

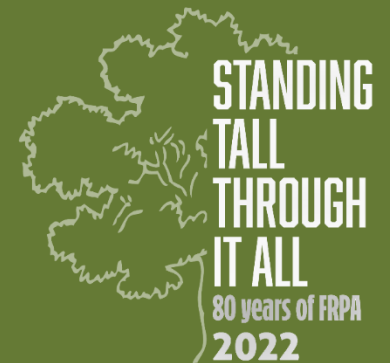


Welcome to the 2022 FRPA Conference!
August 29 – September 1, 2022 | Orlando, FL



Integrating Stormwater Management into Recreation

Facility Development

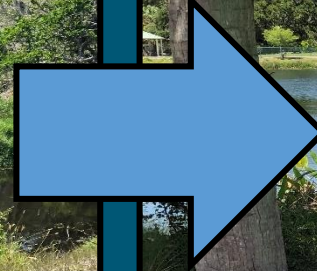




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STORMWATER MANAGEMENT in PARKS





LEARNING OBJECTIVES

- 1. Understand the basic components and terminology of stormwater management systems.**
- 2. Recognize the benefits of planning for stormwater management at the beginning of a park project.**
- 3. Identify at least 3 alternative stormwater management techniques or products.**

BENEFITS of STORMWATER MANAGEMENT

- 1. FLOOD CONTROL**
- 2. REMOVE POLLUTANTS**
- 3. PROTECT WATERBODIES**
- 4. REPLENISH GROUNDWATER**



BENEFITS of STORMWATER MANAGEMENT

5. PREVENT PROPERTY DAMAGE

6. PROVIDE WILDLIFE HABITAT

and

7. PROVIDE RECREATION OPPORTUNITIES



STORMWATER MANAGEMENT TERMINOLOGY

- **WATERSHED** – Area of land that drains or “sheds” water into a specific waterbody (i.e. river. lake)
- **PERVIOUS SURFACES** – Forests. grasslands. porous pavement
- **IMPERVIOUS SURFACES** – Concrete. asphalt. buildings. shell
- **COLLECTION SYSTEM** – Parking lots. rooftops. swales



STORMWATER MANAGEMENT TERMINOLOGY

- **CONVEYANCE SYSTEM** – Inlet structure, pipe, ditch, stream, gutter
- **RETENTION** – Sodded swale or depression for groundwater recharge
- **DETENTION** – Pond or structure to hold / treat / release stormwater
- **OUTFLOW FACILITY** – Structure or landform for release of treated stormwater

PLANNING & DESIGNING A STORMWATER SYSTEM

1. 25-30% OF IMPERVIOUS SURFACE AREA
2. WHAT **Recreation Experience** DO YOU WANT TO PROVIDE ?
 - Natural – Natural or natural-appearing features are dominant
 - Suburban – Balance between developed and landscaped areas
 - Urban – Developed areas are dominant and typically include small landscaped areas



NATURAL STORMWATER MANAGEMENT SYSTEM

TYPICAL COMPONENTS:

- Mimics natural systems in form, materials, and aesthetics
- Grass, gravel, porous rubberized, and pervious geogrid pavement
- Asphalt parking in main parking lot, depending on level of use
- Dry or wet ponds with a natural appearance
- Limited use of curb & gutter, yard drains, and other structures



SUBURBAN STORMWATER MANAGEMENT SYSTEM

TYPICAL COMPONENTS:

- Developed stormwater systems are prevalent and noticeable
- Paved parking, curb & gutter, drain inlet structures, and pipes
- Wet / dry detention ponds, bioswales & rain gardens
- Stabilized grass or gravel overflow parking, cisterns and underground vaults, optional



URBAN STORMWATER MANAGEMENT SYSTEM

TYPICAL COMPONENTS:

- Developed stormwater systems are prevalent and noticeable
- Paved parking, curb & gutter, drain inlet structures, and pipes
- Pervious pavement, cisterns and underground vaults: optional
- Wet / dry detention ponds, bioswales & rain gardens:
if space allows

NATURAL PARK STORMWATER SYSTEM

URFER FAMILY PARK : 55-acre suburban natural park

- Natural areas with trails & boardwalks: cattle grazing
- Restroom, picnic, playground and historic facilities
- Paved parking and trails
- Natural-appearing stormwater management system with detention ponds, swales, and wetlands



URFER FAMILY PARK – Suburban Natural Park



URFER FAMILY PARK – Suburban Natural Park



URFER FAMILY PARK – Suburban Natural Park



NATURAL PARK STORMWATER SYSTEM

NORTH JETTY PARK : 19-acre suburban natural beach park

- Minimally-developed beach and intracoastal access
- Restroom, concession, picnic, and playground facilities
- Open event space and shell parking
- Natural-appearing stormwater management system with dry detention ponds and swales



NORTH JETTY PARK – Suburban Natural Beach



NORTH JETTY PARK – Suburban Natural Beach



NORTH JETTY PARK – Suburban Natural Beach



NORTH JETTY PARK – Suburban Natural Beach



NORTH JETTY PARK – Suburban Natural Beach



NATURAL PARK STORMWATER SYSTEM

SNOOK HAVEN PARK : 5.5-acre natural river park

- Myakka Wild and Scenic River access
- Riverfront restaurant, band shell, picnic, and historic facilities
- Boat ramp, docks, and canoe / kayak launch
- Porous geo-grid pavement stormwater management system



SNOOK HAVEN PARK – Natural River Park



SNOOK HAVEN PARK – Natural River Park



SNOOK HAVEN PARK – Natural River Park



NATURAL PARK STORMWATER SYSTEM

CELERY FIELDS PARK : 400-acre natural stormwater park

- Restroom and Audubon Nature Center
- Natural and paved trails and boardwalks
- Paved and grass overflow parking
- Natural-appearing lakes, wetlands, and bird habitat serve as regional stormwater management system



CELERY FIELDS PARK – Natural Stormwater Park



CELERY FIELDS PARK – Natural Stormwater Park



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CELERY FIELDS PARK – Natural Stormwater Park



NATURAL PARK STORMWATER SYSTEM

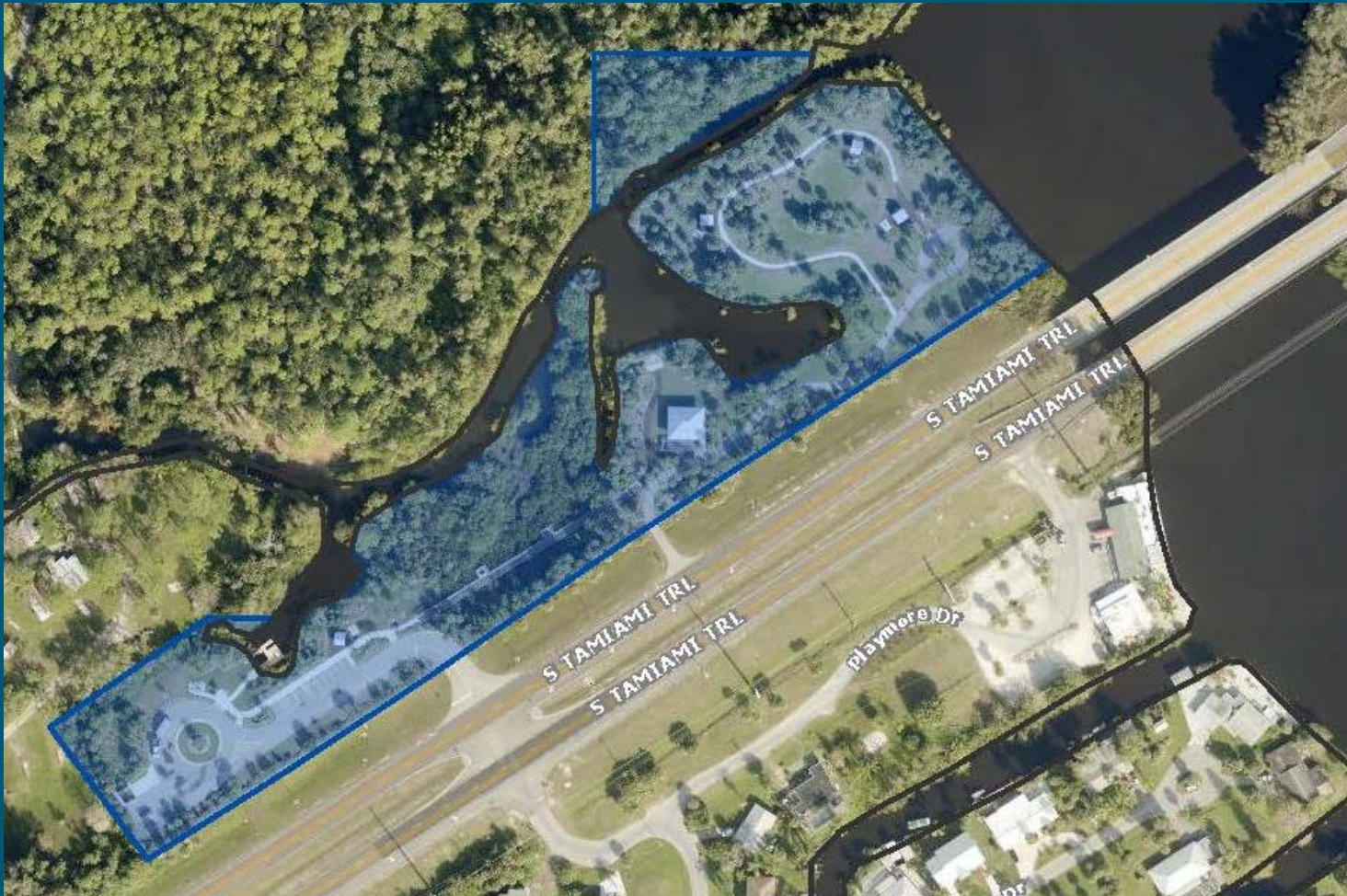
SENATOR BOB JOHNSON'S LANDING : 7-acre suburban natural park

- Myakka Wild and Scenic River canoe / kayak access
- Restroom, picnic, boardwalk, and trail facilities
- Stormwater management includes paved & grass parking, pervious pavement, inlet structures and pipes, detention pond and wetland



SENATOR BOB JOHNSON'S LANDING – Suburban

Natural Park



SENATOR BOB JOHNSON'S LANDING – Suburban

Natural Park



SENATOR BOB JOHNSON'S LANDING – Suburban Natural Park



SENATOR BOB JOHNSON'S LANDING – Suburban



STANDING
TALL
THROUGH
IT ALL
80 YEARS OF TROP
2022

SUBURBAN PARK STORMWATER SYSTEM

ASHTON TRAILHEAD : 3-acre suburban trailhead park

- Regional Legacy Trail access
- Restroom, playground, and picnic facilities
- Paved parking and sidewalks
- Detention pond stormwater management system



SUBURBAN PARK STORMWATER SYSTEM

LIME LAKE PARK : 6-acre neighborhood park

- Lake with fishing pier
- Paved trail and picnic facilities
- Paved parking and sidewalks
- Neighborhood detention pond stormwater management system



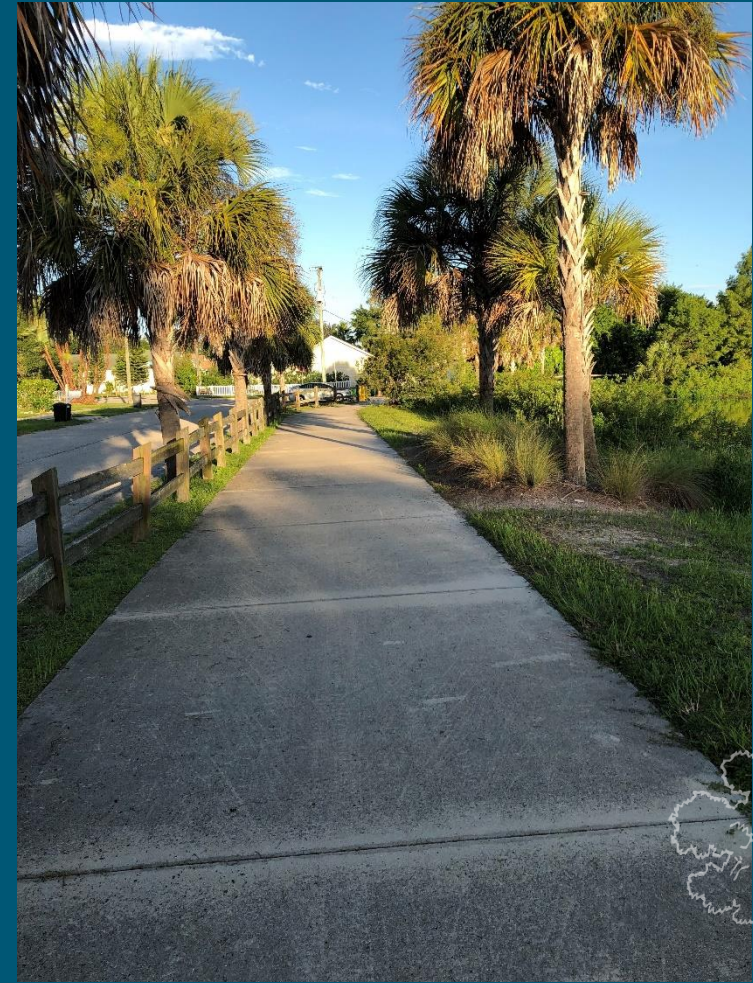
LIME LAKE PARK – Neighborhood Park



LIME LAKE PARK – Neighborhood Park



LIME LAKE PARK – Neighborhood Park



SUBURBAN PARK STORMWATER SYSTEM

COLONIAL OAKS PARK : 17-acre community park

- Recreation center with gym, multi-use rooms, and offices
- Tennis and basketball courts, playground and picnic facilities
- Paved parking, sidewalks, decks, and trails
- Detention ponds for park and roadway: decks built over stormwater outflow system



COLONIAL OAKS PARK – Community Park



STANDING
TALL
THROUGH
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80 years of FRPW
2022

COLONIAL OAKS PARK – Community Park



COLONIAL OAKS PARK – Community Park



SUBURBAN PARK STORMWATER SYSTEM

ED SMITH STADIUM : 50-acre regional sports complex

- Professional baseball stadium, practice facilities, and offices
- Paved and grass parking and paved sidewalks / plazas
- Stormwater management system contains paved and grass parking and detention ponds



ED SMITH STADIUM – Regional Sports Complex



STANDING
TALL
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2022

ED SMITH STADIUM – Regional Sports Complex



ED SMITH STADIUM – Regional Sports Complex



ED SMITH STADIUM – Regional Sports Complex



URBAN PARK STORMWATER SYSTEM

NATHAN BENDERSON PARK : 602-acre community park

- Site of world-class rowing competitions
- Restroom, picnic, playground, trail, and boat launch facilities
- 500-acre lake serves as the stormwater detention facility for park and adjacent UTC Mall development



NATHAN BENDERSON PARK – Community Park



URBAN PARK STORMWATER SYSTEM

SIESTA BEACH PARK : 40-acre urban / suburban beach park

- **Rated #1 beach in America**
- **Beach. restroom. concession. picnic. playground. and tennis court facilities with paved and pervious parking and sidewalks**
- **Stormwater management system consists of pervious pavement. inlet structures. bioswales. and detention pond**



SIESTA BEACH PARK – Urban / Suburban Beach Park



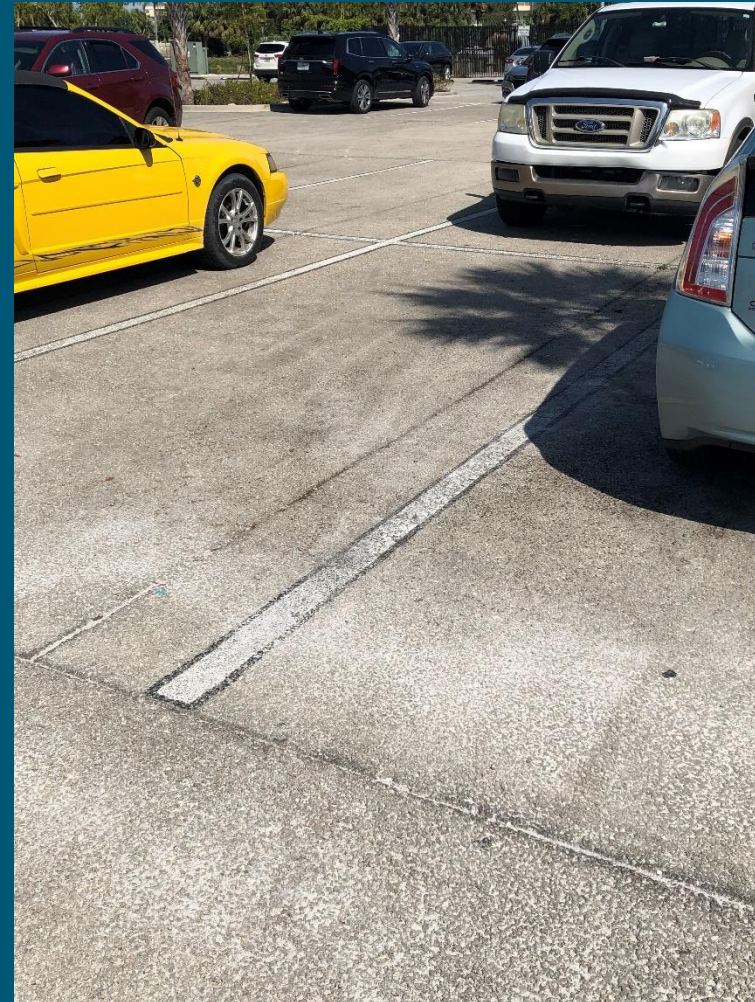
SIESTA BEACH PARK – Urban / Suburban Beach Park



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SIESTA BEACH PARK – Urban / Suburban Beach Park



SIESTA BEACH PARK – Urban / Suburban Beach Park



URBAN PARK STORMWATER SYSTEM

PLAZA PUBLICA. Barranquitas. Puerto Rico : 1-acre urban plaza

- Paved public gathering space with seating, gazebos, fountains
- Surrounded by businesses, government offices, and church bldgs.
- Stormwater management system consists of paved parking and plaza with curb & gutter, and stormwater inlet structures
- Underground vaults and pervious pavement, optional



PLAZA PUBLICA. Barranquitas. Puerto Rico

– Urban Plaza



PLAZA PUBLICA. Barranquitas. Puerto Rico

– Urban Plaza



PLAZA PUBLICA. Barranquitas. Puerto Rico



Urban Plaza

URBAN PARK STORMWATER SYSTEM

Central Park. New York City : 843-acre natural-appearing urban park

- **Natural areas with lakes, trails, meadows, and streams**
- **Paved public gathering spaces with seating, gazebos, fountains, formal gardens, playgrounds, picnic facilities, and zoo**
- **Stormwater management system consists of paved parking, open green space and lakes that serve as detention ponds**



CENTRAL PARK. New York City – Urban Park



CONCLUSIONS

1. Basic components of a stormwater management system:
 - Watershed
 - Pervious vs Impervious surfaces
 - Collection / Conveyance / Outflow systems & facilities
 - Retention vs Detention facilities

CONCLUSIONS

2. Include stormwater management in park planning:

- Assume a need for 25-30% of impervious surface area when planning stormwater management facilities
- Plan for the desired “recreational experiences” (natural, suburban, urban) in the design of the stormwater management system
- Identify potential recreational opportunities based on user analyses & site conditions

CONCLUSIONS

3. Alternative stormwater management techniques / products:

- Rainbow Turf. FlexiPave. Geo-grid. porous concrete
- Swales. bio-swales. rain gardens
- Curb & gutter. structures vs sheet flow
- Detention ponds (dry or wet)

QUESTIONS





Thank You!

MIKE SOSADEETER. PLA

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FLORIDA RECREATION
& PARK ASSOCIATION

For more information about the
Florida Recreation and Park Association
visit frpa.org