Urban Stormwater Resilience

Managing the Impact of Growth Sustainably

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What is Resilience

Resilience is the ability of a local economy and local environment to withstand or recover from a shock or disturbance.

Although the concept of resilience was developed in relation to ecosystems, it is a valuable concept that we should apply across the built environment through the design and planning of the City.

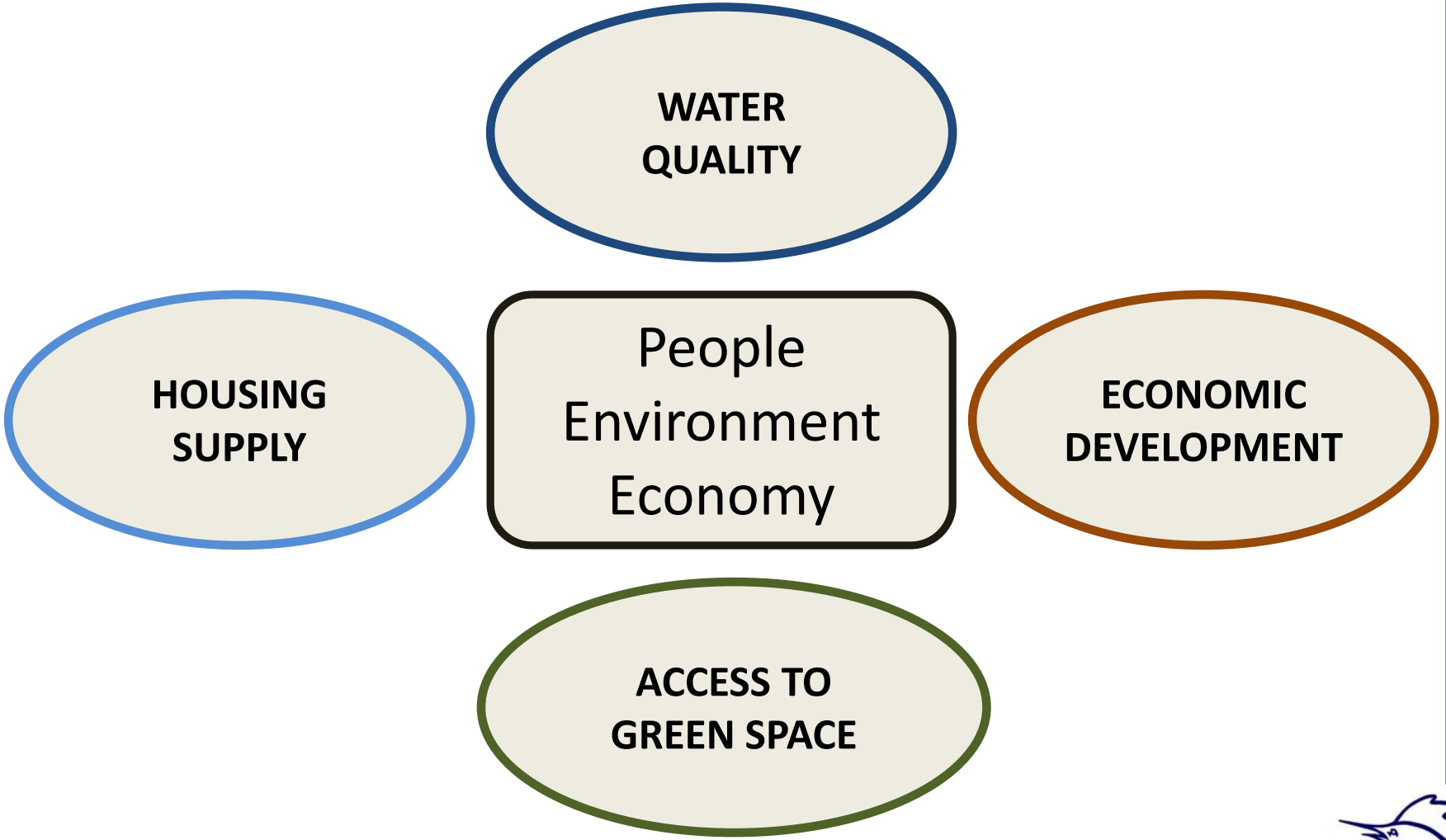
The County, including the City, faces pressure from growth

Unsustainable growth is a disturbance to the People / Environment/ Economy.

How does the City plan (in partnership with the County) to promote sustainable growth?

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Growth Challenges



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Designing for Urban Resilience

Resilience accepts that some level of change/growth is inevitable and normal.

Change that is too impactful can lead to abrupt shifts in the environment and/or the economy that may be very difficult or impossible to reverse and have an adverse effect on the sustainability of the City.

Need to balance Growth with Resilience

(Housing and Economic and Environment)

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Martin County – Growth

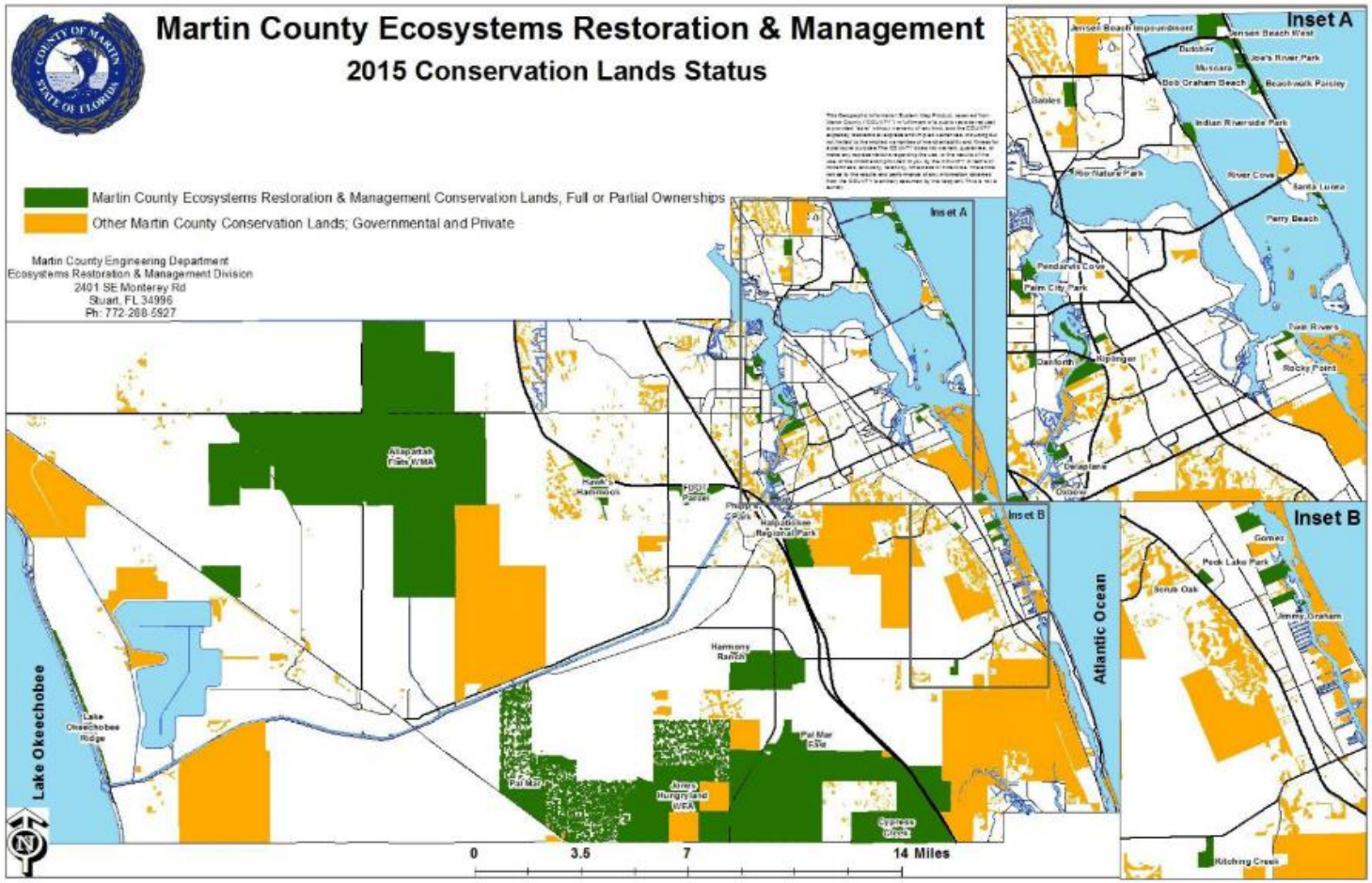


1000 Friends of Florida

1. Reduce Sprawl
2. Promote Compact patterns for new development

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Martin County – Environmental Stewardship - $75m, 45,000 Acres





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Urban Development and Stormwater

The City of Stuart is an urban area and the continued planned buildout of the CRA and downtown will test the resilience of the existing stormwater system to maintain water quality

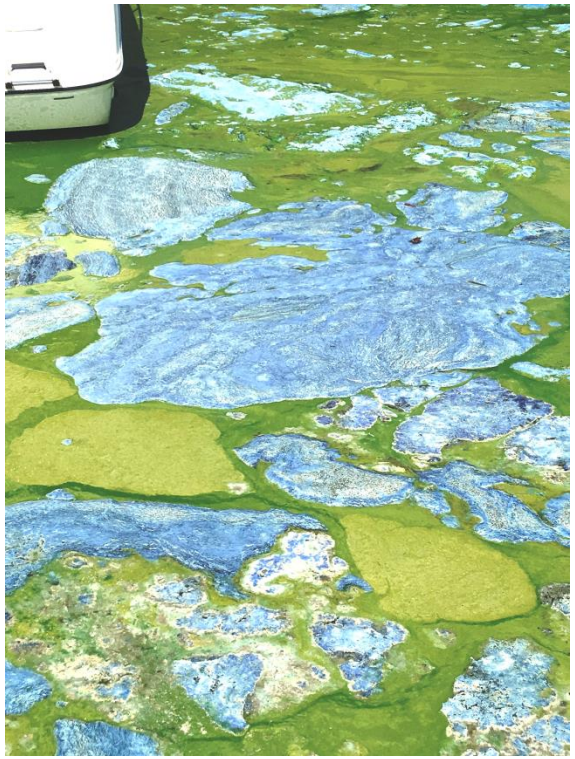
The City have historically dealt with stormwater treatment using traditional methods including detention areas and baffle box's

These methods work – are they enough to maintain or improve water quality? Will the system be resilient enough to cope with continued challenges?

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Our #1 Environmental Issue

THE RIVER - WATER QUALITY - NUTRIENTS - PESTICIDES



Outside of the releases from Lake Okeechobee we need to ensure that any stormwater discharged from our urban areas has been sufficiently cleaned.

The City has an excellent existing stormwater treatment program that can be enhanced by small interventions

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Impact of Development

INCREASED INTERVENTION TO MAINTAIN STORMWATER QUALITY

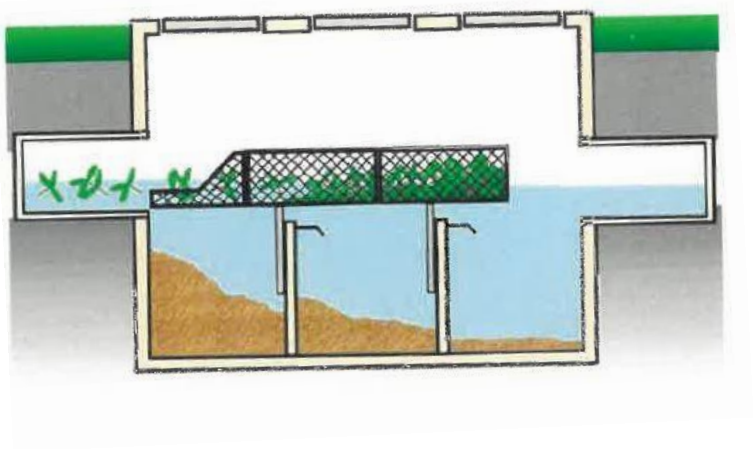


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Urban Stormwater Storage-Treatment

Design – Baffle boxes





Regarding Innovative Stormwater Treatment Methods and New Development:
“Integrating is an enabler to reduce costs.”[1]

1. CH2M/Potts, Marengo report for the Water Environment Federation, 2015

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Urban Resilience

Design urban stormwater management to maximize the efficiency and resilience of the urban environment.

Rather than replace existing levels of stormwater treatment with the same – we should be enhancing the treatment whenever and wherever possible.

Use City Right-of-Way as an additional water quality intervention and integrate innovative stormwater treatment systems with new development that combine to form a City-wide treatment train as water makes its way back to source

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Urban Stormwater - Roadways

Replace Concrete/Asphalt with Pervious Asphalt on low volume residential streets or in Parking Lots.





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Urban Stormwater - Development

Design – Bio-Swales, Rain Gardens, Littoral Zone Planting, Tree Box Filters, Vegetative Filter Strips.

Create Urban Stormwater Treatment Chains





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Urban Stormwater - Buildings

On buildings install Roof Top Gardens



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Urban Stormwater - Shoreline

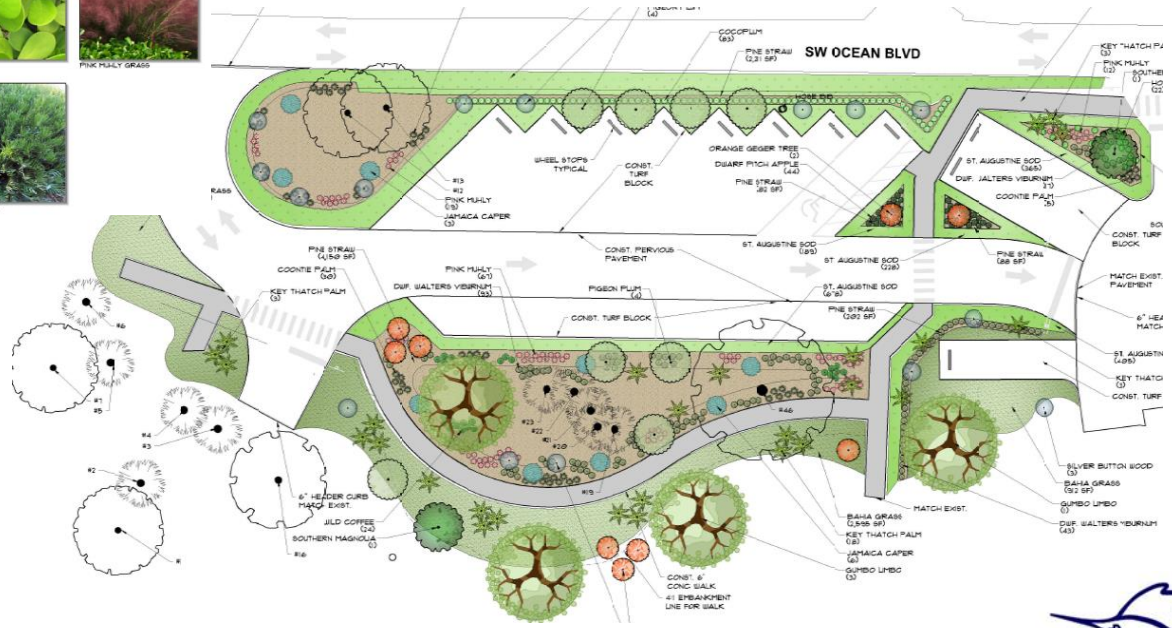
Living Shoreline.



Urban Stormwater - Projects

Shepard's Park Rainwater Garden.





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City has Finite Land Resources

County is the Environmental Mainstay

Urban Development should be concentrated within the City Limits

Urban Stormwater Treatment Trains within the City's RoW can be part of the City's contribution to a Sustainable Environmental Resilience

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