SWM PLAN PREPARER/REVIEWER CHECKLIST

Instruction: The checklist shall be completed if a SWM Plan and Narrative is required per the VT Annual Standards and Specifications for ESC and SWM. The completed checklist shall be provided with the SWM Plan submittal. The Plan and Narrative submitted for review shall be signed and sealed by a licensed professional. This checklist is not inclusive. The licensed professional is responsible for ensuring plans address all applicable SMW laws and regulations.

Project Name: _____ **Project Location:** _____

Submittal Date: _____ **Date on Plans:** _____

Design Engineer (Printed): _____ **Email:** _____

Yes	N/A	General
☐	☐	**ESC GENERAL –** All items are included from the required ESC "General" checklist category.
☐	☐	**CHECKLIST –** Completed SWM checklist provided in the SWM Narrative
☐	☐	**EXCEPTION** – All required documentation submitted for SID review and submittal to DEQ for approval.
Yes	**N/A**	**SWM *Plan* Requirements**
☐	☐	**ESC PLAN** – All items are included from the required "ESC *Plan* Requirements" checklist category.
☐	☐	**BORINGS** – Locations of test borings.
☐	☐	**COMPACTION** – Compaction requirements specified.
☐	☐	**SWM FACILITY CERTIFICATION** – Plans shall list all SWM facilities and critical construction inspection time frames (e.g., liner, underdrain and outlet pipe installation) for which SWM BMP certification is required per Section 4.1.2 of the VT Annual Standards and Specifications for ESC and SWM.
☐	☐	**GENERAL NOTE** – The following note is on the plan: "A certified construction record drawing for permanent SWM facilities shall be submitted to Virginia Tech SID for approval per section 4.1.2 of the VT Annual Standards and Specifications for ESC and SWM. Construction inspections, photographs and surveys, performed by a licensed professional, shall be required at each stage of installation (construction) as necessary to certify that the SWM facility has been built in accordance with the approved plan and design specifications. The Contractor shall provide a minimum of 2 business days' notice to the certifying professional to allow for critical inspections."
☐	☐	**BMP MAINTENANCE** – Include an inspection and maintenance plan for each permanent SWM facility. For manufactured permanent BMPs, the construction drawings shall include manufacturer's recommendations on maintenance and inspection.
☐	☐	**BMP IDENTIFICATION** – Identification of BMP IDs as assigned by the VTSID Department in a table format that provides: BMP ID (provided by SID), BMP Description, and Name, Title, Department, Phone Number, and Email of responsible party for the maintenance of each BMP.
Yes	**N/A**	**SWM *Narrative* Requirements**
☐	☐	**ESC NARRATIVE** – All items are included from the required "ESC *Narrative* Requirements" checklist category.
☐	☐	**LAND COVER** – Summary table and map with pre- and post-development land cover conditions (i.e., forest, managed turf, and impervious areas).
☐	☐	**QUANTITY & QUALITY NARRATIVE** – Discussion of the stormwater management strategy to address water quantity and quality criteria.
☐	☐	**STORMWATER DISCHARGE DESCRIPTIONS** – Information on the type and location of stormwater discharges, including information on the features to which stormwater is being discharged, including surface waters or karst features if present.
☐	☐	**PROPOSED SWM** – Information on the proposed stormwater management facilities, including (i) the type of facility; (ii) location, (iii) impervious and pervious acres treated; and (iv) the surface waters or karst features into which the facility will discharge.

☐	☐	**SWM FACILITY OPERATION AND MAINTENANCE** - A general description of the proposed stormwater management facilities and the mechanism through which the facilities will be operated and maintained after construction is complete.
☐	☐	**GEOTECHNICAL REPORT** – Include when required for BMPs or other site specific needs. Include infiltration rates when required for a BMP.
☐	☐	**BORING LOCATIONS AND LOGS** – Provide information on boring locations in the area of borrow areas, basin areas, and embankments (centerline principal spillway, emergency spillway, abutments). Include Unified Soil Classifications, soil descriptions, seasonal high groundwater table depths, etc.
☐	☐	**KARST REGIONS** – Provide any additional geophysical investigation, consideration, and recommendations for any projects within Karst environments.
☐	☐	**LOCALITY REQUIREMENTS** – Description of the locality's additional technical requirements, if any, and how they were addressed to the maximum extent practicable.
Yes	**N/A**	**Hydrologic Computations** *(Narrative)*
☐	☐	**DRAINAGE AREAS** – Pre- and Post-development mapping that includes all contributing drainage areas, CN labels, and time of concentration flow paths, slopes, and lengths used for runoff hydrographs.
☐	☐	**RAINFALL** – Precipitation frequency data recommended by the U.S. National Oceanic and Atmospheric Administration (NOAA) Atlas 14. Partial duration time series shall be used for the precipitation data.
☐	☐	**CURVE NUMBERS** – Summary table for determination of runoff curve numbers.
☐	☐	**TIME OF CONCENTRATION** – Time of concentration calculations.
☐	☐	**HYDROGRAPHS –** Pre- and post-development runoff hydrographs.
Yes	**N/A**	**Hydraulic Computations** *(Narrative)*
☐	☐	**ROUTING** – Routing computations for each proposed stormwater management facility for each applicable design storm provided in the narrative.
☐	☐	**PEAK RUNOFF SUMMARY** – Summary table of pre- and post-development peak runoff rates for each point of discharge from the site provided in narrative.
☐	☐	**STORM ELEVATIONS** – Maximum water surface elevations for design storms shown in sections or profiles for each stormwater management facility.
☐	☐	**FREEBOARD** – Adequate freeboard is provided for impoundments as shown on the plans based on computations in the narrative.
☐	☐	**HYDRAULIC GRADE LINE** – Computations in the narrative with indication of locations of surcharge or inadequacy.
☐	☐	**STORM DRAIN CALCULATIONS** – Storm drain design, culvert, drop inlet backwater, and gutter spread calculations.
☐	☐	**PIPE PROFILES** – Provide profiles of all storm conveyances (except roof drains) on plans. Profiles should include existing and proposed grade, structure types, pipe materials and sizes, slopes, inverts, etc. HGL information shall be shown in profile format in the narrative in addition to tabular format.
Yes	**N/A**	**Water Quality Computations** *(Narrative)*
☐	☐	**VRRM SPREADSHEET** – Provide Runoff Reduction Method spreadsheet output including: • Site loadings • Required reductions • Input for each BMP employed and reductions achieved by each BMP • Compliance worksheet • Adjusted CN worksheet, when applicable.
☐	☐	**TREATMENT VOLUME** – Stage-storage information indicating the treatment volume required and volume provided as well as all subsequent calculations.
☐	☐	**BMP SPECS** – Include the Virginia BMP Clearinghouse design specifications for all proposed SWM BMPs.
☐	☐	**BMP CHECKLIST** – A BMP-type specific checklist from Appendix 8-A of the Virginia Stormwater Management Handbook, latest edition, is completed and provided in the narrative for each proposed BMP.