APPENDIX 9: GEODATABASE OF RESTORATION PROJECTS FEATURE CLASS ATTRIBUTES

APPENDIX 9: GEODATABASE OF PROJECTS - ATTRIBUTES AND DOCUMENTATION

Following are a list of attributes developed for describing and comparing proposed stormwater retrofit and stream restoration projects. Attributes are associated with a polygon project feature class in the geodatabase. Additional feature classes include drainage area to project and disturbed area of project. These are useful in determining the number and types of property owners that may be affected by a project.

PROJECTS GIS FEATURE CLASS:

Project ID: *(unique key)*

Project Type:

- *Bioretention w/IWS*
- *Bioretention w/o IWS*
- *Wet Detention Basin*
- *Sand Filter*
- *Stormwater Wetland*
- *Level Spreader + Filter Strip*
- *Dry Extended Detention Basin*
- *Grassed Swale*
- *Green Roof*
- *Permeable Pavement*
- *Rainwater Harvesting*
- *Infiltration devices/basins*
- *Floating Wetlands*
- *Mass Soil Amendment*
- *Offline Regional Treatment*
- *Proprietary Devices*
- *Underground/Other Storage/Retention*
- *Improvement of Existing BMP*
- *Priority 1 stream restoration – new stable channel connected to floodplain*
- *Priority 2 stream restoration – new floodplain and stable channel at present elevation*
- *Priority 3 stream restoration – widen floodplain, new bankfull bench, leave stream in place*
- *Priority 4 stream restoration – stabilize existing streambanks in place, no improved access to fp*
- *raising of stream bed and rebuild of hyporheos (stream restoration technique)*
- *instream grade control (to prevent downcutting or rebuild – includes step-pools, engineered riffles, and other instream structures for highly localized flow and grade control management)*
- *stream channel rerouting – restore natural pattern, move away from eroding areas or infrastructure*
- *rebuild instream structure and heterogeneity – riffle-pool structures, increased heterogeneity, hyporheos, emplaced large woody debris*
- *streambank erosion control and stabilization (includes streambank reshaping/new bankfull bench, accelerated streambank evolution, live stakes and other plantings, hard engineered surfaces, green-engineered combo methods)*

- *gully/erosion repair or prevention (includes all kinds of stormwater outfall energy dissipation)*
- *Stream daylighting and culvert removal*
- *Stream ford repair/improvement*
- *Culvert modification, enlargement, realignment, or other improvement*
- *Floodplain fill removal, legacy sediment removal*
- *Large dam removal*
- *Dam repair, replacement*
- *Targeted direct stormwater input removal (illicit discharges and cross-connections)*
- *High-density urban stormwater BMPs*
- *Floodplain restoration/vernal pools*
- *Groundwater remediation*
- *Street sweeping*
- *Leaf collection/management (gross solids control)*
- *Riparian buffer enhancement*
- *Riparian buffer reforestation*
- *Invasive species management and control*
- *Trash/debris cleanup*
- *Dump/trash excavation*
- *Septic system repair/replacement/retirement*
- *Stream fencing*
- *Vegetative erosion control*
- *Floodplain structure removal*
- *Soil restoration, amendment, ripping*
- *Small dam removal*
- *Residential rain garden (i.e. non-engineered bioretention/bioinfiltration)*
- *Upland reforestation/lawn replacement*
- *Conversion of impervious surface to pervious*
- *Illicit discharge enforcement*
- *aboveground storage tank removal, replacement, covering, ground covering, maintenance*
- *Industrial/Commercial Pollution Prevention – dumpsters, restaurant practices, etc.*

Project Description:

Location Description and Driving Directions:

Name of Receiving Water:

Receiving Water DWQ classification:

Receiving Water rating:

Town Subwatershed ID/Name:

Jordan Rules Creditable: *yes, pending, no, unknown*

Drainage Area to Project:

Property owner types in Drainage area and % (for assigning credits): *named jurisdiction, NCDOT, other federal/state (name), private*

Area available for Project:

Proposed Disturbed Area (ac/sqft?):

Disturbed Area current land cover (describe in detail):

Final Project Footprint Area:

Property Owners in Disturbed Area:

Property Owner Cooperation:

Property restrictions: *covenants, easements, regulated floodplain, regulated stream buffers, setbacks of all kinds, deed restrictions, etc. (or "unknown" or "partial listing")*

Construction Accessibility:

Est. Construction Costs:

Est. Utility Move Costs:

Other Implementation Costs:

Design complications: *like fully connected impervious (incl roofdrains), extensive/large network, deep existing network, low slope, limited daylighting opportunities, dedicated rainwater use/management*

Design analyses: *like flood studies, geotechnical testing, 401/404 alternatives analysis, other professional analyses, dedicated rainwater use/management*

Special Design notes: *such as for experimental university studies, improvement of existing underfunctioning BMP, reduce downstream erosion, or other changes to standard design to improve functionality, efficiency, resilience, reduce maintenance, etc.*

Maintenance Accessibility:

Maintenance Responsibility:

Maintenance Funding: *available? Guaranteed how?*

Est. Annual Maintenance costs:

Maintenance description:

Project Protection: *funds/restrictions in place to protect project?*

Drainage Area Average Slope:

Project Area Average Slope:

Soils in Drainage Area: (%?)

Soils in Project Area: *(hydrologic group or estimated or measured permeability)*

Estimated depth to groundwater table: (*some rough indication of whether it's on the order of 1-2 feet or >5 ft might be helpful for some types of BMPs, especially stormwater wetlands)*

Environmentally Sensitive Areas: *floodplain, stream buffers, E/I species habitat, wetlands, Natural Heritage, etc.*

Invasive Plant Species and Severity:

Utility conflicts: *"not investigated", "partial investigation - (list)", and full list*

Other Barriers to Implementation:

Est. Water Quality Volume:

Est. annual Drainage loading – N:

Est. annual Drainage loading – P:

Est. annual Drainage loading – other:

Potential N reduction:

Potential P reduction:

Potential other pollutant reduction:

Potential Runoff reduction:

Volume/rate control: *(List design storms used)*

Addressing Identified Problem: *(Problem IDs – for linkage to Problem ID table)*

Problem types addressed: *pollutants (list), sediment source, stream instability, instream erosion, poor aquatic habitat, poor terrestrial habitat, riparian forest, floodplain function, habitat heterogeneity, hyporheic exchange, connectivity/migration barrier, GW recharge, flashiness/hydrologic modification, low base flow, high water temp, low DO, BOD/COD, algae, drainage complaint, sanitary/septic*

Other Potential Benefits: *park space, pond amenity, support stream or watershed restoration, support another project, support plant community reconstruction, highway/road/public area beautification, wildlife habitat/food/cover, remove invasive plant seed source, address known drainage problem, public ed/involvement (like community garden, demonstration space), ongoing/planned/past academic study*

Feasibility Conclusions:

RETROFIT WQ CALCULATIONS ASSOCIATED TABLE:

Project ID: (parent key)

Land Use Type: *Roadway, Driveway, Parking Lot, Roof, Sidewalk/Patio, Lawn, Managed Pervious, Forest, Other*

Soil type

Drainage Landuse and Impervious types and %: *(do as a separate table or fields for each land use type)*

Soils in Drainage Area: (%'s by hydrologic soil groups)

Fields for each land use:

- TN EMC
- TP EMC
- Area
- Rv
- Annual #N
- Annual #P
- N Load per Ac
- N Reduction per Ac
- P Load per Ac
- P Reduction per Ac
- Total annual runoff for the watershed
- Projected retrofit volume capture
- Projected volume reduction