Stormwater Management / BMP Facilities

Construction Certification Forms

(Note: In accordance with the requirements of the Chesapeake Bay Preservation Ordinance Chapter 94, BMP's shall be designed and constructed in accordance with the manual entitled " " and approved plans generally require that at the completion of the project and prior to release of surety, an "as-built" plan prepared by a registered Professional Engineer or Certified Land Surveyor must be provided for the drainage system for the project, including any Best Management Practice (BMP) facilities. In addition, for BMP facilities involving the construction of an impounding structure or dam embankment, certification is required by a Professional Engineer who has inspected the structure during its construction.)

Section 1. Site Information

Project Name:_____

Structure/BMPName:_____

Project Location:_____

BMP Location:_____

County Plan No:_____

Project Type: (Residential, Commercial, Institutional, Public, Business, Office, Industrial, Roadway, other) _____

Tax Map/Parcel No._____ BMP ID Code (if known)_____

Zoning District:_____ Land Use_____ Site Area (sf or acres)_____

Brief Description of Stormwater Management / BMP Facility:_____

_____

_____

Nearest Visible Landmark to SWM/BMP Facility:_____

Nearest Vertical Ground Control (if known):

Station Number or Name:_____

Datum or Reference Elevation:_____

Control Description:_____

Control Location from Subject Facility:_____

_____

_____

Section 2. Stormwater Management/BMP Facility Construction Information:

Pre-Construction Meeting Held for Construction of SWM/BMP Facility:□ Yes □ No □ Unknown

Approx. Construction Start Date for SWN/BMP Facility:_____

Facility Monitored by County Representative during Construction: :□ Yes □ No □ Unknown

Name of Site Work Contractor who Constructed Facility:_____

Name of Professional Firm who Routinely Monitored Construction:_____

Date of Completion for SWM/BMP Facility:_____

Date of Record Drawing/Construction Certification Submittal:_____

(Note: record drawing and construction certifications are required within thirty (30) days of the completion of Stormwater Management and/or BMP facility construction. Record Drawings and Construction Certifications must be reviewed and approved by the New Kent_____prior to final inspection, acceptance and surety release.)

Section 3. Owner/Designer/Contractor Information

Owner/Developer: (note: Site Owner or Applicant responsible for development of the project)

Name:_____

Mailing Address:_____

Business Phone:_____E-mail:_____

Contact Person:_____Title:_____

Design Professional: (note: Professional Engineer or Certified Land Surveyor responsible for the design and preparation of plans and specifications for the SWM/BMP facility)

Firm Name:_____

Mailing Address:_____
Business Phone:_____E-mail:_____

Responsible Plan Preparer:_____

Title:_____

Plan Name:_____Firm's Project Number:_____

Plan Date:_____

Sheet No.'s Applicable to SWM/BMP Facility:_____

BMP Contractor: (note: Site Work Contractor directly responsible for construction of the SWM/BMP Facility)

Firm Name:_____

Mailing Address:_____
Business Phone:_____E-mail:_____

Contact Person:_____

Site Foreman/Supervisor:_____

Specialty Subcontractors and Purpose (for BMP construction only):_____
_____
_____
_____

Section 4. Professional Certifications:

Certifying Professionals: (Note: A registered professional engineer or Certified Land Surveyor is responsible for preparation of a Record Drawing sometimes referred to as an As-Built plan, for the drainage system for the project including any SWM/BMP facilities. A Registered Professional Engineer is responsible for the inspection, monitoring and certification of SWM/BMP facilities during its construction.

Record Drawing Certification		Construction Certification	
Name		Name	
Mailing Address		Mailing Address	
Business Phone		Business Phone	
Fax/E-mail		Fax/E-mail	
Name		Name	
Title		Title	
Signature		Signature	
Date		Date	
I hereby certify to the best of my knowledge and belief that this record drawing represents the actual condition of the SWM/BMP facility. The facility appears to conform to the provisions of the approved design plan, specifications design and stormwater management plan, except as specifically noted.		I hereby certify to the best of my knowledge and belief that this SWM/BMP facility was monitored and constructed in accordance with the provisions of the approved plan, specifications, and stormwater management plan, except as specifically noted.	
	Seal		Seal
Virginia Registered Professional Engineer or Certified Land Surveyor		Virginia Registered Professional Engineer	

Section 5. Record Drawing and Construction Certification Requirements and Instructions.

□ Pre-Construction Meeting – Provides an opportunity to review SWM/BMP facility construction, maintenance and operation plans and addresses any questions regarding construction and/or monitoring of the structure. The design engineer, certifying professionals (if different), Owner/Applicant, Contractor and County representative(s) are encouraged to attend the preconstruction meeting. Advanced notice to the Engineering and Resource Protection Division is requested. Usually, this requirement can be met simultaneously with Erosion and Sediment Control preconstruction meetings held for the project.

□ A fully completed STORMWATER MANAGEMWENT / BMP FACILITIES, RECORD DRAWING and CONSTRUCTION CERTIFICATION FORM and RECORD DRAWING CHECKLIST. All applicable sections shall be completed in their entirety and certification statements signed and sealed by the registered professional responsible for individual record drawing and/or construction certification.

□ The Record Drawing shall be prepared by a Registered Professional Engineer or Certified Land Surveyor for the drainage system for the project including any Best Management Practices.

□ Construction Certification – Construction of Stormwater Management/BMP facilities which contain impoundments, embankments and related engineered appurtenances including subgrade preparation, compacted soils, structural fills, liners, geosynthetics, filters, seepage controls, cutoffs, toe drains, hydraulic flow control structures, etc., shall be visually observed and monitored by a Registered Professional Engineer or his/her authorized representative. The Engineer must certify that the structure, embankment and associated appurtenances were built in accordance with the approved design plan, specifications and stormwater management plan and standard accepted construction practice and shall submit a written certification and/or drawings to the Engineering and Resource Protection Division as required. Soil and compaction test reports, concrete test reports, inspection reports, logs and other required construction material or installation documentation may be required by the Engineering and Resource Protection Division to substantiate the certification, if specifically requested. The Engineer shall have the authority and the responsibility to make minor changes to the approved plan, in coordination with the assigned County inspector, in order to compensate for unsafe or unusual conditions encountered during construction such as those related to bedrock, soils, groundwater, topography, etc. as long as changes do not adversely affect the integrity of the structure(s). Major changes to the approved design plan or structure must be reviewed and approved by the original design professional and the New Kent County Environmental Division.

□ Record Drawing and Construction Certifications are required within thirty (30) days of the completion of Stormwater Management/BMP facility construction. Submittals must be reviewed and accepted by the New Kent County Environmental Division prior to final inspection, acceptance and bond/surety release.

Dual Purpose Facilities – Completion of construction also includes an interim stage for Stormwater Management/BMP Facilities which serve dual purpose as temporary sediment basins during construction and as permanent stormwater management/BMP facilities following construction, once development and stabilization are substantially complete. For these dual purpose facilities, construction certification is required once the temporary sediment basin phase of construction is complete. Final record drawing and construction certification of additional permanent components is required once permanent facility construction is complete.

Interim Construction Certification is required for those dual purpose embankment-type facilities that are generally ten (10) feet or greater in dam height (*) and may not be converted, modified or begin function as a permanent SWM/BMP structure for a period generally ranging from six (6) to eighteen (18) months or more from issuance of a Land Disturbance permit for construction.

Interim or final record drawing and construction certifications are not required for temporary sediment basins which are designed and constructed in accordance with current minimum standards and specifications for temporary sediment basins per the Virginia Erosion and Sediment Control Handbook (VESCH); have a temporary service life of less than eighteen (18) months; and will be removed completely once associated disturbed areas are stabilized, unless a distinct hazard to the public's health, safety and welfare is determined by the Environmental Division due to the size or presence of the structure or due to evidence of improper construction.

(Note: Dam Height as referenced above is generally defined as the vertical distance from the natural bed of the stream or waterway at the downstream toe of the embankment to the top of the embankment structure in accordance with the Virginia Impoundment Structure Regulations and the Virginia Dam Safety Program.)

□ Record Drawings shall provide, at a minimum, all information as shown within these requirements and the attached RECORD DRAWING CEHCKLIST specific to the type of SWM/BMP facility being constructed. Other additional record data may be formally requested by the New Kent County Environmental Division. (Note: Refer to the current edition of the New Kent County Guidelines for Design and Construction of Stormwater Management/BMP's manual for a complete list of acceptable BMP's.)

□ Record Drawings shall consist of blue/ black line prints and a reproducible (mylar, sepia, diazo, etc.) set of the approved stormwater management plan including applicable plan views, profiles, sections, details, maintenance plans, etc. as related to the subject SWM/BMP facility. The set shall indicated "RECORD DRAWING" in large text in the lower right hand corner of each sheet with record elevations, dimensions and data drawn in a clearly annotated format and/or boxed beside design values. Approved design plan values, dimensions and data shall not be removed or erased. Drawing sheet revision blocks shall be modified as required to indicate record drawing status. Elevations to the nearest .1' are sufficiently accurate except where higher accuracy is needed to show positive drainage. Certification statements as shown in Section 4 of

the Record Drawing and Construction Certification From, or similar forms thereof, and professional signatures and seals, with dates matching that of the record drawing status in the revision or title block, are also required on all associated record drawing plans, prints or reproducibles.

□ Submission Requirements – Initial and subsequent submissions for review shall consist of a minimum of one (1) blue/black line set for record drawings and one copy of the construction certification documents with appropriate transmittal. Under certain circumstances, it is understood that the record drawing and construction certification submissions may be performed by different professional firms. Therefore, record drawing submission may be in advance of construction certification or vice versa. Upon approval and prior to release of bond/surety, final submission shall include one (1) reproducible set of the record drawings, one (1) blue/black line set of the record drawings and one (1) copy of the construction certification. Also for current and/or future incorporation into the County BMP database and GIS system, it is requested that the record drawings also be submitted to the Environmental Division on a diskette or CD-ROM in an acceptable electronic file format.

STORMWATER MANAGEMENT/BMP FACILITIES RECORD DRAWING CHECKLISTS

(A & B are required in addition to the applicable section)

A. Methods and Presentation: (Required for all Stormwater Management/BMP facilities)

____1. All constructed facilities meet approved design plans, unless otherwise shown. Record information or deviations from approved design plan shown in clearly annotated format and/or boxed beside design values.

____2. Elevations to the nearest 0.1' unless higher accuracy is needed to show positive drainage.

____3. All plan sheets labeled with "RECORD DRAWING" in large text in lower right hand corner (Approved County Plan Number and BMP ID Code can be included if known)

____4. All plan sheet revision blocks modified to indicate date and time of record drawing status.

____5. All plan sheets have certification statements and certifying professionals' signature and seal.

B. Minimum Standards (Required for all Stormwater Management/BMP facilities as applicable)

____1. All requirements of Section A (Methods and Presentation) apply to this section.

____2. Plan Views: Show general location, arrangement and dimensions. Location and alignment shall generally match approved design plans.

____3. Profile or elevations along top or berm of the facility. At a minimum, elevations are required at each end, at intervals not to exceed 50 feet and where low spots may be present. Top of embankment or berm elevations must be no less than design elevation plus and settlement allowances.

____4. Top widths, berm widths, and embankment side slopes.

____5. Show length, width and depth of facility or grading, contours or spot elevations as required to verify permanent pool and design storage volumes were met or were reasonably close to the approved design. Evaluation of as-built grading, contours, spot elevations, or cross-sections, may be necessary by the professional to ensure approved design configurations, depths and volumes were closely maintained. If grading or elevations are significantly different from the approved plan, the Environmental Division shall be contacted immediately to determine whether the variation is acceptable or whether further evidence will be required. Facilities which do not closely resemble approved plan grades, elevations or configurations may require regarding by the Contractor, check volumetric computations; and/or a check hydraulic routing to ensure approved design water surface elevations, discharges or freeboard were closely maintained.

____6. Cross-section of the embankment through the principal spillway or outlet barrel. Must extend at least 100 ft. downstream of the pipe outlet or to recorded site property line, whichever is closer. Proper correlation is required between principal spillway (control structure) crest, emergency spillway crest, orifice, and weirs and the top of the dam or facility. All elevations and dimensions must reasonably match the design plan or be sequentially relative to each other and the facility must reflect the required design storage volume(s) and/or design depth.

____7. Profile or elevation along the entire centerline of the emergency spillway. Emergency spillway may be steeper, but no flatter or narrower than design.

____8. Elevation of the principal spillway crest or outlet crest of the structure.

____9. Primary control structure (riser) diameter or dimensions, height, type of material and base size. Indicate provisions for access that are present such as steps, ladders, etc.

____10. Dimensions, locations and elevations of outlet orifices, weirs, slots and drains.

____11. Type and size of anti-vortex and trash rack device. Height, diameter, dimensions, bar spacings (if applicable) and elevations relative to the principal spillway crest. Indicate if lockable hatch is present or not.

____12. Type, location, size, and number of anti-seep collars or documentation of other methods utilized for seepage control. May need to obtain this information during construction.

____13. Top of impervious core embankment, core trench limits and elevation of cut-off trench bottom. May need to obtain this information during construction.

____14. Elevation of the principal spillway barrel (Outlet pipe) inlet and outlet invert.

____15. Outlet barrel diameter, length, slope, type, and thickness class of material and type of flared end sections, headwall or endwall.

____16. Outfall protection dimension, type and depth of rock and if underlain filter fabric is present.

____17. BMP Interior and periphery landscaping zones conform with arrangements and requirements of the approved design plan.

____18. Maintenance plan taken from approved design plan transposed onto record drawing set.

____19. Fencing location and type, if applicable to facility.

____20. BMP vicinity properly cleaned of stockpiles and construction debris.

____21. No visual signs of erosion or channel degradation immediately downstream of facility.

____22. Any other information formally requested by the New Kent County Environmental Dept. specific to the constructed SWM/BMP facility.

Please attached the appropriate Appendices

Appendix C - Wet Ponds

Appendix D - Wetlands

Appendix E - Infiltration Process

Appendix F – Filtering Systems

Appendix G – Open Channel Systems

Appendix H – Open Space

Appendix I – Storm Drainage System

Appendix J – Other Systems

APPENDIX C

Wet Ponds (Includes Small Wet Ponds, Wed Ponds, Wet Ext. Det. Ponds)

____1. All requirements of Section B apply

____2. Principal spillway consists of reinforced concrete pipe with O-Ring gaskets for watertight joint construction.

____3. Sediment forebays or pretreatment devices provided at inlets to pond. Generally 4-6ft. deep.

____4. Access for maintenance and equipment is provided to the forebay(s). Access corridors are at least 12 ft. wide, have a maximum slope of 15 percent and are adequately stabilized to withstand heavy equipment or vehicle use.

____5. Adequate fixed vertical sediment depth markers installed in the forebay(s) for future sediment monitoring purposes.

____6. Pond liner (if required) provided. Either clay liners, polyliners, bentonite liners or use of chemical soil additives based on requirements of the approved plan.

____7. Minimum 6 percent slope safety bench extending a minimum of 15 feet outward from normal pool edge and/or an aquatic bench extending a minimum of 10 feet inward from the normal shoreline with a maximum depth of 12 inches below the normal pool elevation, if applicable, per the approved design plans. (Note: Safety benches may be waived if pond side slopes are no steeper than 4H:1V)

____8. No trees are present within a zone of 15 feet around the embankment toe and 25 feet from the principal spillway structure.

____9. Wet permanent pool, typically 3 to 6 feet deep, is provided and maintains a level within facility.

____10. Low flow orifice has a non-clogging mechanism.

____11. A pond drain pipe with valve was provided.

____12. Pond side slopes are not steeper than 3H:1V, unless approved plan allowed for steeper slope

____13. End walls above barrels (outlet pipe) greater than 48 inch in diameter are fenced to prevent a fall hazard.

APPENDIX D

Wetlands (Includes Shallow Marsh; Ext Det Shallow Wetlands, Pond Wetland System and Pocket Wetland)

____1. Same Requirements as Group A Wet Ponds

____2. Minimum 2:1 length to width flow path provided across the facility

____3. Micropool provided at or around outlet from BMP

____4. Wetland type landscaping provided in accordance with approved plan. Includes correct pondscaping zones, plant species, planting arrangements, wetland beds, etc. Wetland plants include 5 to 7 emergent wetland species. Individual plants at 18 inches on center in clumps.

____5. Adequate wetland buffer provided (Typically 25 ft. outward from maximum design water surface elevation and 15ft. setback to structures)

____6. No more than one-half (1/2) of the wetland surface area is planted.

____7. Topsoil or wetland mulch provided to support vigorous growth of wetland plants.

____8. Planting zones staked or flagged in field and locations subsequently established by appropriate field surveying methods for record drawing presentation.

APPENDIX E

Infiltration Process (Includes Infiltration Trench, Infiltration Trench; Infiltration Basin; and Infiltration Basin)

____1. All requirements of Section B, Minimum Standards apply to Group C facilities as applicable

____2. Facility is not located on fill slopes or on natural ground in excess of six (6) percent

____3. Pretreatment devices provided prior to entry into the infiltration facility. Acceptable pretreatment devices include sediment forebays, sediment basins, sediment traps, sump pits or inlets, grass channels, plunge pools or other acceptable measures.

____4. Three (3) or more of the following pretreatment devices provided to protect long term integrity of structure, grass channel, grass filter strip, bottom sand layer, upper filter fabric layer, use of washed bank run gravel aggregate

____5. Sides of infiltration practice lined with filter fabric

____6. Facility was not used for erosion and sediment control purposes and sediment was prevented from entering the facility to the greatest extent possible during construction.

____7. Stabilization and acceptably vegetative cover established over contributing drainage area prior to conveyance of stormwater to the facility

____8. Minimum one hundred (100) foot separation horizontally from any known water supply well and minimum one hundred (100) foot separation upslope from any building.

____9. Minimum twenty-five (25) foot separation down gradient from any structure

____10. Stormwater outfalls provided for overflow associated with larger design storms

____11. No visual signs of erosion or channel degradation immediately downstream of facility

____12. Facility does not currently cause any apparent surface or subsurface water problems to downgrade properties

____13. Observation well provided

____14. Adequate, direct access provided to the facility for future maintenance, operation and inspection.

APPENDIX F

Filtering Systems (Includes Bio-retention Cells; Surface Sand Filters; Underground Sand Filters; Perimeter Sand Filters; Organic Filters and Pocket Sand Filters)

____1. All requirements of Section B, Minimum Standards apply to Group D facilities

____2. Sediment pretreatment devices provided

____3. For D-1 BMP's (Bioretention Cells), pretreatment consisting of a grass filter strip below level spreader (deflector); a gravel diaphragm; and mulch and planting soil layers were provided.

____4. For D-1 BMP's (Bioretention Cells), plantings consist of native plant species; vegetation provided was based on zones of hydric tolerances; trees and understory of shrubs and herbaceous materials were provided; woody vegetation is absent from inflow locations; and trees are located around facility perimeter.

____5. Facility was not used for erosion and sediment control purposes and sediment was prevented from entering the facility to the greatest extent possible during construction.

____6. No visible signs of accumulated silt/sediment were present in the facility following construction or alternately, accumulated silt/sediment was properly removed.

____7. Filtering system is off-line from storm drainage conveyance system

____8. Overflow outlet has adequate erosion protection

____9. Deflector, diversion, flow splitter or regulator structure provided to divert the water quality volume to the filtering structure

____10. Minimum four (4) inch perforated underdrain provided in a clean aggregate envelope layer beneath the facility

____11. Minimum fifty (50) foot separation from any slope fifteen (15) percent or greater. Minimum one hundred (100) foot separation horizontally from any known water supply well. Minimum one hundred (100) foot separation upslope and twenty-five (25) foot separation downslope from any building.

____12. Stabilization and acceptable vegetative cover established over contributing drainage area prior to conveyance of stormwater to the facility

____13. No visual signs of erosion or channel degradation immediately downstream of facility

____14. Adequate, direct access provided to the pretreatment area and/or filter bed for future maintenance

APPENDIX G

Open Channel Systems (Includes Wet Swales (check dam); Dry Swales; and Biofilters)

____1.All requirements of Section B, Minimum Standards apply to Group E facilities as applicable

____2. Open channel system has constructed longitudinal slope of less than four (4) percent.

____3. No visual signs of erosion in the open channel system's soil and/or vegetative cover

____4. Open channel side slopes are no steeper than 2H:1V at any location. Preferred channel sideslope is 3H:1V or flatter

____5. No visual signs of ponding are present at any location in the open channel system, except at rock check dam locations for E-1 system (Wet Swales)

____6. For E-2 BMPs (Dry Swales), an underdrain system was provided

____7. Treated timber or rock check dams provided as pretreatment devices for the open channel system

____8. Gravel diaphragm provided in areas where lateral sheet flow from impervious surfaces are directly connected to the open channel system

____9. Grass cover/stabilization in the open channel system appears adaptable to the specific soils and hydric conditions for the site and along the channel system

____10. Open channel system areas with grass covers higher than four (4) to six (6) inches were properly mowed

____11. Facility was not used for erosion and sediment control purposes and sediment was prevented from entering the facility to the greatest extent possible during construction

____12. Stilling basin or standard outlet protection provided at principal spillway outlet

____13. Adequate, direct access provided to the facility. Access corridor to facility is at least ten (10) feet wide; slope is less than twenty (20) percent and appropriate stabilization provided for equipment and vehicle use. Access extends to forebay, standpipe and timber wall, as applicable.

____14. No visual signs of undercutting of timber walls or clogging of the low orifice were present

____15. No visual signs of erosion or channel degradation immediately downstream of facility

____16. No visible signs of accumulated silt/sediment were present in the facility following construction or alternately, accumulated silt/sediment was properly removed and no adverse affects to the function of the facility are anticipated.

APPENDIX H

Open Space (Includes all open space types)

____1.All requirements of Section B Minimum Requirements apply to Group F facilities as applicable

____2. Constructed impervious areas appear to conform with locations indicated on the approved plan and appear less than sixty (60) percent impervious in accordance with the requirements of the New Kent County Chesapeake Bay Preservation Ordinance.

____3. Dedicated open space areas are in undisturbed common areas, conservation easements or are protected by other enforceable instruments that ensure perpetual protection.

____4. Provisions included to clearly specify how the natural vegetated areas utilized as dedicated open space will be managed and field identified (marked)

____5. Adequate protection measures were implemented during construction to protect the defined dedicated open space areas.

____6. Dedicated open space areas were not disturbed during construction (i.e. cleared, grubbed or graded)

APPENDIX I

Storm Drainage System (Associated with BMP's Only)

(Includes all incidental stormwater drainage conveyance systems associated with SWM/BMP facilities such as onsite or offsite drains, open channels, inlets, manholes, junctions, outlet protections, deflectors, etc. These facilities are external to the treatment function of, but are directly associated with drainage to and/or from a constructed SWM/BMP facility. The intent of this portion of the certification is to accurately identify the type and quantity of inflow or outflow points associated with the facility for future reference. The Professional may use his/her discretion to determine inclusive facilities to meet the intent of this section. As a general rule, storm drainage systems would include incidental facilities to the nearest access structure upslope or downslope from the normal physical limits of the facility or 800 feet of storm drainage conveyance system length, whichever is less.)

____1. All requirements of Section B Minimum Standards apply to Storm Drainage System

____2. Horizontal location of all pipe and structures relative to the SWM/BMP facility

____3. Type, top elevation and invert elevation of all access type structures (inlets, manholes, etc.)

____4. Material type, size or diameter, class, invert elevations, lengths and slopes for all pipe segments.

____5. Class, length, width and depth of riprap and outlet protections or dimensions of special energy dissipation structures

APPENDIX J

Other Systems. (Includes any non-typical, specialty, manufactured or innovative stormwater management BMP practices or systems generally accepted for use as or in conjunction with other acceptable stormwater management/BMP practices. Requires evidence of prior satisfactory industry use and prior Environmental Division approval, waiver or exception)

____1. All requirements of Section B Minimum Standards apply to this section

____2. Certification criteria to be determined on a case-by-case basis by the Environmental Division specific to the proposed SWM/BMP facility.