

Stormwater Standards for New Development and

Pursuant to Section 6.20 of the Town of Hillsborough's Unified Development Ordinance (UDO) and the State of North Carolina's Falls Lake Rules (15A NCAC 2B .0277), stormwater standards apply to **all** development and re-development projects that:

- Add 10,000 square feet or more of impervious surface
- Disturb 10,000 square feet or more of land for purpose of development
- Disturb ½ acre or more for single lot residential projects (not part of a larger project)
- Disturb ½ acre or more for recreational facilities on a single lot

Stormwater Management Standards:

- Requires at least one primary stormwater control measure (SCM)
- Control/treat runoff from all surfaces generated from first inch of rain
- Runoff volume drawdown 48-120 hours
- 85% Total Suspended Solids (TSS) reduction
- Meet applicable riparian buffers
- No net increase in peak flow for the 1-year, 24-hour storm
- Meet nutrient loading rates¹:
 - ⇒ Nitrogen 2.2 lbs/ac/yr
 - ⇒ Phosphorus 0.33 lbs/ac/yr
- Offset payment is allowed when...
 - ⇒ On-site nutrient load reduced by **30%** for projects disturbing **less** than 1 acre
 - ⇒ On-site nutrient load reduced by **50%** for projects disturbing **more** than 1 acre

¹Calculated using the State approved nutrient accounting tool



Stormwater Wetland at Gold Park

Applicable projects also require the following:

- Approved stormwater management plan and review fee (prior to starting construction)
- Stormwater Control Measures (SCM) designed in accordance with the NCDEQ Stormwater Design Manual and Minimum Design Criteria (MDC).
- Deed restrictions/covenants for all SCMs
- As-built survey and engineer's certification for all SCMs
- Recorded Operation & maintenance agreement for all SCMs
- Annual maintenance inspection and report for all SCMs, once in operation
- Recorded maintenance/storm drainage easements
- Performance security for installation of SCMs may be required
- Submittal of electronic stormwater system data

Stormwater Standards for New Development and Re-development Projects (continued)

Plan Review Fee Schedule

Single Lot Residential ²	\$ 100.00 /plan
LID Project ³	\$ 250.00 /plan
Standard Project (less than 1-acre of new impervious) ⁴	\$ 500.00 /plan
Standard Project (greater than 1-acre of new impervious) ⁴	\$ 500.00 /plan plus \$50/acre of new impervious
Standard Phased Projects ⁵	\$ 250.00 /each subsequent phase submittal

²Not part of a larger common plan for development or sale.

³Projects that meet the State of North Carolina's Low Impact Development requirements and calculations

⁴For standard projects (non-LID projects) requiring stormwater management approval, the fee includes one project review meeting with staff and no more than three rounds of staff comments. If stormwater plans are still incomplete after the third review or if additional meetings with staff are required, the applicant will be required to pay an additional \$500 review fee to cover the significant staff time spent reviewing incomplete or non-compliant stormwater management plans.

⁵Phased development projects are required to obtain a stormwater management plan approval for the entire project; as each as each subsequent phase is submitted, an additional fee will be required to ensure the phase plans comply with the overall stormwater management plan approval.

Important Definitions⁶

Development—Any man-made change or improvement to real property, including but not limited to the construction, erection, structural alteration, enlargement or rehabilitation of buildings or structures, including farm building; mining; dredging; filling; grading; paving; excavation or drilling operations; clearing of vegetation; any division of a parcel of land into two or more parcels; and any use or change in use of any structures or land. Development shall also include any land disturbing activity on improved or unimproved real property that changes the amount of impervious or partially impervious surface on a parcel, or that otherwise decreases the natural infiltration of precipitation into the soil.

Re-development—For stormwater purposes, any development on previously developed land. Redevelopment of structures or improvements that (i) existed prior to December 2006 and (ii) would not result in an increase in impervious surface area and (iii) provides stormwater control at least equal to the previous development is not required to meet the nutrient loading targets of this ordinance.

Larger Common Plan of Development—a site where multiple separate and distinct development activities may be taking place at different times on different schedules but governed by a single development plan regardless of ownership of the parcels. Information that may be used to determine a "common plan of development" include plats, blueprints, marketing plans, contracts, building permits, public notices or hearings, zoning requests, and infrastructure development plans.

Impervious Surface—A ground covering that limits the absorption of stormwater into the ground water system. Examples include building, asphalt, concrete, gravel, and similar treatments.

One-year, 24-hour Storm—The surface runoff resulting from a 24-hour rainfall of an intensity expected to be equaled or exceeded, on average, once in 12 months and with a duration of 24 hours.

Riparian Buffer—Area set aside along rivers, streams or other bodies of water, within which the use and/or improvement of land is restricted or prohibited.

Stormwater Control Measure—A physical device designed to trap, settle out, or filter pollutants from stormwater runoff; to alter or reduce stormwater runoff velocity, amount, timing or other characteristics; to approximate the pre-development hydrology on a developed site; or to achieve any combination of these goals.

⁶Please refer to Section 9.0 of the Town's UDO for more definitions.

Submittal Requirements

Projects typically require site plan approval through the town's Technical Review Committee (TRC) process. Site plan drawings are usually less detailed but for stormwater review purposes must include all items listed in the Stormwater *Checklist Required for Site Plan Review*, listed below.

Once a project has an approved site plan, construction level drawings are submitted, including a stormwater management plan. The stormwater management plan must be approved before construction is allowed to begin. Submittal requirements for the stormwater management plan (construction drawings) are included on the following page.



Stormwater Checklist Required for Site Plan Review⁷

- Drawings showing site layout and locations of Stormwater Control Measures (SCMs), top of banks for the streams, riparian buffers, SCM maintenance easements, and locations of existing and proposed storm drainage infrastructure
- A preliminary Stormwater Impact Analysis (SIA) that includes:
 - Total area of site and total disturbed area proposed
 - Whole site impervious area breakdown (existing, proposed, and demolition)
 - Calculations of required water quality volume and estimate of required volume and surface area of SCMs (as applicable to chosen SCM).
 - Indication of which SCMs will be used for peak attenuation
 - Approved stormwater nutrient accounting tool input and output sheets
- In the Site Plan or Preliminary SIA, include at least one of the following:
 - Plan sheets showing existing and proposed contour lines identifying pre- and post- development drainage patterns
 - Existing and proposed drainage area maps delineating drainage areas to each proposed SCM and all drainage areas bypassing SCMs
- A statement indicating that all permanent slopes, including SCM side slopes, will be constructed at no steeper than 3:1.
- A statement indicating how off-site drainage will be addressed (if applicable)

⁷Any additional details provided will not be reviewed until Construction Plan submittal

Stormwater Standards for New Development and Re-development Projects (continued)

Required for Stormwater Management Plan⁸ Approval following Site Plan Review:

- Must have previously approved site plan
- Payment of stormwater review fee and copy of receipt (unless paid directly to Stormwater Staff)
- Design specifications for impervious surface (type of pavement) and all stormwater management facilities and practices including the location, size, depth, vegetation of all measures, controls, and devices
- All pipe sizes, elevations, and drainage locations
- Specifications that direct contractors to follow all relevant MDCs, including but not limited to:
 - SCM cross-sections with key elevations and features clearly labeled
 - SCM detailed plan views to scale
 - Details on structures integral to the SCM function (e.g. flow splitter)
 - Detailed SCM planting plans including planting zones, species, stem count, and size of plant
 - Notes directing contractors to follow other MDCs not specified in above details
- Complete Stormwater Impact Analysis (SIA) with elements including but not limited to the following:
 - Narrative explaining stormwater management approach and how all relevant requirements are met
 - Existing and proposed detailed drainage area maps including but not limited to:
 - * Proposed drainage areas for all SCMs and areas bypassing SCMs
 - * Corresponding table including total area and impervious area for each existing and proposed drainage area
 - * Scale and north arrow
 - * Analysis points clearly identified and labeled
 - * Time of concentration flow paths
 - Final approved stormwater nutrient accounting tool input and output sheets
 - SCM sizing calculations indicating each SCM is sized adequately for water quality and peak flow requirements.
 - SCM orifice sizing calculations
 - 1-year, 24-hour storm event peak flow estimates for pre-development, post-development, and post-development with SCMs
 - Storm drainage pipe sizing calculations
 - Clearly identify calculation methods and software used
 - Include additional calculation input and output as an appendix
- Additional relevant information documenting the detailed design of the conveyance system and SCMs.
- A post-submittal review meeting with stormwater and environmental services staff may be required.

⁸**For phased projects or those under a larger common plan of development, provide required calculations and information reflecting full buildout of all phases.**

For more information, contact:

Heather Fisher
Stormwater Program Coordinator
PO Box 429, 101 E. Orange St.
Hillsborough, NC 27278
Phone: 919-296-9622
Email: heather.fisher@hillsboroughnc.gov

