Sarasota County

Incentivizing Stormwater Management for Older Florida Communities

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NEST Program

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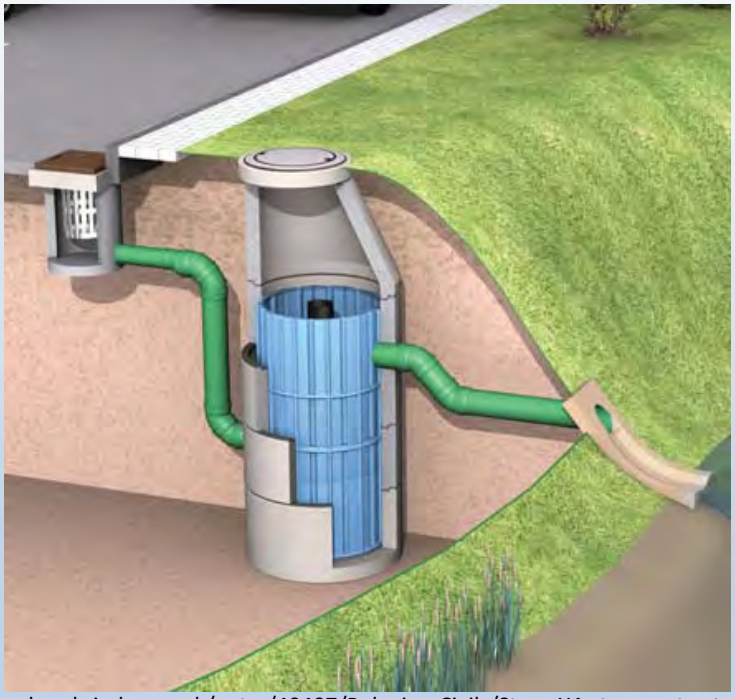
Parallels Across Sectors

Sarasota County

Is there a potential for municipalities to incorporate efficient space-saving technologies with traditional hardscapes to improve water quality ?



http://www.externalworksindex.co.uk/entry/40407/Polypipe-Civils/StormX4-stormwater-treatment-system/

Air Quality Programs

Sarasota County

Diesel Retrofit Experience

Statement of the Problem

- Diesel engines are workhorses, both in mobile and stationary applications
- better mileage, higher torque, cheaper fuel, longer lifetime
- Heavy Duty Trucks and Buses are mostly diesel all around the globe.
- Diesel combustion process emits soot particulates, PM and NOx emissions.
- US EPA, CA CARB, European EPA are among the leading regulatory agencies to limit pollutants from new engines.
- Diesel vehicles with older engines remain major pollutants, while new engines are manufactured via cleaner norms.

Air Quality Programs

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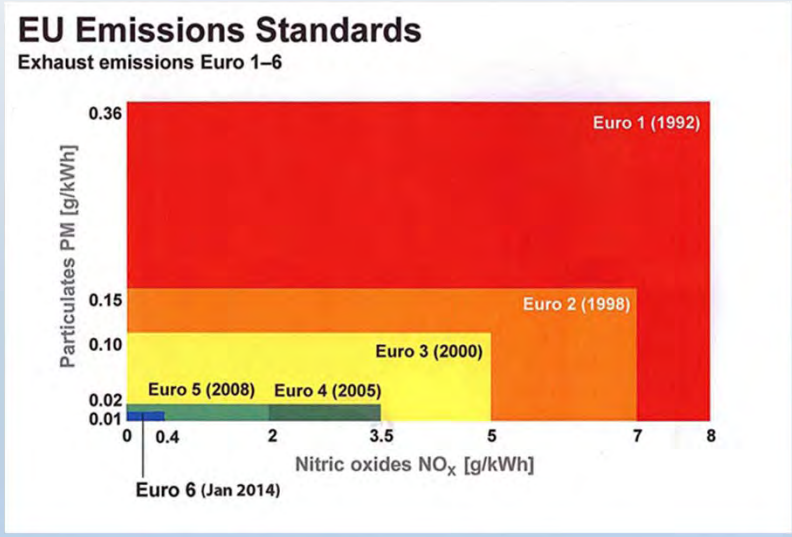
Regulating Mobile Source Air Pollution

Legislation and Agencies → Develop Norms → Engineering Solutions

1970 Clean Air Act

US EPA
CARB

European Environment Agency



Clean Fuel → Refining

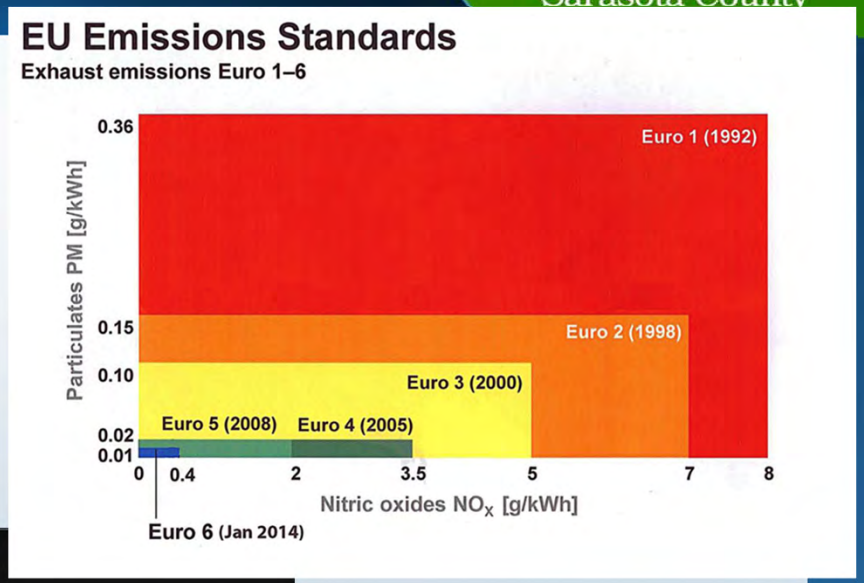
Engine Efficiency → Engineering

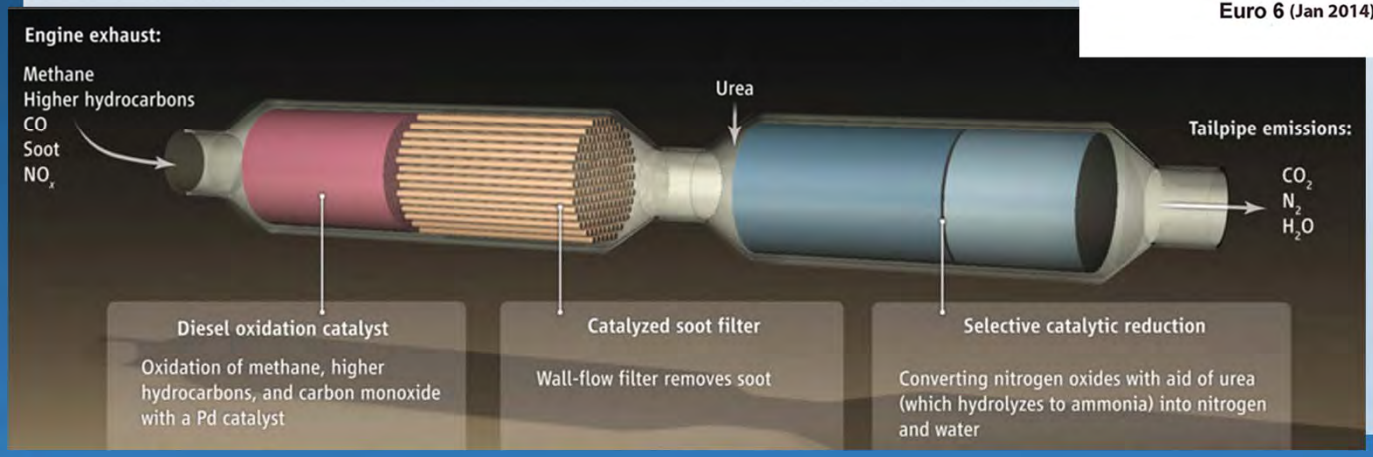
Aftertreatment → Catalytic Converters, Soot Filters

Air Quality Programs

Sarasota County

Euro-4	DOC
Euro-5	Soot Filter
Euro-6	SCR – Urea





Air Quality Programs

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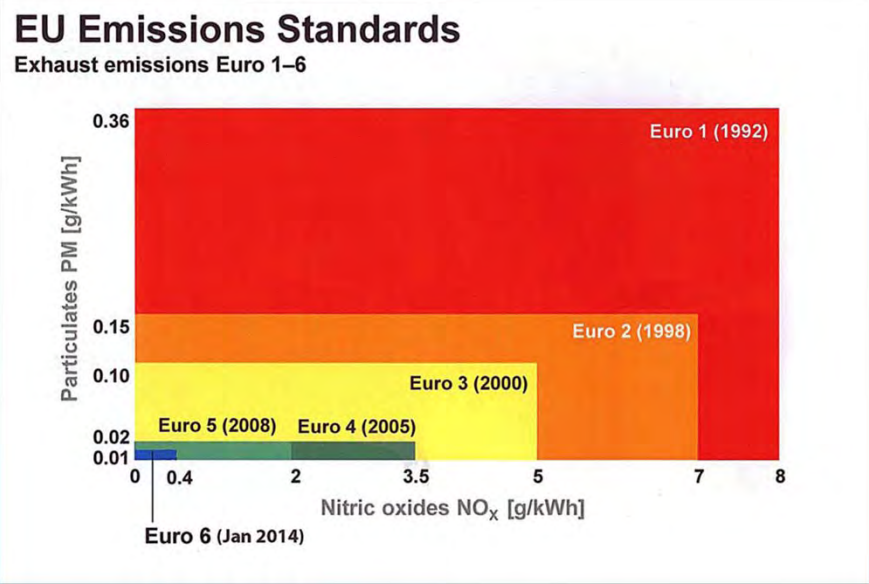
Existing Diesel Fleet Remain as the Concern

- Diesel Engines last long – with proper maintenance, could be in use for 20-30 years, especially the Heavy-Duty engines.
- Preferred for the commerce; trucks, buses, off-road vehicles



What can we do for the existing diesel fleet?

Retrofit them with Catalyst and Soot Filters

Result
Reduction in PM and harmful exhaust components

Is the engine clean like a new one?
No
But significant improvement in soot and pollutant reductions
>80%

Air Quality Programs

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Major Diesel Retrofit Programs

LEGISLATIVE

2001 Hong Kong Diesel Retrofit

2002 Tokyo, Japan bans trucks w/out filters

2003-08 London, Mexico City, NYC, Milan

2005 US School Bus Retrofit

2008 CA Truck & Bus Rule; CA Air Resources Board

2009 American Recovery & Reinvestment Act

PROGRAMS

Voluntary Retrofit- during annual checkup – incentives

Forced truck owners to retrofit

NYC Off-road; Milan cars; London buses, Mexico trucks

Voluntary filter retrofit

Reduce PM by 85%; retrofit or repower on-road vehicles

Provide funds to fleet owners

Air Quality Programs

Sarasota County

Criteria for Retrofit Programs

Legislative Authority	US/CARB, EU VERT, United Nations
Emissions Performance	PM/NOx Emissions
No Adverse Effect	No Secondary Emission
Durability	1000 – 2000 hours in-service
Solution Classification	Various Retrofit Strategies
In-Use Monitoring	Sensors
In-use Performance Evaluation	System testing while in use
Warranty	In-Use Hours; Mileage based
Recall Authority	Authority revokes certification and license

User's Success Criteria

- Choice of Technology
- Applications Engineering
- Maintenance
- Materials Quality
- Management

Water Quality Parallels

Sarasota County

The 1950's through late 70's was a busy time in Southwest Florida.

- State Population went from just over 2.77 million to 9.75 million in 1980. *S. Smith. June 2005*
- Most growth was centered along and west of the "trail"
- Environmental regulations were not strong in most regions of the State

Water Quality Parallels

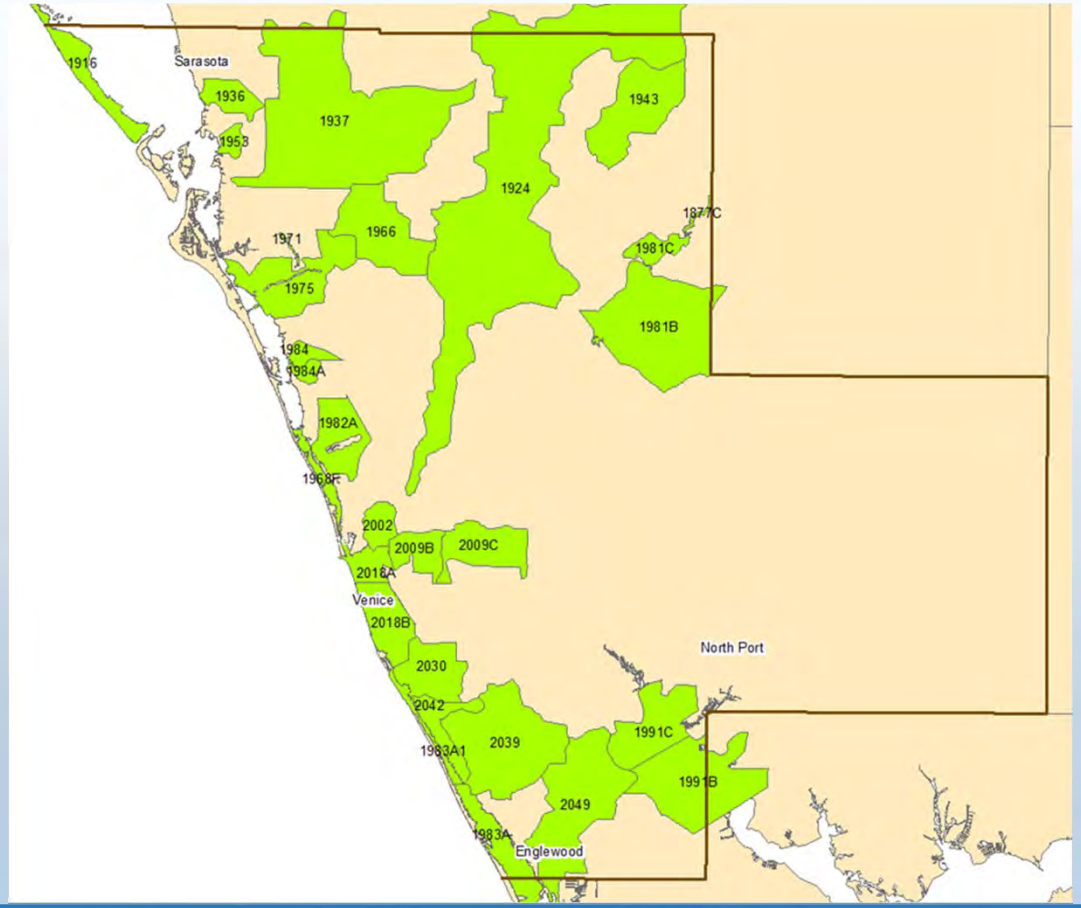
Sarasota County

Stormwater Concerns in older communities:

Nuisance Flooding Water Quality

Water Quality Parallels

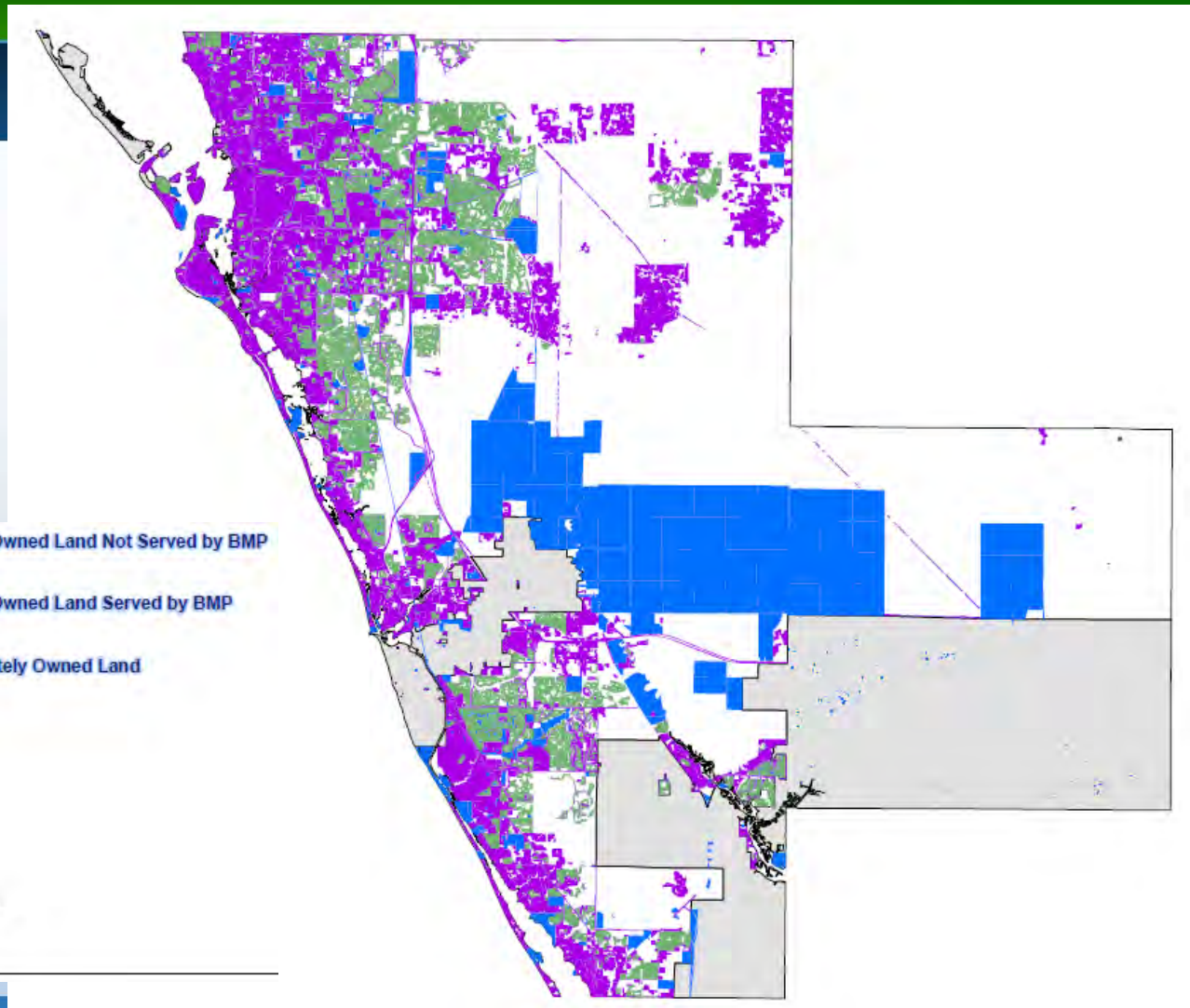
Sarasota County



TMDLs and Impairments:

not only monitor but provide a framework for efforts to IMPROVE water quality.

Water Quality Parallels



LEGEND

- Private Land Not Served by BMP
- Private Land Served by BMP
- Sarasota County Owned Properties

Sarasota County Boundary

Municipality

- City of North Port
- City of Sarasota
- City of Venice
- Sarasota County
- Town of Longboat Key

Total Acreage- Privately Owned Land Not Served by BMP
52,405.566735 ac

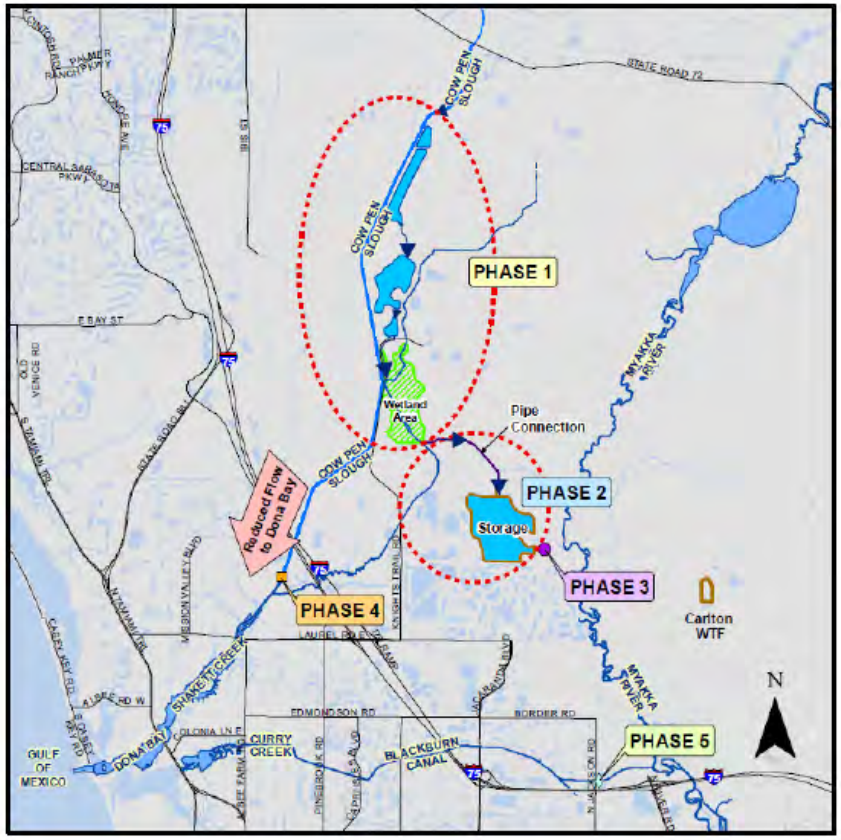
Total Acreage- Privately Owned Land Served by BMP
31,582.286597 ac

Total Acreage of All Privately Owned Land
86,282.981636 ac

Draft: For discussion purposes only.

Water Quality Parallels

Sarasota County



Water Quality

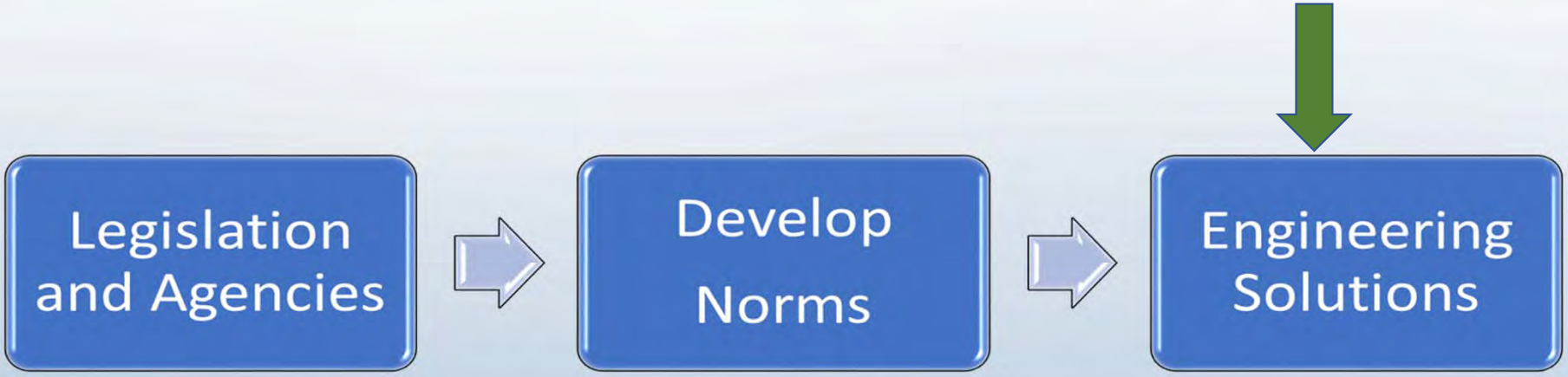
Sarasota County

There are cost share programs which incentivize BMPs to help improve water quality:

Rain gardens – East Multnomah SWCD – Portland, Oregon
Rain Barrels – Sarasota County Rain Barrel Program
Pervious replacement - RiverSmart – Washington DC

Water Quality Parallels

Sarasota County



Water Quality Parallels

Sarasota County

Alligator Creek Baffle Box and treatment Wetland
February 2013

Water Quality Parallels

Sarasota County

Redevelopment of Residential Lots

Sarasota County

Water Quality Parallels

Sarasota County

Water Quality

Sarasota County

Cost Pervious	Cost Impervious	Cost Share Dollars Spent at 75% of TPC of Pervious	Cost Share Dollars Difference of TPC (P/IMP plus incentive	C/B Per Pound Removal (20 yrs) at 75% cost share	C/B Per Pound Removal (20 yrs) Diff + incentive
$ 10,710.00	$ 7,140.00	$ 8,032.50	$ 4,570.00	$ 626	$ 356
$ 4,230.00	$ 2,820.00	$ 3,172.50	$ 2,410.00	$ 227	$ 172
$ 6,165.00	$ 4,110.00	$ 4,623.75	$ 3,055.00	$ 303	$ 200
$ 13,500.00	$ 9,000.00	$ 10,125.00	$ 5,500.00	$ 360	$ 196
$ 6,075.00	$ 4,050.00	$ 4,556.25	$ 3,025.00	$ 239	$ 159

The incentive is $1,000.00!

Water Quality Projects (cost/lb of pollutant removed)			
Project Type	**High**	**Medium**	**Low**
Total Nitrogen (cost/lb)	<$176	≥$176 ≤ $475	>$475
Total Phosphorus (cost/lb)	<$1498	≥$1498 ≤ $4152	>$4152
Septic Conversion Total Nitrogen (cost/lb)	<$100	≥$100 ≤ $176	>$176

Water Quality Parallels

Top 10 reasons to bring LID into a Community
From Planners Web:

1. Increases Property Values
2. Cost Effective
3. Improves Community Resilience to Climate Change
4. Promotes Economic Competitiveness
5. Increases Quality of Life
6. Provides Multiple Ecological Benefits
7. Reduces Flood Risk
8. Provides Aesthetic Benefits
9. Mimics the Natural System
10. Blends into the Landscape

Water Quality Parallels

Sarasota County

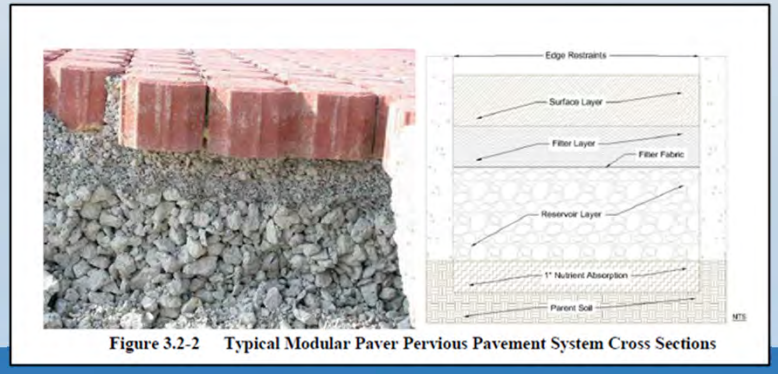


Figure 3.2-2 Typical Modular Paver Pervious Pavement System Cross Sections

Future of Water Quality

Sarasota County

The NEST Program is seeking approval of operating a cost share program that will bring LID to the individual level, and forge partnerships with residents to help improve water quality.

Water Quality Parallels

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- Additional technologies and methodologies from the private sector
- Recognition from the State and above as an additional water quality improvement action plan