

CULPEPER SWCD STORMWATER MANAGEMENT CHECKLIST

March 2005

Below is a checklist of all necessary components required to complete all Stormwater Management Plans submitted to the Culpeper Soil and Water Conservation District (CSWCD) as in accordance with the Virginia Stormwater Management Law, Title 10, Chapter 6, Article 1.1 of the Code of Virginia and Virginia's Stormwater Management Regulations (4VAC 3-20-10). The Plan preparer must sign, date, and attach the checklist to any Stormwater Management Plan to be reviewed by the CSWCD.

For questions please call the CSWCD at (540) 825-8591. Application forms for the 1999 Virginia Stormwater Management Handbook, 1st Edition or the 2001 Virginia Stormwater Management Regulations (4VAC3-20) may be obtained from the CSWCD office or online at <http://www.dcr.virginia.gov/sw/stormwat.htm>.

I. PLAN NARRATIVE:

- _____ Narrative describing stormwater management strategy including all assumptions, and summarize drainage areas and pre and post development runoff rates.
- _____ Describe any sensitive areas and any applicable permits acquired or applied.

A. Drainage Area Map:

- _____ Pre-development
 - _____ Label drainage divides*
 - _____ Label drainage areas*
 - _____ Label "C" and CN values*
 - _____ Label time of concentration*
- _____ Post-development
 - _____ Label drainage divides*
 - _____ Label drainage areas*
 - _____ Label "C" and CN values*
 - _____ Label time of concentration*
- _____ Site boundary
- _____ Show off-site areas
- _____ Show Drainage Easements
- _____ BMP locations

* A summary table placed on the map is appropriate.

B. Soils Investigation:

- _____ Soils map with site and drainage area outlined.
- _____ Geotechnical report with recommendations and earthwork specifications.
- _____ Boring locations
 - _____ Borrow area
 - _____ Basin pool area
 - _____ Embankment area: centerline principal spillway, emergency spillway, abutments

II. COMPUTATIONS:

A. Hydrology:

- _____ Runoff curve number determinations: pre- and post-developed conditions, with worksheets.
- _____ Time of concentration: pre- and post-developed conditions, with worksheets.
- _____ Hydrograph generation: pre- and post-developed condition for appropriate design and safety storms (SCS methods or modified rational-critical storm duration method)

B. Hydraulics:

- _____ Specify assumptions and coefficients used.
- _____ Stage-storage table and curve
- _____ Stage-discharge table and curve (provide equations & references)
- _____ Riser structure and barrel
 - _____ Weir/orifice control analysis
 - _____ Barrel: inlet/outlet control analysis
 - _____ Anti-seep collar or filter diaphragm design
 - _____ Outlet protection per VE&SCH Std.. & Spec 3.18
 - _____ Provisions for use as a temporary sediment basin riser with cleanout schedule & instructions for conversion to a permanent facility.
- _____ Emergency spillway adequacy/capacity analysis with required embankment freeboard.
- _____ Storm drainage & hydraulic grade line calculations
- _____ Reservoir routing of post-development hydrographs for appropriate design storms (2-yr, 10-yr, or as required by the watershed conditions) & safety storms (100-yr or as required.)

C. Downstream impacts:

- _____ Danger reach study
- _____ 100 year floodplain impacts
- _____ "Adequate channel" calculations for receiving channels
- _____ Provide downstream hydrographs at critical study points
- _____ Storm drainage plans for site areas not draining to BMP
 - _____ Safe conveyance – MS -19

D. Water Quality:

- ___ Impervious cover tabulation
- ___ Technology-based criteria: proper selection of BMP based on impervious cover
- ___ Performance-based criteria: pre- and post-developed pollutant load and pollutant removal requirement calculations (provide worksheets).
- ___ Water quality volume calculations

III. PLAN REQUIREMENTS:

A. General Items:

- ___ Plan view drawn at 1" = 50' or less (40', 30', etc.)
- ___ North arrow
- ___ Legend
- ___ Location plan and vicinity map
- ___ Property lines
- ___ Existing and proposed contours (2' contour interval min)
- ___ Show the location and description of all existing and proposed drainage structures, pipes, roof drains, swales, ditches, curbs and channels and the direction of flow in each.
- ___ Location of test borings
- ___ Earthwork specifications
- ___ Construction sequence for SWM basin and E&S structures
- ___ Temporary erosion & sediment control measures
- ___ Conveyance of base flow during construction
- ___ Temporary and permanent stabilization requirements
 - ___ Emergency spillway
 - ___ Basin side slopes
 - ___ Basin bottom
- ___ Delineation of FEMA 100 year floodplain
- ___ Plans sealed by qualified licensed professional

B. BMP Plan Views:

- ___ Dimensions of basin features: perm. Pool and design storms, sediment forebay, embankment, etc.
- ___ Location of all conveyance system outfalls into basin
 - ___ Proper orientation to avoid short circuiting
 - ___ Outlet protection per **VE&SCH**
- ___ Top of bank & basin bottom elevations
- ___ Elevations of permanent pool, water quality volume and max. design water surface elevations for all appropriate design storms and safety storms
- ___ Side slope (H:V) of basin storage area and embankment (upstream and downstream slopes)
- ___ Elevation of crest of emergency spillway

- _____ Emergency spillway inlet, outlet, and side slopes labeled
- _____ Riser and barrel materials and dimensions labeled
- _____ Safety features
- _____ Maintenance access

1. Constructed stormwater wetland / shallow marsh:

- _____ Basin liner specifications
- _____ Pool depth zones identified on plan
- _____ Pool geometry – wet/dry weather flow path

2. Underground detention

- _____ Soils data adequate for excavation to required depths for storage
- _____ Storage volume and discharge rate
- _____ Cross-section along centerline
- _____ Cross-section along stormdrain or flow path
- _____ Observation well
- _____ Emergency spillway
 - _____ Dimensions
 - _____ Design storm Capacity

3. Bioretention/Infiltration basin:

- _____ Soils data adequate for infiltration and excavation to required depths for storage
- _____ Storage volume, ponding area, and discharge rate
- _____ Cross-section along centerline
- _____ Cross-section along stormdrain or flow path
- _____ Pretreatment- Erosion protection: RipRap, Reno mattress, etc.
- _____ Flow entrance – Curb cut, pipe outfall, etc.
- _____ Planting medium – 50% construction sand, 20-30% organic leaf compost, and 20-30% topsoil with max of 5% clay content.
- _____ Mulch and/or groundcover
- _____ Filtering mechanism – gravel & filter cloth, peagravel, etc.
- _____ Underdrain or outlet – approved pipe material, pipe size perforation size
- _____ Safe overflow allowance
- _____ Maintenance access

C. Landscape Plan:

- _____ Planting Schedule and specifications (transport/ storage/ installation/ maintenance)
- _____ Plant selection for planting zones 1 thru 6
- _____ Preservation measures for existing vegetation
- _____ Top soil / planting soil included in final grading

D. Maintenance Items:

- _____ Person or organization responsible for maintenance
- _____ Maintenance narrative which describes the short-term and long-term maintenance requirements of the facility and all components.
- _____ Facility access from public R/W or roadway
- _____ Maintenance Easement
- _____ County Approved Maintenance Agreement

CERTIFICATION OF PLAN PREPARER:

I certify that the above checklist items are fulfilled in the attached stormwater management plan, unless I have attached a written variance request for the omitted components.

(signature of plan preparer)

(date)

(print name)

(phone number)