

General Certification Assessment Checklist

for

Bioretention Areas

Date of Certification Assessment: _____

Assessing and Certifying NCPE: _____ Seal:

BCE #: _____

SCM Facility Name: _____

Access Address: _____

PIN/s of Parcel/s Where the Facility is Sited: _____

SCM and Access Easement Information:

DB _____ PG _____ PB _____ PG _____

CHECKLIST

CDs: Approved Construction Drawings

NC: Non-compliant with the Approved CDs and/or City of Durham Requirements and Policies. Note: An "NC" should only be circled if the element in question is non-compliant.

Y: Yes

N: No

N/A: Not Applicable. If an element is not applicable, please write "N/A" next to the element.

F. Drainage Area -- 2 Points

- The drainage area to the facility is less than 5 acres and is, characteristically, 90% impervious or greater _____. NC
- The drainage area to the facility is completely stabilized, and no excess sediment is discharging into the forebay/sediment basin or bioretention area _____. NC

G. Easements and Accessibility -- 1 Point

- The constructed SCM facility is located entirely in a recorded SCM easement _____. NC
- The constructed access way is located entirely in a 20-ft wide recorded access easement _____. NC
- Unobstructed maintenance vehicle access from a nearby public or private right-of-way (i.e., road, parking lot, etc.) has been provided to the control structure and all inlets _____. NC
- At its narrowest point, the access width is _____. NC
- At its steepest point, the centerline grade of the access is _____. NC

- At its steepest pitch, the pitch or cross-slope of the access is _____. NC
- Unless it has been surfaced with gravel, asphalt, concrete, etc., 85% of the access way has achieved a healthy stand of grass, and all remaining areas have been seeded and mulched _____. NC
- An access hatch and steps down the inside of the riser/control structure have been provided in accordance with the CDs _____. NC

H. Dam Embankment -- 2 Points

- The narrowest top of dam width is _____. NC
- The steepest slope on the upstream face of the dam is _____. NC
- The steepest slope on the downstream face of the dam is _____. NC
- Based on manual rod probings of the dam, particularly in the zones over and around the principal spillway pipe, the dam appears to have been well compacted _____. NC
- The dam and dam foundation, groin, toe, and abutment areas are completely free of trees, landscaping, and other woody growth _____. NC
- The dam has been fine graded and is free of ruts, erosion, etc. _____. NC
- 85% of the dam embankment and dam foundation, groin, toe, and abutment areas have achieved a healthy stand of grass, and all areas that have not achieved a healthy stand of grass have been seeded and mulched. The dam is not overgrown and there is no undesirable vegetation _____. NC
- No evidence of seepage was noted on the downstream face of the dam _____. NC

I. Emergency Spillway -- 1 Points

- The narrowest width of the control section is _____. NC
- The side slopes of the control section are [Left] _____ and [Right] _____. NC
- The size, shape, and alignment of the exit channel are in accordance with the CDs _____. NC
- Armoring has been installed in accordance with the CDs _____. NC
- The spillway has been fine graded and is free of ruts, erosion, etc. _____. NC
- Excluding the hard-surfaced armored area, 85% of the spillway has achieved a healthy stand of grass, and all remaining areas have been seeded and mulched. The spillway is not overgrown and there is no undesirable vegetation _____. NC

J. Riser/Control Structure and Principal Spillway Pipe -- 2 Points

- The riser/control structure is reinforced concrete _____. NC
- The diameter or opening dimensions of the riser/control structure is/are _____. NC
- A top, peak-roofed trash rack has been provided and bolted down to the riser _____. NC
- The riser/control structure and all appurtenant devices appear to be sound _____. NC
- The riser/control structure is free of debris or obstructions _____. NC

- For precast structures, the barrel sections were installed with gasketed joints, and adjacent riser barrel sections have been bolted together with steel strapping _____. NC
- All orifices, siphons, ports, and weirs were installed in accordance with the CDs _____. NC
- The anti-floatation ballast has been provided in accordance with the CDs _____. NC
- A placed concrete invert to the invert out of the principal spillway pipe (PSP) has been provided _____. NC
- The PSP is reinforced concrete _____. NC
- The diameter of the PSP is _____. NC
- Based on a visual inspection, it appears that the joints of the PSP were “homed” reasonably well, and it appears that no joints are leaking _____. NC

K. Inlet/Flow Distribution Area -- 2 Points

- Pre-treatment (sediment basin + turf filter strip, or something equivalent) has been provided at each inlet in accordance with the CDs _____. NC
- All accumulated sediment and other debris in the pre-treatment areas has been removed _____. NC
- Any flow splitters or bypass systems have been constructed in accordance with the approved CDs _____. NC
- The maximum inflow velocity into the bioretention cell is no greater than one foot per second _____. NC
- The flow into the bioretention cell is evenly distributed across the cell in accordance with the CDs and there is no scour within the bioretention cell _____. NC
- All inlet pipes have been installed with appropriate end treatments in accordance with the approved CDs _____. NC

L. Bioretention Cell -- 4 Points

- The maximum allowable head, H_M , above the mulch layer at V_{WQ} (e.g., during the one-inch event) is less than or equal to 9 inches and is in accordance with the CDs _____. NC
- For bioretention areas with an internal water storage (IWS) zone shown on the CDs:
 - The depth of the IWS zone is between 12 and 18 inches above the gravel layer surrounding the underdrains _____. NC
 - A low-level release outlet has been provided in accordance with the CDs _____. NC
 - If a low-level release has not been provided for the facility, the bioretention area has been excavated to an additional depth to accommodate the IWS and maintain full storage availability within the top 30” of the bioretention soil mix _____. NC
- The surface area of the bioretention cell is in accordance with the approved CDs _____. NC
- The required bioretention soil mix and mulch layer, including the minimum mix depths, has been installed in accordance with the approved CDs, and there is no sediment in the bioretention cell _____. NC
- The underdrain system has been installed in accordance with the approved CDs _____. NC
- All side slopes leading to the bioretention cell are no steeper than 3:1 _____. NC

- Any flow splitters or bypass systems have been constructed in accordance with the approved CDs _____ . NC
- Even flow distribution into the bioretention cell has been provided in accordance with the CDs and is not creating scour in the bioretention cell _____ . NC
- The bottom of the lowest part of the underdrain system is located at least two feet above the seasonal high water table _____ . NC
- 85% of the plantings specified in the approved CDs are thriving _____ . NC
- The bioretention cell has been observed by the certifying engineer to drawdown the runoff from the first inch of rainfall in a manner consistent with that specified in the approved CDs _____ . NC

M. Outfall Structure and Outfall Area -- 1 Point

- The control structure has been installed in accordance with the CDs _____ . NC
- The outfall structure is a concrete endwall (with wingwalls if required) _____ . NC
- Appropriate fall protection has been provided across the top of the structure _____ . NC
- A stilling basin (plunge pool) has been provided in accordance with the CDs _____ . NC
- The outfall area appears stable, and all accumulated silt and debris has been removed _____ . NC

BCE's Score: _____

City of Durham's Score: _____

Scoring Notes:

- (1) A passing score shall be 14 out of 15;
- (2) If any item within a section is deemed NC, no points shall be awarded for that section;
- (3) If a BCE awards a score of anything less than 15 and submits an as-built and construction certification to the City anyway, the City will reject the entire submittal.