

City of Winston-Salem Stormwater Post Construction Ordinance

Engineer/Developer Training Session
September 19, 2008



Presentation Outline

- Federal and State and Local factors which influenced the need for revised regulations.
- Review of major provisions of Post Construction Stormwater Control Ordinance.
- Application submittal and review process
- Questions/Discussion

Federal and State Requirements

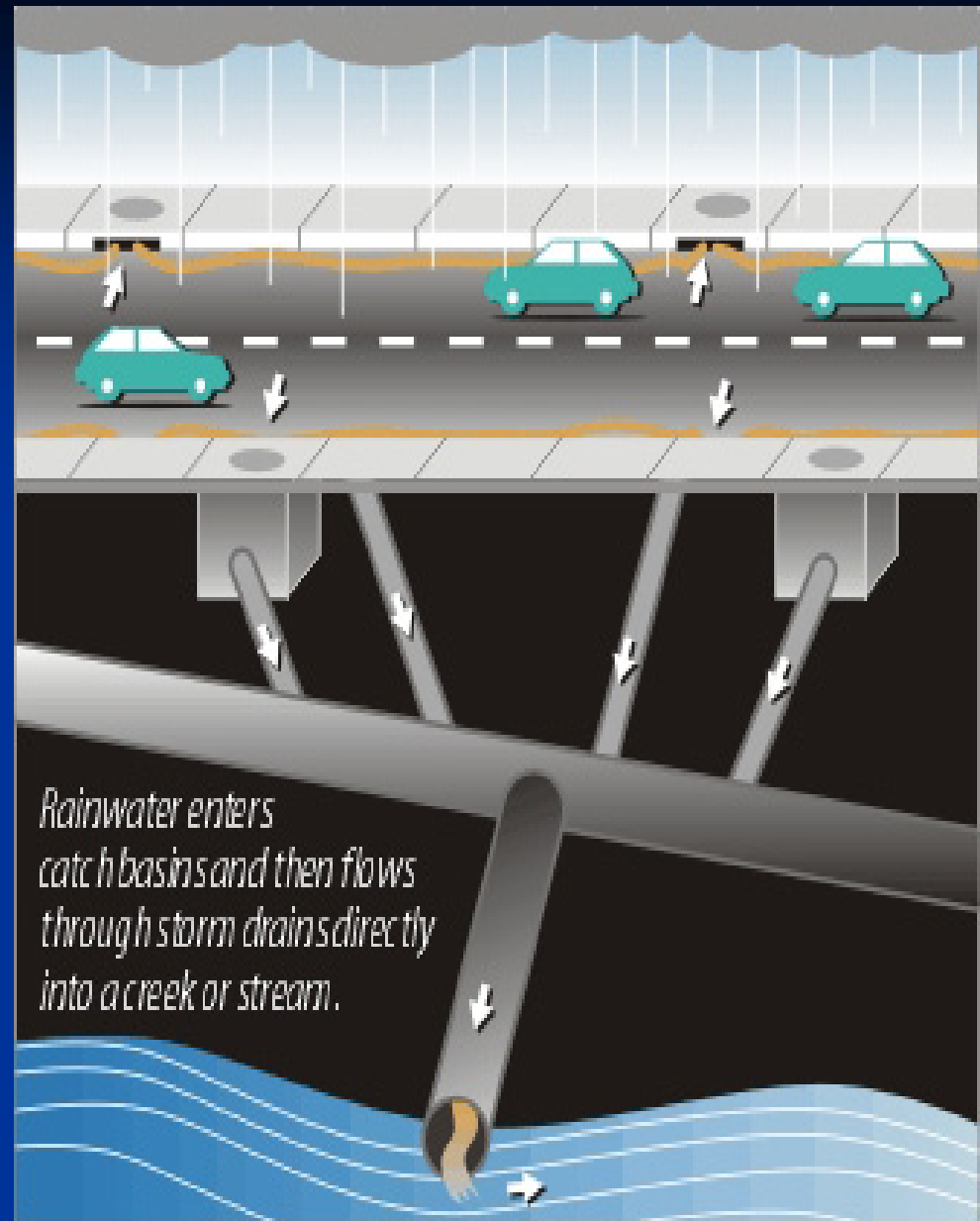
- NPDES Phase II Stormwater Regulations
- Session Law 2006-246 (Amends Post Construction Rules).
- EPA Audit of the City's Stormwater Management Program (Summer 2006)
- Total Maximum Daily Load's on Salem Creek and High Rock Lake.

Local Factors

- Antiquated policies for control of Stormwater runoff for new development and re-development projects (10 year pre/post).
- Localized flooding and erosion Citywide.
- Top priority of local elected officials.



As part of the Clean Water Act, the EPA established Phase I of the **National Pollutant Discharge Elimination System**. Which required medium and large urbanized areas to obtain permits to discharge stormwater to the waters of the United States. These permits required local governments to implement programs to remove pollutants from stormwater to the maximum extent practical.



The NPDES permitting requirements make local governments responsible for the pollutants that collect on impervious surfaces and are then conveyed through the publicly owned and operated storm drainage system and into receiving streams.



Post-Construction Ordinance



Overall Goal: *To develop an ordinance to for the purpose of controlling storm water runoff and associated negative water quality and quantity impacts resulting from post-construction storm water discharges.*

Ordinance Sections

- Section 1 (General Provisions)
- Section 2 (Administration and Procedures)
- Section 3 (Standards)
- Section 4 (Maintenance)
- Section 5 (Enforcement and Violations)

Post Construction Stormwater Control Ordinance Specific Goals

- Establishing decision-making processes for *development* that protects the integrity of watersheds and preserves the health of water resources.
- Requiring that new *development* and *redevelopment* maintain the *pre-development* hydrologic response in their *post-development* state as nearly as practicable for the applicable design storm(s) in order to reduce flooding, streambank erosion.
- Establishing minimum *post-development* stormwater management standards and design criteria for the regulation and control of stormwater runoff quantity and quality.
- Establishing design and review criteria for the construction, function, and use of *structural stormwater BMPs* that may be used to meet the minimum *post-development* stormwater management standards.
- Establishing provisions for the long-term responsibility for and maintenance of *structural and nonstructural stormwater BMPs*.

Section 1 (General Provisions)

Exemptions

- A development that cumulatively disturbs less than one acre and is not part of a larger common plan of development, redevelopment or sale.
- A development or redevelopment that cumulatively disturbs less than one acre is not exempt if such activities are part of a larger common plan of development, redevelopment or sale, even though multiple, separate or distinct activities take place at different times on different schedules;
- A development that cumulatively disturbs less than 20,000 square feet for residential and nonresidential uses is exempt from the quantity management provisions of this ordinance .

Section 1 (General Provisions)

Exemptions

- Any redevelopment activity for which the proposed impervious area is equal to or less than the preexisting impervious area.
- Activities exempt from permit requirements of Section 404 of the federal Clean Water Act, as specified in 40 CFR 232 (primarily, ongoing farming and forestry activities).
- For a development or redevelopment that i) cumulatively disturbs less than three acres; ii) is not part of a larger common plan of development, redevelopment or sale; and iii) is less than 24 percent built-upon area; the standards for stormwater quantity management, as set out in section 75-303 below, shall be limited to controlling only the two-year and ten-year design storms. However, all other provisions of this ordinance shall apply.

Section 1 (General Provisions)

Exclusions

- A grading permit or building permit;
- A site-specific development or redevelopment plan or site specific phased development or redevelopment plan submitted prior to the effective date of this ordinance, and approved within six months of the effective date of this ordinance and which has substantial progress made within two years of the site plan approval;
- Any development or redevelopment activity which has received stormwater management plan approval prior to the effective date of this ordinance and substantial progress is made within two years of the effective date of this ordinance;
- A right that has vested under statutory or local law prior to the effective date of this ordinance.

Section 2 (Administration and Procedures)

Applications for approval

- *Concept plan and consultation meeting.* Before a stormwater management permit application is deemed complete, the stormwater director or owner may request a consultation on a concept plan for the stormwater management system. This consultation meeting should take place prior to submitting the preliminary plan of subdivision, special use rezoning or other early step in the development or redevelopment process.

Section 2 (Administration and Procedures)

Assessment and Control of Water Quantity impacts

- A point downstream where the proposed site development or redevelopment represents less than ten (10) percent of the total watershed area draining to that point (10% Guideline).
- A point downstream where drainage from the development or redevelopment site enters a Federal Emergency Management Agency (FEMA) established floodway.
- A point where the City knows of no existing stormwater problems that the proposed development or redevelopment is likely to exacerbate.
- A point where there are no public road crossings or other public infrastructure that may be adversely impacted by an increase in runoff from the proposed development or redevelopment site.

Section 2 (Administration and Procedures)

As-built plans and final approval

- Upon completion of a project and before a certificate of compliance, as defined in G.S. 160A-423, shall be granted by the building inspector, the owner shall, except as provided for in subsection (e) of this section, certify that the completed project is in accordance with the approved stormwater management system, and shall submit actual as-built plans for the entire stormwater management system once construction is completed. A final inspection and approval by the stormwater director shall occur before the release of any performance securities. The final inspection shall occur within a reasonable time frame in order to expedite release of performance securities.
- *Other permits.* No certificate of compliance shall be issued by the building inspector working in consultation with the stormwater director without final, as-built plans and a final inspection and approval by the stormwater director, except where multiple units are served by the stormwater management system, in which case the building inspector may elect to withhold a percentage of certificates of compliance until as-built plans are submitted and approved by the stormwater director.

Section 2 (Administration and Procedures)

Approvals

- *Effect of approval.* Approval authorizes the owner to go forward with only the specific plans and activity authorized in the permit. The approval shall not be construed to exempt the owner from obtaining other applicable approvals from local, state, and federal authorities.
- *Time limit/expiration.* An approved stormwater plan and permit shall become null and void if the owner has failed to make substantial progress on the site within two years after the date of approval. The stormwater director may grant a single, one-year extension of this time limit, for good cause shown, upon receiving a written request from the owner before the expiration of the approved plan.

Stormwater Appeals

- *Right of appeal.* Any aggrieved person affected by any decision, order, requirement, or determination relating to the interpretation or application of this ordinance and made by the stormwater director may file an appeal to the stormwater appeals board within 30 days of the stormwater director's decision, order, requirement or determination.
- Stormwater Appeals Board is composed of five members: one neighborhood association representative, one developer representative and three professionals.

Section 3 (Standards)

STANDARDS FOR STORMWATER QUALITY MANAGEMENT

Low-Density Projects (24% or less BUA)

- Stormwater runoff shall be transported by vegetated conveyances to the maximum extent practicable.
- All BUA for every development or redevelopment shall be set back in accordance with the standards labeled "Required Landward Buffer Widths" and "Undeveloped Buffer", as measured from the top of the stream bank of all perennial and intermittent surface waters.
- Right-of-way crossings, below ground level utility crossings or encroachments, and greenways, if approved pursuant to a stormwater management permit or pursuant to a development or a redevelopment site plan, may be located within the landward buffer. Other than approved right-of-way and utility crossings, these exceptions to the landward buffer may not be located within the undisturbed buffer.
- A perennial or intermittent surface water shall be present if the feature is approximately shown on either the most recent version of the soil survey map prepared by the Natural Resources Conservation Service of the United States Department of Agriculture or the most recent version of the 1:24,000 scale (7.5 minute) quadrangle topographic maps prepared by the United States Geologic Survey (USGS), or is determined by the city or the division to exist in the field. An exception to this requirement may be allowed when surface waters are not present in accordance with the provisions of 15A North Carolina Administrative Code 2B .0233(3)(a) or similar site-specific determination made using division-approved methodology.

Riparian Buffers

Development or Redevelopment Size	Required Landward Buffer Widths	Undisturbed Buffer Widths (Within Landward Buffer)
0-10 Acres	30 Feet	15 Feet
10-50 Acres	50 Feet	25 Feet
Greater than 50 Acres	100 Feet	50 Feet

Section 3 (Standards)

STANDARDS FOR STORMWATER QUALITY MANAGEMENT

Development Standards for High-Density Projects

- The stormwater management systems shall control and treat stormwater runoff volume leaving the project site for the first one inch of rain. Runoff volume drawdown time shall be a minimum of 48 hours, but not more than 120 hours.
- High-density projects must discharge the storage volume at a rate equal to or less than the predevelopment discharge rate for the one-year, 24-hour storm.
- All stormwater management systems used to meet the requirements of this ordinance shall be designed to have a minimum of 85 percent average annual removal for total suspended solids;
- General engineering design criteria for all projects shall be in accordance with 15A North Carolina Administrative Code 2H .1008(c), as explained in the design manual;
- Riparian buffer rules apply (same as low density)

Section 3 (Standards)

STANDARDS FOR STORMWATER QUALITY MANAGEMENT **Development Standards for High-Density Projects**

- *Water-borne trash and debris.* To reduce the amount of water-borne trash and debris, the owner shall develop, implement and maintain an approved trash and debris collection and disposal program for the development or redevelopment.
- *Oxygen depleting organic material.* To reduce the oxygen depleting impacts of organic material decay on receiving waters, the owner shall develop, implement and maintain an approved leaf and vegetation collection and disposal program for the development or redevelopment.
- *Water supply watershed regulations compliance.* On-site stormwater management for water quality purposes shall meet all pertinent regulations associated with the water supply watershed regulations.
- *Jurisdictional waters regulations compliance.* Any proposed impacts to jurisdictional wetlands and/or jurisdictional waters of the United States shall be reviewed and approved by appropriate regulatory agencies such as the U.S. Army Corps of Engineers (wetlands - Clean Water Act, Section 404) and the department or division (water quality certification - Clean Water Act, Section 401). Proof of compliance with this requirement shall be provided by the owner before the building inspector shall issue a certificate of compliance.

Section 3 (Standards)

STANDARDS FOR STORMWATER QUANTITY MANAGEMENT

- ***Design storm events.*** The quantity of stormwater runoff from a development or redevelopment shall be based on the two-year, ten-year, and 25-year storm events, of minimum six-hour duration. Depending upon site conditions, storm duration may be lengthened.
- ***Peak discharge control.*** Post construction peak discharge rates in the two-year, ten-year, and 25-year storm events shall be controlled so as not to exceed pre-development or pre-redevelopment peak discharge rates for the same storm events.
- ***Volume control.*** A stormwater runoff volume equal to the difference between the pre-development or pre-redevelopment and post construction volume for the 25-year event, six-hour duration, shall be detained on site so that the detention basin(s), or other appropriate structural BMP, releases detained stormwater over a period of at least 48 hours (two days) and no longer than 120 hours (five days).
- ***100-year flood potential.*** The development or redevelopment shall not increase flooding impacts to structures on properties upstream and downstream of the site during a 100-year flood event.

Section 3 (Standards)

STANDARDS FOR STORMWATER QUANTITY MANAGEMENT

- ***Protection of point of discharge.*** Discharge from any on-site stormwater management system into any natural or surface drainage channel or feature, shall be designed and constructed so that the discharge does not cause damage to the receiving system.
- ***Protection of receiving channels and water bodies.*** Receiving natural channels and water bodies (on-site and/or off-site) shall be evaluated to ensure that downstream conveyances are not eroded and/or degraded by altered stormwater flows from development or redevelopment. Mitigation measures shall be implemented where the volume of runoff from a post construction, two-year, one-hour rainfall event is ten percent greater than the volume of runoff from a pre-development or pre-redevelopment, two-year, one-hour rainfall event. Acceptable mitigation alternatives include on-site detention to reduce post construction runoff rates and volumes and natural channel stabilization measures to control channel degradation. Where allowed by other state and federal agencies (e.g. U.S. Army Corps of engineers and the department), armoring of receiving channels is permissible.
- ***Design of water impounding structures (dams).*** Any proposed water impounding structure (dam) shall be designed in accordance with North Carolina Dam Safety standards, and if required, shall be reviewed and approved by the North Carolina Dam Safety Engineer. Proof of compliance with this requirement shall be provided by the applicant before the building inspector may issue a certificate of compliance.

Section 4 (Maintenance)

Annual Maintenance Inspection and Report

- The person responsible for maintenance of any structural BMP installed pursuant to this ordinance shall submit to the stormwater director an inspection report from a qualified registered North Carolina professional engineer, surveyor, or landscape architect performing services only in their area of competence. The inspection report shall contain all of the following:
 - (1) The name and address of the owner;
 - (2) The recorded book and page number of the lot of each structural BMP;
 - (3) A statement that an inspection was made of all structural BMPs;
 - (4) The date the inspection was made;
 - (5) A statement that all inspected structural BMPs are performing properly and are in compliance with the terms and conditions of the approved maintenance agreement required by this ordinance; and
 - (6) The original signature and seal of the engineer, surveyor, or landscape architect.
- All inspection reports shall be on forms supplied by the stormwater director. An original inspection report shall be provided to the stormwater director beginning one year from the date of as-built certification and each year thereafter on or before the date of the as-built certification.

Section 4 (Maintenance)

Operation and Maintenance Agreement

- Prior to the conveyance or transfer of any portion of a development or redevelopment to be served by a stormwater management system pursuant to this ordinance, and prior to issuance of any permit for a development or redevelopment requiring a stormwater management system pursuant to this ordinance, the owner must execute an operation and maintenance agreement that shall be binding on all subsequent owners of the whole or a portion of the development or redevelopment served by the stormwater management system. Until the transference of all property, sites, or lots served by the stormwater management system, the original owner shall have primary responsibility for carrying out the provisions of the maintenance agreement. The operation and maintenance agreement shall require the owner to maintain, repair and, if necessary, reconstruct the stormwater management system, and shall state the terms, conditions, and schedule of maintenance for the stormwater management system. In addition, it shall grant to the city a right of entry in the event that the stormwater director has reason to believe it has become necessary to inspect, monitor, maintain, repair, or reconstruct the stormwater management system. However, in no case shall the right of entry confer an obligation on the city to assume responsibility for the stormwater management system. The operation and maintenance agreement must be approved by the stormwater director prior to plan approval, and it shall be referenced on the final plat and shall be recorded with the county register of deeds upon final plat approval. A copy of the recorded maintenance agreement shall be given to the stormwater director within 14 days following its recordation.

Section 4 (Maintenance)

Special requirement for homeowners' and other associations

For all stormwater management systems required pursuant to this ordinance and that are to be or are owned and maintained by a homeowners' association, property owners' association, or similar entity, the required operation and maintenance agreement shall include the following provisions:

- Acknowledge that the association shall continuously operate and maintain the entire stormwater management system, even though the association is required to escrow funds based on the cost to construct, maintain, operate, repair and inspect only the structural BMPs;
- Establish an escrow account, which shall be used to maintain, operate, repair inspect or reconstruct the stormwater management system;
- Prior to plat recordation or issuance of construction permits, whichever shall first occur, require the owner to pay into the escrow account, at a minimum, an amount equal to 15 percent of the initial construction cost of the structural BMPs;
- Require the home owners association to contribute into the escrow account, at a minimum, an amount satisfactory to support the operation, maintenance and annual inspection of the structural BMPs such that:
- Two-thirds of the total amount required to fund the escrow account shall be deposited into the escrow account within the first five years and the full amount shall be deposited within ten years following initial construction of the structural BMPs;
- The association shall allocate a portion of the association's annual assessments to the escrow account; and

Section 5 (Enforcement)

Withholding of Certificate of Occupancy

- The City/County Inspections Director upon the advisement from the Stormwater Manager may refuse to issue a certificate of occupancy for the building or other improvements constructed on the site and served by the stormwater practices in question until the applicant or other responsible person has taken the remedial measures set forth in the notice of violation or has otherwise cured the violations described therein.

Disapproval of Subsequent Permits and Development Approvals

- As long as a violation of this ordinance continues and remains uncorrected, the Stormwater Manager or other authorized agent may withhold, and the Planning Board, Engineering Division, and Inspections Division may disapprove, any request for permit or *development* approval or authorization provided for by this ordinance or the (zoning, subdivision, and/or building regulations, as appropriate) for the land on which the violation occurs.

Injunction, Abatements, etc.

- The Stormwater Manager, with the written authorization of the City Manager, may institute an action in a court of competent jurisdiction for a mandatory or prohibitory injunction and order of abatement to correct a violation of this ordinance. Any person violating this ordinance shall be subject to the full range of equitable remedies provided in the General Statutes or at common law.

Section 5 (Enforcement)

Correction as Public Health Nuisance, Costs as Lien, etc.

- If the violation is deemed dangerous or prejudicial to the public health or public safety and is within the geographic limits prescribed by North Carolina G.S. § 160A-193, the Stormwater Manager, with the written authorization of the City Manager of Winston-Salem, may cause the violation to be corrected and the costs to be assessed as a lien against the property.

Stop Work Order

- The Stormwater Manager may issue a stop work order to the person(s) violating this ordinance. The stop work order shall remain in effect until the person has taken the remedial measures set forth in the notice of violation or has otherwise cured the violation or violations described therein. The stop work order may be withdrawn or modified to enable the person to take the necessary remedial measures to cure such violation or violations.

Civil Penalties

- Violation of this ordinance may subject the violator to a civil penalty to be recovered in a civil action in the nature of a debt if the violator does not pay the penalty within 30 days after notice of the violation is issued by the Stormwater Manager. Civil penalties may be assessed up to the full amount of penalty to which the City of Winston-Salem is subject for violations of its Phase II Stormwater permit.

Ordinance can be downloaded at:

www.stormwatersmart.com

or

www.municode.com

