6.0 Additional Design Considerations

6.1 Compensating Stormwater Treatment

Occasionally, applicants find that it is impractical to construct a stormwater management system to capture the runoff from a portion of the project site due to on-site conditions such as extreme physical limitations, availability of right-of-way, or maintenance access. Two methods have been developed to compensate for the lack of treatment for a portion of a project. The first method is to treat the runoff that is captured to a greater extent than required by rule (i.e., "overtreatment"). The second method is to provide treatment for an off-site area which currently is not being treated (i.e., "off-site compensation"). Each method is designed to furnish the same level of treatment as if the runoff from the entire project site was captured and treated in accordance with the provisions of this technical manual.

Either of these methods will only be allowed as a last resort and the applicant is strongly encouraged to schedule a pre-application conference with planning staff to discuss the project if these alternatives are being considered. Other criteria, such as peak discharge attenuation, will still have to be met if the applicant utilizes these methods. Each alternative is described in more detail in the following sections.

6.2 Overtreatment

Overtreatment means to treat the runoff from the project area to a higher level than the rule requires compensating for the lack of treatment for a portion of the project area. To meet these goals, the area not being treated generally must be small (less than 10%) in relation to the area, which is encompassed in the SWMF. County staff can aid in determining the proper level of overtreatment for a particular situation.

6.3 Off-site Compensation

Off-site compensation means to provide treatment in another location to compensate for the lack of treatment for portions of the proposed project. The following conditions must be met when utilizing off-site compensation:

A. The off-site area must be in the same watershed as the proposed project, and in the closest vicinity practical to the location of those untreated stormwater discharge(s) requiring compensating treatment; and
B. The applicant shall provide reasonable assurance that the compensating treatment system removes at least the same amount of stormwater pollution loading as was estimated from the untreated project area.
C. The site not receiving treatment cannot directly discharge into any natural water systems such as lakes, rivers, streams, wetlands, or the bay.
D. Approval of this approach will be at the discretion of the County.

6.4 Erosion and Sediment Control Criteria

No sedimentation or excess water shall go off-site during or after construction.

Construction activities, including land clearing and/or the construction of stormwater management systems, shall be designed, constructed, and maintained at all times so that erosion and sedimentation from the system, including the areas served by the system, do not cause violations of applicable state water quality standards. Erosion and sediment controls shall be designed using BMPs and shall be implemented to retain sediment on-site. Flooding, extreme changes in stormwater run-off patterns, changes to water quality, and long-term changes in groundwater levels shall not be acceptable.

Prior to any site disturbance, silt fencing shall be installed around the perimeter of the site. Erosion control measures including but not limited to silt fencing and hay bales (if necessary) shall be maintained throughout all phases of construction. Erosion control mitigation will prevent soil migration off site until permanent erosion controls can be established. The stormwater retention areas will be stabilized with vegetation or sod within 48-hours with the intent of establishing permanent stabilized ground cover. Once construction is complete, the site must be stabilized with sod on slopes equal to or greater than 4:1. Once the site has been stabilized, silt fencing and all other sediment control devices may be removed and disposed of or reused in accordance with appropriate regulations.

LOW IMPACT DEVELOPMENT STORMWATER MANAGEMENT

APPENDICES

Walton County Planning

LIVE | WORK | PLAY

"Stormwater Management System (SMS) - A system that is designed and constructed or implemented to control discharges which are necessitated by rainfall events, incorporating methods to collect, convey, store, absorb, inhibit, treat, use, or reuse water to prevent or reduce flooding, over drainage, environmental degradation, and water pollution or otherwise affect the quantity and quality of discharges from the system."

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Appendix A Approved Plants

Approved Plants

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Ground Cover and Perennials	Type	Light Requirement	Bloom Season	Bloom Color	Height	Moisture Requirement
Blanket Flower	A	Full	Summer	Yellow to Red	**Ground Cover**	Needs good drainage, drought tolerant
Sand Cordgrass	P	Full	N/A	N/A	**3 - 4 feet**	Moist soil, drought tolerant
Swamp Sunflower	P	Full	Fall	Yellow	**2 - 6 feet**	Moist soil, not drought tolerant
Wild White Indigo	P	Full to Part	Spring and Summer	White	**Up to 4 feet**	Drought tolerant, requires regular watering
Joe Pye Weed	P	Part	Fall	Purple	**4 - 5 feet**	Drought tolerant, but requires water to bloom
Blazing Star	P	Part	Fall	Purple, Pink, White	**2 - 5 feet**	Drought resistant, minimal water
Rain-Lily	P	Part	Spring to Late Summer	White	**Ground Cover**	High drought tolerance
Violets	A	Part	Early Spring	White, Blue, Purple	**4 - 8 inches**	Water when dry
Black-Eyed Susan	A, B, P	Sun to Part Shade	Summer	Yellow, Orange	**Up to 3 feet**	Drought tolerant, but requires regular watering
Blue-Eyed Grass	P	Sun to Part Shade	Spring	White, Blue, Violet	**1.5 - 2 feet**	prefers moist soil
Canna Lily	P	Sun to Part Shade	Varies	Yellow	**Up to 4 feet**	Not drought tolerant, requires regular watering
Cardinal Flower	P	Sun to Part Shade	Spring to Fall	Red	**3 - 5 feet**	Requires moist soil
Cut leaf Coneflower	P	Sun to Part Shade	Summer	Yellow	**Up to 6 feet**	Requires regular watering
Prairie Iris	P	Sun to Part Shade	Spring to Summer	Blue, Violet	**Up to 4 feet**	Prefers moist soil
Goldenrod	P	Sun to Part Shade	Fall	Yellow	**2 - 5 feet**	drought tolerant

Ground Cover and Perennials	Type	Light Requirement	Bloom Season	Bloom Color	Height	Moisture Requirement
Meadow Beauty	P	Sun to Part Shade	Summer	White, Pink, Purple	**1 - 3 feet**	drought tolerant
Muhly Grass	P	Sun to Part Shade	Summer	Purple	**1 - 2 feet**	Needs very little watering
Soft Rush	P	Sun to Part Shade	Late Summer	Green-Brown Flowers	**2 - 5 feet**	Drought tolerant and can grow in water
Southern Blue Flag Iris	P	Sun to Part Shade	Late Spring and Summer	Purple	**3 - 7 feet**	Grows in shallow water
Milkweed	P	Sun to Part Shade	Throughout the Year	White	**1.5 - 2 feet**	Requires moist soil
Tickseed	P	Sun to Part Shade	Spring	Pink	**2 - 4 feet**	Prefers moist soil
Cinnamon Fern	P	Shade to Part Shade	N/A	N/A	**3 - 5 feet**	Requires frequent watering
Jack-in-the-Pulpit	P	Shade to Part Shade	Spring	Green to Purple	**1.5 feet**	Low drought tolerance
Royal Fern	P	Shade to Part Shade	N/A	N/A	**Up to 6 feet**	Low drought tolerance
Southern Lady Fern	P	Shade to Part Shade	N/A	N/A	**3 feet**	Low drought tolerance
Southern Wood Fern	P	Shade to Part Shade	N/A	N/A	**3 feet**	Low drought tolerance
Little Brown Jug/Arrow Leaf Wild Ginger	P	Shade to Part Shade	Spring	Brown	**6 inches**	Low drought tolerance
Wake Robin	P	Shade to Part Shade	Early Spring	Greenish-Maroon, Yellow	**1 foot**	Prefers moist soil

A = Annual; B = Biennial; P = Perennial

Trees and Shrubs	Type	Light Requirement	Bloom Season	Bloom Color	Height	Moisture Requirement
Red Buckeye	D	Sun to Part Shade	Spring	Red	**6-35 feet**	Moist to dry soils
River Birch	D	Sun to Part Shade	Late Winter to Early Spring	Green	**40 - 80 feet**	Moist
Beautyberry	D	Sun to Part Shade	Spring to Summer	Purple	**4 - 8 feet**	Moist to dry soils
Buttonbush	D	Sun to Part Shade	Summer	White	**6 - 20 feet**	Moist to wet soils
Eastern Redbud	D	Sun to Part Shade	Early Spring	Pink	**15 - 30 feet**	Moist to dry soils
Fringe Tree	D	Sun to Part Shade	Spring	White	**15 - 30 feet**	Moist to dry soils
Sweet Pepperbush	D	Sun to Part Shade	Summer	White, Pink	**3 - 10 feet**	Moist to dry soils
Loblolly Bay	E	Sun to Part Shade	Spring to Summer	White	**30 - 60 feet**	Moist to wet soils
Dahoon Holly	E	Sun to Part Shade	Spring	White	**20 - 40 feet**	Moist to wet soils
Virginia Sweet spire	D	Sun to Part Shade	Late Spring to Early Summer	White	**3 - 8 feet**	Moist to dry soils
Spicebush	D	Sun to Part Shade	Late Winter to Early Spring	Yellow	**15 feet**	Wet to moist soils
Sweet bay Magnolia	E	Sun to Part Shade	Spring to Summer	White	**25-60 feet**	Wet to moist soils
Southern Crab Apple	D	Sun to Part Shade	Early Spring	Pink	**15 - 25 feet**	Moist to dry soils
Wax Myrtle	E	Sun to Part Shade	Spring	White	**4 - 20 feet**	Wet to well drained soils
Florida Azalea	D	Sun to Part Shade	Spring	Orange	**3 - 10 feet**	Moist to wet soils
Pinxter Azalea	D	Sun to Part Shade	Spring	White, Pink	**10 - 15 feet**	Moist to dry soils
Cabbage Palm	P	Sun to Part Shade	Summer	White	**20 - 60 feet**	Moist to dry soils
Bald Cypress	D	Sun to Part Shade	Spring	Green	**50 - 80 feet**	Wet to dry soils
Winged Elm	D	Sun to Part Shade	Late Winter	Red , Green	**40 - 70 feet**	Moist to dry soils
Possumhaw Viburnum	D	Sun to Part Shade	Spring	White	**18 feet**	Moist to wet soils
Walters Viburnum	D	Sun to Part Shade	Spring	White	**6 -30 feet**	Moist to wet soils
Bluebeech Hornbeam	D	Sun to Part Shade	Early Spring	Green	**30 feet**	Moist
Oak leaf Hydrangea	D	Sun to Part Shade	Late Spring to Early Summer	White, Pink	**4 - 8 feet**	Moist to dry soils

Trees and Shrubs	Type	Light Requirement	Bloom Season	Bloom Color	Height	Moisture Requirement
Florida Anise	E	Sun to Part Shade	Spring	Maroon	**6 - 20 feet**	Moist to wet soils
Needle Palm	P	Sun to Part Shade	Spring	Yellow, Purple	**3 - 8 feet**	Moist to dry soils
Snowbell	D	Sun to Part Shade	Spring	White	**6 - 10 feet**	Moist to wet soils
Swamp Azalea	D	Shade	Summer	White, Pink	**9 - 16 feet**	Moist to wet soils

D = Deciduous; E = Evergreen; P = Palm

Appendix B – References, Glossary, & Acronyms

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Glossary

Definitions and terms that are not defined herein shall be given their ordinary and customary meaning or usage of the trade or will be defined using published, generally accepted dictionaries, together with any rules and statutes of the Agencies that have additional authority over the regulated activities.

1. **100-year flood/One Percent Annual Chance of Flood -** A flood event that has a one percent probability of recurrence in any one year. The 100-year flood elevation is the highest elevation of floodwaters during the 100-year flood and is calculated or estimated from the best available information.
2. **Adsorption -** The adhesion of a substance to another, generally used in the process of treating water.
3. **Attenuation -** A reduction in the peak flow originating from a storm event.
4. **Aquitard** or **Confining-layer -** A layer of low permeability material, such as clay or rock, adjacent to an aquifer that functions to prevent the transmission of significant quantities of groundwater flow under normal hydraulic gradients.
5. **Berm -** A constructed earthen barrier, which serves as a vertical divider with in a stormwater management system.
6. **Bioretention -** A shallow depression intended for the storage and treatment of stormwater. The area is comprised of vegetation, organic soil, and a filter media such as sand. The system is designed to treat stormwater and allow the settlement of suspended sediment.
7. **Capacity -** The total volume of a system.
8. **Cistern –** A large tank used for storing water.
9. **Coastal Dune Lake Protection Zone -** All lands within an area beginning at the mean or ordinary high water line of the coastal dune lakes and their tributaries and extending 300 feet landward
10. **Compatibility –** The ability for two or more items or systems to coexist.
11. **Control elevation -** The lowest elevation at which water can be released through a control device.
12. **Design Storm -** A specified rainfall event with a specified recurrence interval associated with a recorded rainfall depth over a pre-determined period of time.
13. **Erosion -** The natural phenomenon of sediment transport generally caused by wind, gravity, water current, or waves.
14. **Evaporation –** The phase change of a substance from a liquid to a gas.
15. **Floodway -** The permanent channel of a stream or other watercourse, plus any adjacent floodplain areas that must be kept free of any encroachment in order to discharge the 100-year flood without cumulatively increasing the water surface elevation more than a designated amount (not to exceed one foot). For purposes of this Manual, this term does not have the same meaning as the term “floodway” or “regulatory floodway” as defined and implemented by FEMA.
16. **Geotextile Fabric –** A permeable textile material. The material is manufactured is several varieties, such as woven, nonwoven, or knitted.
17. **Hardscape -** areas that cannot absorb water; impervious areas.
18. **Hydrology -** The analysis of water on, under, and over the earth’s surface.
19. **Impervious Surface Ratio –** The ratio of land cover that does not allow water to move through it in relation to the total area of a parcel.
20. **Impervious -** A type of ground cover such as pavement that does not absorb water and contributes to sheet flow.
21. **Infiltration –** The movement of water downward through the soil into groundwater.

22. **Initial County Problem Area List (ICPAL) -** Areas identified to having significant flooding issues.
23. **Inundation -** The abundance of water.
24. **Ksat -**Saturated hydraulic conductivity.
25. **Littoral zone -** That portion of a stormwater management system that is designed to contain rooted emergent plants.
26. **Mitigation -** A reduction in severity.
27. **Non-Point Source -** Pollution such as fertilizers, herbicides, insecticides, sediment, oil and grease that originate from land-use activities. This type of pollution is carried to nearby stream, rivers, and bays through surface runoff.
28. **Off-line -** The storage of a specified portion of the stormwater such that runoff in excess of the specified volume of stormwater does not flow into the area storing the treatment volume.
29. **On-line -** The storage of a specified portion of the stormwater such that runoff in excess of the specified volume of stormwater flows into or through the area storing the treatment volume.
30. **Peak Flow –** Cumulative flow accounting for land-use, precipitation intensity, and the total area of the parcel. The peak flow is determined using the Rational Method (Q=ciA).
31. **Permanent pool -** that portion of a wet detention pond that normally holds water (e.g., between the normal water level and the pond bottom), excluding any water volume claimed as wet detention treatment volume.
32. **Permeability -** determines how fast water will be absorbed into the ground.
33. **Pervious -** A type of ground cover such as grass (natural areas) that absorb water.
34. **Point Source -** An easily identifiable source of pollution entering a nearby waterbody.
35. **Porosity -** ratio of void volume of total volume; the amount of water that can be stored between sand or stone.
36. **Quality -** A predetermined standard in which something is compared.
37. **Quantity -** A definitive numerical value; not an estimate.
38. **Rain Barrel -** A container used to store stormwater for use in the future.
39. **Recovery Rate -** How long it takes a stormwater management system to drain.
40. **Run off -** Excess stormwater that does not immediately infiltrate into the soil.
41. **Runoff Coefficient -** Dimensionless ratio of rainfall excess to precipitation
42. **Saturated Hydraulic Conductivity -** a quantitative measurement of the ability for a saturated soil to transmit water.
43. **Sediment Transport -** The movement of sediment suspended in water.
44. **Silt Fence -** A geotextile fence with wooden stakes used as a best management practice employed to contain soil and sediment throughout site disturbance and construction activities.
45. **Sheet Flow -** Amount of stormwater that is not directly absorbed into the ground, which contributes to the overland flow of stormwater.
46. **Sorption -** Absorption and adsorption considered as a single process**.**
47. **Stabilization -** The act of keeping something from moving or changing.
48. **Stormwater Management Facility (SWMF) -** A system that is designed and constructed or implemented to control discharges which are necessitated by rainfall events, incorporating methods to collect, convey, store, absorb, inhibit, treat, use, or reuse water to prevent or reduce flooding, over drainage, environmental degradation, and water pollution or otherwise affect the quantity and quality of discharges from the system.
49. **Surface Area -** The area available for water to infiltrate into the soil.

50. **Tailwater -** the receiving water elevation (or pressure) at the final discharge point of a stormwater management system.
51. **Tidally-Influenced Waterways -** Includes surface waters that are characterized by a repeatable monthly average tide range of more than 0.1 feet.
52. **Weir -** An intentional obstruction traversing the width of a swale or similar stormwater management system specifically designed to hold a predetermined volume of water.
53. **Wetlands Stormwater Management System -** a stormwater management system that incorporates wetlands to provide stormwater treatment.
54. **Zone A -** The area of the swale that will hold the most water. This area requires plants that are tolerant to excess water during the rainy season (typically June through August), as well as, tolerant during dry conditions if it is a dry swale.
55. **Zone B -** The area along the slopes of a swale. Plants in this region will need to be able to establish robust root systems in order to maintain the design slope and be able to withstand lateral sheet flow during extreme rain events. They will also need to be able to survive extended periods of dry conditions with smaller periods of inundation.
56. **Zone C -** The area along a swale identified as the vegetative strip, this area functions as a pretreatment application to catch sediment and slow down sheet flow. The plants in this area will need to be able to withstand dry conditions.

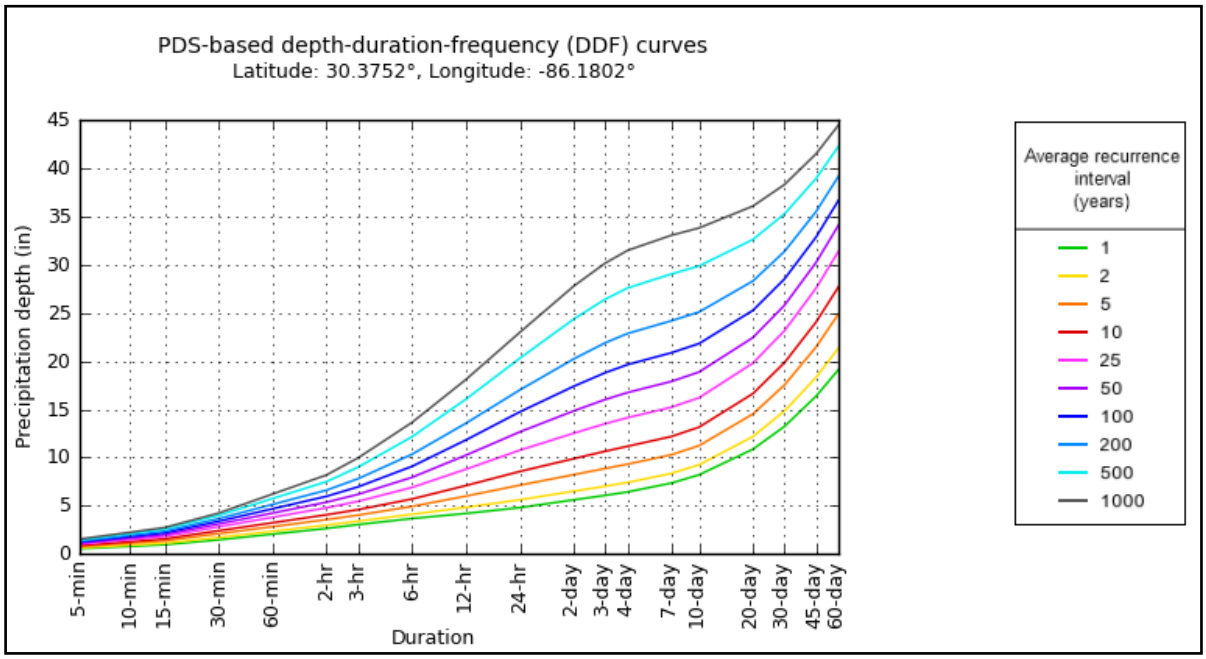
Acronyms

A	Area
ac	Acres
AOI	Area of Interest
BMP	Best Management Practice
c	Runoff coefficient
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDOT	Florida department of Transportation
FS	Florida Statute
ft	Feet
ft^2	Square feet
ft^3	Cubic feet
H	Horizontal
HSG	hydraulic soil group
i	rainfall intensity
ICPAL	Initial County Problem Area List
IDF	intensity duration frequency
in	Inches
in/hr	Inches per hour
ISR	Impervious Surface Ratio
K	Permeability
LDC	Land Development Code
LID	Low Impact Design
NELAP	National Environmental Laboratory Accreditation Program
NRCS	Nature Resource Conservation Service
NWFWMD	Northwest Florida Water Management District
O&M	Operation and Maintenance
OFW	Outstanding Florida Waters
SDWA	Safe Drinking Water Act
SHWT	Seasonal High Water Table
SMS	Stormwater Management System
SWMF	Stormwater Management System
tc	Time of Concentration
Q	Flow
V	Vertical
V	Volume
VT	Treatment Volume

Appendix C – Design Storms

Precipitation / Design Storms

The following figures provide an idea of how much rainfall to expect in your area for several storm events.



PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.541 (0.450-0.656)	0.628 (0.522-0.763)	0.767 (0.635-0.933)	0.877 (0.721-1.07)	1.02 (0.804-1.28)	1.13 (0.867-1.44)	1.23 (0.910-1.61)	1.33 (0.938-1.79)	1.45 (0.982-2.02)	1.54 (1.01-2.19)
10-min	0.792 (0.659-0.960)	0.920 (0.765-1.12)	1.12 (0.929-1.37)	1.28 (1.06-1.57)	1.50 (1.18-1.88)	1.65 (1.27-2.11)	1.80 (1.33-2.36)	1.94 (1.37-2.62)	2.12 (1.44-2.96)	2.25 (1.49-3.21)
15-min	0.966 (0.803-1.17)	1.12 (0.932-1.36)	1.37 (1.13-1.67)	1.57 (1.29-1.91)	1.82 (1.44-2.29)	2.01 (1.55-2.57)	2.19 (1.63-2.88)	2.37 (1.68-3.20)	2.59 (1.75-3.61)	2.74 (1.81-3.91)
30-min	1.47 (1.22-1.78)	1.72 (1.43-2.08)	2.10 (1.74-2.56)	2.41 (1.99-2.95)	2.82 (2.22-3.53)	3.11 (2.39-3.97)	3.40 (2.51-4.45)	3.67 (2.59-4.95)	4.00 (2.71-5.58)	4.24 (2.80-6.05)
60-min	2.06 (1.71-2.50)	2.35 (1.95-2.85)	2.84 (2.35-3.45)	3.24 (2.66-3.96)	3.80 (3.01-4.81)	4.24 (3.26-5.45)	4.69 (3.48-6.18)	5.14 (3.65-6.99)	5.75 (3.91-8.06)	6.22 (4.11-8.87)
2-hr	2.65 (2.22-3.19)	2.99 (2.50-3.60)	3.57 (2.97-4.31)	4.07 (3.36-4.94)	4.79 (3.83-6.05)	5.37 (4.18-6.88)	5.98 (4.48-7.87)	6.62 (4.74-8.97)	7.50 (5.14-10.5)	8.19 (5.45-11.6)
3-hr	3.05 (2.56-3.66)	3.40 (2.85-4.08)	4.03 (3.36-4.85)	4.60 (3.82-5.56)	5.46 (4.41-6.91)	6.18 (4.85-7.93)	6.96 (5.25-9.17)	7.80 (5.62-10.6)	9.00 (6.21-12.6)	9.97 (6.65-14.1)
6-hr	3.68 (3.11-4.38)	4.11 (3.47-4.90)	4.93 (4.14-5.89)	5.70 (4.76-6.85)	6.91 (5.63-8.74)	7.95 (6.29-10.2)	9.08 (6.91-11.9)	10.3 (7.51-14.0)	12.1 (8.45-16.9)	13.6 (9.16-19.1)
12-hr	4.20 (3.57-4.97)	4.84 (4.10-5.72)	6.00 (5.08-7.12)	7.10 (5.96-8.46)	8.79 (7.21-11.1)	10.2 (8.15-13.0)	11.8 (9.05-15.4)	13.6 (9.91-18.2)	16.0 (11.2-22.2)	18.1 (12.2-25.2)
24-hr	4.81 (4.11-5.64)	5.62 (4.80-6.61)	7.13 (6.07-8.41)	8.56 (7.23-10.1)	10.8 (8.89-13.5)	12.7 (10.1-16.0)	14.7 (11.4-19.2)	17.0 (12.5-22.8)	20.3 (14.3-27.9)	23.0 (15.6-31.8)
2-day	5.61 (4.83-6.54)	6.51 (5.59-7.59)	8.22 (7.04-9.62)	9.89 (8.41-11.6)	12.5 (10.4-15.7)	14.8 (12.0-18.7)	17.4 (13.5-22.5)	20.2 (15.0-26.9)	24.4 (17.3-33.4)	27.8 (19.0-38.2)
3-day	6.08 (5.25-7.06)	7.03 (6.06-8.17)	8.87 (7.62-10.3)	10.7 (9.10-12.5)	13.5 (11.3-16.8)	16.0 (13.0-20.2)	18.8 (14.7-24.3)	21.9 (16.3-29.1)	26.4 (18.8-36.0)	30.2 (20.8-41.3)
4-day	6.44 (5.57-7.45)	7.42 (6.41-8.59)	9.32 (8.03-10.8)	11.2 (9.56-13.0)	14.1 (11.9-17.6)	16.7 (13.6-21.0)	19.6 (15.4-25.3)	22.9 (17.1-30.3)	27.6 (19.7-37.5)	31.5 (21.7-43.0)
7-day	7.35 (6.40-8.46)	8.35 (7.25-9.61)	10.3 (8.90-11.9)	12.2 (10.5-14.1)	15.2 (12.8-18.8)	17.9 (14.6-22.3)	20.9 (16.4-26.7)	24.2 (18.2-31.8)	29.0 (20.9-39.3)	33.0 (22.9-44.9)
10-day	8.21 (7.17-9.41)	9.24 (8.06-10.6)	11.2 (9.75-12.9)	13.1 (11.4-15.2)	16.2 (13.7-19.8)	18.9 (15.5-23.4)	21.8 (17.2-27.7)	25.1 (18.9-32.8)	29.9 (21.5-40.2)	33.8 (23.5-45.8)
20-day	10.9 (9.54-12.4)	12.2 (10.7-13.9)	14.5 (12.7-16.6)	16.6 (14.4-19.1)	19.8 (16.7-23.8)	22.4 (18.4-27.3)	25.3 (20.0-31.6)	28.3 (21.4-36.5)	32.6 (23.6-43.3)	36.1 (25.3-48.5)
30-day	13.2 (11.7-15.0)	14.8 (13.1-16.8)	17.5 (15.4-19.9)	19.8 (17.3-22.7)	23.2 (19.5-27.5)	25.8 (21.2-31.1)	28.5 (22.6-35.3)	31.4 (23.7-40.1)	35.3 (25.6-46.5)	38.3 (27.0-51.3)
45-day	16.4 (14.5-18.5)	18.3 (16.2-20.7)	21.5 (18.9-24.3)	24.0 (21.1-27.4)	27.6 (23.2-32.3)	30.2 (24.9-36.1)	32.9 (26.0-40.3)	35.5 (26.9-44.9)	38.9 (28.3-50.9)	41.5 (29.3-55.4)
60-day	19.1 (17.0-21.5)	21.3 (18.9-24.0)	24.9 (22.0-28.1)	27.7 (24.3-31.4)	31.4 (26.4-36.5)	34.1 (28.1-40.4)	36.7 (29.1-44.7)	39.2 (29.7-49.3)	42.3 (30.7-54.9)	44.5 (31.5-59.2)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

National Oceanic and Atmospheric Administration. Hydrometeorological Design Studies Center. *NOAA Atlas 14 Point Precipitation Frequency Estimates*. https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html

Appendix D – Permitting Guidance

Permitting Guidance

Several regulatory guidelines are applicable to the design and operation of stormwater systems. The State of Florida has set into place the following administrative codes and statues in order to protect one of Florida's most valuable natural resources, water. Guidance regarding stormwater permits and discharges are located at https://floridadep.gov/water/water/content/water-resource-management-rules#stormwater.

The following list includes codes and statutes that may apply to your project.

Florida Administrative Code (FAC) Regulatory References:	
Description	**Section / Chapter**
Drainage Connections	14-86 FAC
Environmental Resource Permits	40*-4 FAC
Regulations of Stormwater Discharge	62-25 FAC
Regulations of Stormwater Discharge	62-40 FAC
Surface Water Improvement and Management	62.43 FAC
Surface Water Quality Standards	62-302 FAC
Dredge and Fill	62-312 FAC
Environmental Resource Permits	62-333 FAC
Well Head Protection	62-521 FAC
Underground Injection Control	62-528 FAC
Wastewater Facility and Activities Permitting:	62-620 FAC
Generic Permits	62-621 FAC
Municipal Separate Storm Sewer Systems	62-624 FAC
Underground Storage Tank System	62-761 FAC
Florida Statutes (FS):	
Title XXI Drainage - Drainage and Water Control	Chapter 298
Title XXVIII Natural Resource; Conservation, Reclamation, and Use - Water Resources	Chapter 373
Title XXVIII Natural Resource; Conservation, Reclamation, and Use - Pollution Discharge Prevention and Removal	Chapter 376
Land and Water Management	Chapter 380
Title XXIX Public Heath - Environmental Control	Chapter 403

If you have questions regarding which of the Florida Administrative Codes or Florida Statutes pertain to your project please reach out to the Northwest Florida Water Management District at 850.539.5999 (https://www.nwfwater.com/Permits) or the Florida Department of Environmental Protection at 850.245.8336 (https://floridadep.gov/water).

A comprehensive list of environmental protection requirements is provided at the following links:

- https://www.flrules.org/gateway/organization.asp?divid=430.
- http://www.leg.state.fl.us/statutes/

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