



VERO ISLES SUBDIVISION STORMWATER INLET FILTERS AND PIPE REPAIRS

CITY HALL COUNCIL CHAMBERS

TUESDAY SEPTEMBER 26TH, 2017 10:00 A.M.

PRESENTED BY: CITY OF VERO BEACH PUBLIC WORKS

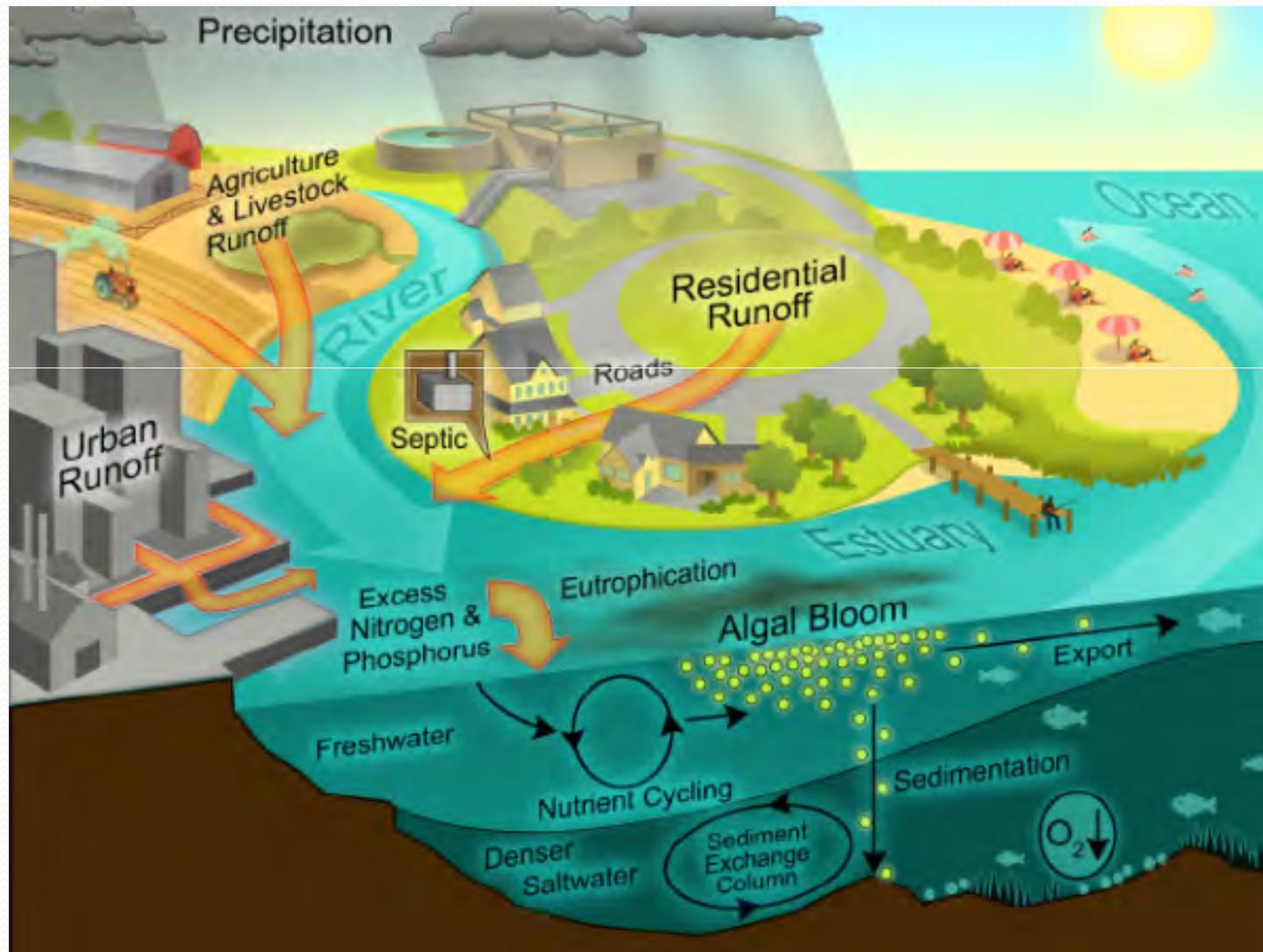
MATTHEW T. MITTS, P.E.– ASSISTANT CITY ENGINEER



Topics for Presentation

- Preventing Pollution from Stormwater Runoff
- History of the Vero Isles Subdivision and Vero Beach
- Project Scope and Costs

Stormwater Basics – A Watershed

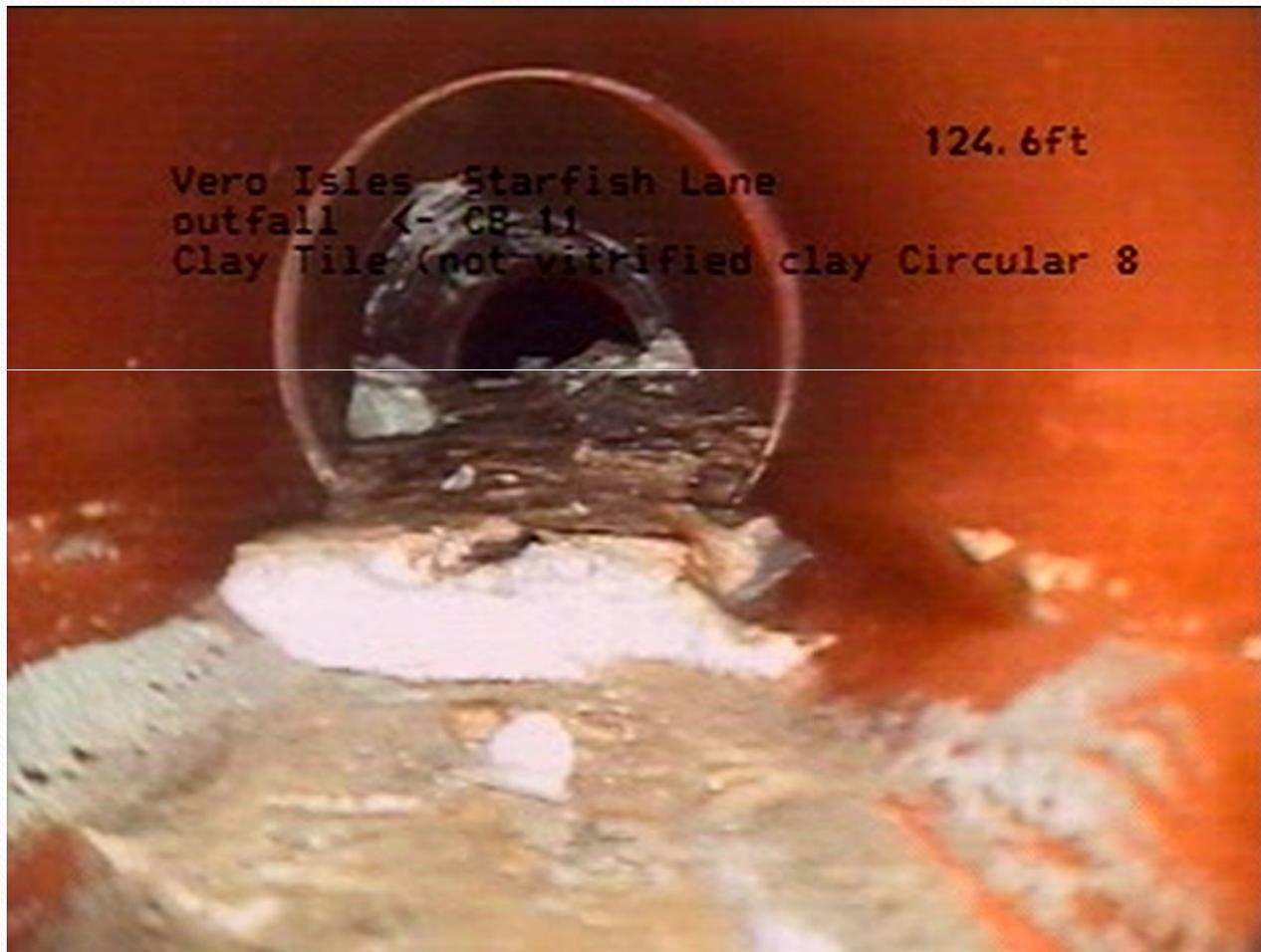


LET ONLY RAIN DOWN THE STORM DRAIN

- Generally, anything besides rain that enters a storm drain is a pollutant.
- Pollutants of Concern:
 - Using a storm drain as a dump for motor oil, concrete washout, paint, or other chemicals
 - Leaf Litter blown into the street that then enters curb inlets
 - Excess Fertilizer
 - Pet Waste



A storm drain is not a trash can!



- Example of concrete that has been dumped into a storm drain

BAG IT, DON'T BLOW IT

BLOWING LEAVES HURTS THE ENVIRONMENT



Blown leaves make their way to storm drains. They travel to our lakes and lower the quality of water, which can kill fish.

DON'T LET GREEN FLOW DOWNSTREAM

Protect Our Lagoon, Follow Fertilizer Laws

SKIP THE PHOSPHORUS

Make sure the middle number, Phosphorus (P), on your bag is zero! Only apply Phosphorus if a soil test confirms it is needed.

JUST SAY NO TO N IN THE SUMMER

It is against the law to apply any N (nitrogen) to the lawn during the rainy season from June 1 to September 30.

GO SLOW ON N IN THE SPRING

You must use fertilizer with at least 50% slow release nitrogen. The best time to apply N is in the spring.

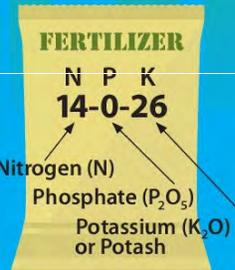
STAY AWAY FROM THE WATERWAY

Keep fertilizer away from any body of water. Set-backs range from 10-25 feet, check your local ordinance to be sure of your set-backs at www.BeFloridianNow.org.

BLOW GRASS BACK

Fertilize your lawn naturally! Keep all grass clippings and vegetative material away from streets, storm drains, and water bodies. Blowing them back on the lawn provides natural fertilizer!

What are the Three Numbers I See on Fertilizer Bags?

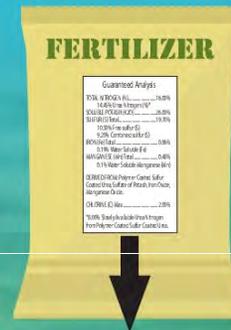


For more information, visit www.BeFloridianNow.org

WHAT DO I LOOK FOR IN FERTILIZER?

Look for the terms time-release, slow-release or controlled-release on the product label. At least 50% of the nitrogen (N) in the fertilizer should be slow-release nitrogen.

To determine how much nitrogen in your fertilizer is slow-release use the "Guaranteed Analysis" (or fertilizer content) label on your fertilizer bag, along with the calculation below.



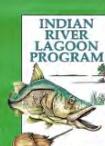
KNOW IF YOUR FERTILIZER IS SLOW!

50% SLOW RELEASE CALCULATION

Guaranteed Analysis	
TOTAL NITROGEN (N)	16.00%
14.45% Urea Nitrogen (N)*	
SOLUBLE POTASH (K ₂ O)	26.00%
SULFUR (S) Total	19.70%
10.50% Free sulfur (S)	
9.20% Combined sulfur (S)	
IRON (Fe) Total	0.96%
0.19% Water Soluble (Fe)	
MANGANESE (Mn) Total	0.48%
0.1% Water Soluble Manganese (Mn)	
DERIVED FROM: Polymer Coated Sulfur Coated Urea, Sulfate of Potash, Iron Oxide, Manganese Oxide.	
CHLORINE (C) Max.....	2.00%
*8.00% Slowly Available Urea Nitrogen from Polymer Coated Sulfur Coated Urea.	

$$\frac{8}{16} \times 100 = 50\% \text{ Slow Release}$$

This bag meets requirements to apply October-May.



The production of this pamphlet was funded in part by a National Estuaries Program grant from the USEPA through an agreement with the IRL Council. The total cost of pamphlet production was \$6,138 of which 60% was provided by USEPA.

Scoop the Poop

- 3 billion fecal coliform bacteria per poop.
- Dog poop contains high concentrations of nutrients.
- Left on the ground, dog poop will wash into storm drains.
- Estimated 84 Tons of Dog poop left on the ground annually in Indian River County alone.

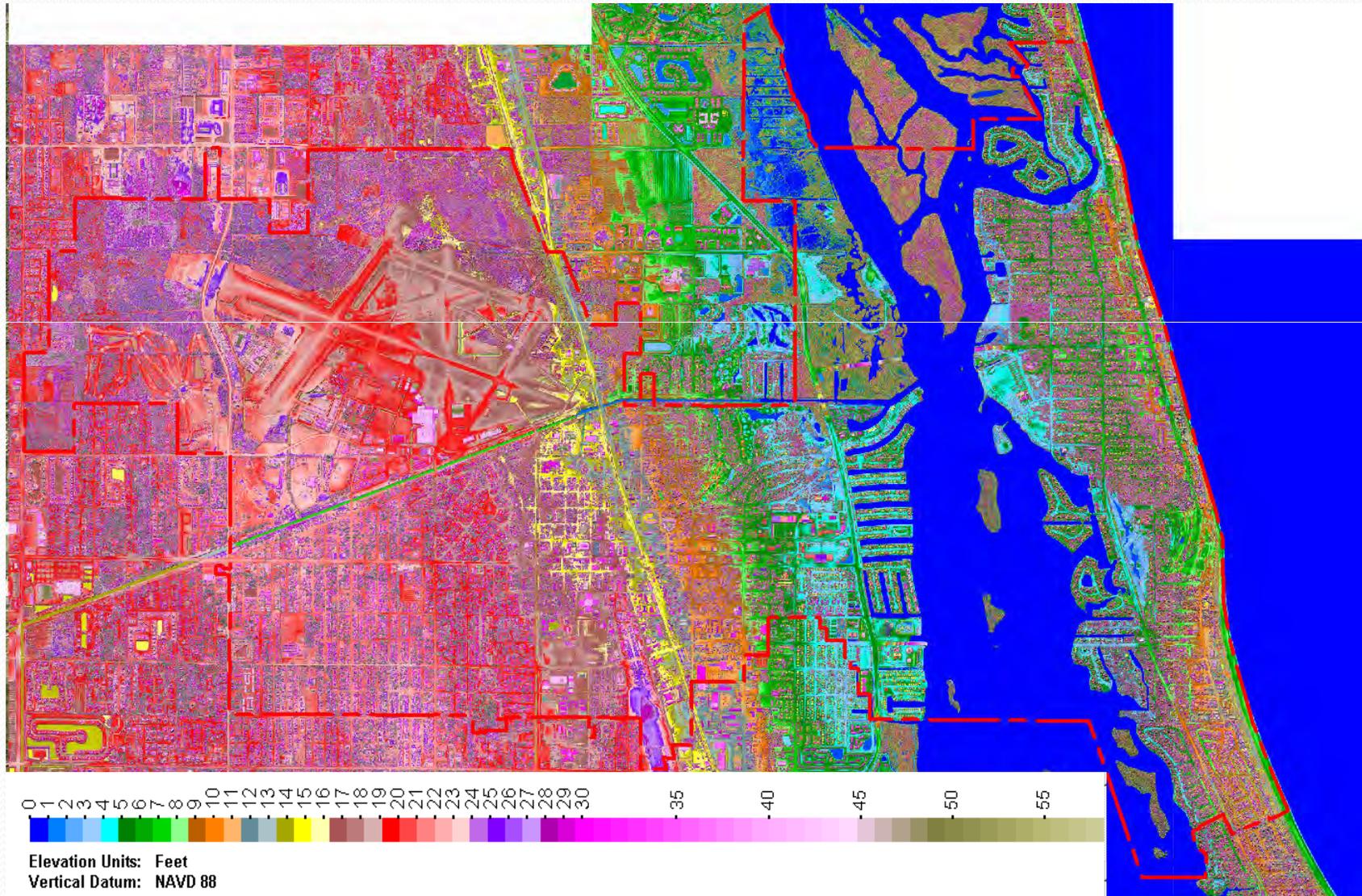




Additional Resources and How to Report Violations

- www.ircstormwater.com
- www.BeFloridianNow.org
- www.covb.org (Public Works Department)
- Contact City Code Enforcement, **772-978-4640**, if you see a violation in the City.
- Contact Indian River County **772-226-1888**, for violations in the County.

Digital Elevation Model



Stormwater Mission Timeline



CITY OF VERO BEACH INCORPORATED
1925

INDIAN RIVER FARMS WATER CONTROL
DISTRICT CREATED
1919



CLEAN WATER ACT AND STATE
DRAINAGE DISTRICTS CREATED
1972



CITY STORMWATER RULES
1988

TMDL ISSUED
2009

UPDATED CITY CODES
2010

SUPERBLOOM EVENT
2011

BMAP CYCLE 1
2013

BMAP CYCLE
2
2018



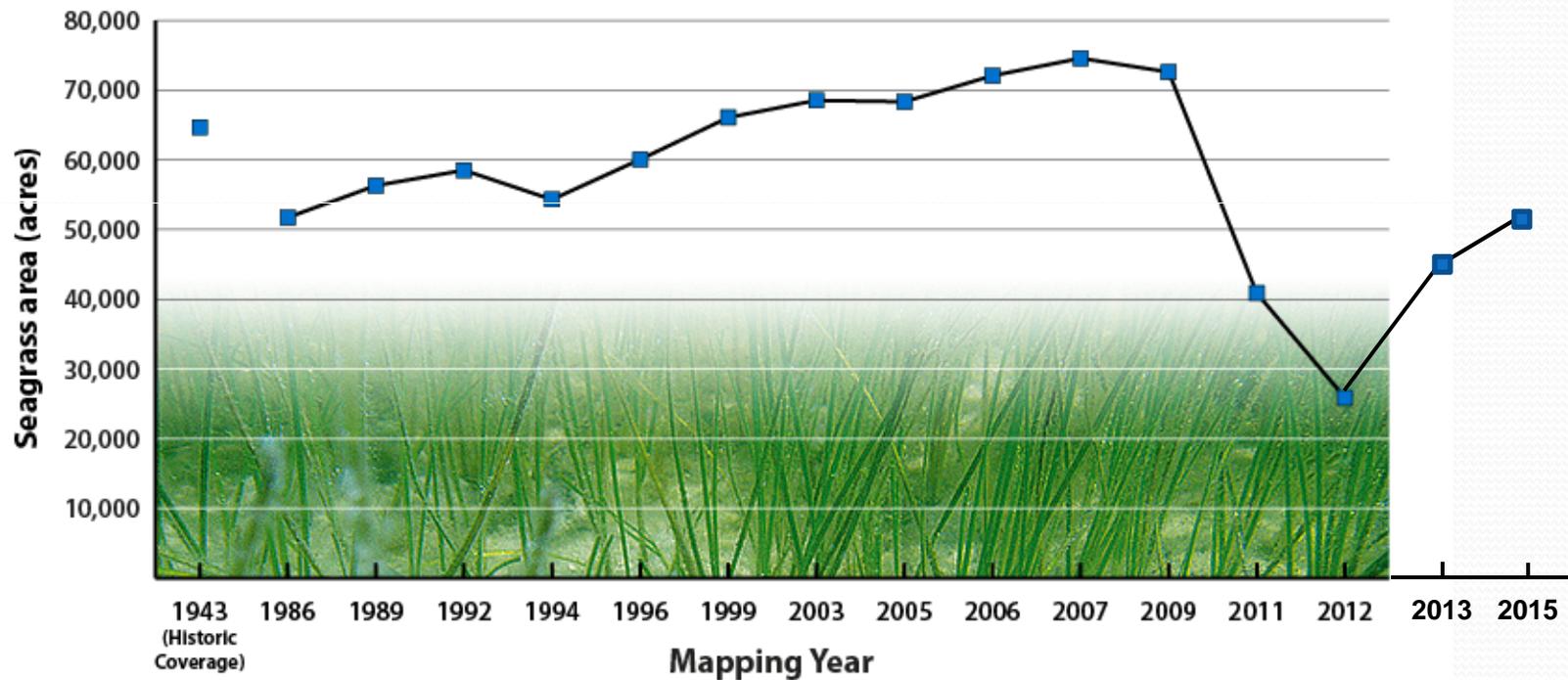
MOVING STORMWATER

**TREATING
STORMWATER**



Indian River Lagoon Seagrass Coverage

(within SJRWMD to Fort Pierce Inlet)



- Aerial photographs of lagoon seagrass are taken every two years and new seagrass maps are produced from this photography. Scientists monitor seagrass transects and collect water quality samples monthly.
- Scientists recorded a 60 percent loss of seagrass in the lagoon between 2009 and 2012.

*Updates from SJRWMD GIS Data:
2013 = 45,850 acres
2015 = 51,367 acres



History of Vero Isles Subdivision

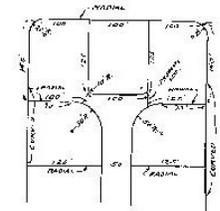
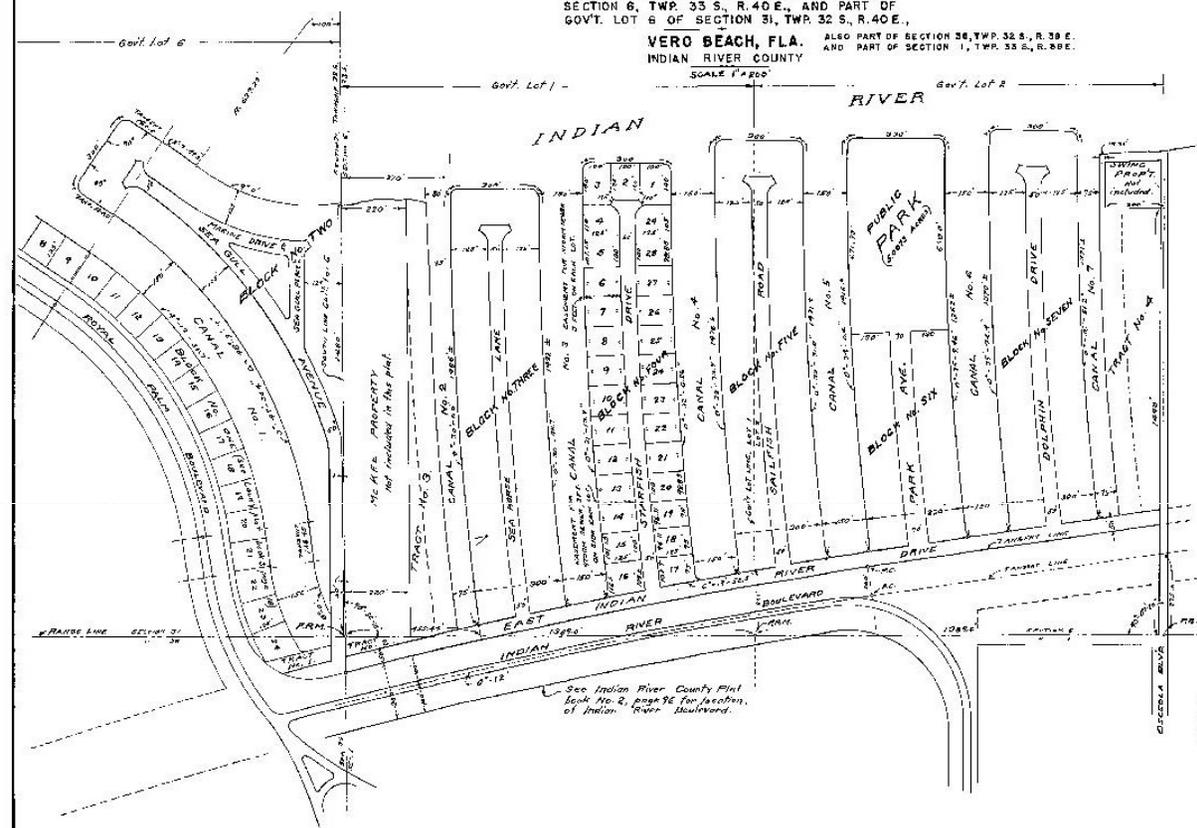
- City purchased land in 1940 as part of a delinquent tax sale for \$114,732.55. (over \$2 Million Dollars in 2017 when adjusted for inflation)
- During the 1950's the City developed the property as the Vero Isles Subdivision.
- Most development occurred in the 1950's making the original infrastructure such as pipes **60 or more years old.**

INDIAN RIVER COUNTY
 PLAT BOOK 3, PAGE 71
 DOCKET No. 63,808.

PLAT NO. 2
VERO ISLES

BEING A SUBDIVISION OF GOV'T. LOTS 1 AND 2 OF SECTION 6, TWP. 33 S., R. 40 E., AND PART OF GOV'T. LOT 6 OF SECTION 31, TWP. 32 S., R. 40 E.,

VERO BEACH, FLA. ALSO PART OF SECTION 36, TWP. 32 S., R. 30 E. AND PART OF SECTION 1, TWP. 33 S., R. 30 E.
 INDIAN RIVER COUNTY
 SCALE 1"=80'



Note: Curves of canals No. 3 to No. 7 are concentric with a common center 1500' east of the range line between R. 32 E. and R. 40 E.

STATE OF FLORIDA
 COUNTY OF INDIAN RIVER
 I, HARRY W. CAMERON, Mayor of the City of Vero Beach, Florida, do hereby certify that this Plat of Vero Isles No. 2 is a true and correct representation of the plat as shown and that the same has been duly recorded in the Public Records of this County of Indian River, Florida, on the 28th day of March, 1934, at the City of Vero Beach, Florida.

CERTIFICATE OF APPROVAL
 This Plat of VERO ISLES No. 2 was approved by E. E. CARTER, Mayor of the City of Vero Beach, Florida, on the 28th day of March, 1934.

CERTIFICATE OF APPROVAL
 Approved by the City Council, City of Vero Beach, Florida, on the 16th day of March, 1934.

DEDICATION
 THE CITY OF VERO BEACH, A MUNICIPAL CORPORATION UNDER THE LAWS OF THE STATE OF FLORIDA, OWNER OF THE LANDS SHOWN AND INCLUDED IN THIS PLAT NO. 2 OF VERO ISLES DOES HEREBY DEDICATE THIS PLAT AS SHOWN AND DOES DEDICATE TO THE USE OF THE PUBLIC THE STREETS, WATERWAYS AND THE PUBLIC PARK AS SHOWN, THIS 16th DAY OF MARCH 1934.
 CITY OF VERO BEACH, FLA.
 ATTEST: *[Signature]* CITY CLERK.
 BY *[Signature]* MAYOR.

STATE OF FLORIDA
 COUNTY OF INDIAN RIVER
 I, THE UNDERSIGNED OFFICIAL CERTIFY THAT THIS DAY PERSONALLY APPEARED BEFORE ME ELMER J. BAUER AND U.G. FINLAYSON, MAYOR AND CITY CLERK RESPECTIVELY, OF THE CITY OF VERO BEACH, FLORIDA, AND THAT THEY ACKNOWLEDGED BEFORE ME THAT THEY EXECUTED THE FOREGOING DEDICATION OF THIS PLAT AS SUCH OFFICERS AND AS THE DULY AUTHORIZED ACT AND DEED OF SAID CITY.
 WITNESS MY HAND AND OFFICIAL SEAL AT VERO BEACH, FLA., THIS 16th DAY OF MARCH 1934.

[Signature]
 NOTARY PUBLIC STATE OF FLORIDA AT LARGE
 MY COMMISSION EXPIRES FEBRUARY 1, 1936

HARRY W. CAMERON
 MAYOR OF THE CITY OF VERO BEACH, FLORIDA

1943-1945: ROYAL PALM, MIRACLE MILE, AND VERO ISLES



1951: ROYAL PALM, MIRACLE MILE, AND VERO ISLES



1957: ROYAL PALM, MIRACLE MILE, AND VERO ISLES



1967: ROYAL PALM, MIRACLE MILE, AND VERO ISLES



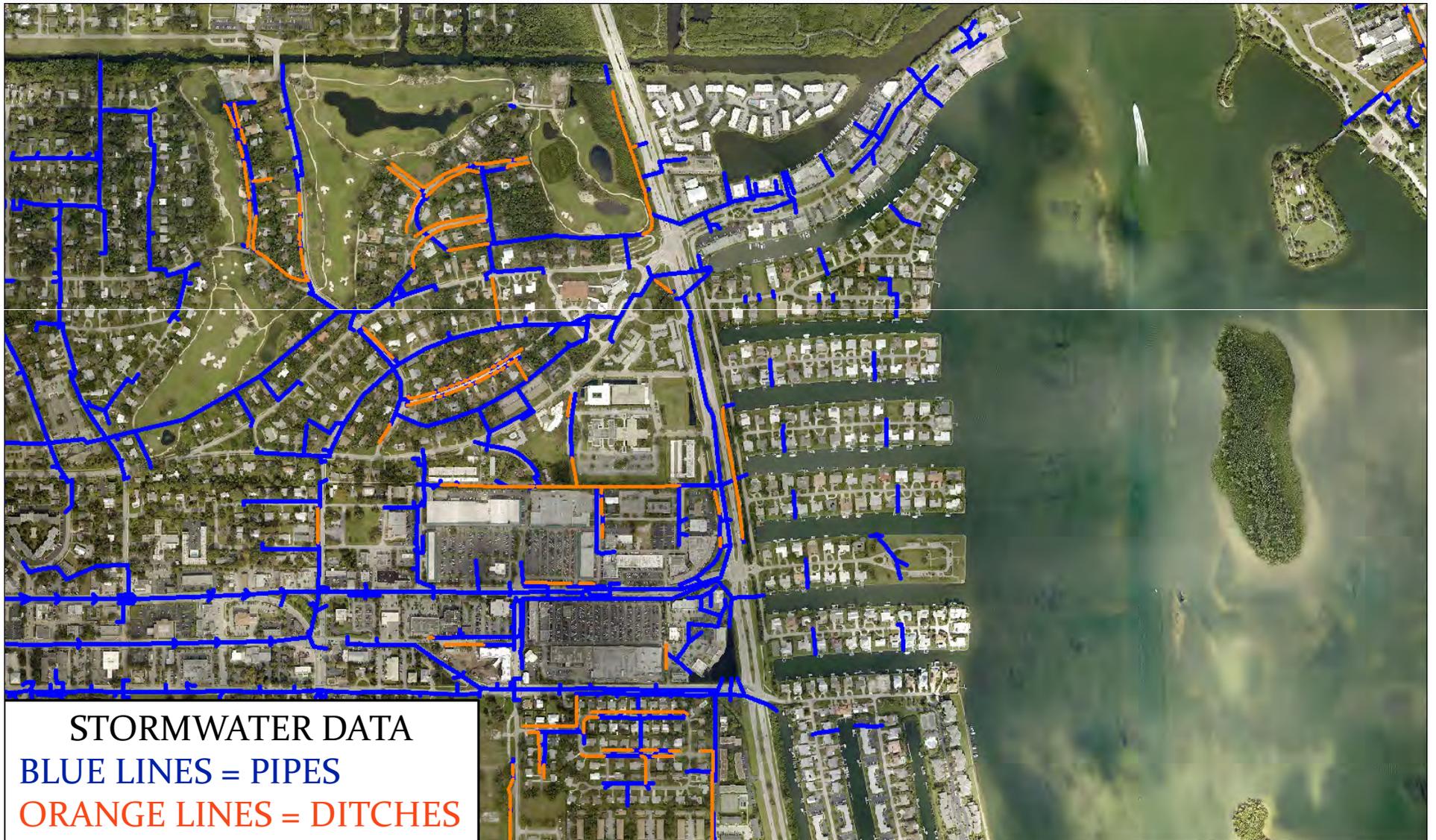
1974: ROYAL PALM, MIRACLE MILE, AND VERO ISLES



1991: ROYAL PALM, MIRACLE MILE, AND VERO ISLES



2015: ROYAL PALM, MIRACLE MILE, AND VERO ISLES





Project Scope

- Retrofit 55 Drainage Structures with Inlet Filters (Will Treat Runoff from 52 Acres)
- Repair 300 Feet of Pipe with Traditional Trench Excavation (road crossings)
- Repair 3500 Feet of Pipe with Cured In Place Pipe

PROJECT FUNDING

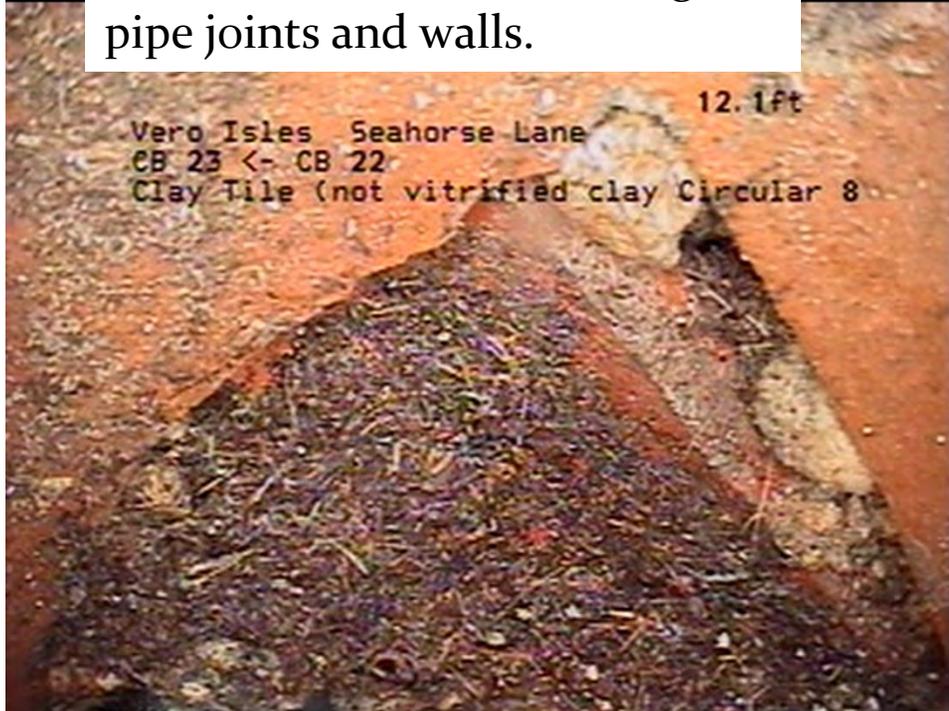
 <p>CITY OF VERO BEACH</p>	\$229,000 (65%)
 <p>INDIAN RIVER LAGOON NATIONAL ESTUARY PROGRAM GRANT</p>	\$122,000 (35%)
<p>TOTAL PROJECT COST</p>	\$351,000

Why do pipes fail?





Roots seek water and damage pipe joints and walls.



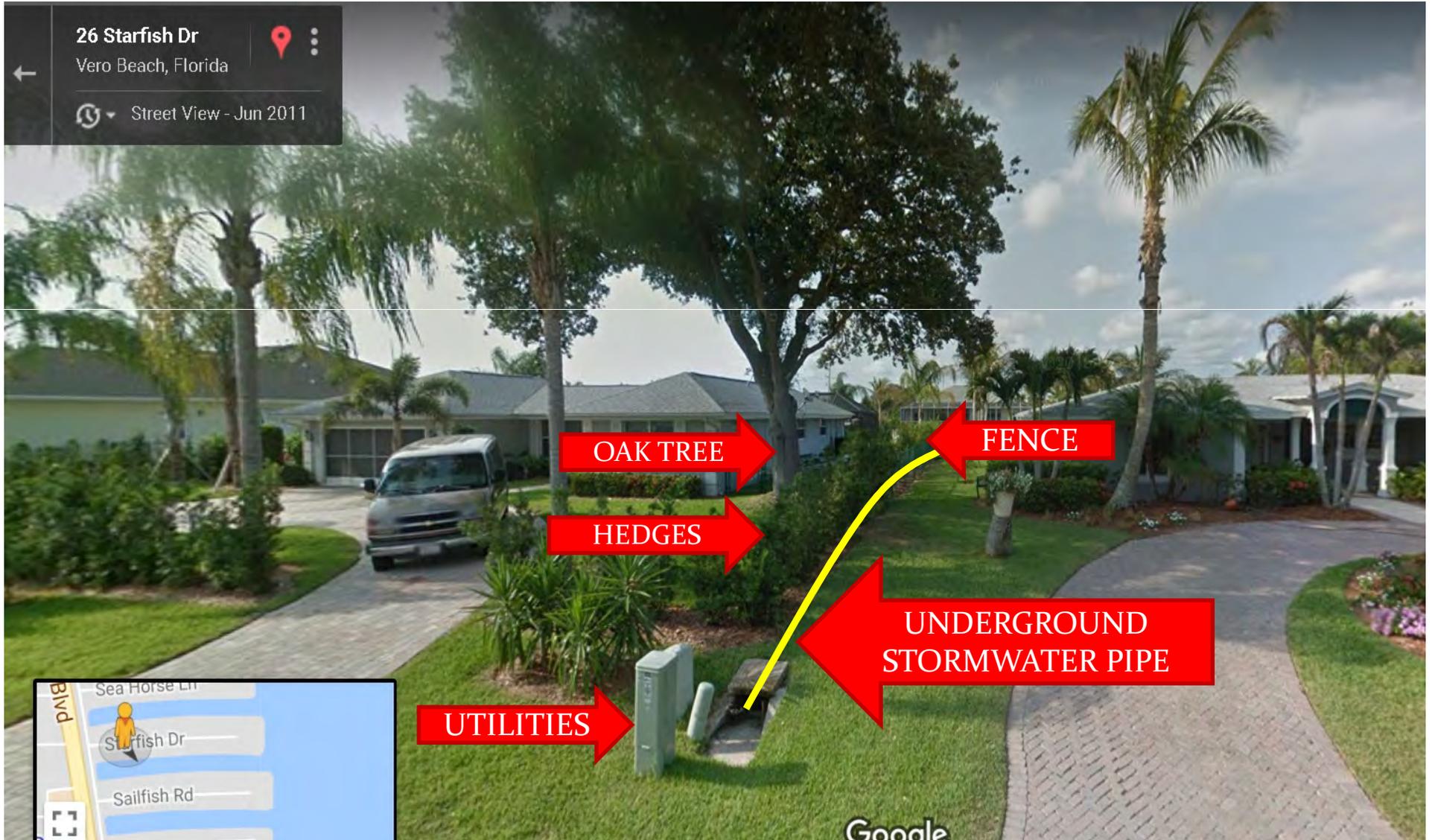
Pipes become misaligned. Voids form and allow dirt to enter.

How do we fix pipes?

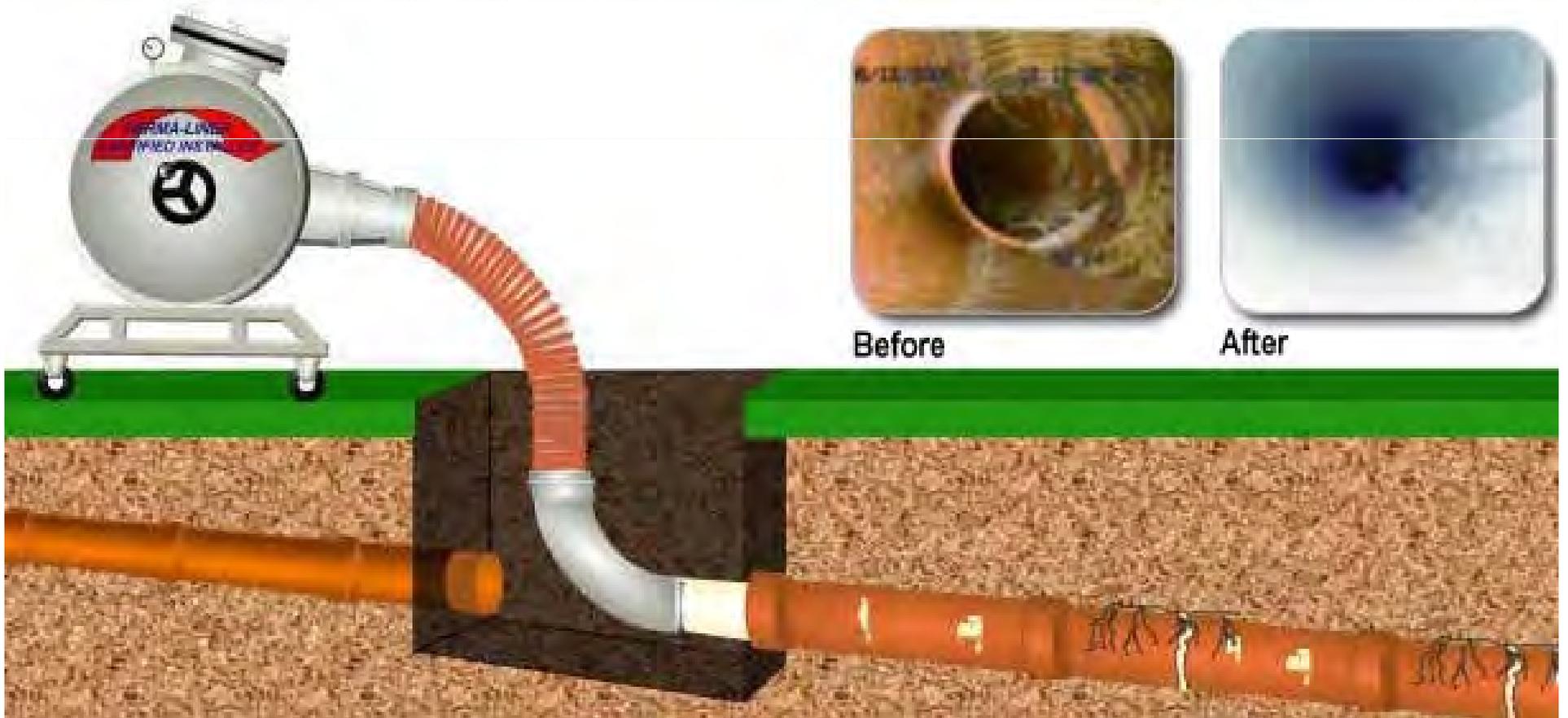
- Two Options.....



Challenges with Trenching

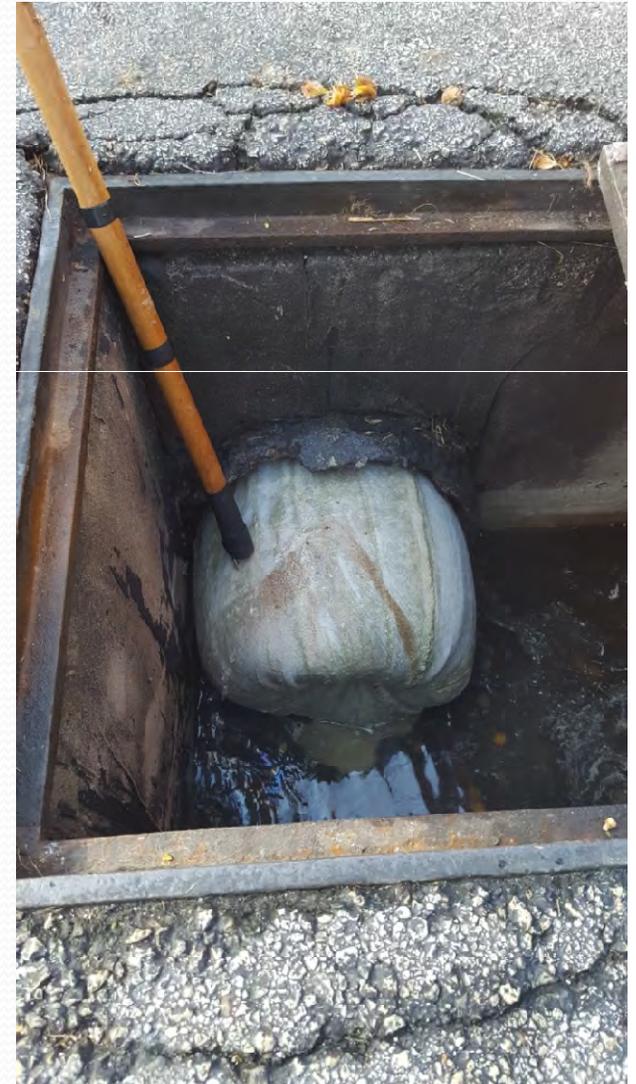


Trenchless Options: Cured In Place Pipe (CIPP)

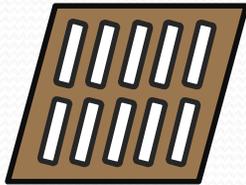




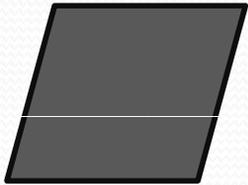
Cured In Place Pipe (CIPP)



Inlet Filters



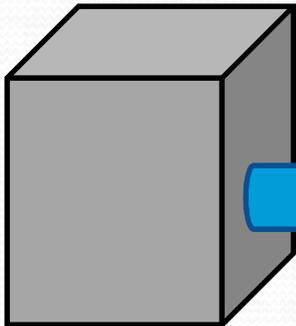
STANDARD CAST IRON GRATE WITH 1" WIDE OPENINGS



FILTER FABRIC PLACED UNDERNEATH GRATE WILL COLLECT LEAVES AND OTHER POLLUTANTS



METAL FRAME WILL HOLD FILTER FABRIC



DRAINAGE STRUCTURE WITH PIPE TO RIVER →





Summary

- \$351,000 Project will treat 52 Acres of Runoff and Repair all 3800 feet of Stormwater Pipe in Vero Isles
- Project is funded by City (65%) and a Grant from the IRL NEP (35%)
- Pollution from Nutrients is Detrimental to Lagoon and Seagrasses. Nutrient sources we can reduce include Fertilizer, Leaf/Grass Litter, and Pet Waste.



Questions?