

STORMWATER - NEW DEVELOPMENT

August 6, 2014



Issue – Downstream Flooding

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Increase in Stormwater Volume and Velocity Due to:

- Removal of site vegetation, particularly trees
- An increase in the amount of impervious surface
- Redirection of the flow of water due to site grading
- Conversion of stormwater from sheet flow to channelized flow

Issue – Downstream Flooding

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Downstream impacts can be exacerbated by the existence of unique features/conditions such as:

- Topography
- The size of the drainage basin
- Existing storm water problems
- Existing drainage easements and pipes

Issue - Downstream Flooding

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Downstream impacts can be exacerbated by the existence of unique conditions/features such as:

- Existing stormwater problems

Issue - Downstream Flooding

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Downstream impacts can be exacerbated by the existence of unique features such as:

- The size of the drainage basin



Issue - Downstream Flooding

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Downstream impacts can be exacerbated by the existence of unique features such as:

- Topography



Actions Taken to Date:

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Storm Water Management :

- Development pre-review site inspection has been broadened to include review of existing storm water related conditions
- Plan review now includes an assessment of the size and configuration of the drainage basin to determine if temporary flow rate reduction measures during construction are warranted
- Plan review staff is specifically looking for areas where the flow of water leaving the site is concentrated and are requiring measures to spread flow

Management Requirements

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- Commercial Development:
- Residential Development of 3 or more lots

Stormwater detention is required for any rate of flow increase for 100 year storm for new development and impervious surface in excess of 5,000 square feet for existing development

Storm Water Regulations

- Existing Stormwater Management Code and Development Regulations reference the Georgia Storm Water Manual
- The code requires submittal of a hydrology study demonstrating that post development runoff rate does not exceed pre-development runoff for the 1, 2, 5, 25 and 100 year storms
- Normally, to achieve the post development no increase in runoff standard, a detention facility that stores the additional volume and meters the flow of water from the site over time is required

Management Requirements

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- Stand Alone Single Family Residential Development
- Projects that call for significant increase in impervious surface on a single family lot

Capturing of the first 1.2” of rainfall from all impervious surfaces is required

Design must provide for stormwater release and/or percolation over a 24 hour period

Storm Water Management

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Stand Alone Single Family Residential Development

Most Commonly Used Storage Measures

- **Flow Wells** - Underground tanks with a perforated bottom
- **Infiltration Trenches** – A gravel pit with an overflow valve to which stormwater is routed
- **Rain Gardens** - An above ground area of ponding with plant material that absorbs water and pollutants

Storm Water Issues

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Stand Alone Single Family Residential

- Smaller homes are being removed and replaced with much larger homes
- More impervious surface is being constructed (tennis courts, swimming pools, motor courts, etc.)
- Very wooded sites are being cleared and being replaced with grass and landscaping which has a significantly higher runoff rate

Storm Water Issues

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Stand Alone Single Family Residential

- Immediate neighbors are being negatively impacted by increased runoff
- Concentrated runoff is being directed to neighbors where no drainage conveyance system exists
- The overall impact on drainage basin may not be significant on an individual lot basis
- Redevelopment of many lots within a drainage basin could have an impact on flooding within a basin

Storm Water Issues

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Stand Alone Single Family Residential

- Capturing of the first 1.2” of runoff is required for all impervious surfaces
- Currently no additional storage is required for any change from woodland area to a grassed, landscaped area

Storm Water Amendments - SF

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Amendment of the Storm Water Ordinance to: Stand Alone Single Family Residential

- Require standardized design for storm water control devices
- Require change from wooded to grassed site be incorporated in stormwater storage design
- Require a soils report demonstrating percolation rate over a 24 hour period
- Require document be recorded to insure future property owners are aware of storm water device on their property
- Establish guidelines for the water quality device maintenance

Storm Water Management

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Other Recommendations:

- Develop incentive program that encourages the use of innovative, low impact development standards for storm water control
- Establish training requirements that focus on innovative measures for designers submitting plans to the City
- Enhance canopy replacement requirements

Innovative Storm Water Measures

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Examples of Innovative Measures

- **Bio-retention** - Shallow ponds with sandy soil, mulch and vegetation that filter and treat stormwater before letting it percolate more slowly into the ground
- **Permeable Pavement** - Porous layers of asphalt or concrete for walkways, driveways and extra parking areas that allows rainwater to percolate into the ground
- **Rainwater Barrels/Cisterns** – Containers, can be small or massive, above-ground or under ground that catch and store rainwater for future use, such as landscaping

Innovative Storm Water Measures

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Examples of Innovative Measures

- **Green Roofs** – A roof extension with waterproof membranes, drainage systems, lightweight soil and, most often, vegetation to absorb stormwater and let it evaporate
- **Vegetated Swales** – Plant material, from grass to trees, that catch stormwater and allow it to evaporate and/or seep into the ground
- **Tree boxes** – Miniature bioretention spots underneath trees, with vegetation and soil, which filter stormwater and store it in the box, for later use in watering trees

Construction Waste

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Require construction site operators control waste at the construction site including:

- Discarded Building Materials
- Concrete Truck Washout
- Chemicals
- Litter
- Sanitary Waste

Amendment:

- August 19, 2014 Council Meeting

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