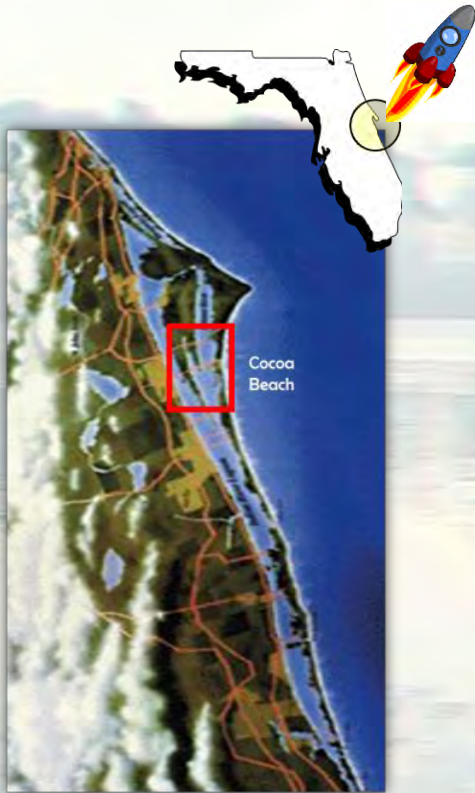


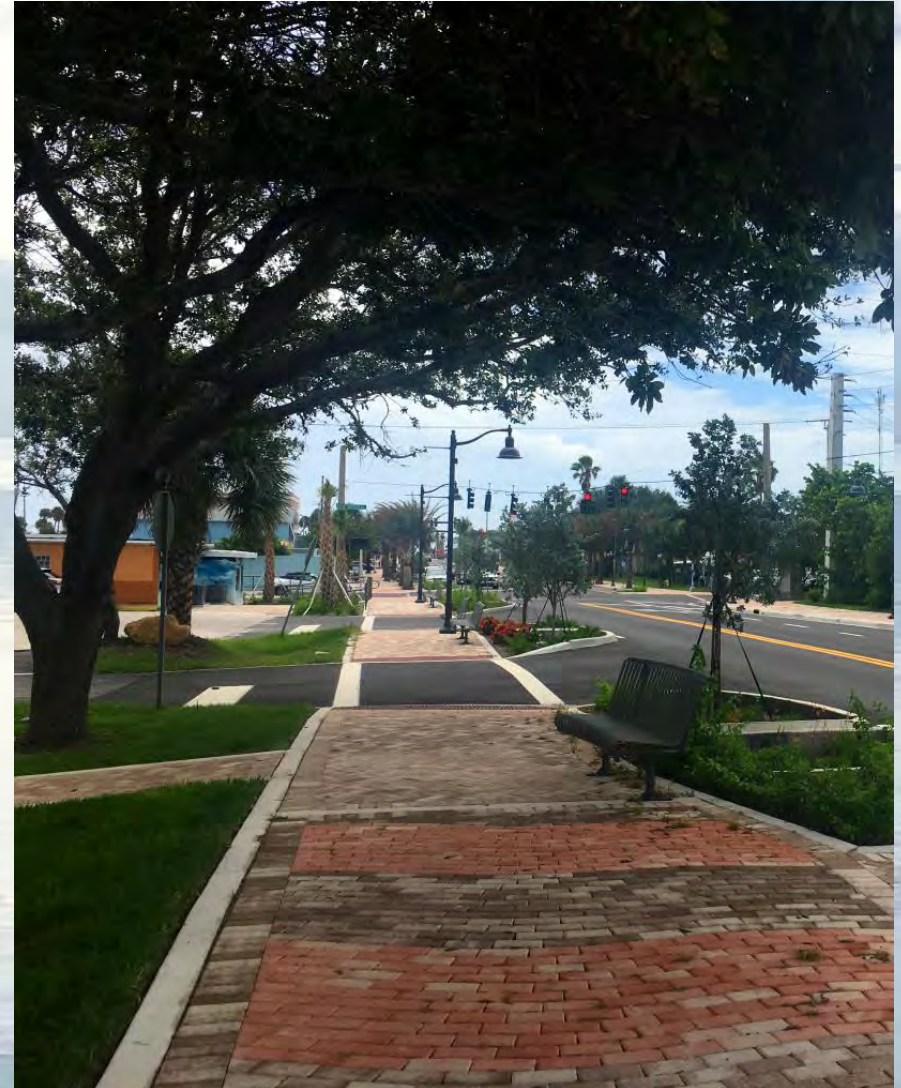
Greening Rocket Town's Downtown while Reducing Pollutants to the IRL



Protecting the IRL with LID

Minutemen Stormwater LID Improvement

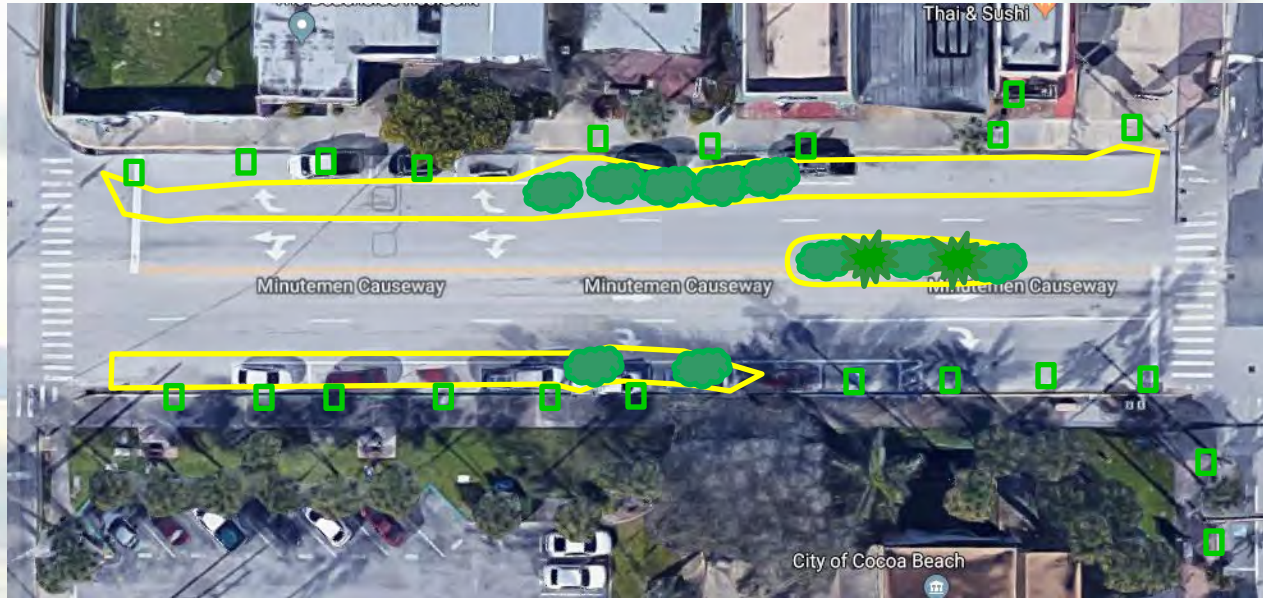
- capture rain where it falls
- ↓ impervious surfaces
- ↑ green space/infrastructure
- ↓ discharge **volume** to lagoon
- ↓ pollutant **load** to lagoon
- protect groundwater resources
- abate saltwater intrusion
- beautify a 1950 urban corridor
- sustainable streetscape design



Minutemen Stormwater LID Improvement



Minutemen Stormwater LID Improvement



Downtown Cocoa Beach Back in the Day



1956

green turns gray



Urbanization Infrastructure . . . Impervious Creep

Downtown Cocoa Beach Back in the Day



1920s



1940s



1930s

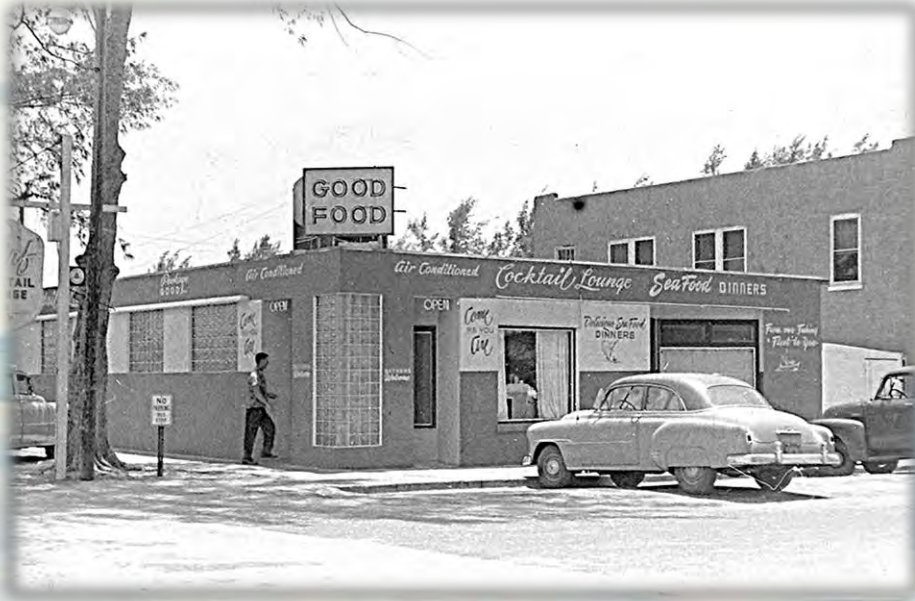


Downtown Cocoa Beach Back in the Day



1950s

Downtown Cocoa Beach Back in the Day



early 1950s

Downtown Cocoa Beach Back in the Day



Downtown Cocoa Beach Back in the Day



1950s/1960s



Downtown Cocoa Beach Back in the Day



1960s

Downtown Cocoa Beach Back in the Day



1960/1970s

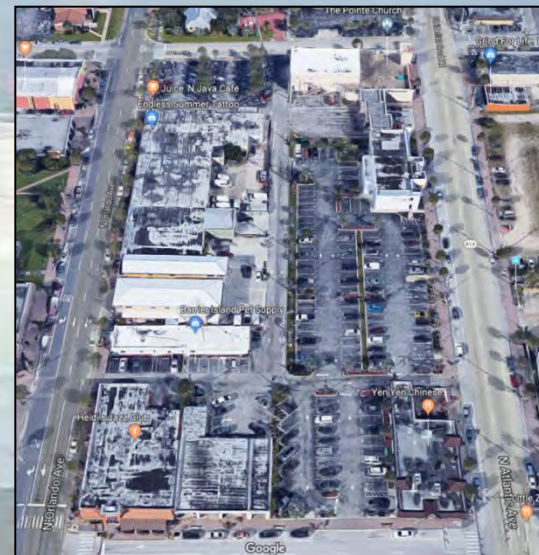
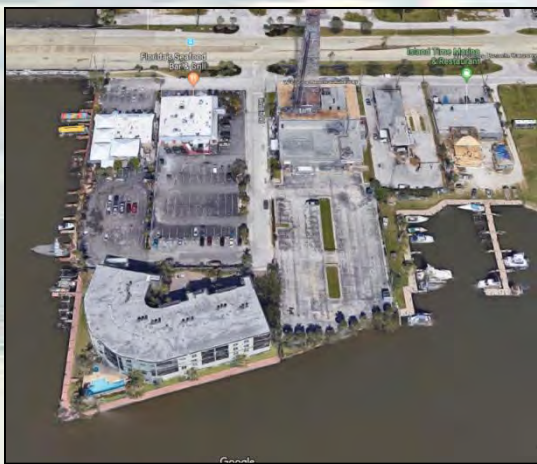


Redevelopment & Impervious

“Developed” Cocoa Beach Land Use

Private	Public R/W
2104.2 acres	55.1 acres
97%	3%

3% Public Roadway
cannot mitigate
large areas of
private development
that have
no
stormwater management
or
compromised/insufficient
stormwater management



Pre-Project Condition

- Cocoa Beach “main street”
- oldest section of town
- very little “green”
- storm runoff to lagoon
- business struggling
- not inviting/not walkable



Post-Project Condition

- Cocoa Beach Main St program
- upgraded infrastructure
- green infrastructure
- stormwater management
- business renovations
- more foot traffic

through downtown



Minutemen Corridor LID Treatment Train

- tree canopy
- urban planters/rain gardens
- permeable pavers
- rain tanks
- bioactive media/BAM



Minutemen Corridor LID Treatment Train

tree canopy – on average intercepts 15% of rain/less runoff



Minutemen Corridor LID Treatment Train

urban planters/rain gardens with 12" of BAM under soil



Minutemen Corridor LID Treatment Train

permeable parking pavers with 2" of BAM beneath stone



Minutemen Corridor LID Treatment Train

stormwater tanks with 12" BAM beneath stone



Project Challenges

business/storefront disruption



asphalt thickness – decades of overlay



utility conflicts/surprises



Project Challenges



total roadway renovation



Project Challenges

total roadway renovation



old drainage infrastructure retrofit



Project Challenges



old drainage infrastructure retrofit



Project Challenges



2 storms – Hurricane Matthew (2016) and Hurricane Irma (2017)

Project Benefits



business storefront beautification



Project Benefits



upgraded FPL power lines



upgraded
water lines

Pre



2011

Post



Pre

2015



Post



Pre



2015

Post



Pre



2011

Post



Pre



Post



O&M Challenges & things not yet figured out . . .



retrofit matching grades



sedimentation - sweeping

O&M Challenges & things not yet figured out . . .



rain garden foot traffic & curb flow bypass

sediment catchbasins vs curb cuts



O&M Challenges & things not yet figured out . . .



Erosion of rain garden soil/mulch
& performance of curb cuts

O&M Challenges & things not yet figured out . . .



landscape palette



Minutemen Corridor LID Treatment Train

Vital Statistics/Leveraging Funds

Total Construction Cost \$5,243,196

Terrific Funding Partners

FDEP/EPA (319/TMDL) \$1,794,540

FDOT (Complete Streets) \$1,395,000

IRLNEP/SJRWMD \$50,000

City of Cocoa Beach \$1,094,667

FDEP SRF Loan (< 1% interest) \$1,131,131

FPL Power Pole Relocation \$155,054

Design & Engineering \$264,575

CEI (admin, engineering, inspection) \$451,995

FDEP SRF Loan CEI - \$222,142



unexpected cool extras

PISCES Recognition Program 2018 Compendium



HONORABLE MENTIONS

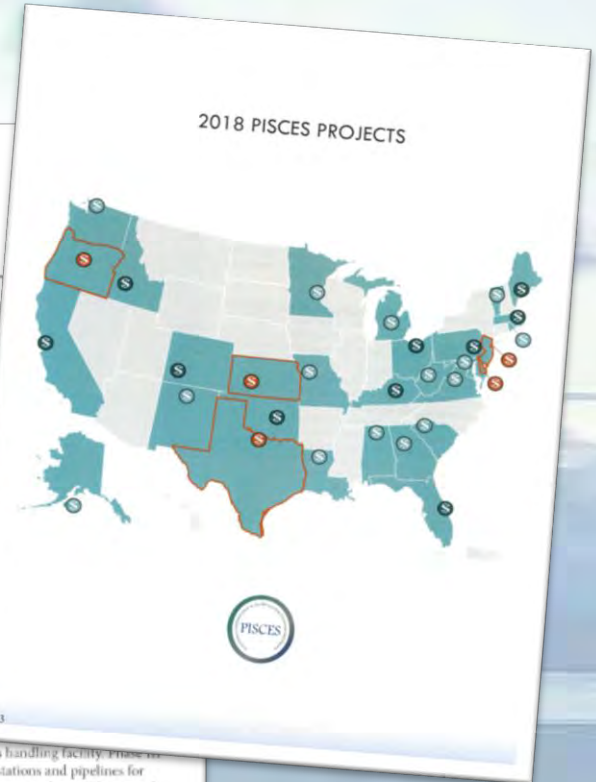
PROGRAM: FLORIDA SRF
RECIPIENT: CITY OF COCOA BEACH
PROJECT: STORMWATER/STREETScape IMPROVEMENTS

The City of Cocoa Beach constructed an urban stormwater project that will reduce nutrients from entering into the Banana River Lagoon, which is part of the Indian River Lagoon system, a designated Estuary of National Significance. This project treats stormwater from an 8.34-acre watershed by using Low-impact Design (LID) best management practices which include native landscape bioswales/tree filters, underground exfiltration, and pervious pavement. Sorption media was also used to further reduce nitrogen and phosphorus from seeping into the groundwater. The total construction costs for this project were \$5.2 million of which the CWSRF financed \$1.8 million that was used to match a 319 Nonpoint Source grant. This large green infrastructure project reduced nutrient loading for the Indian River Lagoon and has also added an aesthetic value along City streets which is said to have attracted new businesses to the area.



PROGRAM: IDAHO DEQ
RECIPIENT: CITY OF NAMPA
PROJECT: TREATMENT PLAN

The City of Nampa, with its population of 91,000, showed foresight and their wastewater quality needs. The City is financing from the Environmental Quality's State Revolving Fund to upgrade its wastewater treatment facility to meet the limit of 0.1 milligrams per liter of phosphorus. To meet summer seasonal temperature requirements, a large project for a city of 91,000 people. The funding approach was adopted through an Improvement Plan over a 20-year period at a rate of 1.68 percent. It is estimated to save \$38 million by using these funds instead of avoiding the market's transaction fees. For the three phase upgrade, the City will install a primary effluent pump station, an anaerobic digester, and a UV disinfection system. The project will bring a fourth aerobic treatment tank, ultraviolet disinfection, a new primary thickener, a new anaerobic digester, and expand the solids handling facility. The project will include individual pump stations and pipelines for irrigation and industrial conveyance, along with internal mixed liquor return pumps for the activated sludge process.



1 of 30 projects chosen nationally – only 5 stormwater projects

Does it work?



surface & groundwater monitoring challenges/results



Greening Rocket Town's Downtown while Reducing Pollutants to the IRL

