



James City County, Virginia
Stormwater Division

Stormwater Facilities - BMP and Conveyance Systems
Record Drawing and Construction Certification Forms

Note: In accordance with the requirements of the Chesapeake Bay Preservation Ordinance, Chapter 23, Section 23-10(4), BMPs shall be designed and constructed in accordance with the manual entitled James City County Guidelines for Design and Construction of Stormwater Management BMPs. The Subdivision Ordinance, Chapter 19-62, the Zoning Ordinance, Chapter 24-159, and approved construction 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, written construction certification is required by a Professional Engineer who inspected the structure during its construction. Currently there are over 20 water quality type BMPs accepted by the County.

Section 1 - Site Information:

Project Name: _____

Structure/BMP Name: _____

Project Location: _____

BMP Location: _____

County Plan No.: _____ - _____ - _____

Project Type: Residential Business Tax Map/Parcel No.: _____

Commercial Office BMP ID Code (if known): _____

Institutional Industrial Zoning District: _____

Public Roadway Land Use: _____

Other _____ 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):

JCC Geodetic Ground Control USGS Temporary Arbitrary Other

Station Number or Name: _____

Datum or Reference Elevation: _____

Control Description: _____

Control Location from Subject Facility: _____

Section 2 - Stormwater Management / BMP Facility Construction Information:

Preconstruction Meeting Held for Construction of SWM/BMP Facility: Yes No Unknown

Approx. Construction Start Date for SWM/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 construction of a Stormwater Facility – BMP or Conveyance system. Record Drawings and Construction Certifications must be reviewed and approved by the James City County Stormwater Division 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: _____ Fax: _____

Contact Person: _____ Title: _____

Design Professional: *(Note: Professional Engineer or Certified Land Surveyor responsible for the design and preparation of plans and specifications for the Stormwater facilities.)*

Firm Name: _____

Mailing Address: _____

Business Phone: _____ Fax: _____

Responsible Plan Preparer: _____

Title: _____

Plan Name: _____

Firm's Project No. _____ Plan Date: _____

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

Stormwater Facility Contractor: *(Note: Site Work Contractor directly responsible for construction of the Stormwater facilities.)*

Name: _____

Mailing Address: _____

Business Phone: _____ Fax: _____

Contact Person: _____

Site Foreman/Supervisor: _____

Specialty Subcontractors & Purpose (for BMP Construction Only): _____

Section 4 - Professional Certifications:

Certifying Professionals: *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 stormwater facilities for the project including all BMP and conveyance systems. A Registered Professional Engineer is responsible for the inspection, monitoring and certification of all stormwater facilities – BMP and conveyance systems during their construction.*

Record Drawing and Construction Certifications for Stormwater Facilities - BMP and Conveyance Systems

Record Drawing Certification

Construction Certification

Firm Name: _____

Firm Name: _____

Mailing Address: _____

Mailing Address: _____

Business Phone: _____

Business Phone: _____

Fax: _____

Fax: _____

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 Stormwater Facilities. The facilities appear to conform to the provisions of the approved construction plans and specifications except as specifically noted.

I hereby certify to the best of my knowledge and belief that these Stormwater Facilities were monitored and constructed in accordance with the provisions of the approved construction plans and specifications except as specifically noted.

Virginia Registered Professional Engineer
or Certified Land Surveyor

Virginia Registered
Professional Engineer

Section 5 - Record Drawing and Construction Certification Requirements and Instructions:

- Preconstruction Meeting - Provides an opportunity to review stormwater facilities construction, maintenance and operation plans, and address any questions regarding construction and/or monitoring of the structure. The certifying professionals, geotechnical engineer, Owner/Applicant, Contractor and County representative(s) are required to attend the preconstruction meeting. Advance notice to the Stormwater Division is required. Usually, this requirement can be met simultaneously with Erosion and Sediment Control preconstruction meeting held for the project.
- A fully completed *Stormwater Facilities – BMP and Conveyance Systems, 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 stormwater facilities including all BMPs and conveyance systems.
- Construction Certification. Construction of Stormwater 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 construction plans and specifications, and standard accepted construction practice and shall submit a written certification and/or drawings to the Stormwater Division as required. Soil and compaction test reports, concrete test reports, inspection reports, logs and other required construction material or installation documentation shall be required by the Stormwater Division to substantiate the certification. The Engineer shall have the authority and 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 James City County Environmental Division with notification to the Stormwater Division.
- Record Drawing and Construction Certifications are required within **thirty (30) days** of the completion of any Stormwater Facility - BMP or conveyance system. Submittals must be reviewed and accepted by James City County Stormwater Division prior to final inspection, acceptance, surety release or issuance of a Certificate of Occupancy.

Dual Purpose Facilities - Completion of construction also includes any interim stage for Stormwater BMP facilities which serve a dual purpose as temporary sediment basins during construction and as permanent stormwater BMP facilities following completion of development and stabilization. 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 Stormwater 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 4VAC50-20-30, 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 CHECKLIST** specific to the type of SWM/BMP facility being constructed. Other additional record data may be formally requested by the James City County Stormwater Division. *(Note: Refer to the current edition of the James City County Guidelines for Design and Construction of Stormwater Management BMP's manual for a complete list of acceptable BMP's. Currently there are over 20 acceptable water quality type BMP's accepted by the County.)*
- Record Drawings shall consist of blue/black line prints and a reproducible (mylar, sepia, diazo, etc.) set of the approved stormwater facilities construction plan including applicable plan views, profiles, sections, details, maintenance plans, etc. as related to the subject Stormwater Facility. The set shall indicate "**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 0.1' 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 Form, *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 surety or a Certificate of Occupancy, 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 Stormwater Division on a diskette or CD-ROM in an acceptable electronic file format such as *.dxf, *.dwg, etc. or in a standard scanned and readable format. The electronic file requirement can be discussed and coordinated with Stormwater Division staff at the time of final submission.

**STORMWATER FACILITY - BMP AND CONVEYANCE SYSTEM
RECORD DRAWING CHECKLIST**

*(Key for Checklist is as follows: **XX** Acceptable **N/A** Not Applicable **Inc** Incomplete)*

I. 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. Include approved County Plan Number and BMP ID Code if known.
- _____ 4. All plan sheet revision blocks modified to indicate date and record drawing status.
- _____ 5. All plan sheets have certification statements and certifying professional's signature and seal.

II. Minimum Standards: *(Required for all Stormwater Management / BMP facilities, as applicable.)*

- _____ 1. All requirements of Section I (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 any 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 Stormwater 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 regrading 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 elevations 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 Stormwater Division specific to the constructed Stormwater BMP facility.

**STORMWATER FACILITY - BMP AND CONVEYANCE SYSTEM
RECORD DRAWING CHECKLIST**

*(Key for Checklist is as follows: **XX** Acceptable **N/A** Not Applicable **Inc** Incomplete)*

III. Group A - Wet Ponds *(Includes A-1 Small Wet Ponds; A-2 Wet Ponds; A-3 Wet Ext Det Ponds.)*

- _____ A1. All requirements of Section II, Minimum Standards, apply to Group A facilities.
- _____ A2. Principal spillway consists of reinforced concrete pipe with O-Ring gaskets for watertight joint construction.
- _____ A3. Sediment forebays or pretreatment devices provided at inlets to pond. Generally 4 to 6 ft. deep.
- _____ A4. 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.
- _____ A5. Adequate fixed vertical sediment depth markers installed in the forebay(s) for future sediment monitoring purposes.
- _____ A6. Pond liner (if required) provided. Either clay liners, polyliners, bentonite liners or use of chemical soil additives based on requirements of the approved plan.
- _____ A7. 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).
- _____ A8. No trees are present within a zone 15 feet around the embankment toe and 25 feet from the principal spillway structure.
- _____ A9. Wet permanent pool, typically 3 to 6 feet deep, is provided and maintains level within facility.
- _____ A10. Low flow orifice has a non-clogging mechanism.
- _____ A11. A pond drain pipe with valve was provided.
- _____ A12. Pond side slopes are not steeper than 3H:1V, unless approved plan allowed for steeper slope.
- _____ A13. End walls above barrels (outlet pipe) greater than 48 inch in diameter are fenced to prevent a fall hazard.

**STORMWATER FACILITY - BMP AND CONVEYANCE SYSTEM
RECORD DRAWING CHECKLIST**

*(Key for Checklist is as follows: **XX** Acceptable **N/A** Not Applicable **Inc** Incomplete)*

IV. Group B – Wetlands *(Includes B-1 Shallow Marsh; B-2 Ext Det Shallow Wetlands; B-3 Pond Wetland System and B-4 Pocket Wetland)*

- _____ B1. Same requirements as Group A Wet Ponds.
- _____ B2. Minimum 2:1 length to width flow path provided across the facility.
- _____ B3. Micropool provided at or around outlet from BMP (generally 3 to 6 ft. deep).
- _____ B4. 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.
- _____ B5. Adequate wetland buffer provided (Typically 25 ft. outward from maximum design water surface elevation and 15 ft. setback to structures).
- _____ B6. No more than one-half (2) of the wetland surface area is planted.
- _____ B7. Topsoil or wetland mulch provided to support vigorous growth of wetland plants.
- _____ B8. Planting zones staked or flagged in field and locations subsequently established by appropriate field surveying methods for record drawing presentation.

**STORMWATER FACILITY - BMP AND CONVEYANCE SYSTEM
RECORD DRAWING CHECKLIST**

*(Key for Checklist is as follows: **XX** Acceptable **N/A** Not Applicable **Inc** Incomplete)*

V. Group C - Infiltration Practices *(Includes C-1 Infiltration Trench; C-2 Infiltration Trench;
C-3 Infiltration Basin; and C-4 Infiltration Basin)*

- _____ C1. All requirements of Section II, Minimum Standards, apply to Group C facilities as applicable.
- _____ C2. Facility is not located on fill slopes or on natural ground in excess of six (6) percent.
- _____ C3. 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.
- _____ C4. 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.
- _____ C5. Sides of infiltration practice lined with filter fabric.
- _____ C6. 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.
- _____ C7. Stabilization and acceptable vegetative cover established over contributing drainage area prior to conveyance of stormwater to the facility.
- _____ C8. Minimum one hundred (100) foot separation horizontally from any known water supply well and minimum one hundred (100) foot separation upslope from any building.
- _____ C9. Minimum twenty-five (25) foot separation down gradient from any structure.
- _____ C10. Stormwater outfalls provided for overflow associated with larger design storms.
- _____ C11. No visual signs of erosion or channel degradation immediately downstream of facility.
- _____ C12. Facility does not currently cause any apparent surface or subsurface water problems to downgrade properties.
- _____ C13. Observation well provided.
- _____ C14. Adequate, direct access provided to the facility for future maintenance, operation and inspection.

**STORMWATER FACILITY - BMP AND CONVEYANCE SYSTEM
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

VI. Group D - Filtering Systems (Includes D-1 Bioretention Cells; D-2 Surface Sand Filters; D-3 Underground Sand Filters; D-4 Perimeter Sand Filters; D-5 Organic Filters; and D-6 Pocket Sand Filters)

- _____ D1. All requirements of Section II, Minimum Standards, apply to Group D facilities.
- _____ D2. Sediment pretreatment devices provided.
- _____ D3. For D-1 BMPs (Bioretention Cells), pretreatment consisting of a grass filter strip below level spreader (deflector); a gravel diaphragm; and mulch and planting soil layers were provided.
- _____ D4. For D-1 BMPs (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.
- _____ D5. 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.
- _____ D6. No visible signs of accumulated silt/sediment were present in the facility following construction or alternately, accumulated silt/sediment was properly removed .
- _____ D7. Filtering system is off-line from storm drainage conveyance system.
- _____ D8. Overflow outlet has adequate erosion protection.
- _____ D9. Deflector, diversion, flow splitter or regulator structure provided to divert the water quality volume to the filtering structure.
- _____ D10. Minimum four (4) inch perforated underdrain provided in a clean aggregate envelope layer beneath the facility.
- _____ D11. 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.
- _____ D12. Stabilization and acceptable vegetative cover established over contributing drainage area prior to conveyance of stormwater to the facility.
- _____ D13. No visual signs of erosion or channel degradation immediately downstream of facility.
- _____ D14. Adequate, direct access provided to the pretreatment area and/or filter bed for future maintenance.

**STORMWATER FACILITY - BMP AND CONVEYANCE SYSTEM
AS-BUILT PLAN CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

VII. Group E - Open Channel Systems *(Includes E-1 Wet Swales (Check Dams); E-2 Dry Swales; and E-3 Biofilters)*

- E1. All requirements of Section II, Minimum Standards, apply to Group E facilities as applicable.
- E2. Open channel system has constructed longitudinal slope of less than four (4) percent.
- E3. No visual signs of erosion in the open channel system=s soil and/or vegetative cover.
- E4. Open channel side slopes are no steeper than 2H:1V at any location. Preferred channel sideslope is 3H:1V or flatter.
- E5. No visual signs of ponding are present at any location in the open channel system, except at rock check dam locations for E-1 systems (Wet Swales).
- E6. For E-2 BMPs (Dry Swales), an underdrain system was provided.
- E7. Treated timber or rock check dams provided as pretreatment devices for the open channel system.
- E8. Gravel diaphragm provided in areas where lateral sheet flow from impervious surfaces are directly connected to the open channel system.
- E9. 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.
- E10. Open channel system areas with grass covers higher than four (4) to six (6) inches were properly mowed.
- E11. 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.
- E12. 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.
- E13. For E-3 BMPs (Biofilters), the bottom width is six (6) feet maximum at any location.
- E14. For E-3 BMPs (Biofilters), sideslopes are 3H:1V maximum at any location.
- E15. For E-3 BMPs (Biofilters), the constructed channel slope is less than or equal to three (3) percent at any location.
- E16. For E-3 BMPs (Biofilters), the constructed grass channel is approximately equivalent to the constructed roadway length.

**STORMWATER FACILITY - BMP AND CONVEYANCE SYSTEM
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

VIII. Group F - Extended Dry Detention *(Includes F-1 Timber Walls; and F-2 Dry Extended Detention with Forebay)*

- ___ F1. All requirements of Section II, Minimum Standards, apply to Group F facilities.
- ___ F2. Basin bottom has positive slope and drainage from all basin inflow points to the riser (or outflow) location.
- ___ F3. Timber wall BMP used in intermittent stream only. (ie. Prohibited in perennial streams.)
- ___ F4. Forebay provided approximately 20 ft. upstream of the facility. Forebays generally 4 to 6 feet in depth.
- ___ F5. A reverse slope pipe, vertical stand pipe or mini-barrel and riser was provided to prevent clogging.
- ___ F6. Principal spillway and outlet barrel provided consisting of reinforced concrete pipe with O-Ring gaskets for watertight joint construction.
- ___ F7. Mini-barrel and riser, if used, contains a removable trash rack to reduce clogging.
- ___ F8. Low flow orifice, if used, has a minimum diameter of three (3) inches or two (2) inches if internal orifice control was utilized and a small, cage type external trash rack.
- ___ F9. Timbers properly reinforced or concrete footing provided if soil conditions were prohibitive.
- ___ F10. Timber wall cross members extended to a minimum depth of two (2) feet below ground elevation.
- ___ F11. Protection against erosion and scour from the low flow orifice and weir-flow trajectory provided.
- ___ F12. Stilling basin or standard outlet protection provided at principal spillway outlet.
- ___ F13. 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.
- ___ F14. No visual signs of undercutting of timber walls or clogging of the low orifice were present.
- ___ F15. No visual signs of erosion or channel degradation immediately downstream of facility.
- ___ F16. 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.

**STORMWATER FACILITY - BMP AND CONVEYANCE SYSTEM
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

IX. Group G - Open Spaces *(Includes All Open Space Types G-1; G-2; and G-3)*

- ___ G1. All requirements of Section II, Minimum Standards, apply to Group G facilities as applicable.

- ___ G2. 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 James City County Chesapeake Bay Preservation Ordinance.

- ___ G3. Dedicated open space areas are in undisturbed common areas, conservation easements or are protected by other enforceable instruments that ensures perpetual protection.

- ___ G4. Provisions included to clearly specify how the natural vegetated areas utilized as dedicated open space will be managed and field identified (marked).

- ___ G5. Adequate protection measures were implemented during construction to protect the defined dedicated open space areas.

- ___ G6. Dedicated open space areas were not disturbed during construction (ie. cleared, grubbed or graded).

**STORMWATER FACILITY - BMP AND CONVEYANCE SYSTEM
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

X. Storm Drainage Systems, closed and open

(Includes all stormwater drainage conveyance systems such as onsite or offsite storm drains, open channels, inlets, manholes, junctions, outlet protections, deflectors, etc. The intent of this portion of the certification is to ensure the drainage conveyance facilities are constructed in accordance with the construction plans and specifications so that they convey the design flow levels and do not require excessive maintenance.)

- ___ SD1. All requirements of Section II, Minimum Standards, apply to Storm Conveyance systems.
- ___ SD2. Horizontal location of all pipes, structures and channels relative to the approved plan.
- ___ SD3. Type, top elevation and invert elevation of all closed system access structures (inlets, manholes, etc.).
- ___ SD4. Material type, size or diameter, class, invert elevations, lengths and slopes for all closed pipe segments.
- ___ SD5. Channel cross-section and invert elevations at 100 foot intervals. Channel liners as specified on the construction plans.
- ___ SD6. Class, length, width and depth of riprap and outlet protections or dimensions of special energy dissipation structures.

XII. 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.)

- ___ O1. All requirements of Section II, Minimum Standards, apply to this section.
- ___ O2. Certification criteria to be determined on a case-by-case basis by the Stormwater Division specific to the proposed SWM/BMP facility.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

XIII. References *(The James City County Record Drawing and Construction Certification Forms and Checklists for Stormwater Management / BMP facilities were developed using the following sources and references.)*

- Baltimore County, Maryland Soil Conservation District, As-Built Stormwater Management Pond Checklist.
- James City County, Virginia, Guidelines for Design and Construction of Stormwater Management BMP=s (October 1999).
- James City County, Virginia, Stormwater Detention/Retention Basin Design Checklist and Erosion and Sediment Control and Stormwater Management Design Plan Checklists.
- James City County Stormwater Policy Framework, Final Report of the James City County BMP Policy Project, October 1998, The Center for Watershed Protection.
- Prince Georges County, Maryland, As-Built Requirements Retention or Detention Pond/Basin.
- Prince William County, Virginia, Stormwater Management Fact Sheet.
- Stafford County, Virginia, As-Built Plan Checklist.
- Stormwater Management Design Manual, NRCS Maryland Code No. 378, Pond Standards and Specifications.
- USEPA/Watershed Management Institute, Stormwater Management Inspection Forms.
- Virginia Impounding Structure Regulations (Dam Safety), Department of Conservation & Recreation, 1997.
- Virginia Erosion and Sediment Control Handbook, Third Edition 1992, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation.
- Virginia Stormwater Management Handbook, 1999 edition, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation.