



MEMORANDUM

To: Jason Icerman, P.E.
Water Resources Engineering
City of Tallahassee – Underground Utilities and Public Infrastructure

From: Cameron Snipes, P.E.
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Subject: ***Urban Redevelopment Permitting Needs Assessment***

Kimley-Horn evaluated the **regulatory criteria used to permit urban redevelopment projects** in each Water Management District (WMD) and various municipalities within the state of Florida. Our comparison focused on criteria associated with stormwater quality and stormwater quantity that would be enforced to permit a redevelopment project. Most of these criteria are identical to what would be enforced for a typical new land development project with allowances made in some cases for existing conditions on-site. We also assessed a hypothetical scenario to highlight differences in regulatory criteria between the City of Tallahassee (City), the Northwest Florida Water Management District (NFWFMD), and other regulatory agencies within the state.

WMD Criteria Comparison

Stormwater Quality

The WMDs have consistent criteria related to water quality for traditional (wet or dry) stormwater pond best management practices (BMPs) though the magnitude of required treatment varies. In general, water quality treatment requirements for stormwater ponds consists of a required treatment volume, which the stormwater pond is required to capture and treat via the design mechanism, and a recovery time during which the stormwater pond is required to complete treatment of the captured volume and by the end of the recovery period be able to accept a new treatment volume load.

The required treatment volume is typically derived from runoff generated over the project area using a maximum of a direct depth requirement (such as 1" of runoff) or an indirect depth requirement (such as runoff from 1" of rainfall). The Suwannee River Water Management District (SRWMD) is the only WMD that only uses one or the other (indirect depth), requiring treatment volume capture of runoff from 1" of rainfall over the impacted project area. The City's requirements are direct depth only, requiring 1.125" runoff for dry ponds and 1.5" runoff for wet ponds.

The WMD standard is that treatment volume calculations are based on the entire project area, which would cover pervious and impervious areas—like the City's requirement. However, a notable exception is the South Florida Water Management District (SFWMD). SFWMD does not require the area associated with proposed stormwater ponds and/or building footprints be included in treatment volume calculations, which implies no additional pollutant loading occurs from these sources. No other discounts for existing site improvements (imperviousness) are found in the WMD regulations unless stormwater management facilities also exist on-site.

The required treatment volume recovery time is typically directly stated by the WMD. A recovery time of 72 hours (some WMDs require a factor of safety of 2) for dry ponds is effectively a statewide standard and matches the City's requirement. The required treatment volume recovery time for wet ponds is less consistent, ranging from 48 to 120 hours. The SFWMD requires that detention systems be designed to discharge no more than 0.5" of the detained volume per 24 hours. For wet ponds, the City requires that no more than half the treatment volume be discharged in the first 60 hours.

Stormwater Quantity

The WMD standard is that pre-development calculations include the existing impervious areas present. Some WMDs enforce various interpretations of this rule. For example, within the St. Johns Water Management District (SJRWMD) a cleared or vacant site may receive credit for existing impervious if historical aerials depict impervious area on-site.

By rule, SRWMD does not consider existing impervious areas in the pre-development condition; however, in our experience some sites will receive credit for existing impervious areas. Typically, SRWMD requires existing conditions be considered as a "greenfield". This is similar to the City's requirement for Major Roadway Projects where pre-development runoff is based on a natural, undeveloped condition.

For projects in closed basins, WMD's require stormwater ponds be designed to retain volume in excess of the pre-development runoff volume. The runoff volume capture requirement is based on either a 25-year (NFWMD and SJRWMD) or 100-year (SRWMD and Southwest Florida Water Management District [SWFWMD]) design storm, though the storm durations vary from 24-hour to 10-day. The City requires volume in excess of the pre-development runoff volume to be retained for all storm events up to a 100-year 24-hour design storm. In addition, the City requires a flood exclusion area (assuming full build-out of all on-site and off-site property within the closed basin) be determined based on up to 100-year 10-day storm.

For projects in open basins, WMD's typically require stormwater ponds be designed for rate control where proposed condition discharge rates cannot exceed existing condition rates. Three WMDs (NFWMD, SJRWMD, and SWFWMD) use the 25-year 24-hour design storm for rate control; however, within the NFWMD and SJRWMD most projects do not meet the threshold for rate control—more detail is provided below. The SRWMD rate control is based on 100-year design storms—more detail is provided below. Additional criteria related to water quantity varies across the WMDs.

- NFWFMD – Rate control for the 25-yr 24-hr design storm is only required for projects over 40 acres in total area or over 12 acres new impervious which also exceeds 40% of the total area or where over 40 acre-feet of runoff is impounded. For projects where new impervious exceeds 50% of the project area, rate control is based on the 2-year 24-hour design storm “to protect streambanks”. The streambank protection criteria are unique to NFWFMD. Stormwater treatment areas, redevelopment projects, and pervious areas impact the interpretation of this rule.
- SJRWMD – Rate control for the 25-yr 24-hr design storm is only required for projects over 40 acres in total area or over 12 acres new impervious which also exceeds 40% of the total area or where over 40 acre-feet of runoff is impounded. There are also specific thresholds of various impervious areas within specific basins and habitat protection zones. In these situations, rate control is generally required for the mean annual 24-hr storm.
- SRWMD – For all projects the post-development peak discharge rate must not exceed the pre-development peak discharge rate for 100-year design storms ranging from 1-hour to 10-day in duration. As noted above, SRWMD does not consider existing impervious areas so pre-development discharge rates are based on “greenfield”.

SFWMD does not specify between open and closed basins, presumably because there are limited closed basins within the district due to the flat topography. SFWMD has pre-development vs post-development rate control standards for the 25-yr 3-day event. Projects are modeled with “glass walls” at property lines to determine perimeter berm, roadway crown, and finished floor elevations. For example, finished floor elevations must be above the 100-year 3-day design storm peak stage in SFWMD. Roadway crown and other standards vary by location within the district.

The City requires either a downstream analysis or 2-year restricted analysis for projects in open basins. Based on experience and discussions with City Growth Management, most projects are permitted using the 2-year restricted analysis, which is a form of rate control. The downstream analysis does not specifically address discharge rates and can potentially result in smaller stormwater ponds; however, it requires more survey, stormwater modeling, and coordination with City staff. The 2-year restricted analysis is unique to the City.

The City requires 1' of freeboard above the peak stage of the 100-year critical storm event. SRWMD has a similar requirement. No other WMDs have requirements for freeboard. Most municipalities do not have requirements for freeboard.

Attachment 1 summarizes the design criteria for the WMDs and City.

Notable Municipal Criteria

Similar to the City, many municipalities across the state have local criteria that is different from and often more restrictive than the relevant WMD. We did not perform an exhaustive review of municipal criteria, but have listed below examples of more restrictive local criteria based on our working experience in the state.

- City of Destin – Minimum treatment volume equal to 1" of runoff over the site.
- City of Lakeland – No increase in discharge volume allowed from the 25-year 24-hour design storm. City reserves the right to impose more strict criteria in special circumstances.
- City of Tampa – Minimum treatment volume equal to 0.5" runoff over improved area. Post-development discharge rate limited to pre-development 5-year peak discharge.
- Hillsborough County – Discharge rates associated with 100-year 24-hour design storm volume increases are limited to pre-development 5-year design storm rates.
- Pinellas County – Pond design requires 0.5' freeboard. Potential tailwater conditions in addition to the 25-year 24-hour design storm must be considered.
- Polk County – Retain and infiltrate 25-year 24-hour design storm.
- Sarasota County – Water Quantity is regulated by existing watershed-scale stormwater models. No increase in 100-year peak stage is allowed.

Hypothetical Urban Redevelopment Scenario

The following hypothetical urban redevelopment scenario was presented to Kimley-Horn by the City for use in this assessment.

<u>Existing</u>	<u>Proposed</u>
• 5-acre site area • 70% impervious • No existing stormwater features	• 5-acre site area • 95% impervious

This hypothetical project would not be exempt from permitting within any WMDs. In our experience, most site conditions within the City are more favorable to the dry pond BMP approach. For a dry pond, the following would be required:

- NFWFMD would require on-site treatment of a water quality treatment volume equal to the greater of 0.5" runoff over the contributing area or runoff from 1" of rainfall over the contributing area. They would also require post-development rate control for the 25-year 24-hour design storm with existing impervious area accounted for in the pre-development rate.
- The City categorizes redevelopment projects as Type I and II and generally requires treatment for the increase in impervious area only. Pre-development rate calculations may include the existing impervious area on the site. The City allows for some reductions or additions in parking and some

reductions in landscape island requirements for redevelopment projects. For redevelopment projects, if stormwater ponds exist on a site the existing volume is generally required to be replaced.

Summary

The intent of this memorandum is to outline general permitting requirements and compare criteria across the state. Typically, each project is a unique situation and requires a customized approach and coordination with staff to efficiently meet specific requirements of the site. Many factors are considered in final design that are not discussed above. For example, drainage connections to FDOT right-of-way require compliance with other design criteria. Evaluating the enforcement or interpretation of regulations was not the intent of this assessment; however, it appears like SFWMD may assess on a more case-by-case basis relative to other WMDs. More specific information and detailed criteria are shown in the attachments which are grouped by WMD but also include our knowledge of municipal criteria that is different from the WMD in which they reside.

In our opinion, the City's criteria are generally more restrictive than the NFWMD's criteria and other WMD's criteria. However, this is not unique to the City. Other municipalities have more strict criteria than the district in which they reside. As noted above, these are general observations and the actual implementation of different criteria—and their impact on final design—are very dependent on-site conditions.

Design Criteria Summary						
REQUIREMENT TYPE	AGENCY					
	CITY OF TALLAHASSEE	NWFWMD	SRWMD	SJRWMD	SWFWMD	SFWMD
WATER QUANTITY (OPEN BASINS)	2-year restricted or downstream analysis	pre-post rate 25-yr, 24-hr *	pre-post rate 100-yr, 1-, 2-, 4-, 8-24-hr, and 3-, 7-, 10-day **	pre-post rate 25-yr, 24-hr *	pre-post rate 25-yr, 24-hr	pre-post rate 25-yr, 3-day
WATER QUANTITY (CLOSED BASINS)	pre-post volume 100-yr, 24-hr	pre-post volume 25-yr, 96-hr	pre-post rate and volume for storms above **	pre-post rate 25-yr, 24-hr and pre-post volume 25-yr, 96-hr	pre-post volume 100-yr, 24-hr	N/A
STREAMBANK PROTECTION	N/A	pre-post rate 2-yr, 24-hr	N/A	N/A	N/A	N/A
WATER QUALITY (DRY)	1.125" runoff, recover 72 hrs	max. of runoff from 1" rainfall and 0.5" runoff, recover 72 hrs	runoff from 1", recover 72 hrs	0.5" runoff or runoff from 3-yr, 1-hr, recover 72 hrs	max. of runoff from 1" rainfall and 0.5" runoff, recover 72 hrs	50-75% of runoff from 1" rainfall
WATER QUALITY (WET)	1.5" runoff (less than 100 acres), recover no more than half in 60 hours	1" runoff, recover 1/2 volume between 48-60 hrs	runoff from 1", recover 72 hrs	Greater of 1" runoff over drainage area and 2.5" over impervious area (excluding water bodies), recover half the required treatment volume within 24 and 30 hrs	1" runoff, shall be discharged in no less than 120 hrs with no more than half the total volume being discharged within the first 60 hrs.	max. of runoff from 1" rainfall and 2.5" x delta impervious, discharge no more than 0.5" of the detained volume in 24 hrs.
FREEBOARD	1'	N/A	1'	N/A	N/A	N/A

* Only required for systems that serve more than 40 acres of land, placement of 12 acres of impervious (which also constitutes 40% of project area), or impound a volume of water exceeding 40 ac-ft. SJRWMD has some additional thresholds.

** Some sites with existing impervious will not receive "credit" for existing impervious in pre-development condition.

Items not considered:

Outstanding Florida Waters

Offline Stormwater Ponds

FDOT Drainage Connection Permits

Specific land uses that require more treatment

Positive Outfall (SFWMD)

Stream -to-sink

DESIGN CRITERIA		
REQUIREMENT TYPE	CITY OF TALLAHASSEE	NWFWMD
WATER QUANTITY (OPEN BASINS)	On-site peak post-development stormwater discharge rates shall not exceed the peak predevelopment discharge rates for all intensities, durations, and return frequencies up to and including the 25-year storm period.	Pre vs Post for the 25-year, 24-hour storm event. This criteria must be met for systems that meet any of the following: (a) systems that serve projects of 40 or more acres of total land area; (b) systems that provide for the placement of 12 or more acres of impervious surface, which also constitutes more than 40% of the total project area; or (c) systems that are at any time capable of impounding a volume of water exceeding 40 ac-ft, as measured at the top of the berm.
	Stormwater treatment and rate or volume control shall be provided for all of the post project impervious surface area within the right-of-way.	Pre vs. Post rate for 2-year, 24-hour if project is required to meet streambank protection criteria (section 4.5). Projects that modify existing systems may be exempt from this criteria.
	Analysis of pre-development runoff shall presume the site to be in a natural and undeveloped condition.	
	Downstream conveyance analysis or restricted surface discharge analysis (post-development discharge is restricted to the critical 2-year pre-development rate for all duration and return frequencies up to and including the 25-year, 24-hour storm event)	
WATER QUANTITY (CLOSED BASINS)	Analysis of pre-development runoff shall presume the site to be in a natural and undeveloped condition.	Pre vs. Post volume for 25-year, 96-hour storm event.
	Stormwater treatment and rate or volume control shall be provided for all of the post project impervious surface area within the right-of-way.	Pre vs. Post for 2-year, 24-hour if project is required to meet streambank protection criteria (section 4.5). Projects that modify existing systems may be exempt from this criteria.
	Runoff volumes within regulated closed basins in excess of the predevelopment runoff volume shall be retained for all storm events up to a 100-year, 24-hour duration storm.	
WATER QUALITY	Wet Detention: Runoff from first 3 inches of rainfall or 1.5 inches of runoff for sites with drainage areas less than 100 acres.	Wet Detention: 1 inch of runoff from contributing area. Additional treatment volume for systems that discharge directly to OFWs. Treatment volume shall not cause pond level to rise more than 18" above control elevation.
	Off-line retention: Off-line retention treatment volume shall be at least the first 0.75 inch of runoff.	Off-line retention: first one-half inch of runoff from the contributing area
	On-line retention or detention with filtration: Treatment volume shall be at least the first 1.125 inches of runoff.	On-line retention: one inch of rainfall over the contributing area; a minimum volume of one-half inch of runoff from the contributing area is required
RECOVERY	Treatment: No more than half the volume may be discharged in the first 60 hours (Wet Detention); 72 hours following a storm event (Off-line retention, on-line retention, detention with filtration)	Treatment: Retention treatment volume shall be available within 72 hours. Wet detention: ½ Pollutant Abatement Volume (PAV) between 48 and 60 hours.
	Attenuation: Total required retention/ detention volume shall be available within 90 hours following a rainfall event.	Attenuation: Outlet controls shall be designed such that required detention volumes are available within 14 days following the design storm event.
POND CONFIGURATION	Side slopes: shall be sodded; grades 4:1 or steeper shall be fenced	Side slopes: Control elevation to 2 feet below the control elevation is no steeper than 4:1
	Freeboard: There shall be at least one foot of freeboard above the peak stage of the 100-year critical storm event and below the top of the pond.	Baffle, skimmer, grease trap or equal required for systems that receive stormwater from contributing areas that are greater than 50% impervious (excluding water bodies) or which are a potential source of oil and grease.
		Littoral zone areas must be 6:1 or flatter. Littoral area is 30-40% of wet detention surface area.
FLOODPLAIN IMPACT/ COMPENSATION		Mean depth: 2 to 8 feet
FLOODPLAIN IMPACT/ COMPENSATION	Provide compensating treatment, compensating rate control, or compensating volume control, within the same drainage basin as the roadway project.	No net reduction in flood storage within a 10-year floodplain. No net reduction in flood conveyance capabilities provided by a floodway.
		Systems shall cause no more than 1-foot increase in the 100-year flood elevation immediately upstream and no more than 1/10 of a foot increase in the 100-year flood elevation 500 feet upstream.
PERMANENT POOL		14 days residence time from average wet season rainfall. Additional permanent pool volume is required for systems that directly discharge to OFWs. Additional 50% of the appropriate permanent pool volume as an alternative to littoral plantings.
Does WMD give credit for pervious material for treatment? It is considered in calculations; however, a minimum 0.5" over the project area is required.		
Does WMD give credit for building footprint vs. vehicle use area for treatment? No.		

Experience with other Municipalities:

Destin - requires 1" over project area - water quality
Callaway - NWFWMD standards apply
Pensacola - received de minimus from NWFWMD - redevelopment that reduced impervious area
Panama City - received de minimus from NWFWMD - redevelopment that reduced impervious area
Franklin County - NWFWMD standards apply
Escambia County - NWFWMD standards apply
Lynn Haven - NWFWMD standards apply

Hypothetical Urban Redevelopment Project Scenario:

NWWFMD

Existing

- 5 Acres
- 70% Impervious
- No existing stormwater features

Proposed – Complete Redevelopment of Site

- 5 Acres
- 95% Impervious
- Stormwater treatment – Is it required?
- Stormwater attenuation - Is it required?

NWWFMD - Stormwater Design Criteria - Hypothetical Urban Redevelopment Project Scenario:

- Assumptions:
- 1) No existing stormwater features; therefore, it is assumed that there is no existing permit for the site.
 - 2) The site will be taken to a "bare earth" condition for the redevelopment project.
 - 3) The project is over 50% impervious; therefore, the stormwater facility needs to meet the requirements of the streambank protection criteria.
 - 4) Without a stormwater pond, pollutant loading is not reduced in proposed condition.

Water Quality (Treatment)	Max. of runoff from 1" rainfall and 0.5" runoff, recover 72 hrs
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Water Quantity (Attenuation)	Meet requirements of Section 4.5 for streambank protection (pre vs. post for 2-year, 24-hour storm). Credit for existing impervious.
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City of Tallahassee - Stormwater Design Criteria - Hypothetical Urban Redevelopment Project Scenario:

	Num.	Square Feet	Percentage
Existing Conditions:			
Total Area of Site		217,800	
Total Existing Impervious Area		152,460	70%
Type II Redevelopment portion of site		65,340	30%
Proposed Conditions:			
Development Components			
Total Vehicle Use Area (VUA)		75,000	
Green Space Components			
Required Urban Forest and Landscaping Area		26,136	12%
Minimum Preserved Urban Forest Area		6,534	
Required VUA Interior Landscape Area		4,875	

Redevelopment projects significant benefits - 25% required parking flexibility, reduced landscape island requirement (1 400 SF island/8000 SF VUA)

Water Quality (Treatment)	Type I Redevelopment - per TLDC 5-113 - existing impervious area, Type II Redevelopment - per TLDC 5-114 - new impervious area - 1.125" over this additional impervious area
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Water Quantity (Attenuation)	Per TLDC 5-86 (d) - Pre-post rate (2-yr restricted or downstream analysis - 2.5% of total flow). Credit for existing impervious. In lieu of providing a downstream analysis, a stormwater management facility may be designed for restricted discharge. The post-development discharge is restricted to the critical duration two-year predevelopment rate for all duration and return frequencies up to and including the 25-year, 24-hour storm event. The total required detention volume shall again be available within 90 hours following a rainfall event. In this case, the lower limit of the analysis is defined as the point where concentrated discharge leaves the site. At the discretion of the director, a conveyance analysis shall be required if problem areas have been identified downstream.
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Other standards for level of service, positive drainage, spread, and inlet capacity apply.

Design Criteria	
REQUIREMENT TYPE	SFWMD
WATER QUANTITY	Rate Control: Pre vs. Post for the 25-year, 3-day storm event.
WATER QUALITY	Wet Detention: first 1" of runoff from the entire site or 2.5 inches times the change in percentage of impervious area, whichever is greater Dry Detention: 75% of the volume required for wet detention Retention System: 50% of the volume required for wet detention Commercial or industrial zoned projects shall provide at least 0.5" of dry detention or retention pre-treatment. Water surface and roofed areas can be deducted from site areas only for water quality pervious/impervious calculations. The water surface meeting dimensional criteria may also be subtracted from the total site area when making final water quality treatment volume calculations.
RECOVERY	Any detention system shall be designed to discharge no more than 0.5" of the detained volume in 24 hrs.
DESIGN CRITERIA	The FFE must be set at the highest elevation from the choices below: (a) FEMA flood elevation (b) Nearest crown of road elevation + X inches (varies by location) (c) 100-year, 3-day maximum stage (zero discharge) (d) ASCE-24 Minimum crown elevation: 5-year, 1-day max stage Minimum crown elevation for Especial District: 10-year, 1-day max stage Wet Detention: 0.5 acre minimum, 100' minimum width for linear areas in excess of 200' length, 4:1 from top of bank to a minimum depth of 2' below control elevation, bulkheads shall be allowed for no more than 40% of the shoreline length. Properties with positive discharge require a control structure with Top of weir set at 25-year, 3-day maximum stage with a minimum size bleeder set at the water table (minimum diameter - 3 inch) Properties without positive discharge are required to provide a berm, but will not have a control structure or bleeder (zero discharge until 25-year, 3-day maximum stage)
POND CONFIGURATION	Wet Retention/Detention: Minimum area of 0.5 acres, average pond width of shall average at least 100 ft., side slopes shall be no steeper than 4:1, minimum depth 10 ft. Dry Retention/Detention: Minimum area of 0.5 acres, average pond width shall average at least 100 ft., side slopes shall be no steeper than 4:1.
Does WMD give credit for pervious material for treatment? 0.5" dry pre-treatment needs to be provided for entire site (minus lakes); for water quality requirements, typically subtract pervious areas (including green and pervious materials such as pervious pavers, etc.)	
Does WMD give credit for building footprint vs. vehicle use area for treatment? Yes, rooftops and ponds are not counted in water quality calculations. They are included in water quantity.	

Hypothetical Urban Redevelopment Project Scenario:

SFWMD

Existing

- 5 Acres
- 70% Impervious
- No existing stormwater features

Proposed – Complete Redevelopment of Site

- 5 Acres
- 95% Impervious
- Stormwater treatment – Is it required?
- Stormwater attenuation - Is it required?

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SFWMD - Stormwater Design Criteria - Hypothetical Urban Redevelopment Project Scenario:

Water Quality	first 1" of runoff from the entire site or 2.5 inches times the change in percentage of impervious area, whichever is greater
Water Quantity	Pre vs. post for 25-year, 3-day. Credit for existing impervious.

DESIGN CRITERIA	
REQUIREMENT TYPE	SJRWMD
WATER QUANTITY (OPEN BASINS)	Pre-development considered to be impervious area associated with "last use" of the site. Volume: none Rate: Pre vs Post for 25-year, 24-hour storm event * Projects meeting certain conditions are required to meet Pre vs Post for mean annual 24-hour storm
WATER QUANTITY (CLOSED BASINS)	Pre-development considered to be impervious area associated with "last use" of the site. Volume: Pre vs Post for 25-year, 96-hour storm event Rate: Pre vs Post for 25-year, 24-hour storm event
WATER QUALITY	Varies based on Class and OFWs. Typically have on-line retention. Off-line: Runoff from 0.5" or 1.25" over impervious area. On-line: Additional 0.5" runoff from off-line volume <u>or</u> runoff of 3-year, 1-hour storm <u>or</u> runoff from 1" or 1.25" over impervious area (pending areas and soil types) Wet Detention: Greater of 1" runoff over drainage area and 2.5" over impervious area (excluding water bodies)
WATER QUANTITY (RECOVERY)	Storage volume must recover within 14 days following the design storm event
WATER QUALITY (RECOVERY)	On-line Retention: Treatment volume shall be available within 72 hours. Wet Detention: One-half the required treatment volume within 24 and 30 hours following a storm event.
POND CONFIGURATION	Side slopes: Typically no steeper than 4:1. Fence required for steeper.
FLOODPLAIN IMPACT/COMPENSATION	No adverse impacts to storage or conveyance capabilities. Compensating volume: 10-year floodplain.
PERMANENT POOL	14-day average residence time during the wet season (June-October)
Does WMD give credit for pervious material for treatment? SJRWMD does not count pervious concrete and turf block as impervious surface when over open graded gravel. Compacted soils and limerock are considered impervious.	
Does WMD give credit for building footprint vs. vehicle use area for treatment? No.	

Experience with other Municipalities:

Jacksonville - overlay districts with more strict requirements; however, majority follows SJRWMD
Palatka - SJRWMD standards apply

Hypothetical Urban Redevelopment Project Scenario:

SJRWMD

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- No existing stormwater features

Proposed – Complete Redevelopment of Site

- 5 Acres
- 95% Impervious
- Stormwater treatment – Is it required?
- Stormwater attenuation - Is it required?

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SJRWMD - Stormwater Design Criteria - Hypothetical Urban Redevelopment Project Scenario:

Water Quality (Treatment)	runoff from 3-yr/1-hr storm, recover 72 hrs
Water Quantity (Attenuation)	Pre vs. post for 25-year, 24-hour storm. Credit for existing impervious (case by case basis)

Design Criteria	
REQUIREMENT TYPE	SRWMD
WATER QUANTITY	Coastal, Open, Stream: Post-developed peak discharge rate must not exceed the pre-developed discharge rate. 100-year frequency analysis of the 1-, 2-, 4-, 8-, 24-hour, 3-, 7-, and 10 day durations for all stormwater systems.
	Stream to Sink, Closed: Post-developed peak discharge rate and volume must not exceed the pre-developed discharge rate and volume for any event. 100-year frequency analysis of the 1-, 2-, 4-, 8-, 24-hour, 3-, 7-, and 10 day durations for all stormwater systems.
WATER QUANTITY (RECOVERY)	Storage volumes designed into retention or detention systems must be available as follows: One-half the of the total volume within seven (7) days following the end of the design storm event. The total volume within 30 days following the end of the design storm event. In the event that a stormwater pond cannot meet the requirements above, the design professional may route back to back storms through the system. The system must be able to provide for required discharge rates and volumes. Low Flow and Base Flow maintenance may be considered on some projects.
WATER QUALITY	Stream-to-Sink Watershed: Runoff from the first 2 inches of rainfall from the design storm.
	Stream, Coastal, or Open-lake Watershed and discharging to an Outstanding Florida Water: Runoff from the first 1.5 inches of rainfall from the design storm
	Stream, Coastal, or Open-lake Watershed and discharging to any class of surface water: Runoff from the first 1.0 inch of rainfall from the design storm
WATER QUALITY (RECOVERY)	72 hours following the end of the design storm event. If detention with filtration is proposed, the design must accomate a safety factor of 2.
POND CONFIGURATION	Wet Detention: 1' freeboard, The permanent pool shall be sized to provide at least a 14-day residence time based upon average wet season rainfall (rainfall occurring over the wettest four months of an average year). Additional permanent pool volume is required for wet detention systems which directly discharge to OFWs. The maximum depth of the permanent pool shall be 12 feet. The minimum depth of the permanent pool shall be 2 feet. An aerobic environment should be maintained throughout the water column in wet detention ponds.
Does WMD give credit for pervious material for treatment? Stormwater management ponds, including dry retention ponds, detention ponds with filtration, dry detention ponds with underdrains, and wet detention ponds, shall be considered as 100% impervious. The area, calculated from the top of the pond, shall be directly connected impervious areas in calculating composite runoff coefficients (C), and composite curve numbers (CN). Pervious pavement, pavers and other such surfaces shall use the runoff coefficient as the below ground. Compacted limerock or clay and millings shall be considered semi impervious.	
Does WMD give credit for building footprint vs. vehicle use area for treatment? No.	
Experience with other Municipalities: Perry - SRWMD standards apply	

Hypothetical Urban Redevelopment Project Scenario:

SRWMD

Existing

- 5 Acres
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- No existing stormwater features

Proposed – Complete Redevelopment of Site

- 5 Acres
- 95% Impervious
- Stormwater treatment – Is it required?
- Stormwater attenuation - Is it required?

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SRWMD - Stormwater Design Criteria - Hypothetical Urban Redevelopment Project Scenario:

Water Quality (Treatment)	Runoff from 1" rainfall, recover 72 hrs
Water Quantity (Attenuation)	Post-developed peak discharge rate must not exceed the pre-developed discharge rate. 100-year frequency analysis of the 1-, 2-, 4-, 8-, 24-hour, 3-, 7-, and 10 day durations for all stormwater systems. No credit for existing impervious.

DESIGN CRITERIA	
REQUIREMENT TYPE	SWFWMD
WATER QUANTITY (OPEN BASINS)	Pre vs Post for the 25-year, 24-hour storm event.
WATER QUANTITY (CLOSED BASINS)	Runoff volumes within regulated closed basins in excess of the predevelopment runoff volume shall be retained for all storm events up to a 100-year, 24-hour duration storm (type II Florida Modified 24-hour rainfall distribution).
WATER QUALITY	On-line and Off-Line retention: 1 inch of rainfall over the contributing area; a minimum volume of one-half inch of runoff from the contributing area is required. Wet Detention: 1 inch of runoff from contributing area. 35 percent of littoral zone to be concentrated at the outfall. Treatment volume shall not cause pond level to rise more than 18" above control elevation. All projects discharging directly into OFWs shall provide 50 percent additional treatment volume. Compensating treatment must be located within the same watershed and benefit the same receiving water body as the proposed project.
RECOVERY	Treatment(All other): Total treatment volume shall again be available within 72 hours, however, only that volume which can again be available within 36 hours may be used for quantity Treatment (Wet): Total Treatment volume discharged in a minimum of 5 days with no more than 1/2 of total volume discharged within the first 2.5 days. Only volume available within 36 hours may be counted towards quantity control measures. Attenuation: Outlet controls shall be designed such that required detention volumes are available within 14 days following the design storm event.
POND CONFIGURATION	Side slopes: shall be sodded; grades 4:1 or steeper shall be fenced Baffle, skimmer, grease trap or equal required for systems that receive stormwater from contributing areas that are greater than 50% impervious (excluding water bodies) or which are a potential source of oil and grease. Wet Detention systems shall be designed with a 100 foot minimum width for linear areas in excess of 200 feet in length Depth: Based on underlying aquitard or providing a minimum of 2 feet clear from underlying limestone.
FLOODPLAIN IMPACT/ COMPENSATION	No net encroachment into the flood plain, up to that encompassed by the 100-year event. Compensating storage shall be equivalently provided between the seasonal high water level and the 100-year flood level.
PERMANENT POOL	For wet detention systems, the bottom elevation of the pond must be at least one foot and no more than 8 feet below the control elevation. 14 days residence time from average wet season rainfall.
Does WMD give credit for pervious material for treatment? It is considered in calculations; however, a minimum 0.5" over the project area is required.	
Does WMD give credit for building footprint vs. vehicle use area for treatment? No.	

Experience with other Municipalities:

Tampa - Redevelopment - 0.5" runoff from area of new construction, post discharge limited to for pre-development 5-year storm
 Polk County - retain and infiltrate 25-yr, 24-hr storm, 14 day recovery
 Lakeland - no increase in rate/volume for 25-yr, 24-hr storm. Infrastructure improvements may be required.
 Hillsborough County - post discharge limited to pre-development 5-year storm (after pre vs post volume for 100-yr, 24-hr storm)
 Pinellas County - 6" freeboard required

Kimley»Horn

Hypothetical Urban Redevelopment Project Scenario:

SWFWMD

Existing

- 5 Acres
- 70% Impervious
- No existing stormwater features

Proposed – Complete Redevelopment of Site

- 5 Acres
- 95% Impervious
- Stormwater treatment – Is it required?
- Stormwater attenuation - Is it required?



SWFWMD - Stormwater Design Criteria - Hypothetical Urban Redevelopment Project Scenario:

Water Quality (Treatment)	1" runoff, recover 72 hrs, only volume availabe after 36 hrs is considered in attenuation calcs.
Water Quantity (Attenuation)	Pre vs. post for 25-year, 24-hour storm. Credit for existing impervious.