



# **Storm Resiliency & Infrastructure Development Review Committee**

## **New Development Revised Drainage Design Criteria Considerations**

**Department of Public Works & Planning Department  
March 15, 2019**

# Agenda



- Review of Adverse Impact Types
- Potential Drainage Design Criteria Revisions
- Potential Plan Forward

# Review of Adverse Impact Types



## ☐ Upstream of New Development

- Flooding
  - Restricted conveyance through new development
    - Failure to account for off-site contributing area
    - Failure to maintain drainage during construction
  - Elevated conveyance through new development
    - Added fill that creates conditions that block drainage
  - Impacts to Groundwater?
    - Filling low areas where groundwater used to “daylight”

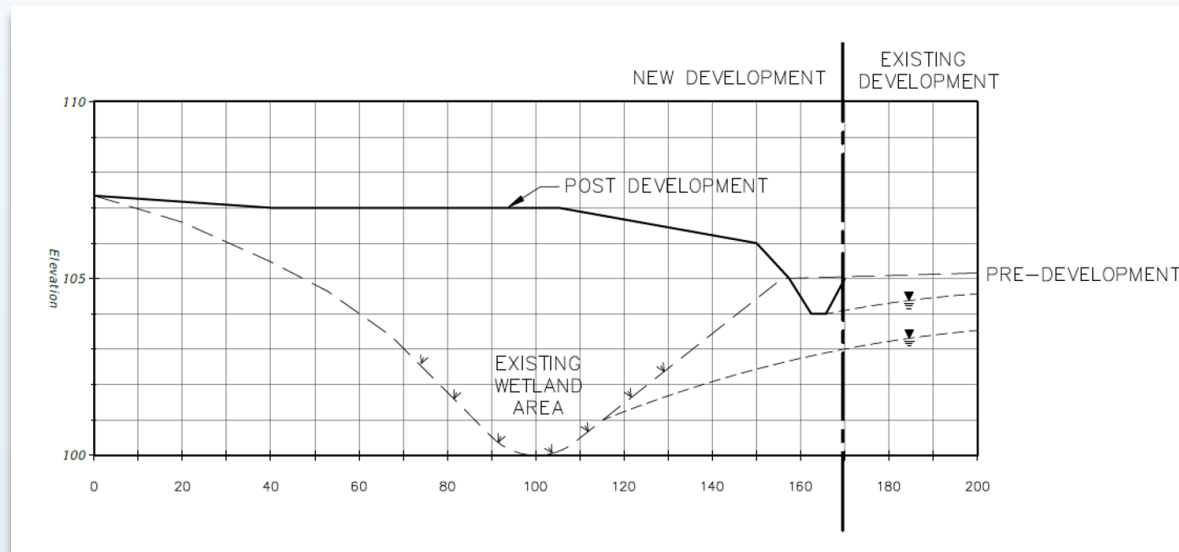
## ☐ Downstream of New Development

- Flooding
  - Increased Flow from new development
    - Failure to account for off-site contributing area
    - Failure to maintain drainage during construction
  - Flow Pattern Altered & Concentrated from new development

# Potential Drainage Design Criteria Revisions



- **Soil Permeability on Filled Lots** – Concern is associated with less permeable soil that will restrict Groundwater flow and increase Groundwater levels in adjacent areas.
  - Public Works & Planning Department working with Geotechnical Professionals to determine impacts (if any) and criteria by which to evaluate and address (if required).



# Potential Drainage Design Criteria Revisions



- **Expansion of Pre-Development Survey** – Concern is associated with new development not accounting for off-site drainage that is contributing to the development area.
  - At a minimum, provide topo survey for the area that is within 100 ft. of the new development. This requirement will be mandated with no exceptions.
  - Design Professional will determine any additional topo survey required to ensure that all contributing area is included with development's design.



# Potential Drainage Design Criteria Revisions



- **Maintenance of Drainage Plans** – Concern is associated with stormwater flooding during new development construction. There have been no formal plans required that reflect the management of drainage during active construction activities...need a proactive plan that is reviewed & approved.
  - Require a Maintenance of Drainage Plan with the 10-set review process that will describe Pre-Construction and During-Construction activities that clearly defines all phases of temporary/permanent drainage systems to maintain appropriate stormwater flow.

Beginning January 1, 2019, plans submitted for review shall include a proposed “Maintenance of Drainage” plan which identifies the site-specific method to maintain stormwater drainage patterns during the construction phase of a project. A Plan Reviewer will examine all commercial and residential projects for compliance with the Maintenance of Drainage requirements. In addition, staff from the Development Services Division will also routinely inspect construction sites for compliance. Again, the city will not prescribe specific methods to achieve this objective and the individual method to achieve and maintain full compliance will be the responsibility of the owner or person in charge of the project.

# Potential Drainage Design Criteria Revisions



- **Backyard Drainage Swales** – Concern is for Private Property Owners modifying (filling) the rear-lot drainage swales which results in rear-lot flooding.
  - Previously (approximately 5 years ago), the Land Development Procedures Manual was revised to require all Backyard Drainage Swales to be a closed drainage system that included an drainage inlet every 3<sup>rd</sup> Lot.
    - We believe this criteria is appropriate but need to ensure that the system is adequately designed and constructed to function appropriately.

# Potential Drainage Design Criteria Revisions



- **Shorten life of 10-Set Review Plans** – Concern is that construction of a development project can begin and then sit dormant or proceed very slowly. Concerns with incomplete stormwater management systems (MOD, Siltation Control, Dust Control, Pond Safety...4:1 sideslopes or fencing) and “blighted” conditions (Vegetative Control & Debris) for long periods of time.
  - Currently, an approved 10-set design plan is valid for 5 years (matching SJRWMD Permits).
    - It is not believed that by reducing the approval period, the issues described above will be addressed satisfactory.
    - Potential to add a requirement for Monthly Inspection Reports (of active construction sites) that require status and condition information of all components that are of concern.
      - Stormwater Management System
      - Blight “Appearance” Conditions



# Potential Drainage Design Criteria Revisions



- **Enhancing the By-Passing of Off-site Stormwater** – Concern is that the by-pass drainage system is not adequately designed to accommodate the stormwater flow from adjacent property.
  - Currently, drainage by-pass systems are designed utilizing the 25-Year Storm.
    - The expansion of the Pre-Development Survey, previously recommended, would provide for increased assurance of capturing adjacent contributing areas and improve designs.
    - Enhanced requirement to provide information that validates area drainage breaks (to show large areas contributing to the site) will support improved designs.

# Potential Drainage Design Criteria Revisions



- **Design Standard related to Lot Coverage Impervious Consumption** – Concern that the drainage design parameters for new development (focus was residential) do not accurately predict impervious area...which results in increased stormwater runoff quantities.
  - Currently, new development drainage calculations are based on the property's Zoning Lot Coverage requirement. When a Building Permit application is submitted (either for a new home or when modifications to the home are to be constructed...like a patio), the Planning Department ensures compliance.
    - Potential to sample Zoning Lot Coverage from older/established developments to determine if the design impervious values are appropriate.
    - Additional challenge is the regulation of un-permitted improvements.

# Potential Drainage Design Criteria Revisions



- **Compare Current Building Code to Palm Coast Ordinance** – To evaluate other municipality process and criteria for management of development (residential) impervious area.
  - Development Services was able to search Palm Coast’s municipal code and determined that the Palm Coast’s process/criteria to ensure compliance with the development’s design is similar to Jacksonville.
- **Forestry...Water Consumption documented per Tree Size on Existing Property** – Concern is that the removal of Trees from a site adversely impacts (increases) stormwater runoff from a site and it is not being managed.
  - The City of Jacksonville is currently engaged with a Study to evaluate Tree impacts on Stormwater Management. The Study is a partnership with the Green Infrastructure Center and Florida Forest Service.
    - Study will provide info on Runoff Quantity-Flow Peak Time-Infiltration Impacts

# Potential Plan Forward



- Formalize detailed Design Criteria Modifications
- Obtain Subdivision Standards & Policy Advisory Committee approval
- Revise Land Development Procedures Manual to reflect approved revisions



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## **Questions/Input?**

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