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STORMWATER GRATES & Our Approach to Debris Removal Land Use and Sustainability Committee February 11, 2022

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Presentation Outline

Historical Evaluation of Stormwater Inlet Grates

- Methodology: Tested Systems from Two Vendors
- Results: Flooding and Significant O&M
- Conclusions: Inlet Grates are Not Recommended for our City

Our City's Approach to Debris Capture and Removal

- Collection and Centralized Removal of Large Debris at Bar Screens
- Overview of Older and New Generation Stormwater Treatment Systems
- Ongoing Evaluation of Additional System Enhancements through Use of Blue-Green Infrastructure



County-wide Stormwater Management Report Card

. Questions/Comments

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1 Historical Evaluation of Stormwater Inlet Grates



Pilot Testing of Stormwater Grates



Methodology:

2015 Stormwater Inlet Grates Pilot:

- > Two types of grates were installed along Ocean Drive
 - from 5th Street to 12th Street. .
- > 7 Stop Ocean Pollution grates and
- 9 EcoSense grates





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Two Types of Grates Installed

Stop Ocean Pollution Grates



Specifications	Price includes the following	Price per filter	Price for 15 filters
6061 Aluminum curb inlet filter Height: 8" Length: 48"	- Manufacturing - Installation documentation - In-person consultation to train the company that will install the filters	\$275	\$4,125
Shipping	- Shipping 15 filters to zip code 33139	N/A	\$130
Installation Materials	 2 cut-off wheels for metal Concrete Construction Adhesives Anchors Angles Utility wire 	\$17	\$255
		Total	\$4,510

Sales Rep FOB Lead Time Terms ESI 3 - 4 Weeks RB Net 30 aty Total Lin Part # Description Cost 712.00 10002030 Curb Inlet Grate for 30" Curb Inlet 8 \$9.00 Dimensions: 30" x 4" Curb Inlet Grate for 42" Curb Inlet 98.00 686.00 10002029 7 Dimensions: 42" x 5.5"

QUOTE VALID FOR 30 DAYS

This quote has been provided to you for your convienence. Please sign and return to indicate your acceptance of this quote with a purchase order.

Offerra valida per 30 giorni. Questa citazione è stata fornita voi per il vostro convienence. Prego firmate e runvate questo documento di accettazione di questa quota con un ordune d'acquisto. Offerte geldig gedurende 30 dagen. Deze aanbieding is voor uw gennak gennakt. On uw bestelling te plaatsen hoeft u deze aanbieding alleen is ondertekenen en terug te sturen. Wij weten dan dat uw order geplaatst is en verwerkt kau worden.

EcoSense Grates



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USD 1,398.00

Total

Flooding from Stormwater Grates

Pilot Results

Shortly after installation, a rain event caused flooding on Ocean Drive due to debris clogging the grates. A similar situation was observed at all locations where grates were installed.

Daily cleaning of the grates was required along with routine inspections during rain events to clear clogs.

The City received numerous phone calls, service requests, and other complaints regarding the ineffectiveness of the grates during the short time they were installed.

Stop Ocean Pollution representatives advised Public Works staff that grates may have been installed incorrectly, therefore contributing to the problem. The issue continued after adjustments were made by Stop Ocean Pollution representatives.

Flooding from Stormwater Grates, 8th Street



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Figure 1: Pictures (above) taken after street sweepers passed by drains.

Flooding from Stormwater Grates, 8th Street



Figure 2: Stop Ocean Pollution Grates clogged with trash and debris do not look aesthetically pleasing in between cleanings.

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Figure 3: Grates clog and backup water into the street.

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Figure 4: EcoSense grates are better for stopping larger items but need to be cleaned frequently by street sweepers.

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EcoSense grates are better for stopping larger items but need to be cleaned frequently by street sweepers.





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EcoSense grates are better for stopping larger items but need to be cleaned frequently by street sweepers.



EcoSense grates, flooding from stormwater grates

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EcoSense grates, flooding from stormwater grates

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EcoSense grates, flooding from stormwater grates

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EcoSense grates are better for stopping larger items but need to be cleaned frequently by street sweepers.

Flooding from Stormwater Grates

Conclusions

City staff determined these stormwater grates were **not a good fit for the City.**

The process is **extremely labor intensive**. The daily inspections cleaning of the city's 4100 storm inlets is **cost prohibitive**. Less impact to collect the trash at the pump stations collection systems.



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2 Our City's Approach to Stormwater Debris Capture and Removal...



Consolidate Capture of Large Debris at Screen/Trash Rack Structure









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Cleaning at Screen/Trash Rack Structure

✓ Entire system is cleaned yearly & high priority areas are cleaned 3 times/week – More than 5 times what is required by NPDES





Stormwater Cleaning

✓ More than 300 tons of debris captured annually





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Older-Generation Pump Station Design





New-Generation Stormwater Treatment Systems – Our Current Strategy



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Water Quality Treatment Systems:

- ✓ 5 stage treatment incorporates best of available technologies
- Includes injection well to sequester "first flush"
- Outfall for Large Storms

Blue/Green Infrastructure to help mitigate Rainfall Events



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Currently Constructing Bioswales in Our City



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Stormwater Management Practices in Miami-Dade County: County-wide Report Card (May 2021)

collaboration between



UNIVERSITY OF MIAMI

MIAMI WATERKEEPER° and UM RSMAS ROSENSTIEL SCHOOL of MARINE & ATMOSPHERIC SCIENCE

Municipality Name	Final Average	Final Grade
Aventura	45.00%	F
Bal Harbour	65.00%	D
Bay Harbor Islands	39.00%	F
Coral Gables	65.00%	D
Cutler Bay	100.00%	A
Doral	90.00%	A
El Portal	38.00%	F
FDOT District 6	89.00%	B+
FDOT FL Turnpike	100.00%	A
Golden Beach	95.00%	А
Hialeah Gardens	50.00%	F
Homestead	55.00%	F
Indian Creek Village	44.00%	F
Key Biscayne	90.00%	A
Medley	56.00%	F
Miami Beach	100.00%	А
Miami-Dade County (unincorporated)	70.00%	С
Miami Gardens	50.00%	F
COUNTY AVERAGE	62.26%	D

Municipality Name	Final Average	Final Grade
Miami Lakes	60.00%	D
Miami Shores	38.00%	F
Miami Springs	10.00%	F
Miami-Dade Expressway Authority	60.00%	D
North Bay Village	55.00%	F
North Miami	75.00%	С
North Miami Beach	60.00%	D
Opa-Locka	55.00%	F
Palmetto Bay	44.00%	F
Pinecrest	83.00%	В
South Miami	75.00%	С
Sunny Isles Beach	45.00%	F
Surfside	55.00%	F
Virginia Gardens	33.00%	F
West Miami	45.00%	F
City of Miami (permit no. FLS000002)	100.00%	A
City of Hialeah (permit no. FLS000023)	45.00%	F
COUNTY AVERAGE	62.26%	D

"The City of Miami Beach scored 100%, as they met all the requirements of the permit and had performed additional activities not required by the permit."

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