to reduce pollutant loads to receiving waters, reduce erosion, provide health and safety benefits, and be cost effective.

The varieties of water quality BMPs are numerous. BMPs are considered either structural or non-structural. Charleston County's current approved lists of stormwater quality BMPs, listed in Table 3.7, are based on literature reviews and experience. Some references to BMP selection, effectiveness, and design can be found in SCDHEC (2005), Agricultural Resource Council (2001), Schueler (1987), and Water Environment Foundation (WEF) & American Society of Civil Engineers (ASCE) (1998). Guidance on applying BMPs into Low Impact Development (LID) approaches can be found in Prince Georges County (1999 a and b).

Table 3.6. Average Pollutant Loading for Various Land Uses (mg/L)

Land Use	Pollutant Loading (mg/l)											
	BOD	COD	TSS	TDS	TP	DP	TKN	NO2 / NO3	Pb	Cu	Zn	Cd
Forest/ Rural Open	3	27	51	415	0.11	0.03	0.94	0.80	0.000	0.000	0.000	0.000
Urban	3	27	51	415	0.11	0.03	0.94	0.80	0.014	0.000	0.040	0.001
Agricultural/ Pasture	3	53	145	415	0.37	0.09	1.92	4.06	0.000	0.000	0.000	0.000
Low Density Residential	38	124	70	144	0.52	0.27	3.32	1.83	0.057	0.026	0.161	0.004
Medium Density Residential	38	124	70	144	0.52	0.27	3.32	1.83	0.180	0.047	0.176	0.004
High Density Residential	14	79	97	189	0.24	0.08	1.17	2.12	0.041	0.033	0.218	0.003
Commercial	21	80	77	294	0.33	0.17	1.74	1.23	0.049	0.037	0.156	0.003
Industrial	24	85	149	202	0.32	0.11	2.08	1.89	0.072	0.058	0.671	0.005
Highways	24	103	141	294	0.43	0.22	1.82	0.83	0.049	0.037	0.156	0.003
Water/ Wetlands	4	6	6	12	0.08	0.04	0.79	0.59	0.011	0.007	0.003	0.001

Adapted from NURP (1983), Horner et. al (1994), and Cave et. Al. (1994)

BOD = Biochemical Oxygen Demand
COD = Chemical Oxygen Demand
TSS = Total Suspended Solids
TDS = Total Dissolved Solids
TP = Total Phosphorus
DP = Dissolved Phosphorus
TKN = Total Kjeldahl Nitrogen
NO_2/NO_3 = Nitrates / Nitrites
Pb = Lead
Cu = Copper
Zn = Zinc
Cd = Cadmium

Fecal coliform (FC) concentrations were not provided in the table above due to the large variability. Guidance from SCDHEC and NURP (1983) should be sought when estimating existing and post-development bacteria loads and the reduction requirements.

Table 3.7: Accepted Water Quality Controls (BMPs)

General Structural Control	Description
Wet Ponds	Wet stormwater ponds are constructed stormwater basins that have a permanent pool or micropool of water. Runoff from each rain event is detained and treated in the pool, and released at a designed rate.
Storm Water Wetlands	Stormwater wetlands are natural or constructed systems used for stormwater management. Stormwater wetlands consist of a combination of shallow marsh areas, open water and semi-wet areas above the permanent water surface.
Bioretention Areas	Bioretention areas are shallow stormwater basins or landscaped areas that utilize engineered soils and vegetation to capture and treat stormwater runoff. Runoff may be returned to the conveyance system or partially exfiltrate into the soil.
Sand Filters	Sand filters are multi-chamber structures designed to treat stormwater runoff through filtration, using a sand bed as its primary filter media. Filtered runoff may be returned to the conveyance system or partially exfiltrated into the soil.
Infiltration Trenches	An infiltration trench is an excavated trench filled with stone aggregate used to capture and allow infiltration of stormwater runoff into the surrounding soils from the bottom and sides of the trench.
Enhanced Grassed Swales	Enhanced swales are vegetated open channels that are explicitly designed and constructed to capture and treat stormwater runoff within dry or wet cells formed by check dams or other structures.
Engineered Devices • Vortex Separator • Baffles • Cartridges • Skimmers • Bioretention • Gravity Oil-Grit Separator • Filter Material • Inlet inserts	Pre-fabricated controls use the movement of stormwater runoff through a specially designed structure to remove target pollutants. They are typically used on smaller commercial sites and urban hotspots. There are numerous commercial vendors of these structures, but there is limited data on the performance of these structures. Until further research is done and substantial removal efficiencies are published, these structures may require monitoring. Some of the popular vendors/products include but not limited to Crystal Stream, Vortechnics, Aquashield, Filterra, Stormceptor, Stormfilter, CDS, BaySaver, and Downstream Defender[1]. This is by no means a complete list and the Public Works Director will

General Structural Control	Description
	evaluate any such device if included in designs, provided evidence is provided as to it effectiveness. Such evidence must include applicability and proof of third-party testing on trapping efficiencies.

[1] This list is not intended as preference for these devices nor to exclude others.

Some structural BMPs have limited applications and are recommended to be used in conjunction with other BMPs. Limited application controls may be used within a system of water quality controls and are very effective pre-treatment structures for the controls listed in Table 3.7. Limited application structural controls may be designed and used only in development situations where regular maintenance is guaranteed. Popular limited stormwater controls are shown in Table 3.8.

Table 3.8: Limited structural controls (BMPs)

Limited Structural Control	Description
Vegetated Filters • Filter Strip • Grassed Channels and Swales	Both filter strips and grassed channels provide filtering of stormwater runoff as it flows across the vegetation. However, by themselves these controls do not consistently obtain adequate sediment and pollutant removal. Both filter strips and vegetated channels shall be used as pretreatment measures or part of a treatment system approach.
Submerged Gravel Wetland Systems	Submerged gravel wetlands use wetland plants in a submerged gravel or crushed rock media to remove stormwater runoff pollutants. These systems should only be used in mid- to high- density environments where other structural controls will be utilized.
Small Sand Filters • Surface Sand Filter • Perimeter Sand Filter	Sand filters are multi-chamber structures designed to treat stormwater runoff through filtration, using a sand bed as its primary filter media. Filtered runoff may be returned to the conveyance system or partially exfiltrated into the soil.
Porous Paver Systems	Porous paver systems consist of open void paver units laid on gravel subgrade to promote stormwater infiltration. Porous pavers provide water quality and quantity benefits.

Regardless of the type of control, maintenance schedules will be included for each BMP proposed.

Listed below are some non-structural BMPs that may be considered for use in larger construction activities and re-development projects.

1. Buffers: an area along a shoreline, wetland, or stream where development is restricted or prohibited. The primary function of the buffer is to physically protect and separate a stream, lake, or wetland from future disturbance or encroachment.

2. Disconnected roof drains/impervious areas: directing stormwater runoff from rooftops towards pervious areas where it is allowed to filter through vegetation and other landscaped material and infiltrate into the soil.

3. Grass/Porous pavements: allows for the reduction of paved areas by implementing areas that are infrequently used, providing water quality benefits through increased infiltration. Should be avoided in high traffic areas

4. Cluster development: concentrate development away from environmentally sensitive areas such as streams, wetlands, mature wooded areas, and steep slopes.

5. Literature for owners, and HOAs to educate and train themselves and homeowners on the impact they can have on water quality and the activities necessary to maintain structural controls. These efforts are particularly critical in LID designs.

3.5.3 Design Standards

3.5.3.1 General Standards

The following design criteria are established for water quality control and must be incorporated in one or more BMPs for a given sub basin unless a specific quality waiver is granted by the Public Works Director. Incorporation of these requirements shall constitute adequate control of the discharge of pollutants.

1. All sites which disturb one (1) acre or greater shall have a permanent BMP installed that guarantees maintenance of all BMPs in perpetuity.

2. Permanent water quality ponds and water quality structures having a permanent pool elevation shall be designed to store and release a water quality volume (WQV) defined as the first one-half (½) inch of runoff from the contributing area site over a minimum period of 24-hours. The storage volume of these water quality structures shall be designed to accommodate at least one-half (½) inch of runoff from the entire site.

3. Permanent water quality structures not having a permanent pool elevation shall be designed to store and release the WQV, defined as the first one (1) inch of runoff from the site over a minimum period of 24-hours.

4. The WQV requirement may be waived if treatment is instead provided by engineered devices. Applicability of such waivers will be based on submitted information showing that an equivalent amount of runoff is captured by the device as captured by a "dry" pond with a WQV of one (1) inch.

5. BMPs used strictly for water quality that will be capturing one (1) or more acres shall have a pretreatment device as part of the BMP or treatment system, such as a forebay or vault, to remove debris and coarser sediments.

6. Projects that discharge either directly or indirectly into an impaired waterbody as determined by the existence of an adopted TMDL by SCDHEC or through SCDHEC's listing of the waterbody on the latest 303(d) list shall be required to reduce pollutant loads so as to meet applicable water quality standards. This will require the installation and implementation of measures (structural or non-structural BMPs) which are expected to adequately reduce pollutant loads to levels required by the TMDL (currently expressed as % reductions) or to prevent further impairment. A list of approved water quality devices was provided in the previous section.

   If the site disturbs less than 25 acres, an evaluation of the BMPs chosen to control the release of pollutants must be provided. Such evaluations may reference published values on BMP effectiveness. If greater than 25 acres, a quantitative and qualitative analysis shall be provided and include, at a minimum, calculations that show:

   - a site's pollutant load for all pollutants of concern (see Table 3.5),
   - the trapping effectiveness of the chosen BMPs, and
   - that the runoff discharged through the last water quality BMP have a water quality level equal to or better than the in-stream standard or as required by an applicable TMDL.

7. All BMPs must have a maintenance plan. Suggested schedules and routine activities are provided in the BMP Manual (SCDHEC 2005).

8. The Public Works Director reserves the right to require specific effluent limits for any pollutant from a site if necessary to ensure the water quality standards and other state and federal water quality regulations are met. The Stormwater Division also reserves the right to not allow credits in the stormwater utility fee at certain sites.

3.5.3.2 Typical Design Procedures

1. Determine an appropriate, accepted BMP(s) needed for the site, considering the land use, pollutants of concern (Table 3.5), soils, maintenance requirements, and location in relation to Waters of the State and any impairments that may exist.

2. If the receiving water of the project is impaired or has an adopted TMDL, the applicant must show that water quality standards are being met and designated uses are not impacted. This proof must be quantitative and qualitative for sites which disturb greater than twenty five (25) acres. The appropriate steps include

a. Calculate the estimated load for the pollutant(s) of concern. The IDEAL model may be used for all water quality calculations. Contact the Public Works Director for more information on this model. Another, less preferred option is the Schuler Simple Method (Schueler 1987). This method is based on an extensive database obtained in Washington, D.C. for the National Urban Runoff Program (NURP). The Simple Method estimates pollutant loads from urban development by the following equation:

$$L = 0.227(Q \ P_j \ R_v \ C \ A) \qquad \text{Equation 1}$$

Where:

L = Pollutant load in pounds per desired time interval,

Q = Runoff depth,
One-half (½) inch for wet ponds, some wetlands,
One (1) inch for all other BMPs,

P_j = Fraction of rainfall events over the time interval that produce runoff
P_j = One (1) for a single event
P_j = 0.9 for larger time intervals (months, years),

R_v = Volumetric runoff coefficient expressing the fraction of rainfall converted to runoff (See Equation 2),

C = Event mean pollutant concentration in mg/l (See Table 3.6),

A = Total area of site in acres (areas < 640 acres are recommended for this method).

The most important factor affecting the volumetric runoff coefficient (**R_v**) is the imperviousness of the watershed, **I**, in percent. An empirical relationship was developed that relates **R_v** and I as:

$$R_v = 0.05 + 0.09(I) \qquad \text{Equation 2}$$

The rainfall depth, P, was chosen such that a large percentage of storm events will be captured, with larger events only partially captured or bypassed. Greater than eighty-five (85) % of the average annual rainfall amount in Charleston County occurs from storm events with a total depth equal to or greater than 1-inch. The one (1) inch of runoff from pervious areas is the result of approximately 4.5-inches of total rainfall, but it only takes a rainfall of 1.2 inches on impervious surfaces.

Other loading functions, such as in SEDPRO and SEDCAD for eroded particles or common buildup and washoff equations may be used.

b. Select appropriate BMPs from Tables 3.7 and the BMP Uses tables in Appendix F. The use of an engineered device will require documentation to demonstrate its equivalency in meeting water quality criteria.

c. Compute BMP effectiveness for removing pollutants of concern, showing at a minimum that the concentration of the pollutants of concern from the last BMP meets applicable water quality standards.

3. If the BMP is to capture runoff from one (1) or more acres, design a forebay or vault. Guidance on this aspect can be found in SCDHEC (2005) and ARC (2001).

4. Calculate the water quality volume using the following equation.

$$WQV = \frac{Q * DA}{12}$$ Equation 3

Where:

WQV = water quality volume (acre-feet)

Q = runoff depth inches (one-half inch for permanent pool ("wet") structures, one (1) inch for dry structures, one and one-half (1 ½) inches if project is within one thousand (1000) feet of a shellfish bed)

DA = drainage area to water quality BMP (acres). Runoff from the entire site must be captured in a water quality BMP, unless otherwise allowed by the Public Works Director (e.g. credits).

5. Compute the inflow hydrograph for the structure for one (1) inch or one-half (1/2) inch, twenty-four (24) hour storm event, as necessary, for the proposed condition. Note – this is the one inch **runoff** event.

6. Unless already known from the quantity calculations detailed in section 3.3.2, compute stage-storage and stage-discharge relationships of the outlet control structure(s).

7. Perform routing calculations for the one (1) inch or one-half (1/2) inch, twenty-four (24) hour storm event through the BMP. These may be done by hand, or may be done by using a storage routing computer model.

8. Determine if the entire volume from the one (1) inch or one-half (1/2) inch, twenty-four (24) hour storm event was released before the twenty-four (24) hour point. If it does, the outlet is too large. Resize outlet structure.

9. Repeat steps 4-8 until entire volume is not released prior to twenty-four (24) hours. This procedure is commonly accomplished using a low-flow orifice.

10. For engineered devices, alternative calculations other than detailed here shall be provided.

11. Provide all calculations in submittal package in a cohesive, organized, and easy to follow format.

The above procedure commonly involves "counting the squares" to determine the detention time and whether or not the proper WQV is captured and detained. An alternative method, termed the Dimensionless First Flush Calculation, computes the flow rate that corresponds to treating the WQV through detention for 24-hours. See Appendix I.

3.6 Erosion Prevention and Sediment Control Standards

Charleston County requires that an erosion prevention and sediment control (EPSC) plan be submitted and approved prior to initiating construction on construction activities that are in excess of ½ acre or require a building permit or as otherwise directed by Charleston County Public Works Director. This plan describes the practices and controls that will be used during and after construction to meet the following goals:

1. Minimize the extent and duration of disturbed soil exposure,
2. Stabilize disturbed areas promptly,
3. Protect off-site and downstream locations, drainage systems and natural waterways from the impacts of erosion and sedimentation,
4. Limit the exit velocities of the flow leaving the site to non-erosive or pre-development conditions, and
5. Design and implement an ongoing inspection and maintenance plan.

3.6.1 Accepted EPSC BMPs

The various types of EPSC BMPs that are acceptable for use in Charleston County are presented below. These generally fall into three categories: erosion prevention measures, temporary sediment controls, and runoff control and conveyance measures. Runoff from sites shall contain controls that fall into at least one of these categories.

3.6.1.1 Erosion prevention measures

Erosion prevention measures shall be used during and after construction site preparation to avert the discharge of runoff highly concentrated with sediment and other associated pollutants. One or more measures are typically needed on a given site. Measures that fall into this category along with their preferred application are provided in Table 3.9. Details on each of these measures are not discussed in this Manual. Guidance documents that will be referenced as necessary include: SCDHEC (2003), Haan, C. T., Barfield, B. J., and Hayes, J. C. (1995) and Shwab, Glenn O. and Richard K. Frevert (1985). Other practices, such as engineered devices, will be allowed as long as sufficient evidence is presented as to their effectiveness.

Table 3.9 Erosion Prevention BMP Suggested Uses

BMP	Slope Protection	Waterway Protection	Surface Protection	Enclosed Drainage	Large Flat Areas	Borrow Areas	Adjacent Properties
Erosion Prevention Measures	X	X	X	X	X	X	X
Surface Roughening	X		X				
Bench Terracing	X		X				
Temporary Seeding	X		X		X	X	X
Mulching	X				X	X	
Erosion Control Blankets (ECB) and Turf Reinforcement Mats (TRM)	X	X	X			X	
Final Stabilization	X		X		X		X
Topsoiling			X		X		
Permanent Seeding and Planting of Grasses	X		X		X		X
Permanent Ground Cover Plants	X		X				X
Sodding	X		X		X		X
Riprap or Aggregate	X	X	X				
Outlet Protection		X		X			X
Dust Control					X	X	X
Polyacrylamide (PAMs)	X		X	X	X	X	X

3.6.1.2 Temporary sediment control measures

Charleston County emphasizes preventative measures as the main control to protect against erosion, both during and following construction. However, there are typically instances where erosion prevention measures alone do not provide sufficient control. For these situations, temporary sediment controls shall be implemented to control the migration of eroded sediment off site. The sediment control measures are typically only applicable as practices for use during construction. One or more of the measures may be utilized as appropriate during the project's construction phase. Table 3.10 contains a list of some of the suggested controls of this type along with their intended use. Details on these and others measures are again not discussed in detail in the Manual; however, an excellent reference is Haan, Barfield, and Hayes (1995). Other practices, such as engineered devices, will be allowed as long as sufficient evidence is presented as to their effectiveness.

Table 3.10 Temporary Sediment Control BMP Suggested Uses

BMP	Slope Protection	Waterway Protection	Surface Protection	Enclosed Drainage	Large Flat Areas	Borrow Areas	Adjacent Properties
Temporary Sediment Control Structures	X	X	X	X	X	X	X
Storage Volumes and Maintenance Schedules		X		X			X
Temporary Sediment Basin		3.6.1.2.1.1	X	X			X
Multipurpose Basin		X	X	X			X
Temporary Sediment Trap		X	X				X
Silt Fence	X	X					X
Rock Ditch Check			X				X
Stabilized Construction Entrance					X		X
Storm Drain Inlet Protection		X		X			X
Vegetated Filter Strips		X					X
Rock Sediment Dike		3.6.1.2.1.2	X				X

3.6.1.3 Runoff Control and Conveyance Measures

This category of EPSC BMPs may be used as necessary during and following construction. Suggested varieties and their corresponding uses are provided in Table 3.11.

Table 3.11 Runoff Control and Conveyance Measures BMP Suggested Uses

BMP	Slope Protection	Waterway Protection	Surface Protection	Enclosed Drainage	Large Flat Areas	Borrow Areas	Adjacent Properties
Pipe Slope Drains	X		X				
Temporary Stream Crossing		X	X				X
Runoff Conveyance Measures	X					X	X
Construction De-watering		X		X	X	X	
Level Spreader			X		X		X
Subsurface Drains			X		X		

3.6.1.4 Temporary Vegetation/Seeding

Description

The purpose of purpose of temporary seeding is to reduce erosion and sedimentation by stabilizing disturbed areas that would otherwise lay bare for long periods of time before they are worked or stabilized. Temporary seeding is also used where permanent vegetation growth is not necessary or appropriate.

When and Where to Use It

Temporary seeding is used on exposed soil surfaces such as denuded areas, soil stockpiles, dikes, dams, banks of sediment basins, banks of sediment traps, and temporary road banks. Temporary seeding prevents and limits costly maintenance operations on other sediment control structures. Sediment cleanout requirements for sediment basins, sediment traps and silt fence is reduced if the drainage area is seeded when grading and construction operation are not taking place.

Temporary stabilization is required within fourteen (14) days after construction activity is complete **unless construction activity is going to resume within 21 days.** Cover seeded areas with an appropriate mulch to provide protection from the weather. When the temporary vegetation does not grow quickly or think enough to prevent erosion, re-seed as soon as possible. Keep seeded areas adequately moist. Irrigate the seeded area if normal rainfall is not adequate for germination and growth of seedlings. Water seeded areas at controlled rates that are less than the rate at which the soil can absorb water to prevent runoff. Runoff of irrigation water wastes water and can cause erosion.

Plant Selection

Plant seed selection will be based on the type of soil and the season of the year in which the planting is to be done. Tables 3.11 and 3.12 will be used if you plan to use conventional tillage methods (plowing, seedbed preparation, hydroseeding, etc). If you need a fast growing crop to nurse your permanent species, then use the mix rate. Failure to carefully follow agronomic recommendations often results in an inadequate stand of temporary vegetation that provides little or no erosion control.

Tillage

If the area has been recently plowed, no tillage is required other than raking or Surface Roughening to break any crust that has formed and to leave a textured surface. If the soil is compacted less than six (6) inches, it should be disked for optimal germination.

Soil Testing

Information on test providers is available from the Public Works Director and the Soil and Water Conservation District Office.

Lime

Lime is not required for temporary seeding unless a soil test shows that the soil pH is below 5.0. It may be desirable to apply lime during the temporary seeding operation to benefit the long-term permanent seeding. Apply a minimum of 1.5 tons of Lime/acre (70 pounds per 1000 square feet) if it is to be used.

Fertilizer

A minimum of five hundred (500) pounds per acre of 10-10-10 fertilizer (11.5 pounds per 1000 square feet) or equivalent should be applied during temporary seeding unless a soil test indicates a different requirement. Fertilizer and lime (if used) should be incorporated into the top 4-6 inches of the soil by disking or other means where conditions allow.

Seeding

The surface of the soil may be loosened just before broadcasting the seed. Seed will be applied evenly by the most convenient method available for the type of seed to be used and the location of the temporary seeding. Typical application methods include but are not limited to cyclone seeders, rotary spreaders, drop spreaders, broadcast spreaders, hand spreaders, cultipacker seeder, and hydro-seeders. Cover applied seed by raking or dragging a chain, and then lightly firm the area with a roller or cultipacker.

Mulching

Mulch may be used in seeded areas to retain soil moisture and reduce erosion during establishment of vegetation. The most commonly accepted mulch used in conjunction with temporary seeding is small grain straw. This straw should be dry and free from mold damage and noxious weeds. The straw may need to be anchored with netting or emulsions to prevent it from being blown or washed away. The straw mulch may be applied by hand or machine at the rate 1.5 - 2 tons per acre (90 pounds per 1000 square feet). Frequent inspections are necessary to check that conditions for growth are good.

Irrigation

Seeded areas should be kept adequately moist. Irrigate the seeded area if normal rainfall is not adequate for the germination and growth of seedlings. Water seeded areas at controlled rates that are less than the rate at which the soil can absorb water to prevent runoff. Runoff of irrigation wastes water and can cause erosion.

Re-seeding
Areas where the plants do not grow quickly, thick enough, or adequately to prevent erosion should be re-seeded with temporary grasses as soon as such areas are identified.

Table 3.12 Temporary Vegetation/Seeding Schedule

Species	Rates (lbs/acre)	Optimum Dates to Plant	Remarks
Browntop Millet (Alone)	40	April 20 - August 15	Quick, Dense Cover
Browntop Millet (Mix)*	10	April 20 - August 15	Quick, Dense Cover
Rye Grain (Alone)	56	February - March, August 15 - November 20	Quick Cover
Rye Grain (Mix)*	10	February - March, August 15 - November 20	Quick Cover
Rye Grass (Alone)	50	August 10 - October 10	Competitive, Dense
Rye Grass (Mix)*	8	August 10 - October 10	Competitive, Dense

* For details on mixes consult the Charleston Soil and Water Conservation District.

Table 3.13 Temporary Vegetation/Seeding Schedule for Steep Slopes/Cut Slopes

Species	Rates (lbs/acre)	Optimum Dates to Plant	Remarks
Weeping Lovegrass (Alone)	4	April - July 20	Quick cover, deep roots, likes dry sites, seldom used alone, clumps
Weeping Lovegrass (Mix)*	2	April - July 20	Quick cover, deep roots, likes dry sites, seldom used alone, clumps

* For details on mixes consult the Charleston Soil and Water Conservation District.

3.6.1.5 Permanent Vegetation/Seeding

Description

The purpose of purpose of temporary seeding is to reduce erosion and sedimentation by stabilizing disturbed areas that would otherwise lay bare for long periods of time before they are worked or stabilized. Temporary seeding is also used where permanent vegetation growth is not necessary or appropriate.

When and Where to Use It

Temporary seeding is used on exposed soil surfaces such as denuded areas, soil stockpiles, dikes, dams, banks of sediment basins, banks of sediment traps, and temporary road banks. Temporary seeding prevents and limits costly maintenance operations on other sediment control structures. Sediment cleanout requirements for sediment basins, sediment traps and silt fence is reduced if the drainage area is seeded when grading and construction operation are not taking place.

Temporary stabilization is required within fourteen (14) days after construction activity is complete **unless construction activity is going to resume within 21 days.** Cover seeded areas with an appropriate mulch to provide protection from the weather. When the temporary vegetation does not grow quickly or think enough to prevent erosion, re-seed as soon as possible. Keep seeded areas adequately moist. Irrigate the seeded area if normal rainfall is not adequate for germination and growth of seedlings. Water seeded areas at controlled rates that are less than the rate at which the soil can absorb water to prevent runoff. Runoff of irrigation water wastes water and can cause erosion.

Plant Selection

Plant seed selection should be based on the type of soil, the season of the year in which the planting is to be done, and the needs and desires of the permanent land user. Tables 3.14 and 3.15 should be used to select the desired species to be planted. Failure to carefully follow agronomic recommendations often results in an inadequate stand of permanent vegetation that provides little or no erosion control. The rates in Tables 3.14 and 3.15 are based on purity and germination standards required for certification.

The following notes apply to Tables 3.14 and 3.15.

1. In mixtures with temporary cover, the full seeding rate of permanent cover shall be used.

2. Mix means two (2) or more long-term species plus short-term species. For dates other than optimum, call the Charleston Soil and Water Conservation District.

3. A legume, such as a clover, crown vetch, and serecia should be used where it is possible.

4. The appropriate inoculants should be used.

Topsoil

If the surface soil of the seedbed is not adequate for plant growth, topsoil may be applied.

Tillage

If the area has been recently plowed, no tillage is required other than raking or Surface Roughening to break any crust that has formed and to leave a textured surface. If the soil is compacted less than six (6) inches, it should be disked for optimal germination. If the soil is compacted more than six (6) inches, it should be sub-soiled and disked.

Soil Testing

Information on test providers is available from the Public Works Director and the Soil and Water Conservation District Office.

Lime

Unless a specific soil test indicates otherwise, apply 1½ tons of ground course textured agricultural limestone per acre (70 pounds per 1000 square feet).

Fertilizer

A minimum of one thousand (1000) pounds per acre of a complete 10-10-10 fertilizer (23 pounds per 1000 square feet) or equivalent should be applied during permanent seeding of grasses unless a soil test indicates a different requirement. Fertilizer and lime (if used) should be incorporated into the top four (4) to six (6) inches of the soil by disking or other means where conditions allow. Do not mix the lime and the fertilizer prior to the field application.

Seeding

The surface of the soil should be loosened just before broadcasting the seed. Seed should be evenly applied by the most convenient method available for the type of seed to be applied ands the location of the temporary seeding. Typical application methods include, but are not limited to, cyclone seeders, rotary spreaders, drop spreaders, broadcast spreaders, hand spreaders, cultipacker seeder, and hydro-seeders. Cover applied seed by raking or dragging a chain or brush mat, and then lightly firm the area with a roller or cultipacker. Do not roll seed that is applied with a hydro-seeder and hydro-mulch.

Mulching

All permanent seeded areas may be covered with mulch immediately upon completion of the seeding application to retain soil moisture and reduce erosion during establishment of vegetation. The mulch should be applied evenly in such a manner that it provides a minimum of seventy-five (75) percent coverage. Typical mulch applications include straw, wood chips, bark, wood fiber, and hydro-mulches. The most commonly accepted mulch used in conjunction with permanent seeding is small grain straw. This straw should be dry and free from mold damage and noxious weeds. The straw may need to be anchored with netting or asphalt emulsions to prevent it from being blown or washed away. The straw mulch may be applied by hand or machine at the rate two (2) tons per acre (90 pounds per 1000 square feet). Frequent inspections are necessary to check that conditions for growth are good.

Irrigation

Permanent seeded areas should be kept adequately moist, especially late in the specific growing season. Irrigate the seeded area if normal rainfall is not adequate for the germination and growth of seedlings. Water seeded areas at controlled rates that are less than the rate at which the soil can absorb water to prevent runoff. Runoff of irrigation water wastes water and can cause erosion.

Re-seeding

Inspect permanently seeded areas for failure; make necessary repairs and re-seed or over seed within the same growing season if possible. If the grass cover is sparse or patchy, re-evaluate the choice of grass and quantities of lime and fertilizer applied. If the permanent seeding has less than forty (40) percent cover, have the soil tested to determine any acidity or nutrient deficiency problems.

Final stabilization by permanent seeding of the site requires that it be covered by a seventy (70) percent coverage rate.

Post-Stabilization

Once areas are stabilized they can be converted to native species or for establishing on non-critical, level sites. Table 3.16 lists some native species of Charleston County that can be used.

Table 3.14 Permanent Vegetation/Seeding Schedule

Species	Rates (lbs/acre)	Optimum Dates to Plant	Remarks
Bahia Grass (Alone)	40	March 20 - June 15	Slow to become established
Bahia Grass (Mix)*	30	March 20 - June 15	Slow to become established
Bermuda Grass (Hulled) (Alone)	8-12	April - July 15	Quick cover, Sod forming, partial winter kill
Bermuda Grass (Hulled) (Mix)*	4-6	April - July 15	Quick cover, Sod forming, partial winter kill
Fescue, Tall (KY31) Alone	40	August 15 -	Seldom seeded alone, not for

Species	Rates (lbs/acre)	Optimum Dates to Plant	Remarks
		October	dry or wet sites
Fescue, Tall (KY31) Mix*	20	August 15 - October	Seldom seeded alone, not for dry or wet sites
Sericea Lespedeza (Scarified) Alone or Mix*, (Inoculate with EL Inoculant)	40	April - June	Good for slopes, cuts, and fills that require low maintenance
Ladino Clover (Mix* only), (Inoculate with AB Inoculant)	2	August 20 - October	Naturally adds nitrogen

* For details on mixes consult the Charleston Soil and Water Conservation District.

Table 3.15 Permanent Vegetation/Seeding Schedule for Steep Slopes/Cut Slopes

Species	Rates (lbs/acre)	Optimum Dates to Plant	Remarks
Weeping Lovegrass (Alone)	4	April – July 20	Quick cover, deep roots, likes dry sites, seldom used alone, clumps
Weeping Lovegrass (Mix)*	2	April – July 20	Quick cover, deep roots, likes dry sites, seldom used alone, clumps
Crownvetch (Mix*) (Inoculate with Type M Inoculant)	8-10	March - April	2 years to establish, no mowing, green all year, 20” maximum height

* For details on mixes consult the Charleston Soil and Water Conservation District.

Table 3.16 Native species that can be used on non-critical, level sites in Charleston County, SC

Species	Rates (lbs/acre)	Optimum Dates to Plant	Remarks
Switchgrass (Mix* with Legumes)	10, PLS**	February 10 – April 20	Mix with Serecia at 30 lbs/acre
Indian Grass (Mix)*	8, PLS**	February – April 20	Mix with Serecia at 30 lbs/acre
Little Bluestem, (Mix*)	8, PLS**	February 10 – April	

* For details on mixes consult the Charleston Soil and Water Conservation District.
**Pure Live Seed

3.6.2 Design Standards

3.6.2.1 General Standards

1. EPSC plans shall be developed to achieve an eighty (80) percent design removal efficiency goal. Simply applied, when a site is completely denuded of vegetation, the structural and nonstructural EPSC measures are designed to trap 80 percent of the total suspended solids (TSS) or 0.5 ML/L peak settable solids concentration (SSC), which ever is less, that are generated by the site. The design storm event associated with this level of control is the ten (10) year twenty-four (24) hour SCS Type III storm event. Calculations using models, such as SEDPRO or SEDCAD, or SCDHEC design aids shall be provided to show adherence to this criteria.

2. SCS procedures shall be used to determine runoff amounts. It is important to note that when a BMP is designed for the ten (10) year twenty-four (24) hour storm event, the BMP will have a greater trapping efficiency for more frequent events such as the two (2) year twenty-four (24) hour storm event.

3. A sediment detention basin is required when ten (10) or more acres of disturbed land area drain to a single outlet point. Such basins shall be designed to have a design effluent concentration of 0.5 ML/L peak SSC or eighty (80) percent trapping efficiency for TSS, whichever is less, control the ten (10) year twenty-four (24) hour storm event to pre-development conditions, and successfully pass the one hundred (100) year twenty-four (24) hour storm event. Sediment basins shall be limited to controlling runoff for twenty (20) acres. Sediment traps shall not have more than five (5) acres draining to them.

   Activities that disturb between one (1) and ten (10) acres of land area that do not drain to a single outlet point may incorporate practices other than a sediment basin to achieve equivalent removal efficiency.

4. Silt fencing shall be placed at the toe of all fill slopes and soil berms and below disturbed areas where the size of the area is no more than ¼-acre per one hundred (100) feet of silt fence length. The maximum slope length behind the fence is one hundred (100) feet and the maximum gradient behind the fence is 2H:1V.

5. The following nonstructural site management practices shall be utilized on the plans where applicable:

   a. Minimize site disturbance to preserve and maintain existing vegetative cover,

   b. Limit the number of temporary access points to the site for land disturbing activities,

   c. Protect off-site and downstream locations, drainage systems and natural waterways from the impacts of erosion and sedimentation,

d. Phase and sequence construction activities to minimize the extent and duration of disturbed soil exposure, and

e. Implement an ongoing inspection and maintenance plan. Suggested maintenance schedules are given in SCDHEC (2005).

6. Sediment storage volumes shall be calculated for all sediment controls to determine the required clean-out frequencies and maintenance schedules. The Universal Soil Loss Equation (USLE) and subsequent modifications or other acceptable methods that determine sediment yield may be used to predict the required sediment storage volumes for specific sediment control structures

7. To encourage the development and testing of innovative alternative EPSC BMPs, alternative management practices that are not included in the Manual may be allowed upon review and approval by the Public Works Director. To use an alternative BMP, the design professional shall submit substantial evidence that the proposed measure will perform at least equivalent to currently approved BMPs contained in the Manual. Evidence may include, but is not limited to:

   a. Supporting hydraulic and trapping efficiency calculations.

   b. Peer review by a panel of licensed professional engineers.

   c. Research results as reported in professional journals.

   d. Manufacturer literature.

8. Detailed EPSC plans shall comply to the maximum extent practicable with the following specific standards and review criteria:

   a. Sediment tracking control shall be implemented using stabilized construction entrances that are to be located and utilized at all points of ingress/egress on a construction site. The transfer of soil, mud, and dust onto roads shall be prevented.

   b. Crossings of waterways during construction will be minimized and must be approved by the Public Works Director and possibly the USACE. Encroachment into stream buffers riparian areas and wetlands will be avoided when possible.

   c. Topsoil shall be stockpiled and preserved from erosion or dispersal both during and after site grading operations when applicable.

   d. Where construction or land disturbance activity will or has temporarily ceased on any portion of a site, temporary site stabilization measures shall be required as soon as practicable, but no later than seven (7) calendar days after the activity has ceased. Hydroseeding as often as possible is encouraged. Stabilization of disturbed areas is one of the best approaches for erosion prevention and sediment control.

e. All slopes must be stabilized though grassing, hydroseeding, synthetic or vegetative matting, diversion berms, temporary slope drains, etc. and must be performed within two (2) working days after the necessary grading (temporary or permanent) has been achieved.

f. Final stabilization of the site shall be required within fourteen (14) calendar days of construction completion. Final stabilization is defined as having seventy (70) percent or more of the entire site with permanent coverage in good condition.

g. Temporary structural controls installed during construction shall be designed to accomplish maximum stabilization and control of erosion and sedimentation, and shall be installed, maintained, and removed according to the specifications set forth in the Manual and project specifics developed as part of the permit application/engineering calculations. All temporary structural controls shall be designed to control the peak runoff resulting from the ten (10) year storm event.

h. All permanent structural controls, including drainage facilities such as channels, storm sewer inlets, and detention basins, shall be cleaned out as part of the project closeout/NOT process.

i. Linear projects (utility lines, road construction) over, under, or along water body shall include measures and controls which adequately protect the water body from undue impact. Such work shall not be performed without approval from USACE. In addition, such work shall be coordinated with the installation of erosion prevention and sediment control measures so that disruption is minimized. Every effort should be made to install utilities during the initial construction phases. Trench sharing is encouraged to the extent practicable

9. The grading plan shall include the following general measures at a minimum:

a. The finished cut and fill slopes to be vegetated should not be steeper than 3H:1V. The finished grades of cut and fill slopes to be vegetated with vines and/or groundcovers should not be steeper than 1H:1V.

b. Cuts or fills may not be so close to property lines as to endanger adjoining property without adequately protecting such properties against erosion, sedimentation, slippage, settlement, subsidence, or other damages.

c. Subsurface drainage may be provided in areas having a high water table to intercept seepage that would affect slope stability, bearing strength or create undesirable wetness.

d. No fill shall be placed where it can slide or wash onto another property.

e. Fill shall not be placed adjacent to channel banks where it can create bank failure, reduce the capacity of the stream, or result in downstream sediment deposition.

f. All borrow and disposal areas shall be included as part of the grading plan.

g. Adequate channels and floodways shall be provided to safely convey increased runoff from the developed area to an adequate outlet without causing significant channel degradation, or increased off-site flooding.

h. The site shall be graded to direct flows to appropriate controls.

10. EPSC plan shall have the following information contained with in a cohesive, organized, and easy to follow format:

a. Location of all erosion and sediment control structures on construction documents;

b. Delineation of all sensitive features (wetlands, streams, ponds, existing stormwater structures, etc.) and potential sediment sources;

c. Installation sequencing and maintenance schedules for all EPSC BMPs during and after construction;

d. Provisions to preserve topsoil and limit the amount of total disturbed area;

e. Details of site grading;

f. Design details and computations for all EPSC structures;

g. Protection of all storm drain inlets and outlets;

h. For sites which disturb greater than five (5) acres, a list or calculation of the trapping efficiency for all EPSC BMPs, as applicable;

i. For sites which disturb greater than five (5) acres, calculations of required sediment storage volumes for all EPSC BMPs, as applicable;

j. Explanation of any computer models or software used with highlights of and/or notes on the output data;

k. Locate temporary and permanent soil disposal areas, haul roads, and construction staging areas to minimize erosion, sediment transport, and disturbance to existing vegetation.

l. All necessary certifications by the person responsible for the activity. This includes the NOI application signatures and maintenance agreement/operating permit. Proper preparation of the EPSC Plan and the SWPPP, if necessary, by a registered engineer, landscape architect, Tier B land surveyor, or a qualified Federal Government employee.

3.6.2.2 Typical Design Procedures

The design procedures will vary depending on the EPSC BMP. Many of the BMPs listed in Tables 3.9 – 16 do not need to be "designed" using calculations, such as surface roughening or dust control. Others require the use of equations or design aids to properly design. SCDHEC has two handbooks, the BMP Handbook (SCDHEC 2005) and the Stormwater Management and Sediment Control Handbook (SCDHEC 2003) that provide the procedures and equations needed to design some of the EPSC BMPs listed in Tables 3.9 thru 3.16. Example problems are given for most types. As with the design of any BMP, engineering judgment will be needed on most applications. Proper design must be complemented with proper installation and routine maintenance in order for BMPs to be effective and to adhere to these provisions of this section.

3.7 Stormwater Drainage System Design Standards

This section provides the design requirements for various storm sewer drainage/collection system components including: design storms, velocities; and, pipe and inlet sizes. Storm drainage systems shall include all storm drainage structures and pipes that convey runoff under roadways. These systems are commonly referred to as lateral closed systems. These standards are required for all publicly maintained systems and are recommended for private systems.

1. Storm drain pipes:

    a. Storm drainage lines shall be staked at each box or at intervals that will be sufficient to check alignment and grade of the construction with the approved plans. The use of lasers to augment control is encouraged.

    b. The minimum size storm drainage pipe allowable shall be fifteen (15) inches in diameter.

    c. The minimum allowable slope for storm drainage pipe shall be four tenths (0.4%) percent [0.004 ft/ft] or a minimum flow velocity of three (3) feet per second at all flow levels, except where specifically approved in writing by the Public Works Director. Maximum allowable slope for storm drainage pipe is twenty (20) percent.

    d. Drainage system installation must be such that stormwater discharge is not concentrated on adjacent property owners and that the velocity is less than erosive limits for the site soils. At pipe outfalls, this normally requires the use of a rip-rap apron, placed on filter fabric and lightly grouted, for a minimum distance equal to or greater than six (6) pipe diameters.

    e. Type and class of storm drainage pipe, as well as the construction of pipe culverts, shall be in accordance with the SCDOT and Charleston County Transportation Committee (CCTC) specifications. The proposed use of any type of storm drainage pipes other than reinforced concrete pipe (RCP) shall be specifically approved in writing by the Public Works Director.

f. A minimum of one (1) feet of cover shall be provided for all RCP storm drainage pipes under unpaved roads or any other situation in which no roadway or other structure is to cover the pipe or unless otherwise stated by a pipe manufacturer. For pipes under any paved surface, the minimum cover is six (6) inches, excluding base and surface course depth. Contact the Public Works Director for minimum depths in other situations (e.g. other pipe types). RCP Class IV or V pipe may be requested by the Public Works Director in special conditions be specifically approved be specifically approved in writing by the Public Works Director.

g. Storm drainage pipe shall be placed to minimize length running under pavement. Where it is necessary for pipe to cross the roadway, it preferably shall be placed at a ninety (90) degree angle, and in no case at less than thirty (30) degrees. All cross lines in the roadway shall be compacted in six (6) inches lifts to ninety-five (95) percent Standard Proctor maximum density and to ninety-eight (98) Standard on the last six (6) inches.

h. Any storm drainage pipe shall extend out to or beyond the toe of the roadway embankment; in no case will the end of the pipe be within the five foot roadway shoulder.

i. Storm drainage pipe discharging into a drainage channel shall intersect the channel in a manner such that the interior angles measured from their centerlines of flow, is greater than, or at most equal to ninety (90) degrees. Rip-rap, or other suitable protection, is required from the outlet point to the bottom of the channel and on the opposite channel bank to prevent scour and erosion.

j. Storm drainage pipe discharging into a wet pond or lake shall have the discharge invert above the permanent pool elevation and rip-rap or other energy dissipation structures shall be placed from the bottom of the outlet to one foot below the normal permanent pool level.

k. A maintenance access point shall be available within every three hundred (300) feet for fifteen (15) to eighteen (18) inch diameter pipe, every four hundred (400) feet for twenty-four (24) inch pipe and every five hundred (500) feet for larger storm drainage lines.

l. Hydraulic grade line and head loss calculations for determining water surface elevations shall be performed for all systems connections.

m. Calculations shall be performed for the appropriate design storm event (see General requirements sections above).

n. For storm drainage systems with less than five (5) connections, Manning's Equation shall be acceptable for sizing the capacity of drain pipes for non-submerged conditions where the free water surface elevation is below the crown of the pipes. The Saint-Venant equations (full dynamic wave), which are used in many common engineering program, shall be employed in larger design situations.

o. Storm drain profile plots will be included in the set of construction plans.

p. Storm drainage systems shall be designed to convey stormwater runoff by gravity flow unless otherwise approved.

q. For very flat flow lines, flow velocities shall increase progressively throughout the system. Upper reaches of the pipe system may have flatter slopes than the lower end of the system.

2. Culverts:

a. Proper consideration of inlet and outlet control shall be given in the design of culverts and outlets;

b. The pipe, appurtenant entrance and outlet structure shall properly account for water, bed-load, and floating debris at all stages of flow;

c. There shall be no unnecessary or excessive cause of property damage;

d. The outlet shall be designed to resist undermining and washout.

e. Culvert design shall include all cross drainage facilities that transport stormwater runoff under roadways. Culvert selection techniques can range from solving empirical formulas, to using nomographs and charts, to comprehensive mathematical analysis for specific hydraulic conditions. The models approved for these calculations are listed below. Other widely accepted models may be used, but must be approved by the Public Works Director. Designs shall be based upon SCDOT requirements where applicable.

f. Culvert under roadways shall be designed using the fifty (50) year storm event, regardless of contributing area. Ponding on the upstream end of the culvert is acceptable as long as the roadway is not overtopped during the precipitation event. Ponding or backwater effects shall not impact any new or existing structures and recede after the storm event in a time period acceptable to the Public Works Department.

g. Additional hydraulic capacity shall be required as necessary to prevent backwater effects that may adversely impact upstream property or structures.

h. Acceptable models for designing culverts include, but are not limited to:

- ICPR
- HY8
- Pond Pack
- HEC-RAS
- Flow Master

i. A complete study of culverts and design considerations can be found in USDOT 2001a.

3. Headwalls and Outlets:

All exposed ends of pipes may be protected by a flared end section (limited to pipes 36" or less in diameter) or one of the following type headwalls:

a. A concrete or brick plastered with non-shrink grout, headwall is preferred; it is required on culverts located in major defined drainage channels.

b. A rip-rap headwall is acceptable for pipes twenty-four (24) inch or less in a number of situations; if used. Note that this technique requires the use of filter fabric and grout and/or concrete.

c. Storm drainage or pond outfalls must be carried to an existing drainage outfall such as a pipe, ditch, etc.

d. No new point discharge onto adjacent property, where there was not an existing point discharge, is allowed without the adjacent property owner's written permission. Discharge points created with new development shall connect to an existing drainage system, whether natural or man-made. The new outlet may not cause flooding or in any way degrade the existing drainage system and proof of such should be provided. In some cases, conveyance must be constructed from the new development to a point of discharge into the existing system and shall be done at the owner's expense. In these cases, the owner is responsible for obtaining all necessary easements and agreements to construct such,

e. Outlets will not be allowed to discharge on fill slopes.

4. Energy Dissipation:

a. All outlets shall be sufficiently stabilized. Calculations will be provided justifying the design and material used (e.g. riprap aprons geometry and diameter),

b. If riprap aprons are used, filter fabric is to be installed beneath all riprap.

c. Level spreaders, plunge pools, etc. shall be properly designed and installed at the proposed outlet(s).

5. Catch basins, yard inlets, manholes, and junction boxes.

a. Materials and construction shall be as specified in Section 719 of the SCDOT specifications.

b. When the depth of a catch basin or junction box exceeds six (6) feet, rungs/steps shall be provided for ascent and descent. (Steps are to be ASTM-C-478, or equivalent.)

c. The box top shall be a minimum of three (3) feet by three (3) feet. Sides shall be plastered with grout.

d. All pipes entering or leaving shall not protrude more than four (4) inches into the box.

e. All roadway catch basins shall be SCDOT Type 9, Type 16 or Type 18 Catch Basins based the on application.

Maximum roadway catch basin inlet capacity for an inlet shall be determined based on the following:

For inlets at sag, capacity shall be based on weir flow (unsubmerged). The depth flow shall be limited to the curb depth, but may be further limited by the allowed spread, detailed below. In sag conditions, a fifteen (15) percent factor of safety shall be used to account for debris/clogging. Ponding at the sag location shall be limited to twenty-four (24) hours after the storm event.

For inlet on grade, theoretical capacity shall consider in the design the longitudinal and cross slopes, and gutter depression. The length of the gutter opening must be such that the gutter efficiency is eighty (80) percent of the theoretical capacity. Several equations and nomographs are available in the literature for determining the theoretical capacity. Maximum flow depth shall be limited to the depth of curb.

f. SCDOT inlets shall be designed to accommodate a given flow such that ponded water is removed within twenty-four (24) hours and does not cause flooding to adjacent buildings or other interests. As long as these criteria are met, the depth of ponded water is allowed to exceed the top of the manhole lid by no more than 6 inches for the appropriate design storm.

g. Catch basins will be located outside curve radii. If this is not possible, the catch basin shall be set back an extra foot and the face of the catch basin shall be parallel to a chord joining the two points on the curve radius located by projecting lines from the sides of the catch basin box.

h. Catch basins shall contain a minimum drop of 0.2 feet from invert in to invert out.

i. Floors of drop boxes/manholes/junction boxes are to be of concrete and contain "formed troughs" to help channel flow.

j. Within a catch basin, the elevation at the crown of any inlet pipe shall be equal to or greater than the crown of the outlet pipe.

k. Catch basins shall be field staked to ensure proper catch basin inlet alignment with the street gutter line.

l. Area around all catch basins shall be backfilled in six (6) inch to eight (8) inch lifts, compacted to ninety-five (95) percent Standard Proctor maximum density.

m. Inlet protection shall be provided at all inlets into the stormwater system during construction and until project closure procedures have been completed or notification from the Public Works Director has been given stating that an acceptable level of stabilization has been achieved. Guidance on design, installation and maintenance of inlet protection can be found in SCDOT (2005).

n. Inlet spacing shall be based partly on the maximum spread of water into the road way. For the appropriate design storm, at least one full travel lane width must be available during the rain event for all roads. Inlets up-gradient of a road intersection, sag inlets, or the last inlet for a given system must be designed with sufficient capacity to handle the entire flow, such that there is no flow through/bypass.

o. Maximum depth in which the water may pond above or around an inlet must not threaten surrounding permanent structures or facilities including vehicular or pedestrian traffic.

p. Inlets placed in roadway gutter lines shall be spaced to prevent flow from entering road intersections and to not exceed a maximum spread of 6-feet, or one-half of a travel lane, whichever is greater, and based on maximum inlet capacity.

q. In depth design procedures for inlet and storm sewer design may be referenced in AASHTO (1999), USDT (2001b), Mays, L., (2001), and Yen (2001). Culvert design guidance is found in USDT (2001a).

r. All manhole lids and catch basins will contain a water quality logo. Contact the Stormwater Division for information on how to obtain logos.

3.8 Open Channel Hydraulics

Open channels shall include all permanent storm drainage channels including swales, culverts, and diversions. These storm drainage systems shall be designed based upon the following criteria:

1. All open channels are to be uniform and shall be stabilized to prevent erosion in a manner approved by the Public Works Director. A number of acceptable techniques are shown in the current version of the SCDHEC (2005).

2. The design of open channels shall be based on Manning's Formula where backwater effects from obstructions and/or tailwater is not present. Flow velocities for the ten (10) year storm event must be less than five (5) ft/sec (two and one-half (2.5) ft/sec in bare sandy soils) or the channel surfaces must be adequately lined, e.g., rip-rap, concrete.

3. The minimum channel grade shall be 0.005 ft/ft, unless supporting calculations show that there will be no pools or standing water areas formed in the channels at smaller slopes.

4. Design conditions may be assumed to be steady, uniform flow.

5. Except for roadside ditches, the side slopes of grassed lined channels without Erosion Control Blankets or Turf Reinforcement Matting shall be no steeper than 3H to 1V.

6. Channels may be designed with multiple stage levels with a low flow section to carry the two (2) year storm event and a high flow section to carry storms of larger frequencies.

7. Charleston County allows vegetated channels. Guidance on the design of these type channels can be found in Haan et. al. (1995) or by using computer software that is capable of calculating channel stability and capacity.

8. Additional hydraulic capacity shall be required as necessary to prevent backwater effects that may adversely impact upstream property or structures.

9. Acceptable models for designing open channels include, but are not limited to:

- ICPR
- HY8
- Pond Pack
- HEC-RAS
- Flow Master

Table 3.17 Maximum permissible velocities for vegetated channels

	Permissible Velocity (ft./sec.)*					
	Erosion Resistant Soils % Slope			Easily Eroded Soils % Slope		
Cover	0-5	5-10	> 10	0-5	5-10	> 10
Bermuda Grass	8	7	6	6	5	4
Bahia Buffalo Grass Blue Gamma Centipede Grass Tall Fescue Kentucky Bluegrass Red Canary Grass	7 5	6	5	5	4	3
Grass-legume Mixture		4	NR	4	3	NR
Lespedeza Sericea Weeping Lovegrass Kudzu	3.5					
Alfalfa Small Grains Temporary Vegetation		NR	NR	2.5	NR	NR

* Allow velocities over five (5) ft/sec only where good cover and maintenance will be provided. If poor vegetation exists due to shade, climate, soils or other factors, the permissible velocity shall be reduced by fifty (50) percent.
NR = Not Recommended
Sources: Elementary Soil and Water Engineering, Shwab et. al. and Hann et. al. (1995)

General guidance on open channel design can be found in USDT (1996, 2001).

3.9 Special Protection Areas

In an effort to address some of the most critical water resource problems that exist in the County, Special Protection Areas may be established. These areas may be established by County Council or by written direction by the Public Works Director or by the establishment of specific local, state or federal requirements (TMDL, State Anti-Degradation, etc.). Those wishing to develop or redevelop lands within these protected areas will be required to comply with the minimum standards listed in the preceding sections as well as a set of design criteria detailed below.

Design criteria within Special Protection Areas may impose water quantity (reduces or prevents frequent and/or extreme flooding) or a water quality criteria that prevents or reduces degradation of riverine, estuarine, coastal ecosystems or maintains a designated use(s). Water quality impairments may be identified through the County's Stormwater Management Program and/or any other local, state or federal requirements. The Stormwater Division will inform permit applicant(s) when submitted applications and/or proposed projects are located within a Special Protection Area. This does not relieve the applicant(s) of other local, state or federal requirements (State approved TMDL's, etc.) Due to the dynamic nature of these Special Protection Areas, the applicant will meet with the Public Works Director to discuss specific design criteria.

3.9.1 Water Quantity

Flooding problem areas exist in many locations around the County to the point that stormwater controls have become overwhelmed, or where controls were never adequately designed or installed to control runoff. The ability to maintain a system is also suspected contributes to some of the frequent flooding. In an effort to relieve existing flooding problems, the following list of design criteria will be required in designated areas. The requirement in conjunction with the enforcement of other design criteria listed in the sections above, are required to provide the necessary controls.

1. The post-development, peak discharge rates is restricted to half (½) the pre-development rates for the two (2) and ten (10) year storm event or to the downstream system capacity, whichever is less.

2. The post-development runoff volumes for the two (2) year frequency twenty-four (24) hour duration storm events above the predevelopment level shall be stored for a period of twenty-four (24) hours on average before release.

Additional criteria may be established.

3.9.2 Water Quality

In conjunction with the NPDES permitting program, SCDHEC, through delegated responsibility from EPA, must identify and mitigate impaired waterbodies. Impaired waterbodies are identified through a monitoring program, the results of which are compared against water quality standards developed to protect designated uses of individual waterbodies. These impaired waterbodies are those that do not meet these standards and cannot be used for their designated purposes, such as fishing, swimming, recreation, and/or support of aquatic life. In accordance with Section 303 of the Clean Water Act, states must release a bi-annual report

of the impaired waterbodies. Waters listed on the 303(d) list will have a TMDL developed, which represents the daily amount of a particular pollutant that a waterbody can receive and still meet the water quality standard for its designated use(s).

3.9.3 Shoreline Protection

Shorelines are environmentally sensitive areas that can impact water quality of adjacent waterbodies. The design and installation of stormwater systems and facilities at or near the shoreline shall follow the list of criteria below as applicable.

1. The natural dune system and native vegetation shall not be impacted unless an appropriate permit has been issued by DHEC-OCRM and/or the appropriate local government.

2. No beachfront outfalls are allowed unless an appropriate permit has been issued by DHEC-OCRM and/or the appropriate local government.

3. Installation of sediment/erosion control BMPs should take into consideration migration of sediment due to wind.

4. All DHEC-OCRM and local government beachfront setback policies must be followed.

CHAPTER 4 INSPECTIONS & ENFORCEMENT

This chapter establishes inspection and enforcement guidelines to be followed by the County.

4.1 Charleston County Stormwater Inspections

The County will inspect applicable construction sites from initial land clearing to final stabilization. The purpose of these inspections will be to check for compliance with the County stormwater management plan approved by the Stormwater Division. Maintenance inspections will also be performed on stormwater management systems and facilities throughout their useful life. For each system or facility installed or retrofitted during an approved construction project, the applicant must have submitted a maintenance schedule or plan. County inspectors will be checking for adherence to this plan and any necessary changes that may arise after installation. County inspections are not to be construed as a relaxation of the requirements on owners/operators to conduct self-inspection in accordance with any applicable local, state or federal stormwater requirements

4.1.1 Charleston County Stormwater Management Inspector Duties/Responsibilities

Charleston County's Stormwater Management Inspectors shall inspect and enforce the requirements of the County Stormwater Management Ordinance and Manual. The job duties/responsibilities of a County Stormwater Inspector shall include, but not be limited to, the following:

1. Conduct and document during construction site inspections to ensure compliance with the approved County permit or stormwater management plan. Frequency of inspections will be determined by County staff.

2. Ensure that the approved County permit or stormwater management plan, the SWPPP, and the construction plans are on the project site and are properly being followed and implemented.

3. Conduct post-construction inspections to ensure that permanent maintenance is being performed in accordance with the maintenance schedules for the various stormwater management facilities in the County permit or approved stormwater management plan.

4. Provide the owner/operator of the project a written report within seven (7) days after every during construction or post-construction site inspection.

5. Issue enforcement orders, as necessary, to the owner/operator when any portion of the work does not comply with the approved County permit and/or stormwater management plan or work is occurring without appropriate permitting. The enforcement process and types of orders is detailed in Section 4.3.

6. Perform an inspection upon the completion of the stormwater system to determine if the system is constructed in accordance with the approved County permit and/or, stormwater management plan.

7. Take action if the owner/operator fails to comply with the approved County permit or the approved stormwater management plan and an imminent hazard exists as a result. The inspector will address the situation and notify any applicable local, state and federal agencies.

8. Maintain accurate and comprehensive project inspection files ensuring relevant information is entered in the files to be maintained in the Public Works Department.

4.1.2 Inspection Process and Procedures

As per the Charleston County Stormwater Ordinance, the Public Works Director or an authorized representative/designee (inspector) may enter upon all properties for regular inspections, periodic investigations, enforcement and to effectuate the provisions of the Ordinance. Upon refusal by any owner/operator or property owner to permit an inspector to enter upon the property or continue an inspection, the inspector shall terminate the inspection or confine the inspection to portions of the property to which no objection is raised.

Upon completion of a during construction site inspection, the County inspector will, at a minimum, include the following in his inspection report to be provided to the owner/operator:

1. Date and location of the site inspection.

2. Whether the approved County permit or stormwater management plan, SWPPP, and construction plans have been properly implemented and maintained.

3. Identification of any approved plan or BMP deficiencies.

4. Any corrective actions needed.

Upon completion of a post-construction maintenance inspection, the County inspector will, at a minimum, include the following in this inspection report to be provided to the owner/operator:

1. Date and location of the site inspection.

2. Whether the activities identified in the approved maintenance schedule have been properly implemented and completed.

3. Identification of any maintenance deficiencies.

4. Any corrective actions needed.

4.2 Permittee Inspection Responsibilities

In accordance with any applicable local, state and federal stormwater requirements including, but not limited to, the NPDES Construction General Permit (CGP), owner/operators are responsible for conducting

during construction and post-construction site inspections. Records of such inspections shall be kept for a minimum of five (5) years and must be made available to Charleston County upon request.

4.3 Enforcement

If the County determines that a project is in non-compliance with the County Stormwater Management Ordinance or Manual then the inspector may direct conformity by proceeding with the appropriate enforcement action. The types of enforcement tools available to the County include a Correction Order, Notice of Violation (NOV), Stop Work Order and Civil/Criminal Penalties. The enforcement mechanism to be utilized will depend on the circumstances as described in the following sections.

4.3.1 Correction Order

The Public Works Director will issue a Correction Order for first offenses of non-compliance with the County Ordinance, the County permit or the approved stormwater management plan. The purpose of the Correction Order is to give notice of the deficiencies, identify expected corrective results and provide a reasonable timeframe to the contractor prior to the County taking further action to ensure compliance. Correction Orders shall be submitted in writing, but a verbal notice may be given if the deficiency needs immediate correction to prevent offsite or downstream impacts. The Director of Public Works shall issue Correction Orders within five (5) working days of an inspection. All Correction Orders, verbal or written, shall be noted in the project file.

A Correction Order may be issued in such cases, but not be limited to, when there is:

1. Failure to comply with the approved stormwater design plans to include failure to have properly installed and/or maintained BMP measures.

2. Failure to properly maintain permanent stormwater management structures.

A Correction Order should at a minimum include, but not be limited to, the following:

1. Nature of the violation(s).

2. Proposed penalty.

3. Required corrective actions.

4. The time period for correcting the violation(s).

4.3.2 Notices of Violation (NOV)

If a Correction Order has been previously issued and there is either subsequent non-compliance issues or failure to complete the items on the Correction Order within a specified time period, then a Notice of Violation may be issued. In addition, for violations that do not involve a safety issue or an imminent threat of serious damage to the environment and/or public or private property, a Notice of Violation may be issued for, but are not limited to, the following:

1. If construction activities have been initiated and no BMP measures are in place, or are not working to prevent sediment from leaving the site.

2. Failure to have work inspected and approved before restarting construction activities after a stoppage of work.

A Notice of Violation (NOV) will at a minimum include, but not be limited to, the following:

1. Nature of the violation(s).

2. Proposed penalty.

3. Notification that a Stop Work Order may be issued or that permits for the site may be suspended or revoked if there is continued non-compliance.

4. Required corrective actions.

5. The time period for correcting the violation(s).

4.3.3 Stop Work Order

A Stop Work Order may be issued for, but are not limited to, the following:

1. Construction activities are occurring without County permits and/or an approved stormwater plan.

2. Past enforcement actions taken by the County (Corrective Orders, Notice of Violations) to remedy a situation(s) that have not been properly addressed with appropriate and prompt action to the satisfaction of the Public Works Director.

3. Non-compliance with the plans has resulted in a health or safety issue.

4. Offsite sedimentation resulting from non-compliance with the approved stormwater plan has eliminated or severely degraded a use in a downstream waterbody or that such degradation is imminent.

5. Offsite sedimentation resulting from non-compliance with the approved stormwater plan has caused severe damage to adjacent land.

A Stop Work Order will cease all construction activities until violations are inspected or corrected for compliance. Failure to comply may result in the suspension or revocation of any remaining permits issued for the site and/or civil penalties.

4.3.4 Civil Penalties

Violations may subject the owner/operator to Civil Penalties as outlined in the Charleston County Stormwater Management Ordinance for each violation. Each day a violation continues constitutes a new and separate violation.

4.3.5 Criminal Penalties

In addition to any applicable civil penalties, any person who negligently, willfully, or intentionally violates any provision of the Stormwater Management Ordinance shall be guilty of a misdemeanor and shall be punished within the jurisdictional limits of the magistrate's court. The Public Works Director may issue a uniform summons citation for a violation of this Ordinance. Fines imposed under the Notice of Violation (NOV) are outlined in the Charleston County Stormwater Management Ordinance. Each day a violation continues constitutes a new and separate violation.

CHAPTER 5 REFERENCES

This chapter lists the various references used in the manual and if available, websites where they can be retrieved.

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Chow, V.T., Maidment, D., and Mays L., (1988). *Applied Hydrology*. McGraw-Hill, NY.

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Schueler, T. R. (1987). "Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMPs," Metropolitan Washington Council of Governments.

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United States Department of Transportation, (1996). "Highway Hydrology – Hydraulic Design Series # 2." Federal Highway Administration, Publication # FHWA-SA-96-067.

United States Department of Transportation, (2001). "Introduction to Highway Hydrology – Hydraulic Design Series # 4." Federal Highway Administration, Publication # FHWA NHI 01-019.

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WEF & ASCE, (1998). *Urban Runoff Quality Management*, WEF Manual of Practice No. 23, ASCE Manual and Report on Engineering Practice No. 87.

Yen, B., (2001). "Hydraulics of Sewer Systems," in L. W. Mays, ed., *Storm Water Collection Systems Design Handbook*. McGraw-Hill, NY, p. 6-1 – 6-113.

APPENDIX A

APPLICATION FORMS

SINGLE FAMILY RESIDENTIAL
&
SMALL COMMERCIAL PROJECTS (0 to ½ acre)

EROSION PROTECTION & SEDIMENT CONTROL CERTIFICATION
(supplement to Building Permit)

Applicant Information

OWNER: _____
ADDRESS: _____
CITY: _____ STATE: _____ ZIP CODE: _____
PHONE: _____ FAX: _____
E-MAIL:_____

Property Information

PARCEL/TMS #(S): _____ LOT NUMBER(S): _____
DEVELPOMENT
ADDRESS:_____
CITY:_____ ZIP CODE:_____
TOTAL ACRES:_____ DISTURBED ACRES:_____
LOTS APPLIED FOR:_____

Contractor Information (if applicable)

(1) COMPANY: _____
LICENSE #: _____
ADDRESS: _____
CITY:_____ STATE: _____ ZIP CODE: _____
PHONE: _____ FAX: _____
EMAIL: _____

Owner/Operator must sign the certification below.

I certify under penalty of law that I understand and will comply with the County's Construction Activity Management Requirements for Single Family Residential Structures Disturbing Less Than 1 Acre in the attached document. I will ensure that the control measures are maintained. I further authorize and consent that Charleston County inspectors may enter upon the premises as necessary to ensure compliance with all related requirements of the Ordinance or Manual.

NAME (Please Print): _____

SIGNATURE: _____DATE: _____

Construction Activity Management Requirements for Single Family Residential Structures Disturbing Less Than 1 Acre

1. The lot shall have protection around the entire boundary with allowances for no more than two (2) entrance/exits. This protection may be silt fencing or earthen or man-made berms or dikes. These measures shall be installed within 24-hours of land disturbance and maintained until the project is stabilized as detailed below. The following guideline should be followed:

    - The maximum length from the crest of a hill to the fence is one-hundred (100) feet. When the distance from a crest to the property boundary is greater than one-hundred (100) feet, and intermediate row of silt fence shall be used or another control measure shall be employed.

    - The maximum slope steepness (normal [perpendicular] to fence line) is 2H:1V. When exceeded, slope drains shall be employed.

    - A maximum of ¼ acre drainage per one-hundred (100) linear feet of silt fence should be used. When this is exceeded, intermediate row of silt fence shall be used or another control measure shall be employed.

    - Sediment accumulated along the fence shall be removed when it reaches 1/3 the height of the fence.

    - Proper construction of these measures can be found from SC DHEC's BMP Manual, or from the Stormwater Division. Manufacturers recommended installation and maintenance procedures shall be followed if applicable.

2. Nearby stormwater inlets, manholes, etc. in the street or on this or adjacent property shall be protected through the use of sediment tubes, check dams, or inlet protection devices. These measures will be maintained throughout the construction process until the site is stabilized as detailed below.

3. Construction entrances will be provided at all entrances/exits. The construction entrance shall contain washed stone that is at least six (6) inches deep, twenty (20) feet wide, and seventy-five (75) feet long. The stone shall be maintained throughout the construction process until the site is stabilized as detailed below. Sediment tracked onto streets shall be removed weekly. More information on the installation and maintenance of the construction entrances can be obtained from the Stormwater Division.

4. All control measures shall be inspected by applicant or applicant's agent every seven (7) calendar days and within 24 hours after each rainfall event that produces ½-inches or more of precipitation.

5. Construction debris and other waste shall be contained in a dumpster or covered with plastic. Covers that prevent exposure to precipitation shall also be used for stockpiles of soil. Chemicals, paints, solvents and other materials shall be stored such that exposure risk to precipitation and stormwater runon is low. Concrete wash water shall be disposed in an area of soil away from surface waters where soil can act as a filter or evaporate the water. Remaining cement shall be

disposed of in a dumpster or otherwise removed from the site. Be aware that this water can kill vegetation. Dewatering water shall be disposed of in a pervious area. Discharge of sediment from dewatering operations shall be prevented from entering into storm sewers and surface waters.

6. Areas not used during construction should be vegetated with sod or grass seed. Existing/natural vegetation should be preserved as much as possible. Grass specifications are available from the Stormwater Division.

7. A site is considered stabilized once the entire area other the buildings, driveways, and walkways, has a vegetative cover with a density of 70%. Seeding should be accompanied or replaced with erosion control mats as necessary to achieve this density.

8. After final stabilization is achieved, all control measures shall be removed from the site.

Type I & Utility/Linear Application

(Only applicable for sites that disturb less than 1 acre, but greater than ½ acre)

A. Name of Activity: _____

B. Applicant Name: _____
Address: _____
City: _____, State: _____ Zip: _____
Phone: _ _ _ - _ _ _ - _ _ _ _ Mobile: _ _ _ - _ _ _ - _ _ _ _ Fax: _ _ _ - _ _ _ - _ _ _ _
Email Address (optional): _____

C. Property Info: ☐ Check Box if same as above
Address:_____
City: _____, South Carolina Zip: _____
Tax Map Number(s): _____

D. Disturbed area to the nearest tenth of an acre: _____

E. Is this a linear construction project that disturbs less than one acre? YES NO

F. Are there any wetlands/Waters of the State that will be disturbed? YES NO

G. Are there any flooding problems on or adjacent to this site? YES NO

H. Where does this stormwater discharge?

_____
_____

General Narrative: Please give a general site narrative explaining the purposes of the land disturbance, existing and proposed stormwater runoff patterns, offsite stormwater runoff and potential problems with adjacent properties. Also, if applicable, wetland and waterbody disturbance issues must be discussed along with the proof of permit coverage by the US Army Corps of Engineers and SC DHEC, if applicable.

_____
_____
_____
_____
_____
_____

Project Sketch: (Draw To Scale, See Attached Sheet)

Attach to this application a project sketch that includes **all of the following**: Location of all proposed disturbance; an outline of the limits of the disturbed area; location of existing and proposed stormwater management control outfalls; location of 100-year flood plain; necessary measures for energy dissipation; property lines; location of all sediment and erosion control measures (silt fence, riprap, inlet protection, etc.).

Applicant's Certification:

I hereby certify that all land disturbance, construction, and/or development will be done pursuant to the site plan submitted in accordance with this application, and I am responsible for the land disturbance and related maintenance thereof. I further authorize and consent that Charleston County inspectors may enter upon the premises as necessary to ensure compliance with all related requirements of the Ordinance or Manual.

_____ _____ _____

Applicant's Printed Name Applicant's Signature Date

Types II and III Application

(Applicable for sites that disturb 1 acre or more)

Date: __ __/__ __/__ __ __ __
Project/ Site Name: _____

I. Project Information
Project Owner/ Operator (Company or person):_____
Contact Person: _____ Company EIN: __ __ - __ __ __ __ __ __ __
Mailing Address: _____
City: _____ State: __ __ Zip: __ __ __ __ __
Phone: (Day) __ __ __-__ __ __-__ __ __ __ (Mobile) __ __ __-__ __ __-__ __ __ __ (Fax) __ __ __-__ __ __-__ __ __ __
Email address: _____

Person Financially Responsible:_____
(If different than above, a person must be named in either space)
Mailing Address: _____
City: _____ State: __ __ Zip: __ __ __ __ __
Phone: (Day) __ __ __-__ __ __-__ __ __ __ (Mobile) __ __ __-__ __ __-__ __ __ __ (Fax) __ __ __-__ __ __-__ __ __ __
Email address: _____

Agent or Contact Person (if applicable): _____
Mailing Address: _____
City: _____ State: __ __ Zip: __ __ __ __ __
Phone: (Day) __ __ __-__ __ __-__ __ __ __ (Mobile) __ __ __-__ __ __-__ __ __ __ (Fax) __ __ __-__ __ __-__ __ __ __
Email address: _____

Engineer, Technical Representative or Firm _____
(If different from Agent)
Mailing Address: _____
City: _____ State: __ __ Zip: __ __ __ __ __
Phone: (Day) __ __ __-__ __ __-__ __ __ __ (Mobile) __ __ __-__ __ __-__ __ __ __ (Fax) __ __ __-__ __ __-__ __ __ __
Email address: _____

II. Property Information
A. Site Location (street address, nearest intersection, etc.): _____
_____
City/ Town (if in limits): _____ Latitude: __ __° __ __’ __ __” N Longitude: -__ __° __ __’ __ __” W
Tax map # (list all):_____
_____

B. Property Owner (if different from section I above): _____
Mailing Address: _____
City: _____ State: __ __ Zip: __ __ __ __ __
Phone: (Day) __ __ __-__ __ __-__ __ __ __

III. Site Information

A. Disturbed area (to the nearest tenth of an acre): __ __ __ __ __. __ Total area: __ __ __ __ __. __
Impervious area: __ __ __ __ __. __

B. Is this project part of a Larger Common Plan for Development or Sale (LCP)? ☐ Yes ☐ No
If yes, what is the previous state permit no.? __ __-__ __-__ __-__ __ __ Previous NPDES number: SCR10 __ __ __ __
LCP/ Overall Development Name: _____

C. Start Date (MM/DD/YYYY): __ __/__ __/__ __ __ __ Completion Date: __ __/__ __/__ __ __ __ (estimated)

D. Type of Activity (check all that apply): ☐Commercial
☐Institutional
☐Residential: Single-family
☐Residential: Multi-family
☐Linear (Roads, utility lines, etc.)
☐Site Preparation (No new impervious) ☐Re-development ☐Other: _____

E. Are there any flooding problems downstream of or adjacent to this site? ☐Yes ☐No

F. Are any portions of the site located in an designated floodplain? ☐Yes ☐No
If yes, what are the FIRM Numbers? _____
_____

IV. Waterbody Information

A. Nearest receiving waterbody(s): _____ Distance to this waterbody (feet): _____
Next/Nearest named receiving waterbody(s): _____

B. Wetlands/Waters of the State

	On the site?	If yes, delineated/identified?	Impacts?	Amount of impacts
a. Waters of the U.S./ State	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	_____ Ac _____ Feet
b. Other (List):_____	☐Yes ☐No	☐Yes ☐No	☐Yes ☐No	_____ Ac _____ Feet

2. If yes for delineation in item B.1, has documentation of the delineation from the USACOE been provided?
☐ Yes ☐ No ☐ N/A
3. If yes for impacts in item B.1, has a USACOE permit been applied for or obtained for those impacts?
☐ Yes ☐ No ☐ N/A If yes, list the permit/ application number. _____

C. Special Protection Areas

Do stormwater (SW) discharges from the site drain to a watershed that drains to a DHEC WQ monitoring site (WQMS). . .

1. Listed on the most current 303(d) List for Impaired Waters? ☐ Yes ☐ No
   a. If yes for (1), is there an unimpaired WQMS between your site and the impaired WQMS? ☐ Yes ☐ No
   b. If no for (a), list the waterbody. _____ List the impairment(s). _____
   c. Will construction SW discharges from your site contain the pollutant(s) of impairment? ☐ Yes ☐ No
   d. If yes for (c), will use of the selected BMPs ensure that the site's discharges will not contribute to or cause further water quality standard violations? ☐Yes ☐ No
2. For which a TMDL(s) has been developed? ☐Yes ☐ No
   a. If yes for (2), list the waterbody. _____ List the impairment(s). _____
   Additional compliance may be required based on the TMDL.

V. Operator Information

A. Company/Firm: _____ S.C. Registration #: __ __ __ __ __
S.C. COA #: __ __ __ __
Mailing Address: _____
City: _____ State: __ __ Zip: __ __ __ __ __
Phone: (Day) __ __ __-__ __ __-__ __ __ __ (Mobile) __ __ __-__ __ __-__ __ __ __ (Fax) __ __ __-__ __ __-__ __ __ __
Email address (optional): _____

B. Operator of Day-to-Day Site Activities [ODSA] (Company or person): _____
Site Contact (if ODSA is company): _____
Mailing Address: _____
City: _____ State: __ __ Zip: __ __ __ __ __
Phone: (Day) __ __ __-__ __ __-__ __ __ __ (Mobile) __ __ __-__ __ __-__ __ __ __ (Fax) __ __ __-__ __ __-__ __ __ __

VI. <u>Signatures and Certifications</u>

A. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I hereby certify that all construction and associated activity pertaining to this site shall be accomplished pursuant to and in compliance with the terms and conditions of the approved plans. I also certify that a responsible person will be assigned to the project for day-to-day control. I hereby grant authorization and consent to Charleston County Public Works Department the right of access upon the premises at all times for the purpose of on site inspections during the course of construction and to perform maintenance inspections following the completion of the land-disturbing activity.

_____	_____	_____
Printed name of Owner/Operator	**Signature of Project Owner/ Operator &Date**	**Title/ Position**

B. Designer Certification-One copy of the plans, all specifications and supporting calculations, forms, and reports are herewith submitted and made a part of this application. Two (2) copies of the plans, all specifications and supporting calculations, forms, and reports shall be submitted upon approval. 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 believe that the design is consistent with the Charleston County Stormwater Management and Sediment Control Ordinance and the Permitting Standards and Procedures Manual.

_____	_____
SIGNATURE & DATE	S.C. REGISTRATION NUMBER

ENGINEER _____
TIER B, LAND SURVEYOR _____
LANDSCAPE ARCHITECT _____

Instructions

Completing the Application:

You must type or print legibly. You must include the original, signed application form, and one copy of all other supporting documentation with the initial submittal.

Who Must Submit an Application:

Any construction project except those exempted in the Ordinance and Manual.

Projects located in the unincorporated limits of Charleston County submit to:

Charleston County Planning Department
4045 Bridge View Drive
North Charleston, SC 29405

Projects located in the following municipalities:

City of Folly Beach: Folly Beach City Hall
21 Center Street
Folly Beach, SC 29439

City of Isle of Palms: Isle of Palms City Hall
1207 Palm Boulevard
Isle of Palms, SC 29451

Town of Lincolnville: Lincolnville Town Hall
141 W. Broad Street
Lincolnville, SC 29484

Town of Sullivan's Island: Sullivan's Island Town Hall
1610 Middle Street
Sullivan's Island, SC 29482

Project/ Site Name: The project/site name should be a unique or distinguishing name (e.g., not Proposed Subdivision). The Department should be notified in writing if the project/site name changes.

County: If the project is in multiple counties, list all counties and indicate in which county the majority of the project will be.

I. Project Information

- The official or legal name of the project owner/operator should be listed. If the project owner/operator is a company, then a permit contact person should be listed. This can be someone other than the person that has signatory authority for the company. All correspondence regarding this permit application will be sent to permit contact at the address listed.
- The Project Owner/ Operator is responsible for all portions of the site until a Project Closeout or Transfer of Ownership form is submitted. See our website for additional information on closeout and transfers of permit coverage and ownership.

II. Property Information

A. List a city/town only if the site is within the city/ town limits. See the following website for assistance in obtaining latitude/ longitude coordinates: http://www.epa.gov/tri/report/siting_tool/index.htm. Latitude (from 32° to 35°) and longitude (78° to 83°) should be for the center of the site to the nearest 15". Minutes (') should be from 0 to 59, and seconds (") should be 0, 15, 30, or 45.

B. If the project owner/operator does not own the project site, then list the official or legal name of the current property owner of the site. Permit coverage will be issued to the project owner/ operator (Section I), not the property owner, unless same entity.

III. Site Information

A. The total and disturbed areas should be rounded to the nearest tenth of an acre. For subdivisions, if the exact build-out is not known, the disturbed area can be estimated using the following equation:
Disturbed area = 2(Maximum Footprint of House) (# of lots) + Road/ Right-of-Way areas + Other easements/disturbance. Please note that the department must be notified if the actual disturbed area is greater than the disturbed area listed on the application.

B. The plan in LCP is "broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating construction activities may occur on a specific plot." [63 Federal Register No. 128, July 6, 1998, p. 36491] For example, if master calculations have been prepared and/or submitted for an entire site, then all phases and parcels at that site would be considered part of a LCP. See the **SPWS** for additional information regarding LCP's. If this is the first phase of an LCP, then this item should be answered yes and the LCP/overall development name should be listed. This LCP/overall development name should also be listed on all applications for future projects that are part of this LCP, including subsequent phases. If the project is part of an LCP, then list the previous state permit number and previous NPDES coverage number (not SCR100000).

C. List the estimated start and completion dates of the construction activity.

D. Institutional includes schools and other publicly owned projects, except linear projects. Site preparation include: clearing, grubbing, and grading only; no new impervious areas should be proposed if this activity type is checked.

E. If yes, then the extent of the flooding problems and the effect of this project on those problems must be explained in the project narrative.

F. If any of the property is located inside an urbanized area or MS4, then list the entity. See the following website for information about MS4's: http://www.scdhec.gov/water/html/swnms4page.html. Urbanized area boundary maps are available at http://cfpub.epa.gov/npdes/stormwater/urbanmapresult.cfm?state=SC.

IV. Waterbody Information

A. The nearest receiving waterbody is the nearest waters of the state to which the site's stormwater will discharge. If this waterbody is unnamed, then provide a description that references the nearest named waterbody (e.g., tributary to Grove Creek). If the site's stormwater discharges to multiple waterbodies, then list all such waterbodies and attach additional sheets, if necessary. See the following website for information about identifying and classifying ephemeral, intermittent, and perennial streams: http://h2o.enr.state.nc.us/ncwetlands/documents/NC_Stream_ID_Manual.pdf.

V. Operator Information

A. Enter N/A for the S.C. Registration # if the Operator preparer is not a registered professional in S.C. (engineer, Tier B land surveyor, or landscape architect). COA is S.C. Certificate of Authorization. Enter N/A for S.C. COA if the firm does not have a COA. If an email address is entered, the Director may contact the Operator via email.

B. If the project owner/operator will not be the ODSA, then complete this section. See Appendix A of the CGP for the definition of operator. If the ODSA is a company, then a person should be listed as the site contact. If there are multiple ODSA's, then attach additional sheets with all information in Section V.B of this application listed. ODSA must be co-permittees with the Project Owner/ Operator or have their own separate NPDES coverage under the CGP.

VI. Certifications

A. The same registered professional must sign and seal the application, calculations, and supporting documentation.

B. A person with signatory authority for the Project Owner/ Operator must sign the application. All reports, including monthly reports, and any information requested by the department must be signed by a person with signatory authority for the project owner/operator or a duly authorized representative.

- Corporation: A responsible corporate officer (e.g., president, vice president, certain managers)
- Partnership or Sole Proprietorship: A general partner or the proprietor, respectively
- Municipality, State, Federal or Other Public Agency: Principal executive officer or ranking elected official

Office Mechanics and Filing

This form and supporting documentation will be kept in the Public Works Department files (hard copy or digitized copy).

APPENDIX B

NPDES PERMIT

D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

www.scdhec.gov/water

STATE OF SOUTH CAROLINA
NPDES GENERAL PERMIT
FOR
STORM WATER DISCHARGES
FROM
REGULATED SMALL MUNICIPAL
SEPARATE STORM SEWER SYSTEMS (MS4s)

The Permit is issued in compliance with the provisions of the SC Pollution Control Act (S.C. Code Sections 48-1-10 *et seq*., 1976) and with the provisions of the Clean Water Act, 33 U.S.C. §1251 et. seq., (hereafter CWA or the Act), as amended by the Water Quality Act of 1987, P.L. 100-4. Upon being granted coverage under this general permit, operators of Regulated Small Municipal Separate Storm Sewer Systems that are described in Subpart 1.2 of this National Pollutant Discharge Elimination System (NPDES) general permit, except for those activities excluded from authorization of discharge in Subpart 1.3 of this permit, are authorized to discharge storm water to waters of the state of South Carolina in accordance with the conditions and requirements set forth herein.

John Litton, P.E., Director
Storm Water, Construction and Agricultural Permitting Division
Bureau of Water

Permit No.: **SCS0000000** **Issued:** **January 30, 2006**

Effective: **March 1, 2006** **Expires:** **February 28, 2011**

Table of Contents

1 Coverage Under this Permit

1.1 Permit Area

This permit covers all areas of the State of South Carolina including the Catawba Indian Reservation.

1.2 Eligibility

1.2.1 This permit authorizes discharges of storm water from SMS4s as defined in South Carolina Water Pollution Control Permits Regulation 61-9 122.26(b)(16). You are eligible to be authorized to discharge under the terms and conditions of this general permit if you:

1.2.1.1 Own or operate an SMS4 within the permit area described in Section 1.1,

1.2.1.2 Are not a "large" or "medium" MS4 as defined in South Carolina Water Pollution Control Permits Regulation 61-9 122.26(b)(4) or (7), and

1.2.1.3 Submit either a Notice of Intent (NOI) in accordance with Part 2 of this permit or an individual application in accordance with Section 122.33(b)(2) or (3) of SC Regulation 61-9, and

1.2.1.3.1 Are located fully or partially within an urbanized area as determined by the latest Decennial Census by the Bureau of Census, or

1.2.1.3.2 Are designated for permit authorization by SCDHEC or EPA pursuant to South Carolina Water Pollution Control Permits Regulation 61-9 122.32 and 40 CFR §123.35.

1.2.2 The following are types of authorized discharges:

1.2.2.1 *Storm water discharges.* This permit authorizes storm water discharges to waters of the State or waters of the United States from the SMS4s identified in Section 1.2.1, except as excluded in Section 1.3.

1.2.2.2 *Non-storm water discharges*. You are authorized to discharge the following non-storm water sources provided that the Department has not determined these sources to be substantial contributors of pollutants to your SMS4:

a) Water line flushing
b) Landscape irrigation
c) Diverted stream flows
d) Rising ground waters
e) Uncontaminated ground water infiltration (infiltration is defined as water other than wastewater that enters a sewer system, including foundation drains, from the ground through such means as defective pipes, pipe joints, connections, or manholes. Infiltration does not include, and is distinguished from, inflow.)
f) Uncontaminated pumped ground water
g) Discharges from potable water sources

h) Foundation drains
i) Air conditioning condensate
j) Irrigation water (not consisting of treated, or untreated, waste water)
k) Springs
l) Water from crawl space pumps
m) Footing drains
n) Lawn watering
o) Individual residential car washing
p) Natural flows from riparian habitats and wetlands
q) Dechlorinated swimming pool discharges
r) Street wash water
s) Discharges or flows from fire fighting activities

1.3 Limitations on Coverage

This permit does not authorize:

1.3.1 Discharges that are mixed with sources of non-storm water unless such non-storm water discharges are:

a) In compliance with a separate NPDES permit, or
b) Determined not to be a substantial contributor of pollutants to waters of the State.

1.3.2 Storm water discharges associated with industrial activity as defined in South Carolina Water Pollution Control Permits Regulation 61-9 122.26(b)(14)(i)-(ix) and (xi).

1.3.3 Storm water discharges associated with construction activity as defined in South Carolina Water Pollution Control Permits Regulation 61-9 122.26(b)(14)(x) or 122.26(b)(15).

1.3.4 Storm water discharges currently covered under another NPDES permit.

1.3.5 Discharges to territorial seas, the contiguous zone, and the oceans unless such discharges are in compliance with the ocean discharge criteria of 40 CFR Part 125, Subpart M.

1.3.6 New or expanding point source discharges that would cause or contribute to violations of water quality standards unless your SWMP includes a description of the BMPs and implementation procedures that you will be using to reduce the discharge of pollutants from your MS4 to the MEP, to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act. Provisions of 1.5.1 specifically apply to this Subsection as well as the remainder of this permit.

1.3.7 Existing discharges that are causing or contributing to a violation of water quality standards are not excluded from coverage under this general permit provided your SWMP includes a description of the BMPs and implementation procedures that you will be using to work towards compliance with water quality standards in accordance with Parts 3 and 4 and Subpart 5.3 of this permit. Provisions of 1.5.1 specifically apply to this Subsection as well as the remainder of this permit.

1.3.8 Discharges of any pollutant into any water for which a Total Maximum Daily Load (TMDL) has been established unless your SWMP includes a description of the BMPs and implementation procedures that you will be using to work towards compliance with a TMDL. You must incorporate any limitations, conditions and requirements contained in the TMDL applicable to your discharges if any, including monitoring frequency and reporting required, in order to be eligible for permit coverage. Applicable limitations, conditions and requirements contained in the TMDL are those limitations, conditions and requirements set forth in the TMDL implementation plan and attributed specifically to your MS4. Provisions of 1.5.1 specifically apply to this Subsection as well as the remainder of this permit.

1.4 Obtaining Authorization

1.4.1 To be authorized to discharge storm water from SMS4s, you must submit a notice of intent (NOI), as required in South Carolina Water Pollution Control Permits Regulation 61-9 122.33(b)(1) and 122.34 and a description of your SWMP in accordance with the deadlines presented in section 2.1 of this permit.

1.4.2 You must submit the information required in section 2.2 of this permit. Your NOI must be signed and dated in accordance with Section 122.22 of SC Regulation 61-9 (see Appendix B of this permit).

Note: If SCDHEC notifies dischargers (either directly, by public notice, or by making information available on the Internet) of other NOI form options that become available at a later date (e.g., electronic submission of forms), you may take advantage of those options to satisfy the NOI use and submittal requirements of part 2.

1.4.3 Dischargers who submit an NOI in accordance with the requirements of this permit are authorized to discharge storm water from SMS4s under the terms and conditions of this permit from the effective date indicated in the written certificate of coverage issued by the Department. The Department may deny coverage under this permit and require submittal of an application for an individual NPDES permit based on a review of the NOI or other information at any time (see Section 122.28 of SC Regulation 61-9).

1.4.4 For areas annexed into your MS4 area after you received coverage under this general permit, the first annual report submitted after the annexation must include the updates to your SWMP, as appropriate.

1.4.5 Small MS4s that submitted or submit an individual permit application may also be granted coverage under this general permit in lieu of SCDHEC issuing an individual MS4 NPDES permit. Provided, however, that if any Small MS4 demonstrates a basis for declining coverage under the general permit, then SCDHEC shall provide individual permit coverage.

1.5 Implementation, Interpretation, and Enforcement

1.5.1 Implementation

1.5.1.1 This permit requires implementation of the MS4 Program under the State and Federal NPDES Regulations as explained by the EPA in the December 8, 1999 Federal Register. On page 68753 of the Federal Register, the EPA states, "Absent evidence to the contrary, EPA presumes that a small MS4 Program that implements the six minimum measures as outlined in today's rule does not require more stringent limitations to meet water quality standards." The EPA further states that "MS4s should modify their programs if and when water quality considerations warrant greater attention or prescriptiveness in specific components of the municipal program."

1.5.1.2 The EPA also states "If a small MS4 operator implements the six minimum measures in Section 122.34(b) and the discharges are determined to cause or contribute to non-attainment of an applicable water quality standard, the operator needs to tailor its BMPs within the scope of the six minimum control measures. EPA envisions that this process will occur during the first two or three permit terms." The EPA has called this the "Iterative Process." Parts 3 and 4 and Subpart 5.3 of this permit are part of this "Iterative Process." This Permit is the first of the "two or three permit terms" EPA refers to in the Federal Register.

1.5.1.3 Further, in the Section entitled "Total Maximum Daily Loads and Analysis To Determine the Need for Water Quality-Based Limitations," the EPA states on page 68790 of the Federal Register that "NPDES permit must include any more stringent limitations when necessary to meet water quality standards. However, even if a regulated small MS4 is subject to water quality based limits, such limits may be in the form of narrative limitations that require implementation of BMPs." Part 3 of this permit is designed to implement EPA's expressed intention.

1.5.2 Interpretation and Enforcement

1.5.2.1 Interpretation and enforcement of the conditions of this permit will be based on:

a) the Federal Clean Water Act;
b) the SC Pollution Control Act;
c) SC Regulation 61-9;
d) the Preamble to the Federal Phase II Storm water NPDES Regulations contained in the December 8, 1999 Federal Register; and
e) all applicable Federal and State court rulings.

2 Notice of Intent Requirements

2.1 Deadlines for Notification

2.1.1 If you are an operator of a regulated SMS4, as defined under South Carolina Water Pollution Control Permits Regulation 61-9 122.26(b)(16), designated under 122.32(a)(1), located in the Urbanized Areas (UAs) listed in the Appendix A of this permit, you must apply for coverage under an NPDES permit, or apply for a modification of an existing NPDES permit by March 10, 2003, unless your SMS4 has been specifically exempted by a waiver granted under SC DHEC Water Pollution Control Permits Regulation 61-9 122.32(d) or (e).

2.1.2 *Additional designations after the date of permit issuance.* If you are designated by the Department after the date of permit issuance, then you are required to submit an NOI and a description of your SWMP to the Department within 180 days of notice.

2.1.3 *Submitting a Late NOI*. You are not prohibited from submitting an NOI after the dates provided in this section. If a late NOI is submitted, your authorization is only for discharges that occur after the written certificate of coverage is granted. The Department reserves the right to take appropriate enforcement actions for any unpermitted discharges.

2.2 Contents of the Notice of Intent

The Notice(s) of Intent must be signed in accordance with Section 122.22 of SC Regulation 61-9 (see Appendix B of this permit) and must include the following information:

2.2.1 *Information on the Permittee*:

2.2.1.1 The name of your municipal entity/tribe/state agency/federal agency, mailing address, and telephone number;

2.2.1.2 An indication of whether you are a Federal, State, Tribal, or other public entity;

2.2.2 *Information on the SMS4:*

2.2.2.1 The Urbanized Area or Core Municipality (if you are not located in an Urbanized Area) where your system is located; the name of your organization, county(ies), city(ies), town(s) or parish(es) where your SMS4 is located, and the latitude and longitude of an approximate center of your SMS4. Maps submitted to the Department should not exceed a "D" size, 24 in. by 36 in. and the scale of the maps should be at least 1 inch equals 1,000 feet but not more than 1 inch equals 2,000 feet. Electronic maps, in a format suitable to the Department, may be submitted in lieu of the size D maps.

2.2.2.2 The name of the waters of the State and an indication of whether any of your receiving waters are on the latest CWA §303(d) list of impaired waters. If you have discharges to 303(d) waters, a certification that your SWMP procedures are in compliance with Part 3 of this permit must be included.

2.2.2.3 An indication of whether all or a portion of the SMS4 is located on Indian Country lands.

2.2.2.4 If you are relying on another entity to satisfy one or more of your permit obligations (see Section 4.4), the identity of that entity(ies) and the element(s) they will be implementing.

2.2.2.5 Information on your chosen best management practices (BMPs) and the measurable goals for each of the storm water minimum control measures in Section 4.2 of this permit, your time frame for implementing each of the BMPs, and the person or persons responsible for implementing or coordinating your SWMP.

2.2.2.6 A list of entities such as military bases, large hospitals, prison complexes, universities, sewer districts, highway departments and others that operate a small separate storm sewer system and are located within your SMS4 area. Indicate whether they are an integral part of your SMS4.

2.3 Where to Submit

You are to submit your NOI, signed in accordance with the signatory requirements of Section 122.22 of SC Regulation 61-9 (see Appendix B of this permit), to the Department at the following address:

SCDHEC Bureau of Water
NPDES Storm Water SMS4 Notice of Intent
2600 Bull Street
Columbia, SC 29201

2.4 Co-Permittees Under a Single NOI

You may partner with other MS4s to develop and implement your SWMP. You may also jointly submit an NOI with one or more SMS4s. Each SMS4 must obtain authorization under this permit by filling out the NOI form required in part 1.4.1 of this permit. The description in the SWMP must clearly indicate which permittees are responsible for implementing each of the control measures.

2.5 Renotification

Upon reissuance of this general permit, permittees already covered by the existing NPDES General Permit for Discharges from Small Municipal Separate Storm Sewer Systems will be granted coverage under the new general permit upon approval of a new NOI submitted to the Department not later than 180 days prior to the expiration date of this permit unless otherwise indicated by the Department. The new NOI must consist of a letter signed in accordance with Section 122.22 of SC Regulation 61-9 and a copy of the most recent "Annual Report" required under Subpart 5.3 including any updates of this Annual Report that are necessary to address new information on your program that is generated between the date of the most recent Annual Report and the date that the NOI is due.

3 Special Conditions

3.1 Discharges to Impaired Water Bodies

3.1.1 *Applicability*: You must:

3.1.1.1 Determine whether storm water discharges from any part of the SMS4 that is covered under this permit contribute directly or indirectly to an impaired water body that is listed in accordance with Section 303(d) of the CWA. If you have discharges meeting this criterion, you must comply with Section 3.1.2; if you do not, Section 3.1 does not apply to you.

3.1.1.2 If you have "303(d)" discharges described above, you must also determine whether a TMDL has been developed by SCDHEC and approved by EPA for the listed water body. If there is no TMDL assigned, you must comply with section 3.1.2. If a TMDL is in effect, or one is assigned after submitting the NOI, you must comply with sections 3.1.2 and 3.1.3.

3.1.2 *Water Quality Controls for Discharges to Impaired Water Bodies*. Your SWMP must include a section describing how implementation of your SWMP will provide Reasonable Assurance that discharges will not cause or contribute to violations of water quality standards in Impaired Water Bodies. This discussion must specifically identify measures and BMPs that are designed to collectively control the discharge of the pollutants of concern. Provisions of 1.5.1 specifically apply to this Subsection as well as the remainder of this permit.

For purposes of this Subsection 3.1.2, the following definitions shall apply:

"Impaired Water Bodies" means those water bodies identified by the State of South Carolina under Section 303(d) of the Federal Clean Water Act or under 40 CFR § 130.7.
"Reasonable Assurance" means something that is reasonably likely to occur, given uncertainties; it is not a guarantee that it will occur. It requires an assessment that water quality standards can be met, while acknowledging uncertainty, and includes measures to remove or reduce the uncertainty. In the present context, the iterative process inherent in the MS4 program addresses that uncertainty.

3.1.3 *Consistency with Total Maximum Daily Load (TMDL) Allocations.* If a TMDL has been established for any watershed into which you discharge, you must incorporate any limitations, conditions and requirements contained in the TMDL applicable to your discharges, if any, including monitoring frequency and reporting required, in order to be eligible for permit coverage. Applicable limitations, conditions and requirements contained in the TMDL are those limitations, conditions and requirements set forth in the TMDL implementation plan and attributed specifically to your MS4.

4 Storm Water Management Programs (SWMPs)

4.1 Requirements

4.1.1 You must develop, implement, and enforce a SWMP designed to reduce the discharge of pollutants from your SMS4 to the maximum extent practicable (MEP), to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act. The SWMP should include management practices; control techniques and system, design, and engineering methods; and such other provisions as the Department determines appropriate for the control of such pollutants. Your SWMP must include the following information for each of the six minimum control measures described in Section 4.2 of this permit:

4.1.1.1 The best management practices (BMPs) that you or another entity will implement for each of the storm water minimum control measures;

4.1.1.2 The measurable goals for each of the BMPs including, as appropriate, the months and years in which you will undertake required actions, including interim milestones and the frequency of the action; and

4.1.1.3 The person or persons responsible for implementing or coordinating the BMPs for your SWMP.

4.1.2 In addition to the requirements listed above, you must provide a rationale for how and why you selected each of the BMPs and measurable goals for your SWMP. The information required for such a rationale is given in Section 4.2 for each minimum measure.

4.1.3 You must have fully developed your SWMP one year from the effective date of your written certificate of coverage.

4.1.4 Except for SMS4s that submit an NOI or individual application after the effective date of this permit, you must have the SWMP fully implemented by the expiration date of this permit. However, the construction and post construction runoff control programs must be implemented in your entire regulated MS4 area within eighteen months of the Effective Date of this permit. (see Sections 4.2.4.3 and 4.2.5.3 of this general permit). For SMS4s that submit an NOI application after the effective date of this general permit, you must include an implementation schedule in your NOI application. The schedule may extend past the expiration date of this general permit such that the implementation of the SWMP will be completed during the next term of this general permit but the schedule cannot exceed five years.

4.2 Minimum Control Measures

The six minimum control measures that must be included in your SWMP are:

4.2.1 Public Education and Outreach on Storm Water Impacts

4.2.1.1 *Permit requirement.* You must implement a public education program to distribute educational materials or conduct equivalent outreach activities about the impacts of storm water discharges on water bodies and the steps that the public can take to reduce pollutants in storm water runoff. Additional information can be obtained from the SCDHEC Storm Water Education Clearinghouse Web Site, http://www.scdhec.net/water/ms4/index.html.

4.2.1.2 *Decision process.* You must document your decision process for the development of a storm water public education and outreach program. Such documentation may be included in your permit application, your SWMP, or your annual report submitted pursuant to Section 5 of this permit. If this information is not included in your permit application, your SWMP, or your annual report submitted pursuant to Section 5 of this permit, you must provide a rationale statement that addresses both your overall public education program and the individual BMPs,

establishes measurable goals, and identifies responsible persons for your program. The rationale statement must include the following information, at a minimum:

4.2.1.2.1 How you plan to inform individuals and households about the steps they can take to reduce storm water pollution.

4.2.1.2.2 How you plan to inform individuals and groups on how to become involved in the storm water program (with activities such as local stream and beach restoration activities).

4.2.1.2.3 Who are the target audiences for your education program who are likely to have significant storm water impacts (including commercial, industrial and institutional entities) and why those target audiences were selected.

4.2.1.2.4 What are the target pollutant sources your public education program is designed to address.

4.2.1.2.5 What is your outreach strategy, including how you plan to inform the target audiences, the mechanisms and activities (e.g., printed brochures, newspapers, media, workshops, etc.) you will use to reach your target audiences, and how many people do you expect to reach by your outreach strategy over the permit term.

4.2.1.2.6 Who is responsible for overall management and implementation of your storm water public education and outreach program and, if different, who is responsible for each of the BMPs identified for this program.

4.2.1.2.7 How you will evaluate the success of this minimum measure.

4.2.2 Public Involvement/Participation

4.2.2.1 *Permit requirement.* You must at a minimum, comply with State, Tribal, and local public notice requirements when implementing a public involvement/participation program.

4.2.2.2 *Decision process.* You must document the program development process and the implementation of a storm water public education and outreach program. Such documentation may be included in your permit application, your SWMP, or your annual report submitted pursuant to Section 5 of this permit. If this information is not included in your permit application, your SWMP, or your annual report submitted pursuant to Section 5 of this permit, you must submit a rationale statement that addresses both your overall public involvement/participation program and the individual BMPs, selection of the measurable goals for each of the BMPs, evaluation of the success of this minimum measure, and responsible persons for your program. The rationale statement must include the following information, at a minimum:

4.2.2.2.1 How you have involved the public in the development and submittal of your storm water management program.

4.2.2.2.2 What is your plan to actively involve the public in the development and implementation of your program.

4.2.2.2.3 The target audiences for your public involvement program, including a description of the audiences' demographic characteristics. You are encouraged to actively involve all potentially affected stakeholder groups, including commercial and industrial businesses, trade associations, environmental groups, homeowners associations, and educational organizations, among others.

4.2.2.2.4 What are the types of public involvement activities included in your program. Where appropriate, consider the following types of public involvement activities:

4.2.2.2.4.1 Citizen representatives on a storm water management panel;

4.2.2.2.4.2 Public hearings;

4.2.2.2.4.3 Working with citizen volunteers willing to educate others about the program; and

4.2.2.2.4.4 Storm drain marking stenciling and tagging, volunteer monitoring or stream/beach clean-up activities.

4.2.2.2.5 Who is responsible for the overall management and implementation of your storm water public involvement/participation program and, if different, who is responsible for each of the BMPs identified for this program.

4.2.2.2.6 How you will evaluate the success of this minimum measure, including how you selected the measurable goal for each minimum measure.

4.2.3 Illicit Discharge Detection and Elimination

4.2.3.1 *Permit requirement.* You must:

4.2.3.1.1 Develop, implement and enforce a program to detect and eliminate illicit discharges (as defined in South Carolina Water Pollution Control Permits Regulation 61-9 122.26(b)(2)) into your SMS4;

4.2.3.1.2 Develop, if not already completed, a storm sewer system map, showing the location of all outfalls and the names and location of all waters of the State that receive discharges from those outfalls. Unless your SWMP addresses implementation on a watershed basis, this map must be completed no later than three years after your written certificate of coverage is granted. If your SWMP is implemented on a watershed basis, the outfall map for each watershed area identified in your SWMP must be completed during the implementation period for that watershed. Maps submitted to the Department should not exceed a "D" size, 24 inches by 36 inches, and the scale of the maps should be at least 1 inch equals 1,000 feet but not more than 1 inch equals 2,000 feet. Electronic maps, in a format suitable to the Department, may be submitted in lieu of the size D maps.

4.2.3.1.3 To the extent allowable under State, Tribal or local law, effectively prohibit, through ordinance, or other regulatory mechanism, non-storm water discharges into your storm sewer system and implement appropriate enforcement procedures and actions;

4.2.3.1.4 Develop and implement a plan to detect and address non-storm water discharges, including illegal dumping, to your system;

4.2.3.1.5 Inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste; and

4.2.3.1.6 Address the following categories of non-storm water discharges or flows (i.e., illicit discharges) only if you identify them as significant contributors of pollutants to your SMS4: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration (as defined at 40 CFR §35.2005(20)), uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, and street wash water (discharges or flows from fire fighting activities are excluded from the effective prohibition against non-storm water and need only be addressed where they are identified as significant sources of pollutants to waters of the State).

4.2.3.1.7 You may also develop a list of other similar occasional incidental non-storm water discharges (e.g. non-commercial or charity car washes, etc.) that will not be addressed as illicit discharges. These non-storm water discharges must not be reasonably expected (based on information available to the permittees) to be significant sources of pollutants to the SMS4, because of either the nature of the discharges or conditions you have established for allowing these discharges to your SMS4 (e.g., a charity car wash with appropriate controls on frequency, proximity to sensitive water bodies, BMPs on the wash water, etc.). You must document in your SWMP any local controls or conditions placed on the discharges. You must include a provision prohibiting any individual non-storm water discharge that is determined to be contributing significant amounts of pollutants to your SMS4.

4.2.3.2 *Decision process.* You must document your decision process for the development of a storm water illicit discharge detection and elimination program. Such documentation may be included in your permit application, your SWMP, or your annual report submitted pursuant to Section 5 of this permit. If this information is not included in your permit application, your SWMP, or your annual report submitted pursuant to Section 5 of this permit, you must develop a rationale statement that addresses your overall illicit discharge detection and elimination program and the individual BMPs, measurable goals, and responsible persons for your program. The rationale statement must include the following information, at a minimum:

4.2.3.2.1 How you will develop a storm sewer map showing the location of all outfalls and the names and location of all receiving waters. Describe the sources of information you used for the maps, and how you plan to verify the outfall locations with field surveys. If already completed, describe how you developed this map. Also, you must submit an updated map

with each annual report unless there are no changes to the map that was previously submitted. When there have been no changes to the map, your annual report must state this. Maps submitted to the Department should not exceed a "D" size, 24 inches by 36 inches and the scale of the maps should be at least 1 inch equals 1,000 feet but not more than 1 inch equals 2,000 feet. Electronic maps, in a format suitable to the Department, may be submitted in lieu of the size D maps.

4.2.3.2.2 The mechanism (ordinance or other regulatory mechanism) you will use to effectively prohibit illicit discharges into the SMS4 and why you chose that mechanism. If you need to develop this mechanism, describe your plan and a schedule to do so. If your ordinance or regulatory mechanism is already developed, include a copy of the relevant sections with your program.

4.2.3.2.3 Your plan to ensure through appropriate enforcement procedures and actions that your illicit discharge ordinance (or other regulatory mechanism) is implemented.

4.2.3.2.4 Your plan to detect and address illicit discharges to your system, including discharges from illegal dumping and spills. Your plan must include, to the extent practicable, dry weather field screening for non-storm water flows and field tests of chemical parameters you selected as indicators of discharge sources. Your plan must also address on-site sewage disposal systems that flow into your storm drainage system. Your description must address the following, at a minimum:

4.2.3.2.4.1 Procedures for locating priority areas which includes areas with higher likelihood of illicit connections (e.g., areas with older sanitary sewer lines, for example) or ambient sampling to locate impacted reaches.

4.2.3.2.4.2 Procedures for tracing the source of an illicit discharge, including the specific techniques you will use to detect the location of the source.

4.2.3.2.4.3 Procedures for removing the source of the illicit discharge.

4.2.3.2.4.4 Procedures for program evaluation and assessment.

4.2.3.2.5 How you plan to inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste. Include in your description how this plan will coordinate with your public education minimum measure and your pollution prevention/good housekeeping minimum measure programs.

4.2.3.2.6 Who is responsible for overall management and implementation of your storm water illicit discharge detection and elimination program and, if different, who is responsible for each of the BMPs identified for this program.

4.2.3.2.7 How you will evaluate the success of this minimum measure, including how you selected the measurable goals for each of the BMPs.

4.2.4 Construction Site Storm Water Runoff Control

4.2.4.1 *Permit requirement.* Within eighteen months from the effective date of this permit, you must develop, implement, and enforce a program to reduce pollutants in any storm water runoff to your regulated SMS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of pollutants in storm water discharges from construction activity disturbing less than one acre must be included in your program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more. Your program must include the development and implementation of, at a minimum:

4.2.4.1.1 An ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, to the extent allowable under State, Tribal, or local law;

4.2.4.1.2 Requirements for construction site operators to implement appropriate erosion and sediment control BMPs;

4.2.4.1.3 Requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality;

4.2.4.1.4 Procedures for site plan review, which incorporate consideration of potential water quality impacts;

4.2.4.1.5 Procedures for receipt and consideration of information submitted by the public; and

4.2.4.1.6 Procedures for site inspection and enforcement of control measures.

4.2.4.2 *Decision process.* You must document your decision process for the development of a construction site storm water control program. Such documentation may be included in your permit application, your SWMP, or your annual report submitted pursuant to Section 5 of this permit. If this information is not included in your permit application, your SWMP, or your annual report submitted pursuant to Section 5 of this permit, you must develop a rationale statement that addresses your overall construction site storm water control program and the individual BMPs, measurable goals, and responsible persons for your program. The rationale statement must include the following information, at a minimum:

4.2.4.2.1 The mechanism (ordinance or other regulatory mechanism) you will use to require erosion and sediment controls at construction sites and why you chose that mechanism. If you need to develop this mechanism, describe your plan and a schedule to do so. If your ordinance or regulatory mechanism is already developed, include a copy of the relevant sections with your SWMP description.

4.2.4.2.2 Your plan to ensure compliance with your erosion and sediment control regulatory mechanism, including the sanctions and enforcement mechanisms you will use to ensure compliance. Describe your procedures for when you will use certain sanctions. Possible

sanctions include non-monetary penalties (such a stop work orders), fines, bonding requirements, and/or permit denials for non-compliance.

4.2.4.2.3 Your requirements for construction site operators to implement appropriate erosion and sediment control BMPs and control waste at construction sites that may cause adverse impacts to water quality. Such waste includes discarded building materials, concrete truck washouts, chemicals, litter, and sanitary waste.

4.2.4.2.4 Your procedures for plan review, including the review of pre-construction site plans, which incorporate consideration of potential water quality impacts. For construction projects that disturb 25 acres or more and discharge the pollutant or pollutants of concern to a water on the South Carolina 303(d) List of Impaired Waters, the Stormwater Pollution Prevention Plans prepared by applicants for construction sites that you review must contain a written quantitative and qualitative assessment showing that the BMPs selected will control the construction and post construction stormwater discharges so that the stormwater discharges will not cause or contribute to a violation of water quality standards.

A copy of the most current 303(d) List of Impaired Waters can be obtained from:

Water Quality Division
Bureau of Water
SC DHEC
2600 Bull Street
Columbia, SC 29201

or it can be downloaded at the following DHEC WEB site:

www.scdhec.gov/water/html/tmdl.html

4.2.4.2.5 Your procedures for receipt and consideration of information submitted by the public. Consider coordinating this requirement with your public education program.

4.2.4.2.6 Your procedures for site inspection and enforcement of control measures, including how you will prioritize sites for inspection.

4.2.4.2.7 Who is responsible for overall management and implementation of your construction site storm water control program and, if different, who is responsible for each of the BMPs identified for this program.

4.2.4.2.8 Describe how you will evaluate the success of this minimum measure, including how you selected the measurable goals for each of the BMPs.

4.2.4.3 For SMS4 which submitted an application before the effective date of this general permit, you must implement your local construction site storm water runoff control program in your entire regulated SMS4 area within eighteen months of the effective date of this permit.

4.2.5 Post-Construction Storm Water Management in New Development and Redevelopment

4.2.5.1 *Permit requirement.* You must:

4.2.5.1.1 Within eighteen months from the effective date of this permit, develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into your regulated SMS4. Your program must ensure that controls that would prevent or minimize water quality impacts are in place;

4.2.5.1.2 Develop and implement strategies which include a combination of structural and/or non-structural BMPs appropriate for your community; and

4.2.5.1.3 Use an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State, Tribal or local law (see also Section 4.2.4.2.4); and

4.2.5.1.4 Ensure adequate long-term operation and maintenance of BMPs.

4.2.5.2 *Decision process.* You must document your decision process for the development of a post-construction SWMP. Such documentation may be included in your permit application, your SWMP, or your annual report submitted pursuant to Section 5 of this permit. If this information is not included in your permit application, your SWMP, or your annual report submitted pursuant to Section 5 of this permit, you must develop a rationale statement that addresses both your overall post-construction SWMP and the individual BMPs, measurable goals, and responsible persons for your program. The rational statement must include the following information, at a minimum:

4.2.5.2.1 Your program to address storm water runoff from new development and redevelopment projects. Include in this description any specific priority areas for this program.

4.2.5.2.2 How your program will be specifically tailored for your local community, minimize water quality impacts, and attempt to maintain pre-development runoff conditions.

4.2.5.2.3 Any non-structural BMPs in your program, including, as appropriate:

4.2.5.2.3.1 Policies and ordinances that provide requirements and standards to direct growth to identified areas, protect sensitive areas such as wetlands and riparian areas, maintain and/or increase open space (including a dedicated funding source for open space acquisition), provide buffers along sensitive water bodies, minimize impervious surfaces, and minimize disturbance of soils and vegetation.

4.2.5.2.3.2 Policies or ordinances that encourage infill development in higher density urban areas, and areas with existing storm sewer infrastructure;

4.2.5.2.3.3 Education programs for developers and the public about project designs that minimize water quality impacts; and

4.2.5.2.3.4 Other measures such as: minimization of the percentage of impervious area after development, use of measures to minimize directly connected impervious areas, and source control measures often thought as good housekeeping, preventive maintenance and spill prevention.

4.2.5.2.4 Any structural BMPs in your program, including, as appropriate:

4.2.5.2.4.1 Storage practices such as wet ponds, and extended-detention outlet structures;

4.2.5.2.4.2 Filtration practices such as grassed swales, bioretention cells, sand filters and filter strips; and,

4.2.5.2.4.3 Infiltration practices such as infiltration basins and infiltration trenches.

4.2.5.2.5 What are the mechanisms (ordinance or other regulatory mechanisms) you will use to address post-construction runoff from new developments and redevelopments and why did you choose that mechanism. If you need to develop a mechanism, describe your plan and a schedule to do so. If your ordinance or regulatory mechanism is already developed, include a copy of the relevant sections with your program.

4.2.5.2.6 How you will ensure the long-term operation and maintenance (O&M) of your selected BMPs. Options to help ensure that future O&M responsibilities are clearly identified include an agreement between you and another party such as the post-development landowners or regional authorities.

4.2.5.2.7 Who is responsible for overall management and implementation of your post-construction SWMP and, if different, who is responsible for each of the BMPs identified for this program.

4.2.5.2.8 How you will evaluate the success of this minimum measure.

4.2.5.3 For SMS4s who submitted an application before the effective date of this general permit, you must implement your local post construction storm water management program in your entire regulated SMS4 area within eighteen months of the effective date of this permit.

4.2.6 Pollution Prevention/Good Housekeeping for Municipal Operations

4.2.6.1 *Permit requirement.* You must:

4.2.6.1.1 Develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations as an integral part of the SWMP; and

4.2.6.1.2 Using training materials that are available from SCDHEC, EPA, or other organizations, include in your program employee training to prevent and reduce storm water pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance.

4.2.6.2 *Decision process.* You must document your decision process for the development of a pollution prevention/good housekeeping program for municipal operations. Such documentation may be included in your permit application, your SWMP, or your annual report submitted pursuant to Section 5 of this permit. If this information is not included in your permit application, your SWMP, or your annual report submitted pursuant to Section 5 of this permit, you must develop a rationale statement that addresses your overall pollution prevention/good housekeeping program and the individual BMPs, measurable goals, and responsible persons for your program. The rationale statement must include the following information, at a minimum:

4.2.6.2.1 Your operation and maintenance program to prevent or reduce pollutant runoff from your municipal operations. Your program must specifically list the municipal operations that are impacted by this operation and maintenance program. You must also include a list of industrial facilities you own or operate that are subject to SCDHEC NPDES General Permit for Storm Water Discharges Associated with Industrial Activity (SCR000000) or individual NPDES permits for discharges of storm water associated with industrial activity that ultimately discharge to your SMS4. Include the SCDHEC permit number or a copy of the Industrial NOI form for each facility.

4.2.6.2.2 Any government employee training program you will use to prevent and reduce storm water pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance. Describe any existing, available materials you plan to use. Describe how this training program will be coordinated with the outreach programs developed for the public information minimum measure and the illicit discharge minimum measure.

4.2.6.2.3 Your program description must specifically address the following areas:

4.2.6.2.3.1 Maintenance activities, maintenance schedules, and long-term inspection procedures for controls to reduce floatables and other pollutants to your SMS4.

4.2.6.2.3.2 Controls for reducing or eliminating the discharge of pollutants from streets, roads, highways, municipal parking lots, maintenance and storage yards, waste transfer stations, recycling collection centers, fleet or maintenance shops with outdoor storage areas, salt/sand storage locations, and snow disposal areas you operate.

4.2.6.2.3.3 Procedures for the proper disposal of waste removed from your SMS4 and your municipal operations, including materials such as dredge spoil, accumulated sediments, floatables, and other debris.

4.2.6.2.3.4 Procedures to ensure that new flood management projects are assessed for impacts on water quality and existing projects are assessed for incorporation of additional water quality protection devices or practices.

4.2.6.2.4 Who is responsible for overall management and implementation of your pollution prevention/good housekeeping program and, if different, who is responsible for each of the BMPs identified for this program.

4.2.6.2.5 How you will evaluate the success of this minimum measure, including how you selected the measurable goals for each of the BMPs.

4.3 Reserved

4.4 Sharing Responsibility.

Implementation of one or more of the minimum measures may be shared with another entity, or the entity may fully take over the measure. You may rely on another entity only if:

4.4.1 The other entity in fact, implements the control measure.

4.4.2 The particular control measure, or component of that measure, is at least as stringent as the corresponding permit requirement.

4.4.3 The other entity agrees to implement the control measure on your behalf. Written acceptance of this obligation is expected. This obligation must be maintained as part of the description of your SWMP. If the other entity agrees to report on the minimum measure, you must supply the other entity with the reporting requirements contained in Section 5.3 of this permit. If the other entity fails to implement the control measure on your behalf, then you remain liable for any discharges due to that failure to implement.

4.5 Reviewing and Updating Storm Water Management Programs (SWMPs)

4.5.1 *SWMP Review:* You must do an annual review of your SWMP in conjunction with preparation of the annual report required under Section 5.3

4.5.2 *SWMP Update:* You may change your SWMP during the life of the permit in accordance with the following procedures:

4.5.2.1 Changes adding (but not subtracting or replacing) components, controls, or requirements to the SWMP may be made at any time upon written notification to the Department.

4.5.2.2 Changes replacing an ineffective or unfeasible BMP specifically identified in the SWMP with an alternate BMP may be requested at any time. Unless denied by the Department, changes proposed in accordance with the criteria below shall be deemed approved and may be implemented 60 days from submittal of the request. If request is denied, the Department will send you a written response giving a reason for the decision. Your modification requests must include the following:

4.5.2.2.1 An analysis of why the BMP is ineffective or infeasible (including cost prohibitive),

4.5.2.2.2 Expectations on the effectiveness of the replacement BMP, and

4.5.2.2.3 An analysis of why the replacement BMP is expected to achieve the goals of the BMP to be replaced.

4.5.2.3 Change requests or notifications must be made in writing and signed in accordance with Section 122.22 of SC Regulation 61-9 (see Appendix B of this permit).

4.5.3 *SWMP Updates Required by the Department*: The Department may require changes to the SWMP as needed to:

4.5.3.1 Address documented impacts on receiving water quality caused, or contributed to, by discharges from the SMS4;

4.5.3.2 Include more stringent requirements necessary to comply with new Federal statutory or regulatory requirements; or

4.5.3.3 Include such other conditions deemed necessary by the Department to comply with the goals and requirements of the Clean Water Act.

4.5.3.4 Changes requested by the Department must be made in writing, set forth the time schedule for you to develop the changes, and offer you the opportunity to propose alternative program changes to meet the objective of the requested modification. All changes required by the Department will be made in accordance with South Carolina Water Pollution Control Permits Regulation 61-9 124.5, 122.62, or as appropriate 122.63.

4.5.4 *Transfer of Operational Authority, or Responsibility for SWMP Implementation:* You must implement the SWMP on all new areas added to your portion of the SMS4 (or for which you become responsible for implementation of storm water quality controls) as expeditiously as practicable, but not later than one year from addition of the new areas. Implementation may be accomplished in a phased manner to allow additional time for controls that cannot be implemented immediately.

4.5.4.1 Within 90 days of a transfer of operational authority, or responsibility for SWMP implementation, you must have a plan for implementing your SWMP on all affected areas. The plan may include schedules for implementation. Information on all new annexed areas and any resulting updates required to the SWMP must be included in the annual report.

4.5.4.2 Only those portions of the SWMP specifically required as permit conditions shall be subject to the modification requirements of South Carolina Water Pollution Control Permits Regulation 61-9.124.5. Addition of components, controls, or requirements by the permittee(s) and replacement of an ineffective or infeasible BMP implementing a required component of the SWMP with an alternate BMP expected to achieve the goals of the original BMP shall be considered minor changes to the SWMP and not modifications to the permit.

5 Monitoring, Record keeping, and Reporting

5.1 Monitoring

5.1.1 You must evaluate program compliance, the appropriateness of identified BMPs, and progress toward achieving identified measurable goals. If you discharge to a water body for which a TMDL has been established, you may have additional monitoring requirements under Section 3.1.3.6.

5.1.2 When you conduct monitoring at your permitted SMS4, you are required to comply with the following:

5.1.2.1 *Representative monitoring.* Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

5.1.2.2 *Test Procedures.* Monitoring results must be conducted according to test procedures approved under 40 CFR part 136.

5.1.3 Records of monitoring information shall include:

5.1.3.1 The date, exact place, and time of sampling or measurements;

5.1.3.2 The names(s) of the individual(s) who performed the sampling or measurements;

5.1.3.3 The date(s) analyses were performed;

5.1.3.4 The names of the individuals who performed the analyses;

5.1.3.5 The analytical techniques or methods used; and

5.1.3.6 The results of such analyses.

5.1.4 *Discharge Monitoring Report.* Monitoring results must be reported on a Discharge Monitoring Report (DMR)

5.2 Record Keeping

5.2.1 You must retain records of all monitoring information, including, all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, copies of Discharge Monitoring Reports (DMRs), a copy of the NPDES permit, and records of all data used to complete the application (NOI) for this permit, for a period of at least three years from the date of the sample, measurement, report or application, or for the term of this permit, whichever is longer. This period may be extended by request of the Department at any time.

5.2.2 You must submit your records to the Department when specifically asked to do so. You must retain a description of the SWMP required by this permit (including a copy of the permit language) at a location accessible to the Department. You must make your records, including the notice of intent (NOI) or application and the description of the SWMP, available to the public if requested to do so in writing.

5.3 Reporting

You must submit your first annual report to the Department fourteen months after the effective date of the written certificate of coverage**.** The following annual reports shall be submitted every twelve months from the scheduled date of the first submittal. All annual reports shall be sent to:

SCDHEC Bureau of Water
Storm Water Compliance Manager
2600 Bull Street
Columbia, SC 29201-1708

The report must include:

5.3.1 The status of your compliance with permit conditions, an assessment of the appropriateness of the identified best management practices (this may be satisfied by updating your Decision Process under Subsections 4.2.1.2, 4.2.2.2, 4.2.3.2, 4.2.4.2, 4.2.5.2, and 4.2.6.2), progress towards achieving the statutory goal of reducing the discharge of pollutants to the MEP, and the measurable goals for each of the minimum control measures;

5.3.2 Results of information collected and analyzed, if any, during the reporting period, including monitoring data used to assess the success of the program at reducing the discharge of pollutants to the MEP;

5.3.3 A summary of the storm water activities you plan to undertake during the next reporting cycle (including an implementation schedule);

5.3.4 Proposed changes to your SWMP, including changes to any BMPs or any identified measurable goals that apply to the program elements; and

5.3.5 Notice that you are relying on another entity to satisfy some of your permit obligations (if applicable).

6 Standard Permit Conditions

South Carolina regulations require that the Standard Conditions provisioned at §122.41 of SC Regulation 61-9 be applied to all NPDES permits. You are required to comply with those Standard Conditions, details of which are provided in Appendix B, that are applicable to SMS4 storm water discharges.

7 Definitions

All definitions contained in Section 502 of the Act and South Carolina Water Pollution Control Permits Regulation 61-9 122 shall apply to this permit and are incorporated herein by reference. For convenience, simplified explanations of some regulatory/statutory definitions have been provided, but in the event of a conflict, the definition found in the Statute or Regulation takes precedence.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Control Measure, as used in this permit, refers to any BMP or other method used to prevent or reduce the discharge of pollutants to waters of the United States.

CWA or The Act means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub.L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483 and Pub. L. 97-117, 33 U.S.C. 1251 et.seq.

Department means the South Carolina Department of Health and Environmental Control.

Discharge, when used without a qualifier, refers to "discharge of a pollutant" as defined at South Carolina Water Pollution Control Permits Regulation 61-9 122.2.

Illicit Connection means any man-made conveyance connecting an illicit discharge directly to a small municipal separate storm sewer.

Illicit Discharge is defined at South Carolina Water Pollution Control Permits Regulation 61-9 122.26(b)(2) and refers to any discharge to a small municipal separate storm sewer that is not entirely composed of storm water, except discharges authorized under an NPDES permit (other than the NPDES permit for discharges from the SMS4) and discharges resulting from fire fighting activities.

Indian Country, as defined in 18 USC 1151, means:

(a) All land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and including rights-of-way running through the reservation;

(b) All dependent Indian communities within the borders of the United States whether within the original or subsequently acquired territory thereof, and whether within or without the limits of a state; and,

(c) All Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same. This definition includes all land held in trust for an Indian tribe.

MEP is an abbreviation for "Maximum Extent Practicable," the technology-based discharge standard for Municipal Separate Storm Sewer Systems to reduce pollutants in storm water discharges that was established by CWA §402(p).

MS4 is an abbreviation for "Municipal Separate Storm Sewer System" and is used to refer to either a Large, Medium, or Small Municipal Separate Storm Sewer System (e.g. "the Columbia MS4"). The term is used to refer to either the system operated by a single entity or a group of systems within an area that are operated by multiple entities (e.g., the Greenville County MS4 includes MS4s operated by the city of Greenville, the South Carolina Department of Transportation, Greenville County, and others).

Municipal Separate Storm Sewer is defined at South Carolina Water Pollution Control Permits Regulation 61-9 122.26(b)(8) and means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States; (ii) Designed or used for collecting or conveying storm water; (iii) Which is not a combined sewer; and (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at South Carolina Water Pollution Control Permits Regulation 61-9 122.2.

NOI is an abbreviation for “Notice of Intent” to be covered by this permit and is the mechanism used to request coverage under a general permit.

Outfall means a point source as defined by section 122.2 of SC Regulation 61-9 at the point where a municipal separate storm sewer discharges to waters of the State and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the State and are used to convey waters of the State.

Regulated Small Municipal Separate Storm Sewer System is defined by Section 122.32 South Carolina Regulation 61-9 and means: (1) a small municipal storm sewer system that is located in an urbanized area as

determined by the latest Decennial Census by the Bureau of Census (If your small MS4 is not located entirely within an urbanized area, only the portion that is within the urbanized area is regulated.); or (2) you are designated by the Department, including where the designation is pursuant to Sections 122.35(b)(3) or (b)(4) of SC Regulation 61-9, or is based upon a petition under Section 122.26(f) of the SC Regulation 61-9. In accordance with Section 122.32(c) of SC Regulation 61-9, the Department may waive the requirements otherwise applicable to you if you meet the criteria of Sections 122.32(d) or (e) of SC Regulation 61-9.

Small Municipal Separate Storm Sewer System (SMS4) is defined at South Carolina Water Pollution Control Permits Regulation 61-9 122.26(b)(16) and refers to all small separate storm sewer systems that are owned or operated by the United States, a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States, but is not defined as "large"' or "medium" municipal separate storm sewer system. This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.

Storm Water is defined at South Carolina Water Pollution Control Permits Regulation 61-9 122.26(b)(13) and means storm water runoff, snowmelt runoff, and surface runoff and drainage.

Storm Water Management Program (SWMP) refers to a comprehensive storm water management program to manage the quality of storm water discharged from the small municipal separate storm sewer system.

Waters of South Carolina, or Waters of the State means lakes, bays, sounds, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic Ocean within the territorial limits of the State, and all other bodies of surface or underground water, natural or artificial, public or private, inland or coastal, fresh or salt, which are wholly or partially within or bordering the State or within its jurisdiction and all waters of the United States within the political boundaries of the State of South Carolina. Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA are not waters of the South Carolina. This exclusion applies only to manmade bodies of water which neither were originally created in waters of South Carolina (such as disposal areas in wetlands) nor resulted from the impoundment of waters of South Carolina.

Waters of the United States, or Waters of the U.S. means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
(b) All interstate waters, including interstate "wetlands";
(c) All other waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, wet meadows, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
    (1) Which are or could be used by interstate or foreign travelers for recreational or other purposes;
    (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    (3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of South Carolina under this definition;
(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;
(f) The territorial sea; and
(g) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

"You" and "Your" as used in this permit is intended to refer to the permittee, the operator, or the discharger as the context indicates and that party's responsibilities (e.g., the city, the country, the flood control district, the U.S. Air Force, etc.).

Appendix A - Regulated Small MS4s in SC

Reference list (not inclusive of all SMS4 owners or operators subject to SC Water Pollution Control Permits Regulation 61-9 122.32 – 122.36) of Governmental Entities Located Fully or Partially Within an Urbanized Area in the State of South Carolina according to the 2000 Census of Population and Housing, U.S. Bureau of the Census. Military bases, large hospitals, prison complexes, universities and colleges, sewer districts, and highway departments that own or operate an SMS4 within an urbanized area are also subject to the SC Water Pollution Control Permits Regulation 61-9 122.26(b)(16) and 122.32(a).

URBANIZED AREA (UA)	MUNICIPALITY	POPULATION (IN UA)	DENSITY
Anderson, including Centerville, Homeland Park & Northlake CDPs	Anderson	25,510	1,845
	Anderson County [1]	(40,636) + 9,958	
	Belton [*]	4,290	1,150
Augusta – SC, including Belvedere, Clearwater, Gloverville & Murphys Estates CDPs	Aiken	24,621	1,559
	Aiken County	40,423	
	Burnettown	2,331	558
	Edgefield County	246	
	North Augusta [2]	17,381 + 5	1,003
Charleston – N. Charleston, including Ladson, a CDP	Berkeley County	43,233	
	Charleston	93,382	847
	Charleston County	45,755	
	Dorchester County	40,132	
	Folly Beach	1,760	113
	Goose Creek	28,708	903
	Hanahan	12,708	1,211
	Isle of Palms	4,508	826
	Lincolnville	904	807
	Mount Pleasant	45,582	959
	North Charleston [3]	74,336 + 3,379	1,274
	Sullivan's Island	1,911	574
	Summerville [4]	940 + 20 + 26,782	1,806
Charlotte – SC, including Lake Wylie & Riverview CDPs	Fort Mill	7,533	1,649
	Tega Cay [*]	4,044	1,287
	York County [5]	(12,552) + 20,663	
Columbia, including Dentsville, Lake Murray, Oak Grove, Red Bank, Seven Oaks, St. Andrews & Woodfield CDPs	Arcadia Lakes	882	1,316
	Cayce	11,817	1,076
	Elgin [*]	801	814
	Forest Acres	10,558	2,133
	Irmo [6]	4,071 + 6,968	2,719
	Kershaw County [*]	1,678	
	Lexington [*]	9,769	1,709
	Lexington County	93,069	
	Pine Ridge	1,195	428
	South Congaree	2,252	697
	Springdale	2,877	712
	West Columbia	13,064	2,064
Florence	Darlington County	3,067	
	Florence	30,126	1,704
	Florence County	33,346	

Greenville, including Arial, Berea, City View, Dunean, Gantt, Golden Grove, Judson, Parker, Piedmont, Powderville, Sans Souci, Taylors, Wade Hampton & Welcome CDPs	Anderson County [1]	(9,958) + 40,636	
	Easley [*]	17,698	1,659
	Greenville [*]	55,789	2,140
	Greer [7*]	(10,966 + 4,867) + 399	1,057
	Liberty [*]	2,697	705
	Pickens [*]	2,970	1,240
	Pickens County	17,454	
	Spartanburg County [8]	(7,415) + 331 + 90,254	
	Travelers Rest [*]	3,693	932
Mauldin – Simpsonville, including Five Forks, a CDP	Fountain Inn [9*]	4,612 + 1,178	1,096
	Greer [7*]	(399) + 10,966 + 4,867	1,057
	Laurens County [*]	386	
	Mauldin [*]	14,978	1,764
	Simpsonville [*]	14,352	2,300
	Spartanburg County [8]	(331) + 7,415 + 90,254	
Myrtle Beach, including Forestbrook, Garden City, Little River, Murrells Inlet, Red Hill & Socastee CDPs	Atlantic Beach [*]	351	2,340
	Briarcliffe Acres [*]	470	712
	Conway [*]	11,506	884
	Georgetown County	5,233	
	Horry County	68,302	
	Myrtle Beach	22,696	1,351
	North Myrtle Beach [*]	10,001	808
	Surfside Beach	4,425	2,269
Rock Hill, including India Hook, Lesslie & Newport CDPs	Rock Hill	49,344	1,599
	York County [5]	(20,663) + 12,552	
Spartanburg, including Boiling Springs, Inman Mills, Roebuck, Saxon, Southern Shops, Startex & Valley Falls CDPs	Cherokee County [*]	363	
	Cowpens	2,074	978
	Duncan [*]	2,764	824
	Inman [*]	1,884	2,117
	Lyman [*]	2,391	653
	Spartanburg	39,673	2,064
	Spartanburg County [8]	(90,254)	
	Wellford [*]	1,948	1,005
Sumter, including Cane Savannah, Cherryvale, East Sumter, Lakewood, Millwood, Mulberry, Oakland, South Sumter & Stateburg CDPs	Sumter	38,579	1,478
	Sumter County	25,561	

( ) Population for counties in two, or more UAs.

(*) SMS4 owners or operators of Governmental Entities Located Fully or Partially Within an Urbanized Area in the State of South Carolina in addition to those listed on page 68831 of Appendix 6 of the preamble of the Federal Register, Vol. 64, N°. 235, Wednesday, December 8, 1999, according to the 2000 Census of Population and Housing, U.S. Bureau of the Census. Military bases, large hospitals, prison complexes, universities and colleges, sewer districts, and highway departments that own or operate an SMS4 within an Urbanized Area are also subject to SC Water Pollution Control Permits Regulation 61-9 122.32 – 122.36

(1) In the Anderson UA, 40,636 people & in the Greenville UA, 9,958 people

([2]) In the Augusta – Richmond County, GA – SC UA, 17,381 people in Aiken County & 5 in Edgefield County

([3]) In the Charleston – North Charleston UA, 74,336 people in Charleston County & 3,379 in Dorchester County

([4]) In the Charleston – North Charleston UA, 940 people in Berkeley County, 20 in Charleston County & 26,782 in Dorchester County

([5]) In the Charlotte, NC – SC UA, 12,552 people & in the Rock Hill UA, 20,663 people

([6]) In the Columbia UA, first number is the population in the Lexington County portion of the municipality, while the second corresponds to the Richland County portion

([7]) In the Greenville UA, 10,966 people in Greenville County & 4,867 in Spartanburg County. In the Mauldin - Simpsonville UA, 399 people in Spartanburg County

([8]) In the Greenville UA, 7,415 people, in the Mauldin – Simpsonville UA, 331 people & in the Spartanburg UA, 90,254 people

([9]) In the Mauldin – Simpsonville UA, 4,612 people in Greenville County & 1,178 in Laurens County

Appendix B – Sections 122.41 and 122.22 of SC Regulation 61-9

Section 122.41

122.41. Conditions applicable to all permits. The following conditions apply to all NPDES permits. Additional conditions applicable to NPDES permits are in section 122.42. All conditions applicable to NPDES permit shall be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the federal regulations (or the corresponding approved State regulations) must be given in the permit.

(a) Duty to comply. The permittee must comply with all conditions of the permit. Any permit noncompliance constitutes a violation of the Clean Water Act and the Pollution Control Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. The Department's approval of wastewater facility Plans and Specifications does not relieve the permittee of responsibility to meet permit limits.

(1) The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

(2) Failure to comply with permit conditions or the provisions of this regulation may subject the permittee to civil penalties under S.C. Code Section 48-1-330 or criminal sanctions under S.C. Code Section 48-1-320. Sanctions for violations of the Federal Clean Water Act may be imposed in accordance with the provisions of 40 CFR Part 122.41(a)(2) and (3).

(3) A person who violates any provision of this regulation, a term, condition or schedule of compliance contained within a valid NPDES permit, or the State law is subject to the actions defined in the State law.

(b) Duty to reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. (But see 122.4(g)(2)).

(c) Need to halt or reduce activity not a defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(d) Duty to mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

(e) (1) Proper operation and maintenance. The permittee shall at all times properly operate and maintain in good working order and operate as efficiently as possible all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes effective performance based on

design facility removals, adequate funding, adequate operator staffing and training and also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

(2) The permittee shall develop and maintain at the facility a complete Operations and Maintenance Manual for the waste treatment facilities and/or land application system. The manual shall be made available for on-site review during normal working hours. The manual shall contain operation and maintenance instructions for all equipment and appurtenances associated with the waste treatment facilities and land application system. The manual shall contain a general description of: the treatment process (es), the operational procedures to meet the requirements of (e)(1) above, and the corrective action to be taken should operating difficulties be encountered.

(3)(i) Except as stated in (ii) below, the permittee shall provide for the performance of daily treatment facility inspections by a certified operator of the appropriate grade as defined in the permit for the facility. The inspections shall include, but should not necessarily be limited to, areas which require visual observation to determine efficient operation and for which immediate corrective measures can be taken using the O & M manual as a guide. All inspections shall be recorded and shall include the date, time, and name of the person making the inspection, corrective measures taken, and routine equipment maintenance, repair, or replacement performed. The permittee shall maintain all records of inspections at the permitted facility as required by the permit, and the records shall be made available for on-site review during normal working hours.

(ii) The Department may make exceptions to operating requirements, if stated in the permit, as follows:

(A) Attendance by the certified operator of the appropriate grade ("the operator") is normally required only on days when treatment or discharge occurs.

(B) For performance of daily inspections, permits may allow a reduced grade of operator for limited time periods under specific circumstances when justified by the permittee in a staffing plan and approved by the Department.

(C) Reduced inspection frequency, but in no case less than weekly, may be suitable when specified in the permit, if there is complete telemetry of operating data and there is either a simple treatment system with a low potential for toxicity but requiring pumps or other electrical functions or the ability to stop the discharge for an appropriate period when necessary.

(D) In other circumstances where the permittee demonstrates the capability to evaluate the facility in an alternative manner equivalent to the inspection requirements in subparagraph 3(i).

(E) Any exceptions allowed under (A), (B), (C), and (D) above may be subject to compliance with the permit conditions.

(4) (i) Purpose. This regulation establishes rules for governing the operation and maintenance of wastewater sewer systems, including gravity or pressure interceptor sewers. It is the purpose of

this rule to establish standards for the management of sewer systems to prevent and/or minimize system failures that would lead to public health or environmental impacts.

(ii) Authority and applicability. Under Section 48-1-30 of the Code of Laws of South Carolina (1976 as amended), the Department is authorized to adopt such rules and regulations as may be necessary to implement the Pollution Control Act. This regulation applies to all sewer systems that have been or would be subject to a DHEC construction permit under Regulation 61-67 and whose owner owns or operates the wastewater treatment system to which the sewer discharges and which discharges under NPDES. Nothing in this regulation supersedes a more stringent requirement that may be imposed by sewer system owners that manage wastewater from satellite systems. This regulation (122.41(e)(4)) is effective when published in the State Register.

(iii) General requirements. The requirements to properly operate and maintain sewer systems are the responsibility of the system owner. General Standards. The sewer system owner must:

(A) Properly manage, operate, and maintain at all times all parts of its sewer system(s), to include maintaining contractual operation agreements to provide services, if appropriate;

(B) Provide adequate capacity to convey base flows and peak flows for all parts of the sewer system or, if capital improvements are necessary to meet this standard, develop a schedule of short and long term improvements;

(C) Take all reasonable steps to stop and mitigate the impact of releases of wastewater to the environment; and

(D) Notify the Department within 30 days of a proposed change in ownership of a sewer system.

(iv) [Reserved.]

(f) Permit actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

(g) Property rights. This permit does not convey any property rights of any sort, or any exclusive privilege.

(h) Duty to provide information. The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.

(i) Inspection and entry. The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:

(1) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

(2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(3) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(4) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act and Pollution Control Act, any substances or parameters at any location.

(j) Monitoring and records.

(1) (i) (A)Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(B) Samples shall be reasonably distributed in time, while maintaining representative sampling.

(C) No analysis, which is otherwise valid, shall be terminated for the purpose of preventing the analysis from showing a permit or water quality violation.

(ii) Flow Measurements.

(A) Where primary flow meters are required, appropriate flow measurement devices and methods consistent with accepted scientific practices shall be present and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of not greater than 10 percent from the true discharge rates throughout the range of expected discharge volumes. The primary flow device, where required, must be accessible to the use of a continuous flow recorder.

(B) Where permits require an estimate of flow, the permittee shall maintain at the permitted facility a record of the method(s) used in "estimating" the discharge flow (e.g., pump curves, production charts, water use records) for the outfall(s) designated on limits pages to monitor flow by an estimate.

(C) Records of any necessary calibrations must be kept.

(iii) The Department may designate a single, particular day of the month on which any group of parameters listed in the permit must be sampled. When this requirement is imposed in a permit, the Department may waive or alter compliance with the permit requirement for a specific sampling event for extenuating circumstances.

(iv) The Department may require that a permittee monitor parameters in the stream receiving his permitted discharge as necessary to evaluate the need for and to establish limits and conditions and to insure compliance with water quality standards (i.e., R.61-68).

(2) Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by R.61-9.503 or R.61-9.504); the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.

(3) Records of monitoring information shall include:

(i) The date, exact place, and time of sampling or measurements;

(ii) The individual(s) who performed the sampling or measurements;

(iii) The date(s) analyses were performed;

(iv) The individual(s) who performed the analyses;

(v) The analytical techniques or methods used; and

(vi) The results of such analyses.

(4) Analyses for required monitoring must be conducted according to test procedures approved under 40 CFR Part 136 unless other test procedures have been specified in the permit or, in the case of sludge use or disposal, unless otherwise specified in R.61-9.503 or R.61-9.504.

(5) The PCA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $25,000 or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment provided by the Clean Water Act is also by imprisonment of not more than 4 years.

(k) Signatory requirement.

(1) All applications, reports, or information submitted to the Department shall be signed and certified (See section 122.22).

(2) The PCA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be

punished by a fine of not more than $25,000 per violation, or by imprisonment for not more than two years per violation, or by both.

(l) Reporting requirements.

(1) Planned changes. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

(i) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in section 122.29(b); or

(ii) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under section 122.42(a)(l).

(iii) The alteration or addition results in a significant change in the permittee's sewage sludge or industrial sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan (included in the NPDES permit directly or by reference);

(2) Anticipated noncompliance. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(3) Transfers. This permit is not transferable to any person except after notice to the Department. The Department may require modification or revocation and reissuance of the permit to change the name of permittee and incorporate such other requirements as may be necessary under the Pollution Control Act and the Clean Water Act. (See section 122.61; in some cases, modification or revocation and reissuance is mandatory.)

(4) Monitoring reports. Monitoring results shall be reported at the intervals specified in the permit.

(i) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Department for reporting results of monitoring of sludge use or disposal practices.

(ii) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in R.61-9.503 or R.61-9.504, or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Department.

(iii) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Department in the permit.

(5) Compliance schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

(6) Twenty-four hour reporting.

(i) The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

(ii) The following shall be included as information which must be reported within 24 hours under this paragraph.

(A) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See section 122.44(g)).

(B) Any upset which exceeds any effluent limitation in the permit.

(C) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit to be reported within 24 hours (See section 122.44(g)).

(iii) The Department may waive the written report on a case-by-case basis for reports under paragraph (l)(6)(i) of this section if the oral report has been received within 24 hours.

(7) Other noncompliance. The permittee shall report all instances of noncompliance not reported under paragraphs (l)(4), (5), and (6) of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (l)(6) of this section.

(8) Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

(m) Bypass.

(1) Definitions.

(i) “Bypass” means the intentional diversion of waste streams from any portion of a treatment facility.

(ii) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

(2) Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraph (m)(3) and (m)(4) of this section.

(3) Notice.

(i) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible, at least ten days before the date of the bypass.

(ii) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph (l)(6) of this section (24-hour notice).

(4) Prohibition of bypass

(i) Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:

(A) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(B) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(C) The permittee submitted notices as required under paragraph (m)(3) of this section.

(ii) The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three conditions listed above in paragraph (m)(4)(i) of this section.

(n) Upset.

(1) Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. A upset does not include noncompliance to the extent caused by

operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

(2) Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph (n)(3) of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

(3) Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(i) An upset occurred and that the permittee can identify the cause(s) of the upset;

(ii) The permitted facility was at the time being properly operated; and

(iii) The permittee submitted notice of the upset as required in paragraph (l)(6)(ii)(B) of this section (24 hour notice).

(iv) The permittee complied with any remedial measures required under paragraph (d) of this section.

(4) Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

(o) Misrepresentation of Information.

(1) Any person making application for a NPDES discharge permit or filing any record, report, or other document pursuant to a regulation of the Department, shall certify that all information contained in such document is true. All application facts certified to by the applicant shall be considered valid conditions of the permit issued pursuant to the application.

(2) Any person who knowingly makes any false statement, representation, or certification in any application, record, report, or other documents filed with the Department pursuant to the State law, and the rules and regulations pursuant to that law, shall be deemed to have violated a permit condition and shall be subject to the penalties provided for pursuant to 48-1-320 or 48-1-330.

Section 122.22

122.22. Signatories to permit applications and reports.

(a) Applications. All permit applications shall be signed as follows:

(1) For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or

(ii) The manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency or public facility: By either a principal executive officer, mayor, or other duly authorized employee or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) The chief executive officer of the agency, or

(ii) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator, Region IV, EPA).

(b) All reports required by permits, and other information requested by the Department, shall be signed by a person described in paragraph (a) of this section, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in paragraph (a) of this section;

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) and,

(3) The written authorization is submitted to the Department.

(c) Changes to authorization. If an authorization under paragraph (b) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (b) of this section must be submitted to the Department prior to or together with any reports, information, or applications to be signed by an authorized representative.

(d) Certification. Any person signing a document under paragraph (a) or (b) of this section shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

APPENDIX C

OPERATING PERMITS AND CERTIFICATIONS

TRANSFER OF OWNERSHIP AND RESPONSIBILITY APPLICATION

1. Name of Activity:_____
2. Permit Number: __ __ - __ __ __
3. NPDES Permit Coverage Number (if applicable): SCR10 __ __ __ __
4. New Applicant Name: _____
   Address: _____
   City: _____ State: _____
   Zip: _____
   Phone: _ _ _ - _ _ _ - _ _ _ _ Mobile: _ _ _ - _ _ _ - _ _ _ _ Fax: _ _ _ - _ _ _ - _ _ _ _
   Email Address (optional): _____
5. Property Info: ☐ Check Box if same as above
   Address:_____
   City: _____ South Carolina
   Zip: _____
   Tax Map Number(s): _____
6. Original Applicant Name: _____
   Address: _____
   City: _____ State: _____
   Zip: _____
   Phone: _ _ _ - _ _ _ - _ _ _ _ Mobile: _ _ _ - _ _ _ - _ _ _ _ Fax: _ _ _ - _ _ _ - _ _ _ _
   Email Address (optional): _____
7. Transfer Information: Transfer Date (MM/DD/YYYY): __ __/__ __/__ __ __ __

a. Is the entire permit being transferred to a new Permit Holder? ☐Yes ☐No
b. Is this a subdivision where only a lot or a group of lots are being transferred? ☐Yes ☐No
c. If Yes to Item b, list the lot, or group of lots being transferred.

_____

8. Other Information:

d. If there are no modifications being made to the plans, include five (5) sets of plans with signed designer and applicant's certification statements.
e. If this is a subdivision where a lot or group of lots are being transferred, include a plat sheet with the lot or group of lots that are being transferred clearly outlined.

Original Applicant's Certification

"I hereby relinquish the responsibility and ownership of the County Permit in the references above. I realize that the construction activity responsibility pursuant to the County Permit now belong to the new applicant."

_____ _____ _____

Applicant's Printed Name Applicant's Signature Date

New Applicant's Certification"I hereby certify that all construction and/or development will be done pursuant to the County Permit and I am responsible for the construction activities and related maintenance thereof. Charleston County authorities will be allowed to enter the project site for the purpose of on-site inspections. I realize that I am now responsible for all of the construction activities that take place pursuant to the County Permit and will follow the approved permit."

_____ _____ _____

Applicant's Printed Name Applicant's Signature Date

COUNTY OF CHARLESTON, SOUTH CAROLINA

Department of Public Works

Stormwater Division

OPERATING PERMIT FOR PERMANENT MAINTENANCE OF STORMWATER PONDS*

I hereby certify that I will perform the duties as the owner(s) of the pond(s) listed below that include the below listed maintenance activities and others not listed to ensure its proper long-term functioning. I further certify that if ownership is transferred that I will ensure the continued maintenance of these pond(s) through the proper transfer of ownership responsibilities.

Property Information

PARCEL/TMS #(S): _____
(Obtain from Registrar of Deeds office)

NAME & TYPE OF POND(S): _____

_____

LOCATION OF POND(S): _____

_____

PROPERTY DEED RECORDED DATE: _____

TITLE OF SITE PLAN: _____
(Should exactly match the title given on application for a land disturbance permit)

PROJECT ENGINEERING FIRM: _____

PROJECT CONSTRUCTION FIRM: _____

NUMBER & DATE OF LAND DISTURBANCE PERMIT: _____

Property Owner(s)

OWNER #1: _____
ADDRESS: _____
CITY:_____ **STATE:** _____ **ZIP CODE :**_____
PHONE: _____ **FAX:** _____ **E-MAIL:** _____

SIGNATURE: _____**DATE:** _____

OWNER #2: _____
ADDRESS: _____
CITY:_____ STATE: _____ ZIP CODE :_____
PHONE: _____ FAX: _____ E-MAIL: _____

SIGNATURE: _____DATE: _____

OWNER #3: _____
ADDRESS: _____
CITY:_____ STATE: _____ ZIP CODE :_____
PHONE: _____ FAX: _____ E-MAIL: _____

SIGNATURE: _____DATE: _____

Responsibilities

1) Regular Inspections: Inspections shall be performed at least twice a year, and more regularly as listed below. Inspection reports shall be generated and kept on file for 2 years. Reports are to be made available to Charleston County upon request.

2) Routine Maintenance: Some maintenance activities are needed on a routine basis, as listed below. All activities listed should be performed on a monthly, bi-monthly basis or more frequently if needed or unless specified below.

a) Vegetation Management: grass should be mowed bi-weekly or more frequently if needed.
b) Inlet(s) and Outlet(s) Structures: any blockage of inlet(s) and outlet(s) structures should be removed. Inlets and outlet protection should be repaired or replaced as needed.
c) Debris and Litter: trash and other debris that collects in the pond should be removed.

3) Sediment Removal: Ponds will trap sediments and other settleable material over time and should be removed once the storage capacity has been reduced by more than approximately 10%. This is expected to occur once every 2-5 years. Removal of the sediment shall occur no less frequently than once every 5 years. If a forebay exists, any trash, sediment, or other debris should be completely removed as discovered through routine maintenance activities or inspections.

4) Slope Stabilization/Structural Integrity: slope erosion, sink holes, or other structural issues should be repaired as soon as discovered through routine maintenance activities or inspections.

Additional Responsibilities

List any additional routine or long-term activities to be performed on the pond(s).

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Note: Charleston County reserves the right to alter the maintenance schedule and activity as necessary to ensure the proper function of the pond(s).

COUNTY OF CHARLESTON, SOUTH CAROLINA

Department of Public Works

Stormwater Division

OPERATING PERMIT FOR PERMANENT MAINTENANCE OF STORMWATER FACILITIES*

I hereby certify that I will perform the duties as the owner(s) of the BMP listed below that include the below listed maintenance activities and others not listed to ensure its proper long-term functioning. I further certify that if ownership is transferred that I will ensure the continued maintenance of these pond(s) through the proper transfer of ownership responsibilities.

Property Information

PARCEL/TMS #(S):_____
(Obtain from Registrar of Deeds office)

NAME & TYPE OF BMP(S): _____

_____

LOCATION OF BMP(S): _____

_____

PROPERTY DEED RECORDED DATE: _____

TITLE OF SITE PLAN: _____
(Should exactly match the title given on application for a land disturbance permit)

PROJECT ENGINEERING FIRM: _____

PROJECT CONSTRUCTION FIRM: _____

NUMBER & DATE OF LAND DISTURBANCE PERMIT: _____

Property Owner(s)

OWNER #1: _____
ADDRESS: _____
CITY:_____ **STATE:** _____ **ZIP CODE:**_____
PHONE: _____ **FAX:** _____ **E-MAIL:** _____

SIGNATURE: _____**DATE:** _____

OWNER #2: _____
ADDRESS: _____
CITY:_____ STATE: _____ ZIP CODE:_____
PHONE: _____ FAX: _____ E-MAIL: _____

SIGNATURE: _____DATE: _____

OWNER #3: _____
ADDRESS: _____
CITY:_____ STATE: _____ ZIP CODE :_____
PHONE: _____ FAX: _____ E-MAIL: _____

SIGNATURE: _____DATE: _____

Responsibilities

1) Regular Inspections: Inspections shall be performed at least twice a year, and more regularly as listed below or as specified by a manufacturer. Inspection reports shall be generated and kept on file for 2 years. Reports are to be made available to Charleston County upon request. If generated by a third party, it shall remain the owner's (or owners') responsibility to maintain the reports.

2) Routine Maintenance: Some maintenance activities are needed on a routine basis, as listed below. All activities listed should be performed on a monthly, bi-monthly basis or more frequently if needed or unless specified below or by a manufacturer.
   a) Vegetation Management: if applicable, grass should be mowed bi-weekly or more frequently if needed.
   b) Inlet and Outlet Structures: any blockage of inlet(s) and outlet(s) structures should be removed. Inlet(s) and outlet(s) protection should be repaired or replaced as needed.
   c) Debris and Litter: trash and other debris that collects in the BMP should be removed.

3) Sediment Removal: BMP will trap sediments and other settleable material over time and should be removed once the storage capacity has been reduced. This is expected to occur once every 1-2 years. Removal of the sediment shall occur no less frequently than once every 2 years or as specified by the manufacturer. If a forebay exists, any trash, sediment, or other debris should be completely removed as discovered through routine maintenance activities or inspections.

4) Slope Stabilization/Structural Integrity: Slope erosion, sink holes, or other structural issues should be repaired as soon as discovered through routine maintenance activities or inspections.

Additional Responsibilities

List any additional routine or long-term activities to be performed on the BMP(s). This area may also be used to replace the list of maintenance activities listed above or to list manufacturer requirements.

_____
_____
_____
_____
_____
_____

Note: Charleston County reserves the right to alter the maintenance schedule and activity as necessary to ensure the proper function of the BMP.

APPENDIX D

TABLES OF BMP SUGGESTED USES

EROSION PREVENTION BMP SUGGESTED USES

BMP	Slope Protection	Waterway Protection	Surface Protection	Enclosed Drainage	Large Flat Areas	Borrow Areas	Adjacent Properties
Erosion Prevention Measures	X	X	X	X	X	X	X
Surface Roughening	X		X				
Bench Terracing	X		X				
Temporary Seeding	X		X		X	X	X
Mulching	X				X	X	
Erosion Control Blankets and Turf Reinforcement Mats	X	X	X			X	
Final Stabilization	X		X		X		X
Topsoiling			X		X		
Permanent Seeding and Planting of Grasses	X		X		X		X
Permanent Ground Cover Plants	X		X				X
Sodding	X		X		X		X
Riprap or Aggregate	X	X	X				
Outlet Protection		X		X			X
Dust Control					X	X	X
Polyacrylamide (PAMs)	X		X	X	X	X	X

APPENDIX E

REVIEW CHECKLIST

Charleston County Checklist for Design of New and Redevelopment Project

This checklist will be used by Charleston County Plan Reviewers or others employed by the Director, in reviewing proposed construction activities. This checklist shows the components that must be provided by the applicant per the project types (SFR/Small Commercial, Types I – III, and Utility/Linear).

The submitted information typically includes three parts: the application, the technical engineering calculations and discussions, and the construction documents (plans, details, specs, SWPPP).

I. APPLICATION FORM — Application Types: ALL

- All application items should be complete and answered sufficiently.
- Signatory authority (original signatures) should be provided where requested.
- Any fees to be returned to applicant.

II. TECHNICAL REPORT/ENGINEERING CALCULATIONS

1. REPORT COMPOSITION: — Application Types: II and III

- Table of Contents included.
- Report should be put together in a manner that facilitates review.
- Report prepared by licensed professional.
- Two copies to be submitted.

2. MAP(S): — Application Types: ALL

- Include north arrow and scale on all maps.
- Outlined project location.
- Labeled road names.
- Nearest waterbodies, discharge points, and waters of the state.
- Location of any nearby protected areas (waters, wetlands, etc.)
- Topographic information showing runoff patterns.
- Soil types.
- 100-year FEMA floodplain contours.
- Wetlands.
- Simple sketches will suffice for SFR, Utility, and Type I applications.

3. PROJECT NARRATIVE: — Application Types: ALL

- A description of the site in general, purposes of the construction activity, any issues with adjacent properties and owners, waterbodies receiving stormwater runoff, any issues with site soils, existing water quality and flooding issues, anticipated impacts (quality, downstream structures, etc.) and benefits (open space, treatment, maintenance, etc.), and reasons for waiver request.
- A summary table of existing and proposed runoff flows, volumes, and pollutant loads.

- A discussion of issues relating to other state and federal permits needed or regulations to be followed.
- A summary of the maintenance of the stormwater system and arrangements for post-construction maintenance responsibility. Maintenance agreements and/or operating permits must be provided in the application or otherwise addressed.
- This narrative should be much more detailed for larger (Types II and III) projects.
- Simple narratives will suffice for SFR, Utility, and Type I applications.

4. **HYDROLOGIC ANALYSIS:** **Application Types: II and III**

- Proper delineation of the site shown on maps or construction plans (preferably on 24" x 36" sheets).
- Pre- and post-development hydrologic analysis calculations for the two (2), ten (10), twenty-five (25), fifty (50), and one hundred (100) year storm events, as necessary, at each outfall point. Analysis should be performed at the same points and with the same drainage area for both pre- and post-development conditions and corresponds to the delineation. Hydrograph calculations should be provided as needed.
- Analysis performed using SCS methodology (Rational method not acceptable for Types II and III applications) or other if acceptable to Public Works.
- Use rainfall data from Chapter 3.

5. **DETENTION ANALYSIS/DESIGN:** **Application Types: II and III**

Analysis

- Pond routing using a volume based hydrograph for the two (2), ten (10) , twenty-five (25), fifty (50), and one hundred (100) SCS 24-hour rainfall event (Drain:Edge, ICPR, HEC-1, SedCAD, HYDRAFLOW, 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 pond (results of analysis will determine the need to modify the pond design or eliminate the pond requirement-see note in item 10).
- Inputs and outputs from analysis program.
- Summary table of the peak inflows, peak outflows, and maximum water surface elevations (WSE) for the (2), ten (10), twenty-five (25), fifty (50), and one hundred (100) year storm events for each pond.
- Stage-storage-discharge relationship for the outlet structure of each detention structure.
- If a rating curve for the outlet structure must be generated externally from the analysis program (Drain: Edge, HEC-1, HydroCAD), data and equations used to rate the outlet structure.

Design

- Detail of outlet structure and cross-section of the dam, including elevations and dimensions that correspond to the calculations.
- Orifice constructability considered (do not specify orifice diameters with increments of less than ¼ inch).

- Maximum WSE for the design storm event below the embankment with one (1) foot of freeboard between maximum WSE for the one hundred (100) year storm embankment.
- The volume within any structure used for water quantity control shall be drained from the structure within seventy-two (72) hours.
- Bottom of all detention and retention ponds graded to have a slope of not less than 0.5% and side slopes no steeper than 3:1 unless adequately protected.
- If the pond is to be used for sediment control during construction, outlet structure should be sufficiently protected.
- Permanent maintenance access to all permanent detention structures (easements may be needed for structures surrounded by lots).
- Infiltration and underground detention systems designed in accordance with Chapter 3.
- Emergency spillways should not be built on fill slopes.
- If pond is to be used to meet water quality requirements, a forebay, designed in accordance with this manual, is required.
- Installation of a trash rack or other debris-screening device is recommended on all pond risers.

6. **HYDRAULIC DESIGN:** **Application Types: II and III**

- Design calculations for all conveyances, inlets, and outlets based on the contributing area, allowable velocities, and upstream and downstream conditions.
- Upstream and downstream analysis showing the project will not impact new and existing structures or reduce downstream system capacity.
- Check to make sure the proper design storms were used at the appropriate design points.

7. **WATER QUALITY REQUIREMENTS:** **Application Types: II and III**

- Permanent water quality addressed (all projects or larger common plans that disturb five [5] or more acres)
- Wet ponds designed to catch the first one half (½) inch of runoff from the entire area draining to the pond and release it over at least a 24-hour period.
- Dry ponds designed to catch the first one (1) inch of runoff from the entire area draining to the pond and release it over at least a 24-hour period.
- For areas not draining to a pond, show how permanent water quality requirements were addressed.
- Waters of the U.S./State 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: Other non-traditional stormwater controls such as Bioretention areas, constructed wetlands, etc., may be used.

  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, preferably from a third-party testing company. Type of system to be used should be based on the ability to remove the pollutants of concern in that area/situation (e.g., bacteria, hydrocarbons, etc.).

8. **INLET PROTECTION:** **Application Types: II and III**

- Provided at all inlets (no hay bales).
- Steel posts and buried fabric shown for filter fabric inlet protection.
- Inlet protection details provided for pre-paving and after roadways have been paved.

9. **DISCHARGE POINTS:** **Application Types: II and III**

- The post-development discharge rates should be less than pre-development discharges for each discharge point for the two (2), ten (10), and twenty-five (25) year storm events. If not, then a detention waiver should be requested.
- Storm drainage or pond outfalls are carried to an existing drainage outfall such as a pipe, ditch, easement, etc.
- No new point discharges onto adjacent property where there was not a point discharge previously without providing the adjacent property owner's written permission.
- Level spreaders, plunge pools, etc. provided when the proposed outlet is near the property line.
- Provided a twenty (20) foot minimum buffer between the property line and the end of all pipes or energy dissipation measures are installed, where applicable.
- Outlets do not discharge on fill slopes.
- Discharge pipes greater than twenty-four (24) inch require headwall with wings.
- Headwalls required in major drainage channels.
- All outlets stabilized.
- Riprap aprons sized appropriately.
- Riprap detail shows apron dimensions and stone sizes.
- Filter fabric installed beneath all riprap.

10. **SLOPE AND/OR CHANNEL STABILIZATION:** **Application Types: II and III**

- All slopes designed and stabilized properly.
- All channels and diversion ditches must be able to handle the 10-year storm event with non-erosive velocities during construction and post-construction.
- Rock check dams provided in temporary diversion.
- Installation detail for erosion control blanket (ECB) or turn reinforcement matting (TRM) if ECBs or TRMs to be used.
- Slope drains provided where concentrated flows discharge onto a fill slope.
- For all slopes steeper than 1.5:1, identification of stabilization practice (e.g., ECB, TRM).
  - Note: Measures, in addition to grassing or hydroseeding, 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, a ten (10) foot buffer is recommended for construction and maintenance.

11. **UTILITY/LINEAR LINES:** **Application Types: II, III, and Utility**

- Limits of disturbance include areas disturbed for water, sewer, gas, and electric line installation.
- Check for coverage by SCDHEC on utility company and for coordination with permit holder.

12. **SEDIMENTOLOGY:** **Application Types: II and III**

- BMPs should be properly placed (silt fence, inlet protection, construction entrance, rip-rap at outfalls, check dams etc.).
- Trapping efficiency calculations showing that all sediment basins/ traps or other BMPs are capable of achieving a sediment trapping efficiency of eighty (80) percent for suspended solids or 0.5 ML/L peak settable solids concentration, which ever is less. The efficiency shall be calculated for disturbed conditions for the ten (10) year twenty-four (24) hour design event.
- Sediment basins provide storage for the ten (10) year, twenty-four (24) hour storm event for disturbed conditions if ten (10) acres or more drain to a common point (stream, lake, property line, etc.).
- Sediment traps only used for drainage areas of less than five (5) acres.
- Trapping efficiency calculations should be complete, specifying methods, assumptions, and results.
- Sediment basins and traps designed for total area draining to them.
- Drainage area map should outline the area draining to each basin/trap.
- Copies of any figures used to determine V_{15} and trapping efficiencies. The Design Aids in SCDHEC (2003) can be used for these calculations.
- 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.
- Clean-out stake, marked at ½ the designed sediment storage depth, provided in all sediment basins/sediment traps.
- Clear cutting (including tree stump removal) is limited to ten (10) acres.
- Construction schedule with timeline for each activity.

  Note: SCDHEC (2003) and SCDHEC (2005) provide information on the design of these and other devices.

  Note: The Design Aids in SCDHEC (2003) cannot be used to determine trapping efficiencies for structures in series. If the flow for the ten (10) year, twenty-four (24) hour storm for construction conditions overtops the structure or the structure's spillway, then the Design Aids cannot be used. If multiple soil types are in the area draining to the structure, then the soil type with the smallest D_{15} for the appropriate depth should be used to determine the settling velocity, V_{15}; an average D_{15} should not be used.

13. **WATERS-OF-THE-STATE, INCLUDING WETLANDS:** **Application Types: ALL**

- Delineation of all Waters of the State (WoS) located on the site, including wetlands, shown and labeled on plans.
- If impacts to WoS, outlined areas of impacts and labeled that no work can begin in this area until all necessary USACE permits and SCDHEC 401 certifications have been obtained.
- Double row of silt fence provided in all areas where a fifty (50) foot undisturbed buffer cannot be maintained between the disturbed area and the WoS.
- Minimum ten (10) foot maintenance buffer provided between last row of silt fence and WoS; or, if buffer not provided, then statement from P.E. on plans indicating how silt fence will be installed and maintained without impacts to WoS.

  Note: If there are proposed impacts to WoS, then applicant must contact the UCACE (866-329-8187) and/or S.C. DHEC Water Quality Certification,

Standards & Wetlands Programs Section (803-898-4300) to determine additional requirements before submitting this 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 USACE permit is required for construction of a permanent stormwater management structure, County permit coverage cannot be granted until all applicable state and federal permits have been obtained.

Note: A 50-foot buffer between a sediment trap/basin and Waters of the State and wetland areas is recommended.

14. **SPECIAL PROTECTION AREAS: Application Types: II and III**

- 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.
- Qualitative and quantitative assessment (described in Section 3.4C of SCR100000), if nearest WQMS is listed on the 2006 303(d) List of Impaired Waters and if site's stormwater construction discharges contain the pollutant of impairment and if the site disturbs 25 or more acres.
- Evaluation of selected BMPs if nearest WQMS listed on the 2006 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.
- If an Approved TMDL has been developed for the nearest WQMS and if the site's stormwater construction discharges contain the pollutant of impairment show that measures and controls on the SWPPP met assumptions and requirements of TMDL (may need to contact DHEC Watershed Manager for assistance).

15. **POST-CONSTRUCTION MAINTENANCE PLAN: Application Types: II and III**

- Signed agreement from a responsible party accepting ownership and maintenance of the stormwater management structures (operating permit).
- Description of maintenance plan to be used.
- Schedule of maintenance procedures, including time to replacement.
- Detailed or manufacturer-specific maintenance items for proprietary control devices (oil-water separators, etc.), underground detention structures, and non-traditional stormwater controls (constructed wetlands, bioretention, etc.).
- Typical maintenance items to be addressed:
    - Grass to be mowed.
    - Trees to be removed.
    - Trash to be removed from within and around the pond outlet structure and outlet pipes to be cleaned, inspected, and repaired, sediment accumulation to be removed from pond(s).
    - Energy dissipator to be cleaned and repaired.
    - Pond bottom to be regraded to provide proper drainage towards the outlet discharge point and/or energy dissipater to be cleaned and repaired.
    - Emergency spillway, if applicable, to be inspected and erosion repaired on side slopes, if present.
    - The Public Works Director must be notified in writing of any changes in maintenance responsibility for the stormwater devices at the site (include this statement in agreement).

- Specific maintenance items particular to more complex structures.

16. **ACCESS:** **Application Types: ALL**

- Project layout has considered access for maintenance and inspection during and after construction.

17. **DETENTION WAIVER:** **Application Types: II and III**

- If the 2- and 10-year post-development flow rates exceed the pre-development rates, waivers from detention may be granted in accordance with Chapter 2 on a case-by-case basis.
- Justification should be provided in a separate written request and demonstrate that:
  - The proposed project will have no significant adverse impact on the receiving natural waterway or downstream properties; or
  - The imposition of peak control requirement for rates of stormwater runoff would aggravate downstream flooding.
- Waiver signed by the project's Professional Engineer.
- Waiver from water quality criteria is not allowed, however, another equivalent method or criteria will be reviewed (applicant should provide all the necessary information to make a decision).

III CONSTRUCTION PLANS **Application Types: II and III**

- One (1) complete sets of plans and one (1) complete set of engineering calculations. One (1) complete set should come to Public Works Director.
- One (1) additional set of plans and calculations. Ask for one additional set (two [2] for municipalities) once review is complete.

1. **GENERAL ITEMS:**

- Prefer 24" x 36" sheets.
- Engineer stamp and signature on every sheet.
- Engineering firm's Certificate of Authorization seal on grading plan.
- Correct scale and north arrow.
- Existing and proposed contours are to be tied to a known datum, no **assumed** elevations (one (1) foot interval is the minimum).
- Lot layout.
- Property lines, adjacent landowners' names, and land use conditions (locate houses, driveways, etc. onsite/offsite), critical or protected area.
- Legend.
- Existing and proposed contours for entire disturbed area and off-site areas.
- Limits of disturbed area.
- Delineation of waters of the state, including wetlands with letter from US Army Corps of Engineers, if applicable.
- Easements and any offsite easements that will be used.
- Road profiles with existing and proposed ground elevations.
- Construction sequence (include implementation of all stormwater and sediment controls in the first phase of construction).
- Locations of all temporary and permanent control measures.
- Details for all temporary and permanent control measures.
- Grassing and stabilization specifications.

- Construction entrance/exit.
- Location map.
- Individual lot erosion control plan (applicable to subdivisions).
- Revision block utilized.

2. **STORMWATER/DRAINAGE SHEETS**
   - Prefer 24" x 36" sheets.
   - Provide drainage area map for existing and proposed conditions, outlining delineated sub-basins, sub-basin characteristics (watershed identifier, curve number, area length, slope), and the areas draining to all BMPs on site. Off-site drainage areas should be included.
   - Labeling should be consistent with the technical report.

   Conveyance Profiles
   - Indicate high and low points for the site.
   - Catch basin locations should be outside intersection curve radii, uphill of intersection.
   - Easements for storm drainage.
   - Twenty (20) foot wide maintenance shelf around entire pond for Charleston County maintenance.
   - Access road to pond, dedicated with pond.
   - Discharge pipes greater than twenty-four (24) inch require headwall with wing walls.
   - Label all storm drainage structures.
   - Water surface elevation in pond/BMPs for all necessary storm events.
   - Cut/Fill volumes for the site.
   - Utility crossings (water, sewer, storm drainage) to have one foot of cover minimum.
   - Fifteen (15) inch minimum pipe size (no decreases in pipe size in the downstream direction).
   - 0.1% minimum pipe slope.
   - 20% maximum pipe slope.
   - Minimum fall across boxes of 0.1-feet.
   - Crown elevation of inlet pipes equal or greater than crown elevation of outlet pipe.
   - Pre-cast storm drainage structures with knock out panels can be no greater than six (6) feet in depth. Pre-cast pipe openings preferred. Knockout panel box not used in depths which exceed six (6) feet deep. Deeper boxes shall be hand-built or use approved pre-cast. Steps required for boxes greater than four (4) feet deep. Minimum inside box measurements are 3'x3'.
   - Label calculated design flows on each pipe.
   - Hydraulic grade lines on profiles of storm pipe.
   - Existing and proposed grade on profiles of storm pipe.
   - Catch basins field staked to ensure proper alignment with the street and gutter.

3. DETAILS
   - Curb (rolled, barrier, expulsion).
   - Typical road cross section(s).

- Silt fence.
- Inlet protection.
- Lot-to-lot sediment and erosion control.
- Headwalls.
- Rip-rap apron.
- Construction entrance.
- Swale/ditch.
- Typical detail for all BMPs (sediment traps, ponds, water quality devices, etc.).
- Catch basins, manholes, junctions, etc.

4. **STANDARD NOTES**:
    - Notes as required by state and federal agencies and any additional notes for compliance with Charleston County requirements.

APPENDIX F

INSPECTION CHECKLIST

Below are the items that County inspectors will address during each site inspection.

1. Are contractors maintenance logs available?
2. Are contractor's set of plans available on-site?
3. What is the current status of construction: beginning, middle, nearing completion, complete?
4. Have areas been clear cutting? If so, does the total areas exceed the 10-acre limit?
5. Are there any waterbody impacts (sediment, oil, grease, etc.)?
6. Are there any roadway impacts (sediments, damaged asphalt, etc.)?
7. Have any adjacent properties been negatively impacted?
8. If so, what is the extent of the impacts ?
9. Are there any air/dust impacts?
10. Are all tree protections in place and maintained?
11. Enter any additional comments on tree protection.
12. Are all channels stabilized?
13. Enter any additional comments on stabilized channel.
14. Is there any evidence of channel erosion?
15. Enter any additional comments on channel erosion.
16. Are all inactive areas stabilized?
17. Are all inactive slopes stabilized?
18. Are all inactive stock piles stabilized?
19. Enter any additional comments on stabilization needs.
20. Are all erosion prevention and sediment control (EPSC) devices located properly?
21. Do the EPSC devices provide adequate protection?
22. Are there any unneeded controls or are there any that need to be removed (closeout)?

23. Enter any additional comments on EPSC devices.

24. Are there any instances of erosion across the site?

25. If so, what is the percentage?

26. Enter the reinspection date based on condition of the site and off-site impact.

27. Enter any additional comments, as necessary.

28. Is any enforcement action necessary?

APPENDIX G

DIMENSIONLESS FIRST FLUSH CALCULATIONS AND TABLES

Instructions

Calculate the time of concentration, t_c.

Calculate the dimensionless max retention factor, S*, using the following equation.

$S^* = S/P_{24}$. P_{24}. is the precipitation depth in inches for the 10-year, 24-hour event. For Charleston, per Table 3.1 is 6.6 inches. The Max retention factor, S, is calculated per TR-55.

Determine the unit conversion variable, k_q, from the table below.

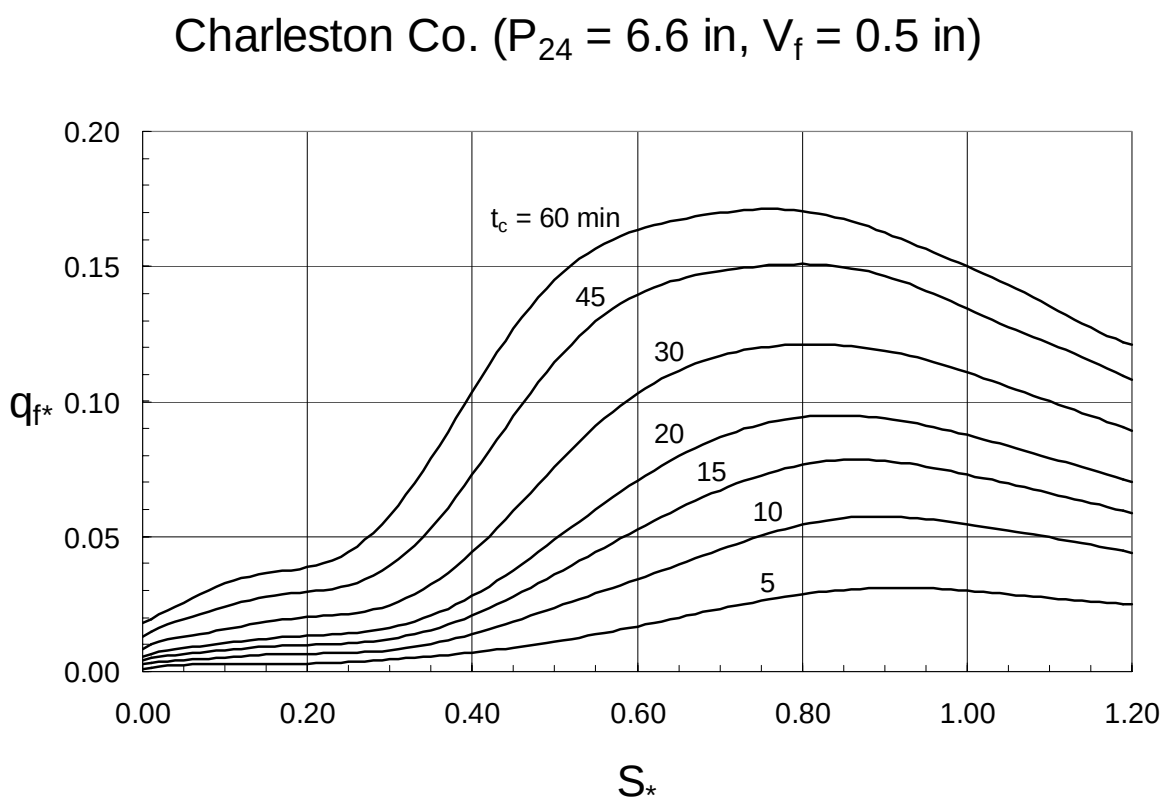
Units of the Following Parameters			K_q for q in ft^3/sec
P_{24}	A	t_c	
Ft	ft^2	sec	1
in	ac	min	60.5
in	ac	hr	1.008
in	mi^2	min	38720
in	mi^2	hr	1.008
mm	ha	min	5.886
mm	ha	hr	0.09810
mm	km^2	min	588.6
mm	km^2	hr	9.810

Determine the water quality volume (WQV) you need for your project.

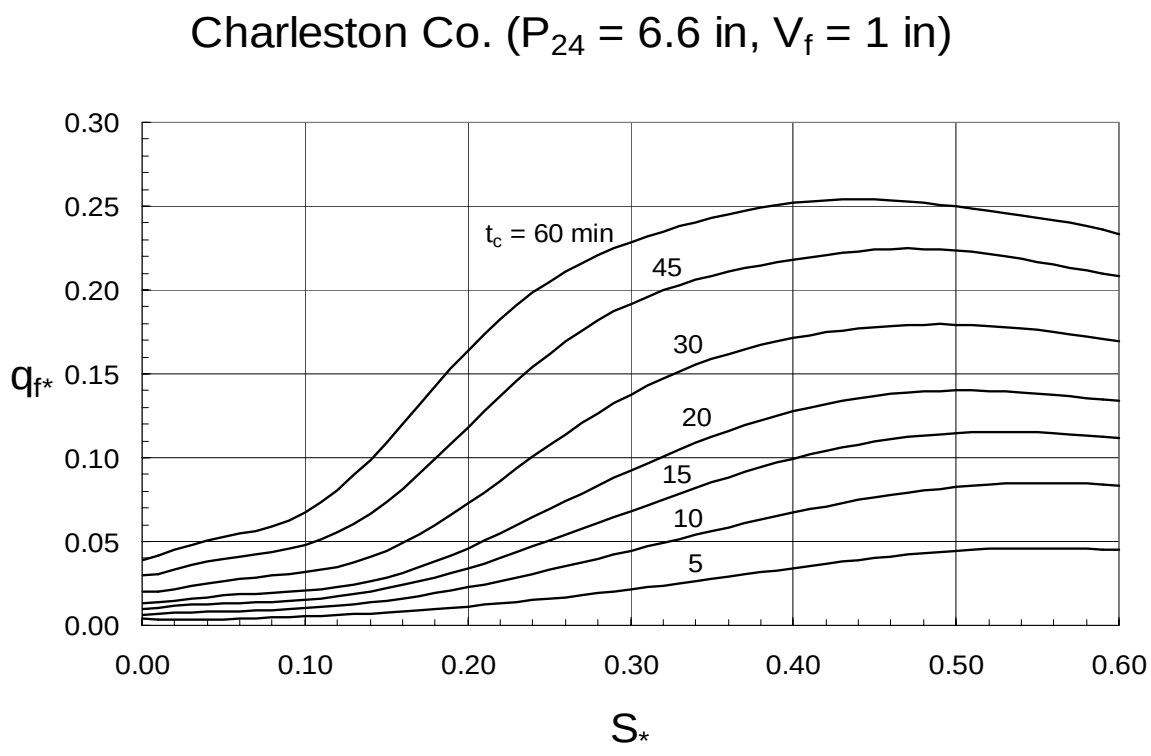
- Wet ponds should be designed using ½ inches as the WQV.
- Dry ponds should be designed using 1 inch as the WQV.
- If the project is within 1,000 feet of a shellfish bed, the WQV is 1 ½ inches.

Determine the dimensionless first flush flow rate, q_{f*}, from the graph below.

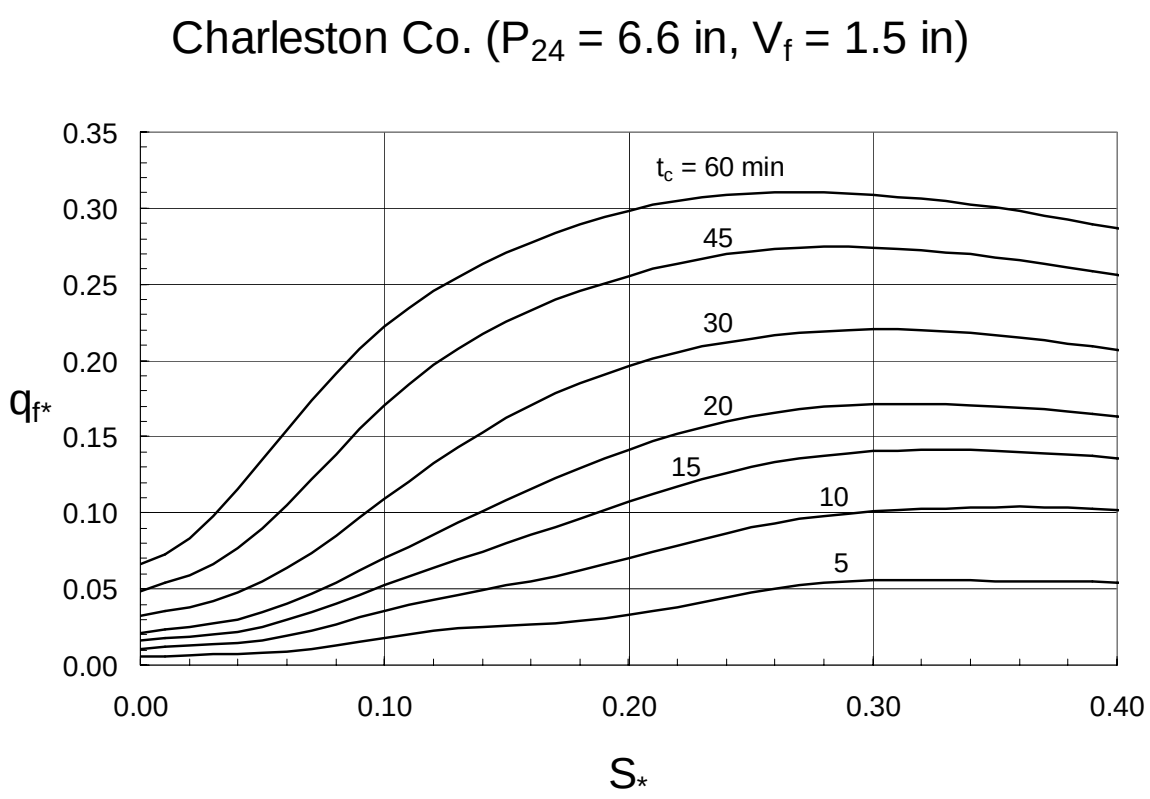
For WQV = ½ inches:



For WQV = 1 inch:



For WQV = 1½ inches:



Calculate the first flush flow rate, q_f , per the following equation.

$$q_f = \frac{k_q P_{24} A q_{f*}}{t_c}$$

where:

A = contributing area (ac). The time of concentration should be in units of minutes.

APPENDIX H

ENFORCEMENT FORMS

Public Works Department
Stormwater Division

CORRECTIVE ORDER

Date:

Name
Address
City, State Zip Code

Project:_____
Permit No._____

This correction order serves as a warning concerning activities on your above-mentioned site.

This warning is based on the results of a Charleston County inspection on _____. A verbal warning was also given to _____ at the time of the inspection. A copy of our inspection report detailing the deficiencies enclosed with this warning.

You have until _____ to correct the deficiencies noted on the inspection report. At that time our inspector will re-visit your site. Failure to comply with this warning is considered a violation of the Charleston County Stormwater Ordinance and will result in the issuance of a **Notice of Violation and/or Stop Work Order**.

If you have any questions concerning this warning you may contact our office at 843-202-7600.

Signed by: _____

Printed Name: _____

Public Works Department
Stormwater Division

NOTICE OF VIOLATION

Date:

Name
Address
City, State Zip Code

Project:_____
Permit No._____

You are hereby served notice that you are in violation of Charleston County's Stormwater Management, Sediment and Erosion Control Ordinance at the above-mentioned site.

This violation is due to failure to comply with a correction order issued on _____ and the results of a Charleston County follow-up inspection completed on _____. A copy of our inspection report is enclosed with this violation.

These deficiencies noted on the inspection report must be corrected within **three (3) working days** of the date of this letter. Failure to comply with this Notice of Violation will result in an immediate **Stop Work Order** issued for your site and/or a **civil penalty in accordance with the Stormwater Management Ordinance for each deficiency.**

If you have questions concerning this violation you can contact our office at 843-202-7600.

Signed by: _____

Printed Name: _____

Public Works Department
Stormwater Division

NOTICE OF VIOLATION-STOP WORK ORDER

Date:

Name
Address
City, State Zip Code

Project:_____
Permit No._____

You are hereby served notice that you are in violation of Charleston County's Stormwater Management, Sediment and Erosion Control Ordinance at the above-mentioned site. A "**STOP WORK**" order is being posted on this property effective **IMMEDIATELY.**

This violation is due to failure to comply with a Notice of Violation issued on _____ and the results of a Charleston County follow up inspection completed on _____. A copy of our inspection report is enclosed with this violation.

Your site must be inspected by a Charleston County Stormwater Management Inspector prior to resuming any construction activity. Any activity other than work leading to compliance with this **Stop Work Order** will result in the issuance of a **civil penalty in accordance with the Stormwater Management Ordinance for each deficiency and/or thirty (30) days in jail**.

If you have questions concerning this violation you can contact our office at 843-202-7600.

Signed by: _____

Printed Name: _____

APPENDIX I

CHARLESTON COUNTY
ORDINANCE #1518

Ord. #1518

adopted 8/14/07

AN ORDINANCE

PROVIDING FOR THE CREATION OF A STORMWATER MANAGEMENT PROGRAM FOR CHARLESTON COUNTY; AUTHORIZING THE ESTABLISHMENT OF PERMITTING STANDARDS AND PROCEDURES; PROVIDING FOR COORDINATION, IMPLEMENTATION AND ENFORCEMENT OF THIS ORDINANCE AND THE STANDARDS AND PROCEDURES OF THE PROGRAM, AND OTHER MATTERS RELATED THERETO.

TABLE OF CONTENTS

CHARLESTON COUNTY STORMWATER MANAGEMENT ORDINANCE

DIVISION 1 GENERAL PROVISIONS

Sec. 1.1 Title.

This Ordinance shall be known as the “Charleston County Stormwater Management Ordinance”.

Sec. 1.2 Authority.

This Ordinance is adopted pursuant to the authority conferred upon Charleston County by applicable Federal and State laws and regulations.

Sec. 1.3 Jurisdiction.

The boundaries and jurisdiction of this Ordinance shall encompass those portions of the unincorporated Charleston County, as they may exist from time to time and may include additional areas lying inside those jurisdictions within Charleston County as approved by Charleston County Council.

Sec. 1.4 Findings.

The Charleston County Council makes the following findings:

(a) Uncontrolled stormwater runoff may have significant, adverse impact on the health, safety and general welfare of Charleston County and the quality of life of its citizens. The potential impacts of uncontrolled stormwater can lead to the degradation of water quality and general riverine ecosystem through excessive or illegal pollutant discharges, erosion, and flooding thereby limiting or removing its designated and potential uses.

(b) Charleston County is required by federal law to obtain a National Pollutant Discharge Elimination System (NPDES) permit from the South Carolina Department of Health and Environmental Control (SCDHEC) for stormwater discharges from the Charleston County Stormwater system. The NPDES permit requires Charleston County to impose controls to reduce the discharge of pollutants in stormwater to the maximum extent practicable using management practices; control techniques and system, design and engineering methods; and such other provisions which are determined to be appropriate for the control of such pollutants.

(c) Additionally, certain facilities that discharge stormwater associated with an industrial activity, including construction activities, are required by the South Carolina Code of Regulations 61-9-122 to obtain NPDES permits for construction activities.

Sec. 1.5 Purpose.

(a) It is the purpose of this Ordinance to protect, maintain, and enhance water quality and the environment of Charleston County and the short-term and long-term public health, safety, and general welfare of the citizens of Charleston County. This Ordinance is also designed to minimize property damage by establishing requirements and procedures to control the potential adverse effects of increased stormwater runoff and related pollutant loads associated with both future development and existing developed land. Proper management of stormwater runoff will further the purpose of this Ordinance to insure a functional drainage system, reduce the effects of development on land and stream channel erosion, attain and maintain water quality standards, enhance the local environment associated with the drainage system, reduce local flooding, maintain where necessary pre-developed runoff characteristics

of the area in terms of flow rate, volume and pollutant concentration, and facilitate economic development while mitigating associated pollutant, flooding, erosion, and drainage impacts.

(b) It is further the purpose of this ordinance to direct the development and implementation of a Stormwater Management Program (SWMP) and to establish authority which authorizes or enables Charleston County at a minimum to:

(1) Comply with State and Federal requirements related to stormwater management developed pursuant to the Clean Water Act;

(2) Prohibit illicit discharges to Charleston County stormwater systems and facilities and receiving waters;

(3) Control to the maximum extent practicable the discharge to Charleston County stormwater systems and facilities and receiving waters of spills, dumping, or disposal of materials other than stormwater;

(4) Address specific categories of non-stormwater discharges and similar other incidental non-stormwater discharges listed in the SWMP;

(5) Require erosion and sediment controls to protect water quality on all applicable new and re-development projects both during and after construction;

(6) Where necessary, require stormwater discharge rate and volume control during and following development, redevelopment, or construction;

(7) Define and implement procedures of site plan review and site inspection of all applicable construction projects within Charleston County;

(8) Control the discharge from Charleston County stormwater systems and facilities and receiving waters of pollutants in such quantity that water quality standards are met or to otherwise address post-construction, long-term water quality. This includes the necessary means needed to comply with State and Federal regulations regarding stormwater management quantity and quality;

(9) Define procedures for addressing citizen complaints of stormwater-related issues within Charleston County;

(10) Provide for adequate long term operation and maintenance of existing stormwater systems and facilities.

(11) Carry out inspection, surveillance and monitoring procedures necessary to determine compliance and noncompliance with permit conditions including the prohibition on illicit discharges to the Charleston County stormwater system and receiving waters;

(12) Encourage the creation of stream buffers and preservation of natural spaces to provide areas that could be used for flood storage, stormwater treatment and control, and recreation. Such areas may be required in special protection areas needed to protect, maintain, or enhance water quality and protect property from flooding problems;

(13) Develop, implement, and enforce action plans to address pollutant load reductions required in impaired waterbodies and to work towards compliance with Total Maximum Daily Loads (TMDLs) established by EPA or SCDHEC and to work towards meeting water quality standards.

(14) Enable enforcement of all of the authorizations noted herein.

(c) It is the purpose of this Ordinance to establish review authority for the Charleston County Public Works Director to provide consistency of construction projects with the Charleston County SWMP.

Sec. 1.6 Construction and Scope.

(a) The Public Works Director shall be primarily responsible for the coordination and enforcement of the provisions of this Ordinance and the SWMP.

(b) The application of this Ordinance and the provisions and references expressed herein shall be the minimum stormwater management requirements and shall not be deemed a limitation or repeal of any other ordinances of Charleston County or powers granted Charleston County by the State of South Carolina statutes, including, without limitation, the power to require additional stormwater management requirements, as defined by Section 3.1(a)(3). If site characteristics on new development, redevelopment, and existing developments indicate that complying with these minimum requirements will not provide adequate designs or protection for real property, residents, or the environment, the property owner, operator, or person responsible for land disturbing activities is required to provide additional and appropriate management practices, control techniques, system design, and engineering methods to attain an adequate level of protection, in accordance with the Charleston County Stormwater Program Permitting Standards and Procedures Manual (Manual).

Sec. 1.7 Severability.

Should any word, phrase, clause or provision of this Ordinance be declared invalid or unconstitutional by a court of competent jurisdiction, such declaration shall not affect this Ordinance as a whole or any part hereof except that specific provision declared by such court to be invalid or unconstitutional.

Sec. 1.8 Reserved.

Sec. 1.9 Relationship with other Laws, Regulations and Ordinances.

Whenever the provisions of this Ordinance impose more restrictive standards than are required in or under any other law, regulation or ordinance, the requirements contained in the provisions of this Ordinance shall prevail. Whenever the provisions of any other law, regulation or ordinance impose more restrictive standards than are required in the provisions of this Ordinance, the requirements of such law, regulation or ordinance shall prevail.

Sec. 1.10 Amendments.

Charleston County Council may adopt additional regulations or resolutions to implement this Ordinance, implement the SWMP, or to otherwise further the goal of protecting the quality of the waters which the Charleston County stormwater system drains into.

Sec. 1.11 Reserved.

Sec. 1.12 Definitions.

“Applicant” is a person, firm, governmental agency, partnership, or any other entity who seeks to obtain approval under the requirements of this Ordinance and who will be responsible for the land disturbing activity and related maintenance thereof.

“As-built drawings” are revised construction drawings that depict final installed location of the new facilities on a project, including the stormwater system. This term and “record drawings” shall be synonymous.

“Best Management Practices (BMPs)” are any structural or non-structural measure or facility used for the control of stormwater runoff, be it for quantity or quality control. BMPs also includes schedules of activities, prohibitions of practices, maintenance procedures, treatment requirements, operating procedures, and other management practices to control site runoff, spillage or leaks, sludge or waste disposal, drainage from raw material storage, or otherwise prevent or reduce the pollution of waters of the State.
“Charleston County Administrator” means the Administrator of Charleston County, South Carolina

“Construction” or “Construction Activity” is activity involving clearing, grading, transporting, filling, or any other activity which causes land to be exposed to the

danger of erosion, or which might create an alteration to and existing drainage way or other component of the stormwater system or facility.

“Construction Activity Application” means the application, set of drawings, specifications, design calculations, SWPPP, and other documents necessary to demonstrate compliance with this Ordinance.

“Director” means the Public Works Director of the Charleston County Public Works Department.

“Developer” means any person, or others who acts in his own behalf, that is required to submit an application for approval to disturb land or encroachment and is thereafter responsible for maintaining compliance with this Ordinance and conditions of the approved application.

“Erosion” means the general process by which soils or rock fragments are detached and moved by the action of wind, water, ice, and gravity.

“Easement” is an authorization by a property owner to the general public, a corporation, or a certain person or persons for the use of any designated part of his property for a specific purpose.

“Flood/flooding” is a temporary rise in the level of water which results in the inundation of areas not ordinarily covered by water.

“Illicit Connection” means a connection to a Charleston County stormwater management system or facility which results in a discharge that is not composed entirely of stormwater runoff except discharges pursuant to an NPDES permit (other than the NPDES MS4 permit for Charleston County).

“Improper Disposal” means any disposal other than through an illicit connection that results in an illicit discharge, including, but not limited to the disposal of used oil and toxic materials resulting from the improper management of such substances.

“Illicit Discharge” or “Illegal Discharge” means any activity which results in a discharge to a Charleston County stormwater management system or facility or receiving waters that is not composed entirely of stormwater except (a) discharge pursuant to an NPDES permit (other than the NPDES for Charleston County) and (b) discharges resulting from the fire-fighting activities.

“Maintenance” means any action necessary to preserve any stormwater system component, including conveyances, facilities and BMPs in proper working condition, in order to serve the intended purposes set forth in this ordinance and to prevent structural failure of such components.

“MS4” means municipal separate storm sewer system and includes all conveyances

or system of conveyances (including roads with drainage systems, highways, right-of-way, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, storm drains, detention ponds, and other stormwater facilities) which inlets, transports, stores, or treats stormwater runoff and which is (a) owned or operated by Charleston County; (b) designed or used for collecting or conveying stormwater; (c) not a combined sewer system; and (d) not part of a Publicly Owned Treatment Works (POTW).

“New Development” or “Re-Development” means any of the following actions undertaken by any person, including, without limitation, any public or private individual or entity:

(a) division or combination of lots, tracts, or parcels or other divisions by plat or deed;

(b) the construction, installation, or alteration of land, a structure, impervious surface or drainage facility;

(c) clearing, scraping, grubbing or otherwise significantly disturbing the soil, vegetation, mud, sand or rock of a site, or changing the physical drainage characteristics of the site; or

(d) adding, removing, exposing, excavating, leveling, grading, digging, burrowing, dumping, piling, dredging, or otherwise disturbing the soil, vegetation, mud, sand or rock of a site.

“NPDES” means National Pollutant Discharge Elimination System.

“NPDES Permit” means the NPDES permit for stormwater discharges issued by SCDHEC pursuant to the Clean Water Act and the federal stormwater discharge regulations that allows for restricting pollutant loads as necessary to meet water quality standards.

“Operator” means the person who has operational control of the real property, including an operator or person who is in charge of any activity related to land disturbance, construction, or post- construction stormwater quality or quantity.

“Outfall” or “Discharge Point” means the point where a Charleston County stormwater management system or facility, or other municipal and private system, discharges into waters of the State or United States.

“Owner” means the property owner, or any person who acts in his own behalf, that submits an application for approval to disturb land or vegetation or for encroachment, and the person, if so designated by default or on legal documents, as the responsible party for maintenance of a stormwater system(s) and facility(s).

“Person” means any and all persons, natural or artificial and includes any individual,

association, firm, corporation, business trust, estate, trust, partnership, two or more persons having a joint or common interest, state or federal or an agent or employee thereof, or any other legal entity.

“Pollutant” means anything which may cause or contribute to violation of water quality standards, including but not limited to sediment, bacteria, nutrients, dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water.

“Property Owner” means the record owner of the real property.

“Public Works Director” means the director of the Department of Public Works of Charleston County, South Carolina or an authorized representative or designees.

“Receiving Waters” means any lakes, bays, sounds, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic Ocean within the territorial limits of the State of South Carolina, and all other bodies of surface or underground water, whether natural or artificial, public or private, inland or coastal, fresh or salt.

“Regulation” means any regulation, rule or requirement prepared by and/or adopted by the Charleston County Council pursuant to this Ordinance.

“Spill” means any accidental or purposeful discharge of any pollutants, hazardous materials, or other substance which is otherwise potentially detrimental to the designated use of a receiving water.

“SWMP” means the Charleston County Stormwater Management Program, which may describe the components to be used by Charleston County to control stormwater discharges, address flooding, and meet water quality standards.

“Stormwater” means stormwater runoff, snowmelt runoff, and surface runoff and drainage.

“Stormwater Management” means the collection, conveyance, storage, treatment and disposal of stormwater runoff in a manner to meet the objectives of this Ordinance and its terms, including, but not limited to, measures that control the increased volume and rate of stormwater runoff and water quality impacts caused by man-made changes to the land.

“Stormwater Systems and Facilities” means those natural and man-made channels, swales, ditches, swamps, rivers, streams, creeks, branches, reservoirs, ponds, drainage ways, inlets, catch basins, pipes, head walls, storm sewers, lakes and other physical works, properties, and improvements which transfer, control, convey, or

otherwise influence the movement of stormwater runoff, be it for quantity or quality control.

“TMDL means the Total Maximum Daily Load which is the regulatory value developed to represent the amount of a pollutant that a water body can incorporate while meeting water quality standards. TMDL is further defined as the pollutant load developed by the Enviroanmental Protection Agency (EPA) and SCDHEC that designates the permitted amount of discharge allowed to flow into a water body of the State or United States.

“Variance” means the modification of the minimum stormwater management requirements contained in this Ordinance and the SWMP for specific circumstances where strict adherence to the requirements would result in unnecessary hardship and not fulfill the intent of this Ordinance.

“Watercourse” is a conveyance used to transport runoff from one location to the next.

“Watershed” is a drainage area or drainage basin contributing to the flow of stormwater into a receiving watercourse or water body.”

“Water Quality” means those characteristics of stormwater runoff that relate to the physical, chemical, biological, or radiological integrity of water.

“Water Quantity” means those characteristics of stormwater runoff that relate to the rate and volume of the stormwater runoff.

DIVISION 2ORGANIZATION AND ADMINISTRATION

Sec. 2.1 Charleston County Stormwater Management Program (SWMP).

The SWMP which has been developed by Charleston County to implement the purposes of this Ordinance shall serve as the basis for directing Charleston County’s efforts to control stormwater runoff and discharge. The SWMP is incorporated by reference and is hereby a part of this Ordinance. The SWMP requirements are to be complied with and shall be enforced in accordance with the provisions of this Ordinance.

Sec. 2.2 Coordination with Other Agencies.

The Charleston County Public Works Director may coordinate Charleston County’s activities with other Federal, State, and local agencies, which manage and perform functions relating to the protection of receiving waters, through a written agreement with those other agencies. Authority not expressly reserved for other agencies or restricted by statute is placed with the Public Works Director for the protection and preservation of receiving waters. The Public Works Director should coordinate with Federal, State and local agencies having jurisdiction of those receiving waters.

Sec. 2.3 Right-Of-Entry.

(a) The Public Works Director may with the consent of the property owner enter upon the real property of any Person subject to this Ordinance. The Public Works Director shall be provided immediate access to the necessary portion of the real property for the purposes of inspecting, monitoring, sampling, inventorying, examining and copying of records, and performing any other duties necessary to determine compliance with this Ordinance.

(b) Where the property owner or operator has security measures in place requiring proper identification and consent before entry upon the real property, the property owner, operator, or person shall make the necessary arrangements with the necessary parties so that the Public Works Director will be permitted to enter on to the property without delay for the purposes of performing such responsibilities identified in (a).

(c) In addition to any other remedies allowed by law, the Public Works Director shall seek the consent of the property owner before entry upon the real property. If such consent is denied or unable to be obtained from the property owner, operator or person, in addition to any other remedies allowed by law, the Public Works Director shall by affidavit based upon the reasonable suspicion that a violation exists, obtain an ex parte order from a court of competent jurisdiction to enter upon the property for the limited purposes stated in (a).

DIVISION 3 STORMWATER QUANTITY AND QUALITY MANAGEMENT REQUIREMENTS

Sec. 3.1 Regulations.

(a) The Public Works Director shall be responsible for the coordination, implementation, and enforcement of this Ordinance and the SWMP, as well as the long-term management of the Charleston County's drainage systems. Without limitation, the Public Works Director shall have the following authority:

(1) To issue any approval, certification, or license that may be required to comply with this Ordinance.

(2) To deny a facility connection to Charleston County stormwater systems or facilities or discharge to waters of the State if State, Requirements and this Ordinance are not met.

(3) To create the Charleston County Stormwater Program Permitting Standards and Procedures Manual. The Manual may be used to convey

design and engineering standards, construction management processes and procedures, and other aspects necessary for compliance with this Ordinance.

The Charleston County Administrator is authorized to approve the adoption and subsequent revisions of the Manual.

(4) To require the submittal of an application for all applicable construction activities that alter any portion of land for development or alter the storm drainage characteristics of the land.

The application shall include the information required to control stormwater pollutants and other components in accordance with the Manual.

(5) To require the development and enforcement of a Stormwater Pollution Prevention Plan (SWPPP) for all new and re-development projects.

(6) To require proper long-term maintenance of stormwater management systems and facilities through the use of an operating permit or other applicable measures in accordance with the manual.

(7) To approve construction activities and to require as a condition of such approval, structural or non-structural controls, practices, devices, operating procedures, or other mechanisms to protect public and private property from flooding and erosion and attain TMDL pollutant load reductions and water quality standards.

(8) To require performance bonds as necessary of any Person to secure that Person's compliance with approvals, certificates, licenses, or authorizations issued by the Public Works Director pursuant to this Ordinance, the SWMP, and Federal and State laws. The Public Works Director shall develop a process that organizes the closure of bonds and construction projects to accommodate phases of development and the transfer of the ownership of real property.

(9) To conduct all activities necessary to carry out the SWMP and other requirements included in this Ordinance and to pursue the necessary means and resources required to properly fulfill this responsibility.

(10) To require appropriate post construction best management practices and appropriate continued maintenance of those best management practices.

(11) To determine appropriate fees, to impose penalties, and to take necessary and appropriate actions to enforce this Ordinance.

(12) To require encroachment permits as necessary.

Sec. 3.2 Prohibitions and Exemptions.

No person shall (1) develop any land, (2) engage in any industry or enterprise, (3) construct, operate or maintain any landfill, hazardous waste treatment, disposal, or recovery facility, or any other industrial or related facility, (4) dispose of any hazardous material or toxic substance or other pollutant, or (5) prevent the transport of sediment and other pollutants associated with stormwater runoff beyond the real property boundary lines without compliance with this Ordinance.

In instances where an imminent threat to the health, safety, or general welfare of the public or the environment is suspected, the Public Works Director shall determine if immediate action is necessary. Such action may be taken with or without the consent of the owner, operator or person. If such consent is denied, the Public Works Director shall follow the provisions in Section 2.3 for entry upon the real property to remove such threat. In such instances, the owner, operator, or person shall reimburse Charleston County for any and all expenses associated with removal of such threat If the owner, operator or person fail to reimburse Charleston County for such expenses, the County may recover the expenses from the owner, operator, or person through any remedies under the law. Any costs associated with any collection effort by the County are in addition to the recovery of the expenses.

The following development activities are exempt from the provisions of this Ordinance.

(a) Land disturbing activities undertaken on forestland for the production and harvesting of timber and timber products and conducted in accordance with best management practices and minimum erosion protection measures established by the South Carolina Forestry Commission pursuant to Section 48-18-70 of the Code of Laws of South Carolina 1976, as amended.

(b) Activities undertaken by persons who are otherwise regulated by the provisions of Chapter 20 of Title 48, the South Carolina Mining Act. livestock, including beef cattle, sheep, swine, horses, ponies, mules, or goats, including the breeding and grazing of these animals; bees, fur animals, and aquaculture. The construction of an agricultural structure that requires the disturbance of one or more acres, such as, but not limited to, broiler houses, machine sheds, repair shops, coops, barns, and other major buildings shall require the submittal and approval of an application in accordance with the Manual prior to the start of the land disturbing activity.

(c) Land disturbing activities on agricultural land for production of plants and animals, including but not limited to: forages and sod crops, grains and feed crops, tobacco, cotton, and peanuts; dairy animals and dairy products; poultry and poultry products; livestock, including beef cattle, sheep, swine, horses,

ponies, mules, or goats, including the breeding and grazing of these animals; bees, fur animals, and aquaculture. The construction of an agricultural structure that requires the disturbance of one or more acres, such as, but not limited to, broiler houses, machine sheds, repair shops, coops, barns, and other major buildings shall require the submittal and approval of a Land Disturbance Application prior to the start of the land disturbing activity.

Sec. 3.3 Design and Engineering Standards.

Design and engineering standards must define the desired level of quality and performance for stormwater management systems on all applicable construction activities in order to meet the purpose of this Ordinance. The standards establish the minimum technical requirements needed to demonstrate compliance.

The Public Works Director is authorized to develop and adopt policies, criteria, specifications, and standards for the proper implementation of the requirements of this Ordinance, Federal and State laws and the SWMP; and to provide a sound technical basis for the achievement of stormwater management, including water quality and quantity objectives. These standards may be provided in the Manual.

It shall be the responsibility of the property owner, operator, or person responsible for land disturbing activities to provide adequate controls to meet the design and engineering standards provided in the Manual.

Sec 3.4 Construction Activity Approval Process.

An application for review and approval shall be made for all applicable construction activities. Applications required under this Ordinance shall be submitted in a format and in such numbers as required by the Public Works Director. Applications may be initiated by the property owner, operator, or person responsible for construction activities. Applications that meet the requirements of this Ordinance, the SWMP, and State and Federal regulations are considered complete. The application process and requirements to establish a complete application will be provided in the Manual.

Sec. 3.5 Charleston County Stormwater Program Permitting Standards and Procedures Manual (Manual).

The Manual may include design standards, procedures and criteria for conducting hydrologic, hydraulic, pollutant load evaluations, and downstream impact for all components of the stormwater management system. It is the intention of the Manual to establish uniform design practices; however, it neither replaces the need for engineering judgment nor precludes the use of information not submitted. Other accepted engineering procedures may be used to conduct hydrologic, hydraulic and pollutant load studies if approved by the Public Works Director.

The Manual will contain at a minimum the following components:

(a) Construction Activity Application contents and approval procedures;

(b) Construction Completion and Closeout processes;

(c) Hydrologic, hydraulic, and water quality design criteria (i.e., design standards) for the purposes of controlling the runoff rate, volume, and pollutant load. Suggested reference material shall be included for guidance in computations needed to meet the design standards;

(d) Information and requirements for new and re-development projects in special protection areas necessary to address TMDLs, known problem areas and other areas necessary to protect, maintain, and enhance water quality and the environment of Charleston County and the public health, safety, and general welfare of the citizens of Charleston County.

(e) Construction document requirements;

(f) Long-term Maintenance & Maintenance Plan

(g) Minimum easement requirements;

(h) Required and recommended inspection schedules and activities for all components of the stormwater management system, including construction-related BMPs.

The Manual will be updated periodically to reflect the advances in technology and experience

Sec. 3.6 Reserved.

Sec. 3.7 Maintenance, Construction, Inspection, and Notice of Termination (NOT).

Maintenance of the stormwater management system is critical for the achievement of its purpose of controlling stormwater runoff quantity and quality and providing for the public health, safety, and general welfare of the citizens of Charleston County.

(a) In accordance with the Manual, a maintenance plan for the stormwater management system shall be included in an application to perform a construction activity to cover activities to be conducted during and after construction. As part of the maintenance plan, the property owner, operator, or person of such system or facility shall agree to be responsible for keeping the system and facility in working order. The Public Works Director shall develop procedures to provide reasonable assurances that maintenance activities are performed in accordance with the Manual for both Charleston

County and privately maintained stormwater systems and facilities. The Public Works Director will provide the procedures for transferring maintenance responsibilities to another entity.

(b) The Public Works Director will define procedures for conducting site inspections.

(c) As part of any application to perform a construction activity, the applicant shall submit construction and BMP maintenance and inspection schedules, and long-term maintenance plan shall be covered by an operating permit for new stormwater management systems and facilities. Required and recommended schedules for BMP maintenance and inspection and long-term plans are provided in the Manual.

(d) If the construction is to be phased, no phase of the work, related to the construction of stormwater management facilities shall commence until the preceding phase of the work is completed in accordance with an approved application to perform a construction activity. The procedure for construction phases beginning and ending and what constitutes such conditions shall be submitted with the application.

(e) The applicant shall notify the Public Works Director before commencing any work, in accordance with the Manual, and upon completion of any phase or designated component of the site. Notification schedules shall be provided for in the Manual. All self-inspections, maintenance actions, BMP replacements, and changes to the approved application shall be documented and presented upon request to the Public Works Director.

(f) The NOT process as identified in the Manual must be completed by the Public Works Director prior to any of the following actions, as applicable:

(1) The use or occupancy of any newly constructed components of the site.

(2) Final acceptance of any road into the Charleston County road maintenance system or designation of road owner and associated stormwater management system.

(3) Release of any bond held by Charleston County if applicable.

(4) Approval and/or acceptance for recording of map, plat, or drawing, the intent of which is to cause a division of a single parcel of land into two or more parcels.

Sec. 3.8 Watercourse Protection.

Every owner, operator, or person responsible for any land disturbance activity on

property through which a watercourse passes shall keep and maintain that portion of the watercourse within the property free of trash, debris, and other obstacles that would pollute, contaminate, or retard the flow of water through the watercourse. In addition, the owner, operator, or person shall maintain existing privately owned structures within or adjacent to a watercourse, so that such structures will not interfere with the use, function, or physical integrity of the watercourse.

To assist in the compliance with State and Federal laws and regulations, the Public Works Director may develop special protection areas which require additional control of stormwater quality and quantity than provided by minimum design standards. Such areas may consist of watersheds corresponding to adopted TMDLs, known flooding problems and pollution impairments, or other areas necessary to protect, maintain, and enhance water quality and the environment of Charleston County and the public health, safety, and general welfare of the citizens of Charleston County. These areas may change with time as development continues and as Federal and State law demands.

New stormwater systems created as the result of any new and re-development project shall be connected in a manner so as not to degrade the integrity of any existing stormwater system, whether natural or manmade, and shall have demonstrate this to the Public Works Director, in accordance with the Manual. Discharge points shall be confined to connections with an existing stormwater system. When stormwater discharges are to flow into collection systems not owned and maintained by Charleston County, the owners of these systems shall maintain the right to disapprove new connections to their system.

Sec. 3.9 Notification of Spills.

The owner, operator, or person responsible for any land disturbance activity shall notify the Public Works Director of any known or suspected release of materials or discharges that are currently resulting in or may result in any illegal discharges of pollutants to an existing stormwater system.

DIVISION 4DETECTION AND REMOVAL OF ILLICIT CONNECTIONS AND DISCHARGES AND IMPROPER DISPOSAL

Sec. 4.1 Illicit Connections, Illicit Discharges and Improper Disposal.

(a) It is unlawful for any owner, operator, or person to connect any pipe, open channel, or any other conveyance system that discharges anything, except stormwater or other approved discharges into Charleston County's stormwater system or facility, or waters of the State.

(b) It is unlawful for any owner, operator, or person to continue the operation of any illicit connection regardless of whether the connection was permissible when constructed. Improper connections in violation of this Ordinance must

be disconnected and redirected, if necessary, to the satisfaction of the Public Works Director in compliance with Federal, State, or local agencies or departments regulating the discharge.

(c) It is unlawful for any owner, operator, or person to throw, drain, or otherwise discharge to any existing stormwater system, the waters of the State or to cause, permit, or allow a discharge that is composed of anything except stormwater or other discharges authorized by the Public Works Director.

(d) The Public Works Director will develop procedures for detecting, tracking, and eliminating illicit discharges and improper disposals to the stormwater system.

(e) After a reasonable determination is made by the Public Works Director that the discharge is not a significant source of pollution, the Public Works Director may require controls for or exempt from the prohibition provisions in (a), (b), and (c) above the following:

(1) Unpolluted industrial cooling water, but only under the authorization and direction of the Public Works Director and if appropriate Industrial NPDES permit is in place.

(2) Water line flushing, diverted stream flows, rising ground waters, and uncontaminated pumped ground waters, and uncontaminated ground water infiltration.

(3) Discharges from potable water sources, foundation drains, air conditioning condensation, landscape irrigation, springs, water from crawl space pumps, footing drains, lawn watering, individual car washing, dechlorinated swimming pool discharges, flows from riparian habitats and wetlands, and street wash water.

(4) Discharges or flows from fire fighting.

(f) The Public Works Director may develop procedures for allowing other non-stormwater discharges.

Sec. 4.2 Detection of Illicit Connections and Improper Disposal.

(a) The Public Works Director will take appropriate steps to detect and eliminate illicit connections to the Charleston County stormwater system, including the adoption of a program to screen illicit discharges and identify their source or sources, perform inspections, and levy fines if not removed.

The Public Works Director will take appropriate steps to detect and eliminate improper discharges. These steps may include programs to screen for disposal, programs to provide for public education and public information, inspection, levying fines, and other

appropriate activities to facilitate the proper management and elimination of illicit discharges.

Sec 4.3 Waste Disposal Prohibitions.

This Ordinance prohibits non-authorized discharges, illicit dumping, or disposal of waste into any existing stormwater system or waters of the state.

Sec. 4.4 Discharges in Violation of NPDES General Permit for Storm Water Discharges Associated with Industrial Activity Permit.

Any owner, operator, or person subject to a violation of the NPDES General Permit for Storm Water Discharges Associated with Industrial Activity Permit (except construction activities) shall comply with all provisions of the permit. Proof of compliance with the permit will be required in a form acceptable to the Public Works Director prior to or as a condition of the issuance of approval of an application and/or a building permit.

DIVISION 5MONITORING AND INSPECTIONS

Sec. 5.1 Monitoring.

The Public Works Director may monitor the quantity and concentration of pollutants in stormwater discharges from the areas and/or locations designated in Charleston County's SWMP.

Sec. 5.2 Inspections.

(a) The Public Works Director subject to the provisions of Section 2.3 may enter upon and inspect all properties for regular inspections, periodic investigations, monitoring, observation measurement, enforcement, sampling and testing, to effectuate the provisions of this Ordinance and the SWMP programs.

(b) Upon refusal by any property owner, operator, or person to permit an inspector to enter upon the property or continue an inspection on the property, the inspector shall terminate the inspection or confine the inspection to portions of the property to which no objection is raised. The Public Works Director will document the refusal and proceed according to the provisions of Section 2.3.

(c) In the event that the Public Works Director reasonably believes that discharges from the property into an existing stormwater system may cause an imminent and substantial threat to the health, safety or welfare of the public or the environment, an inspection may take place.

(d) Inspection reports will be maintained in a permanent file located in the Public Works Department.

(e) At any time during an inspection or at such other times as the Public Works Director may request information from an owner, operator, or person, that owner, operator, or person may identify areas of his system or facility, any material, processes, or information that contain or might reveal a trade secret. If the Public Works Director has no reason to question such identification, all material, processes and information obtained within such areas shall be conspicuously labeled "CONFIDENTIAL – TRADE SECRET." The trade secret designation shall be freely granted to any material claimed to be such by the owner or representative unless there is clear and convincing evidence for denying such designation. In the event the Public Works Director does not agree with the trade secret designation, the material shall be temporarily designated a trade secret and the owner or representative may appeal the Public Works Director's decision in the manner in which all such appeals are handled in this Ordinance.

DIVISION 6ENFORCEMENT, PENALTIES AND ABATEMENT

Sec. 6.1 Enforcement.

(a) In the instance the Public Works Director discovers that work performed for new development and re-development fails to conform to the approved application, or that the work has not been performed, the Public Works Director may direct conformity by sending written Notice of Violation (NOV) to the property owner, operator, or person. Such notice of violation will be in accordance with the Manual. The actions of the Public Works Director may include:

(1) issuing a written order to comply, to suspend work, or to revoke the approval issued;
(2) withholding or revoking other permits related to the site
(3) withholding the release of permanent electric power to the site or certificate of occupancy; and/or
(4) seeking redress through legal action.

The NOV shall serve as notice to remove the violation(s). The NOV shall be provided to the owner, operator, or person responsible for the land disturbing activities stating the nature of the violation, the amount of time to correct deficiencies, the date on which an inspection will be made to ensure that corrective action has been performed, and the applicable penalty or fine if corrective action is not taken by the inspection date. After the issuance of the NOV, the Public Works Director may issue a uniform summons citation in accordance with the Manual.

(b) When the Public Works Director determines that an owner, operator, or person has failed to maintain a stormwater system or facility, the NOV shall be provided to the owner, operator, or person stating the nature of the violation, the amount of time in which to correct deficiencies, the date on which an

inspection will be made to ensure that corrective action has been performed, and the applicable penalty or fine if corrective action is not taken. It shall be sufficient notification to deliver the notice in accordance with the Manual.

(c) When the Public Works Director determines that an owner, operator, or person of any property is causing or partially causing flooding, erosion, or is in non-compliance with water quality standards or this Ordinance, the Public Works Director may require the owner, operator, or person to remedy the violation and restore the impacted property. A NOV will be issued in accordance with the Manual.

(d) This Ordinance may be enforced by any remedy at law or in equity available to the Director under any Federal and State laws and regulations. The penalties and remedies provided in this Ordinance are cumulative and not exclusive, and may be independently and separately pursued against the same Person for the activity constituting a violation.

Sec. 6.2 Penalties.

(a) Civil: Any person violating any provision of this Ordinance shall be subject to a civil penalty of up to one thousand dollars ($1,000) for each violation. Each separate day of a violation, constitutes a new and separate violation.

(b) Criminal: In addition to any applicable civil penalties, any owner, operator, or person who willfully, with wanton disregard, or intentionally violates any provision of this Ordinance shall be guilty of a misdemeanor and shall be punished within the jurisdictional limits of magistrate court. The Public Works Director may issue a uniform summons citation for a violation of this Ordinance. Fines imposed under the NOV may not exceed $500.00 per violation and/or thirty (30) days in jail. Each day a violation remains constitutes a separate violation.

Sec. 6.3 Additional Legal Measures.

(a) Where Charleston County is fined and/or subjected to a compliance schedule by the State or Federal government for a violation of its NPDES permit by any owner, operator, or person, the owner, operator, or person becomes liable to Charleston County for any and all penalties, expenses and costs of compliance associated therewith.

Sec. 6.4 Reserved.

Sec. 6.5 Corrective Action.

In the event a violation of this Ordinance has not been corrected within the applicable time period for correction, Charleston County may subject to the provisions

of Section 2.3 enter upon the real property and correct the violation. Any penalties, expenses and costs incurred as a result of such action, including but not limited to the inspection, administration, labor and equipment costs, shall be forfeited from any bond issued for the project.

Sec. 6.6 Stop Work Order.

The Public Works Director may issue a stop work order if any construction activity conducted in violation of this Ordinance. The stop work order shall require correction of the NOV. Any owner, operator, or person in violation of a stop work order is subject to payment of all fees, bonds, and penalties prior to the lifting of the stop work order**.**

Sec. 6.7 Approval Suspension and Revocation

An approved application_may be suspended or revoked if one or more of the following violations have been committed:

(a) violations of the conditions of the approved application,

(a) construction is not in accordance with the letter or intent of the approved plans,

(b) non-compliance with correction notice(s) or stop work order(s), or

(c) the existence of an immediate danger to a downstream area.

DIVISION 7 VARIANCES

Sec. 7.1 Design Criteria.

The Public Works Director may grant a variance from the requirements of this Ordinance if exceptional circumstances exist such that strict adherence to the provisions of the Ordinance will result in unnecessary hardship to the owner, operator, or person and will not fulfill the intent of the Ordinance.

A written request for a variance shall be required and shall be submitted in accordance with the Manual.

DIVISION 8APPEALS

Sec. 8.1 Appeals Process.

An applicant may appeal the decision of the Public Works Director to the Charleston County Construction Board of Adjustment and Appeals within thirty (30) days after the date of the Public Works Director’s response. The Public Works Director shall provide the petition form to the utility customer.

(a) The petition must be accompanied with a $25.00 fee that will be used to partially defray the costs incurred in connection with the administration of petitions filed pursuant to this section.

(b) The Construction Board of Adjustment and Appeals shall hear the petition to determine if the annual stormwater management utility fee does not apportion the fee with approximate equality, based upon a reasonable basis of classification and with due regard to the benefits conferred by providing stormwater management services to the utility customer and the requirements of public health, safety or welfare. The determination of the annual fee by the Construction Board of Adjustment and Appeals is entitled to a presumption of correctness, and the petitioner has the burden of rebutting the presumption of correctness.

(c) The Construction Board of Adjustment and Appeals shall render a written decision on each petition that is heard, and such written decision shall be issued within twenty (20) calendar days from the day the Board heard the petition. The decision of the Construction Board of Adjustment and Appeals shall contain findings of fact and conclusions of law, and the decision shall be sent to the petitioner by first class mail.

(d) The decision of the Construction Board of Adjustment and Appeals shall be final unless the petitioner appeals the decision to the circuit court in Charleston County within thirty (30) days after the date of the decision of the Construction Board of Adjustment and Appeals. Prior to bringing an action to contest an annual fee, the petitioner shall pay to the treasurer not less than the amount of the annual fee which he admits in good faith is owing. Payment of the fee shall not be deemed an admission that the annual fee was due and shall not prejudice the petitioner in bringing an action as provided herein.

DIVISION 9CHARGES AND FEES

Sec. 9.1 Funding.

In addition to all other charges, fees, and penalties, Charleston County shall have the right to develop and impose a stormwater service fee to fund implementation of the Charleston County Stormwater Management Ordinance and its associated programs and plans.

Sec. 9.2 Connection to Conveyances.

The Public Works Director shall have the right to establish a schedule of appropriate fees for any owner, operator, or person establishing a new discharge to waters of the State within Charleston County. Such fees shall be payable as part of any application related to the discharge of stormwater runoff. Application fees shall

be established on the basis of facility classes relating to the quantity and quality of approved discharge. Establishment and revision of such fees shall be approved by the Charleston County Council.

Sec. 9.3 Plan review.

A fee associated with the plan review of land development construction documents may be assessed. Establishment and revision of such fees shall be approved by the Charleston County Council.

Sec. 9.4 Field inspection.

A fee associated with the field inspection and re-inspections of land development or construction activities may be assessed. Establishment and revision of such fees shall be approved by the Charleston County Council.