

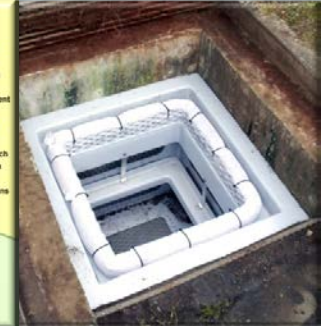
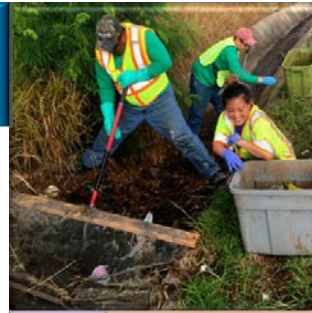


# PROTECT OUR WATER

MĀLAMA I KA WAI

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION

[www.stormwaterhawaii.com](http://www.stormwaterhawaii.com)



## *Talking Trash:* Trash Reduction Plan Construction and Maintenance Considerations

November 14, 2023



# Speaker

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Stormwater Program Manager

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# AGENDA

- 2016 Trash Reduction Plan
- Success to-date: Short-Term Plan Completion Report
- Future Trash Reductions
- BMP Construction and Maintenance
- Challenges for the Future
- Take Home

# Why Are We Here?

Part D.1.f.(2)(v.):

***Trash Reduction Plan*** –The Permittee shall continue to implement its Trash Reduction Plan, dated October 2016, or any revisions to the Plan. The Trash Reduction Plan will be included in the SWMP and any revisions will be noted in the Annual Report.

# 2016 Trash Reduction Plan

- **2013 NPDES Permit required TRP within 3 years to include:**
  - *Quantitative estimate of the debris currently being discharged (baseline load)*
  - *Description of control measures currently being implemented*
  - *A short-term plan and proposed compliance deadline for reducing debris discharges from the MS4 by 50% from the baseline load—2023*
  - *A long-term plan and proposed compliance deadline for reducing debris discharges from the MS4 by 100% from the baseline load—2036*

# 2016 Trash Reduction Plan

- **To-date, HDOT has completed:**
  - ✓ *Quantitative estimate of the debris currently being discharged (baseline load)*
  - ✓ *Description of control measures currently being implemented*
  - ✓ *A short-term plan and proposed compliance deadline for reducing debris discharges from the MS4 by 50% from the baseline load*
  - *A long-term plan and proposed compliance deadline for reducing debris discharges from the MS4 by 100% from the baseline load*

# How Trash Gets Into Waterways

Freeway  
on/off  
ramps

LITTER FROM  
CARS &  
TRUCKS

Garbage trucks and  
uncovered truck beds

Spills on  
collection day

LITTER FROM  
GARBAGE AND  
RECYCLING BINS

Overflowing or  
uncovered bins

ILLEGAL  
DUMPING

In-creek  
dumping

Scavenging

PEDESTRIAN  
LITTER

NEED TO GET RID OF  
CONSUMER WASTE  
PROPERLY

STAY AWAY  
FROM  
WATER

NEED PUBLIC  
TRASH AT STORES AND  
STATIONS

Storm  
drains



# DOT-HWYS FIVE STEP METHOD

## Waterbody Cleanups

- Shoreline Cleanups
- Stream Cleanups

## Partial Capture Devices

- Litter Booms and/or Curtains

## Full Capture Devices

- In-Pipe Devices
- End-of-Pipe Devices

## Partial Capture Devices

- Curb Inlet Screens
- Pump Station

## MS4 Structures Cleaning

- Increased Frequency

## Enhanced Street Sweeping

- Increased Frequency



## Legislative Actions

- Plastic Bag Ordinances
- Polystyrene Ordinances
- Haul Management
- Anti-Littering Enforcement

## Public Education & Outreach

- School/Youth Outreach
- Community Outreach
- Media Relations
- Advertising Campaigns

## Land-based Cleanups

- Adopt-A-Highway
- HWY-OM Litter Removal



# 2016 Trash Reduction Plan: Short-Term Plan

FIVE STEP METHOD	EXISTING AND FUTURE BMP PROGRAM	ENHANCEMENT	ANTICIPATED TRASH REDUCTION	
			CY/YR	PERCENTAGE
<b>Step 1</b> Institutional Actions <sup>1</sup>	Legislative Action	Plastic Bag Ban	17.8	6.00%
	Existing Public Education	Targeted Outreach	5.9	2.00%
	Future Public Education	PSAs	8.9	3.00%
<b>Step 2</b> Land-Based Interception	Land-Based Cleanups	Semiannual	91.0	30.64%
	Street Sweeping	Increase	14.4	4.84%
<b>Step 3</b> MS4 Interception	Existing Permanent BMPs	16 ha	3.6	1.20%
	Future Permanent BMPs	65 ha	6.9	2.32%
<b>Step 4</b> Waterbody Interception <sup>2</sup>	Not Applicable (N/A)	N/A	0.0	0.00%
<b>Step 5</b> Load Reduction	<b>TOTAL ANTICIPATED REDUCTION</b>		<b>148.5</b>	<b>50.00%</b>

# 2016 Trash Reduction Plan: Short-Term Plan Completion Report

STEP	ENHANCED BMP	2013 – 2015 BASELINE (CY)	PROGRESSIVE BASELINE (CY)	2023 GROSS REDUCTION (CY)	NET REDUCTION (CY)	AGGREGATE TOTAL (CY)	% OF 297 CY
1	LEGISLATIVE ACTION	0	0	29.7	29.7	29.7	10.0%
1	PUBLIC EDUCATION	0	0	20.8	20.8	50.5	7.0%
2	LANDSCAPING	40	33.2	93.5	60.3	110.8	20.3%
2	STREET SWEEPING	60.5	50.2	97.7	47.5	158.3	16.0%
3	POST-CONSTRUCTION BMP	0.3	0.1	7.8	7.7	166.0	2.6%
4	WATERBODY INTERCEPTION	NOT APPLICABLE					
5	<b>TOTAL REDUCTION</b>					<b>166.0</b>	<b>56%</b>

# 2016 Trash Reduction Plan: Long-Term Plan

- Consider an ordinance to ban Styrofoam.
- Expand the Plastic Bag Ordinance.
- Increase school and community outreach related to trash.
- Conduct additional outreach and/or inspections of businesses that may exacerbate trash issues (e.g., fast food restaurants).
- Review the street sweeping schedule to enhance the effectiveness of street sweeping.
- **Install additional full trash capture devices, such as trash skimmers**

# Trash Capture Devices

- Full Capture vs. Partial Capture
- Size and Maintenance Interval
- Many treat more than trash in Stormwater
  - Sediment
  - Nutrients
  - Oil and Grease
  - Other Pollutants

# Retractable Inlet Screen



# Retractable Inlet Screen



Construction?



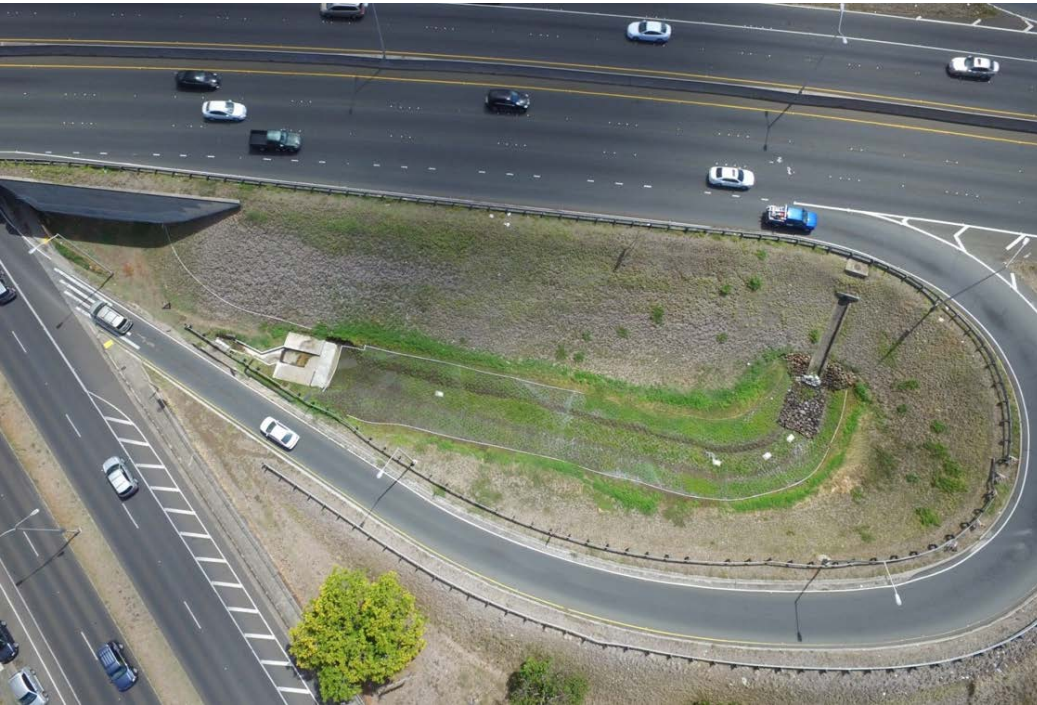
# Retractable Inlet Screen



Maintenance?

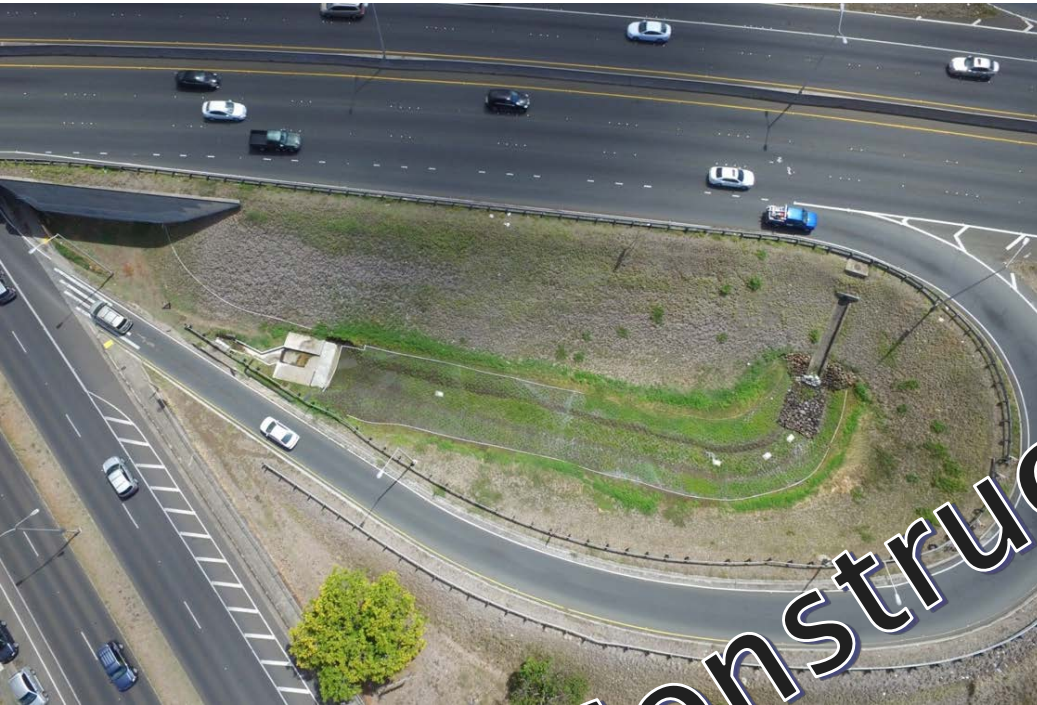


# Bioretention





# Bioretention



Construction?



# Bioretention



# Detention



**Photograph of a Typical Detention Multi-Benefit Trash Treatment System**

# Detention



Photograph of a Typical Detention Multi-Benefit Trash Treatment System

# Detention



Photograph of a Typical Detention Multi-Benefit Trash Treatment System

# Infiltration



Figure A: Photograph of an Urban Infiltration Trench



Figure B: Generic Urban Infiltration Trench Detail

# Infiltration



Figure A: Photograph of an Urban Infiltration Trench



Figure B: Generic Urban Infiltration Trench Detail

# Infiltration

Maintenance?



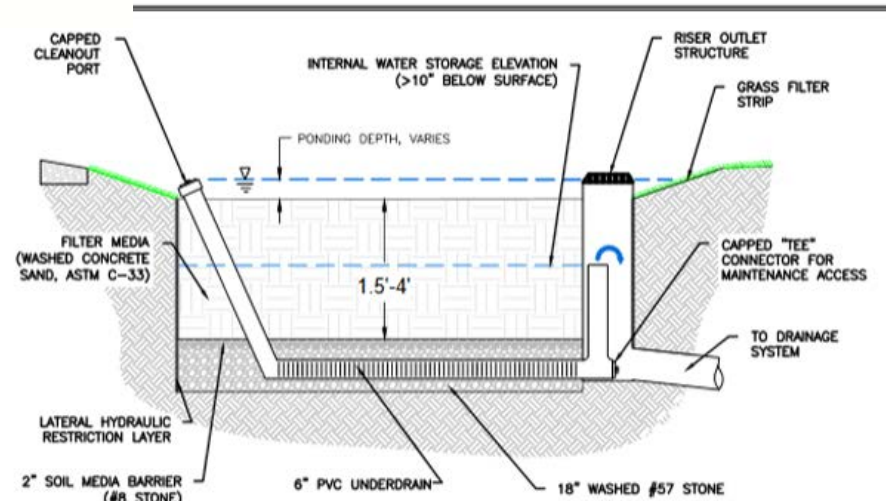
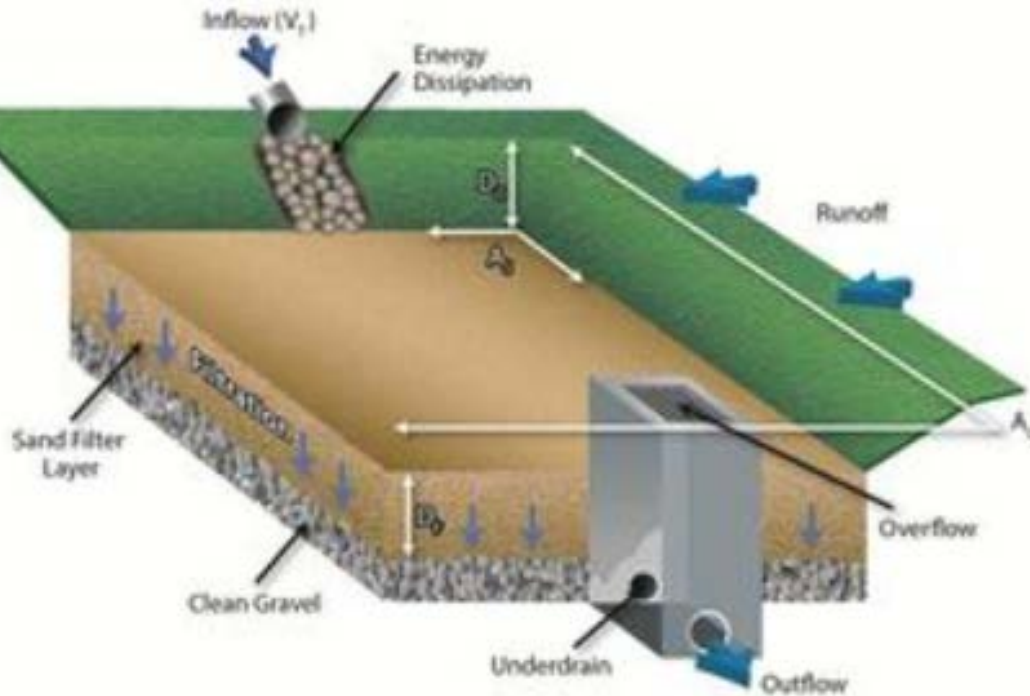
Figure A: Photograph of an Urban Infiltration Trench



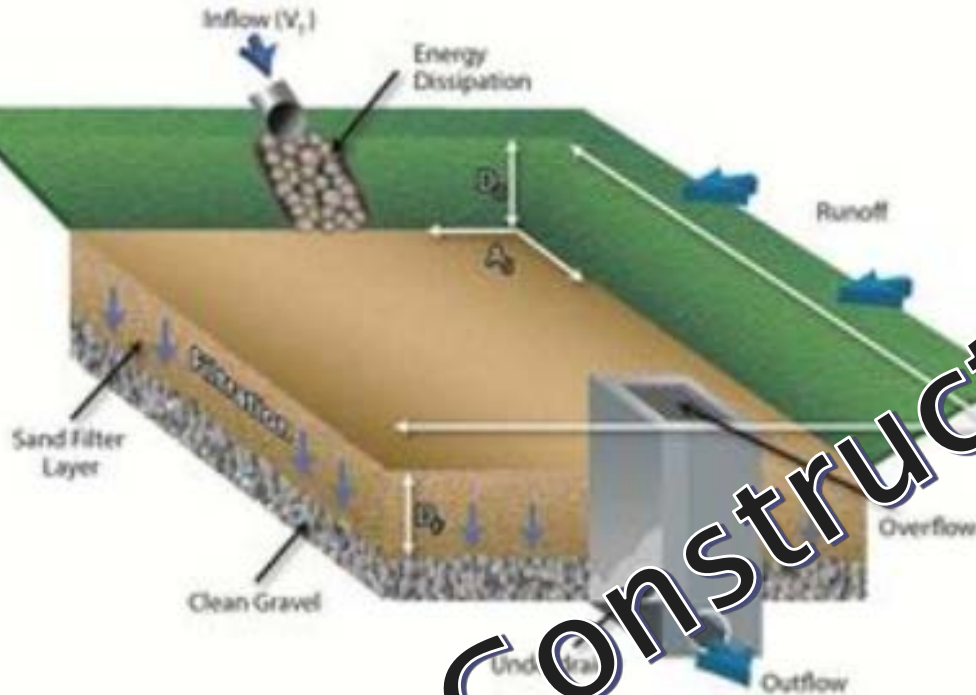
Figure B: Generic Urban Infiltration Trench Detail



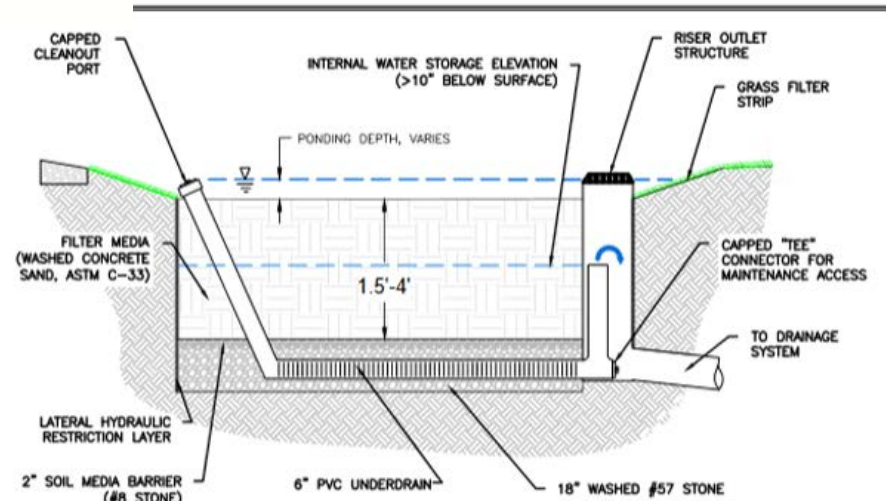
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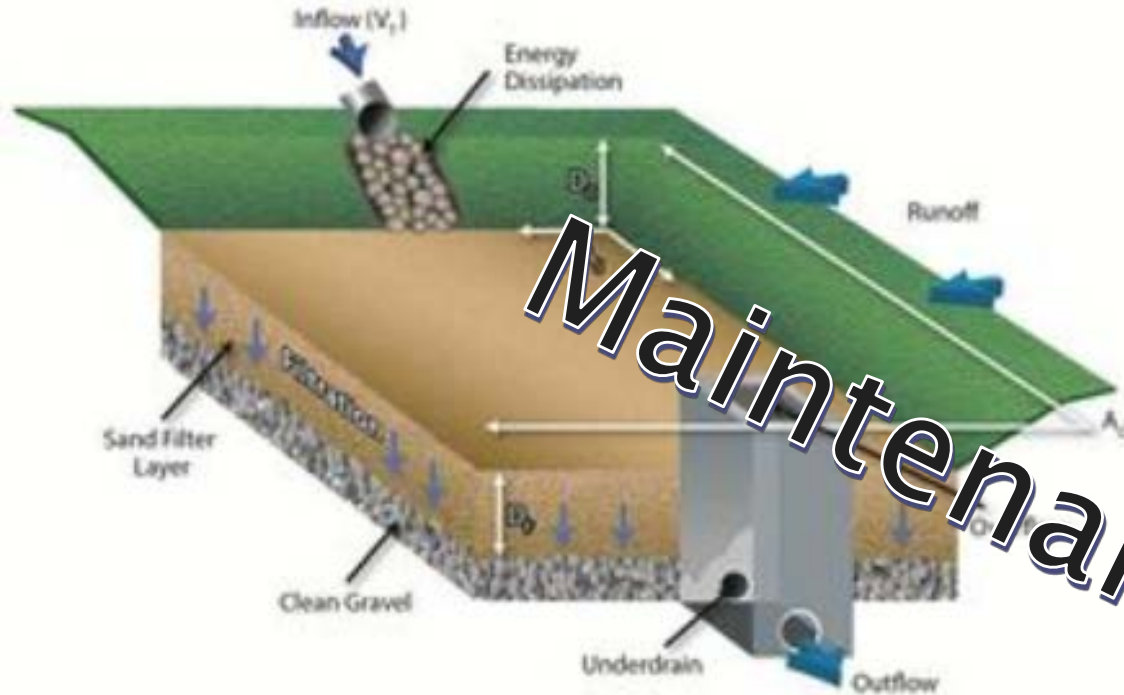
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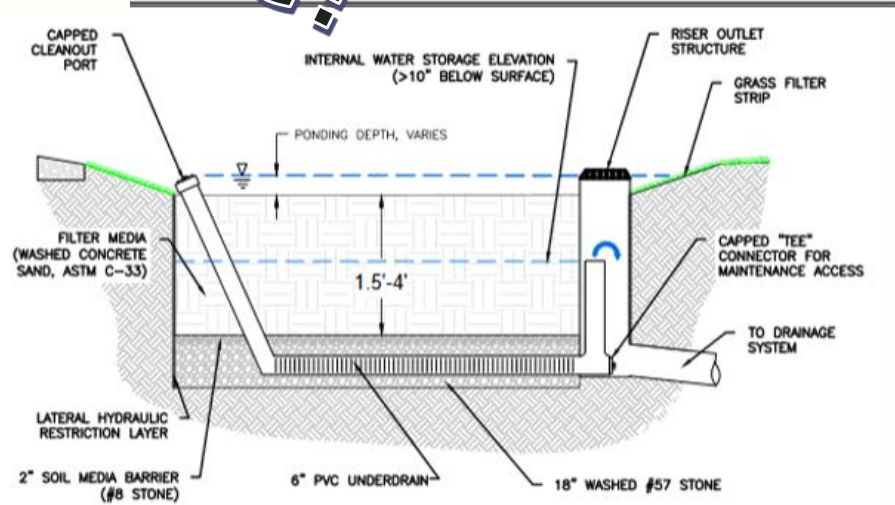
Construction?



# Media Filter



Maintenance?



# Catch Basin Insert



# Catch Basin Insert



Construction?



# Catch Basin Insert



Maintenance?



# Pipe Inlet Screen



# Pipe Inlet Screen



Construction?





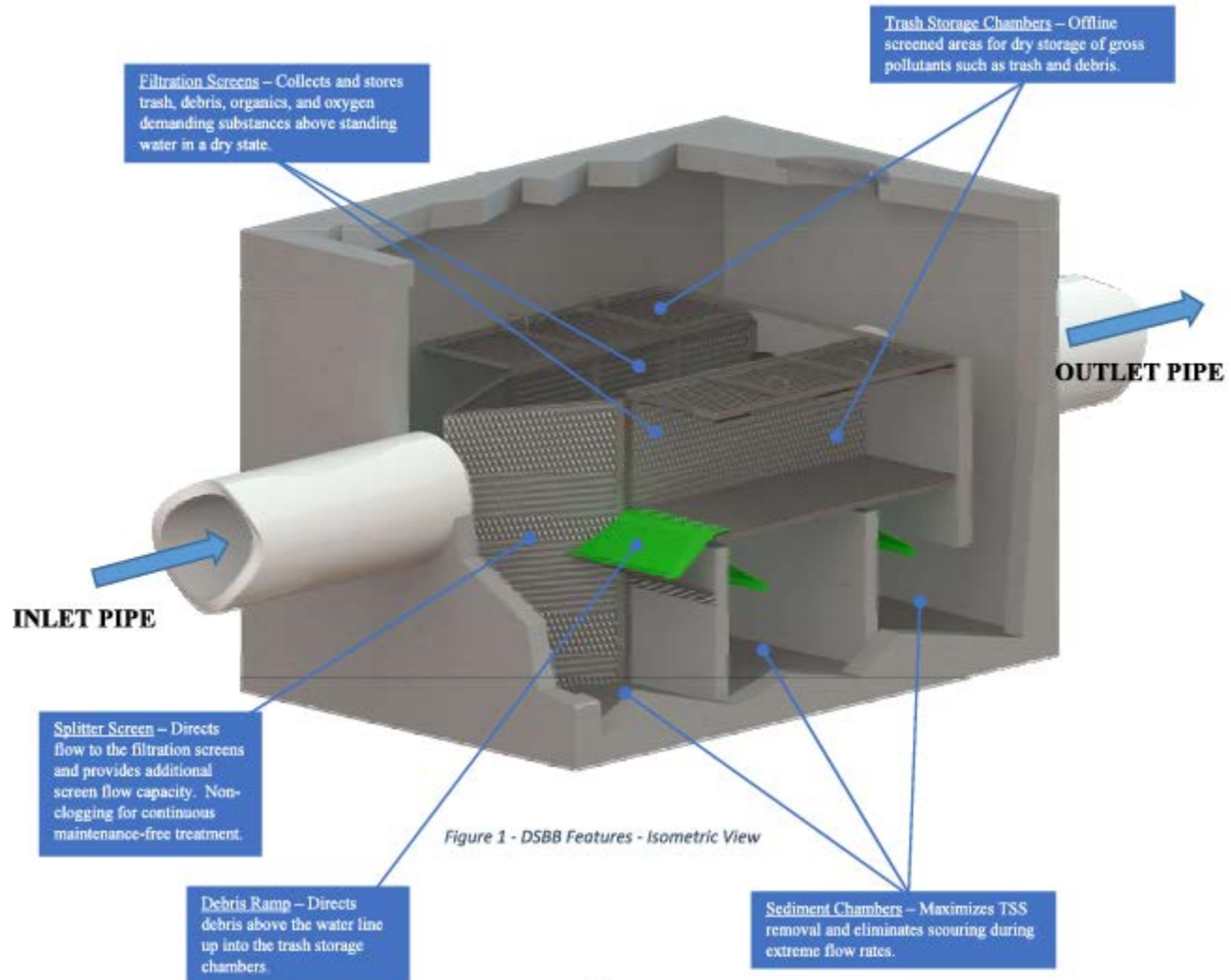
# Pipe Inlet Screen



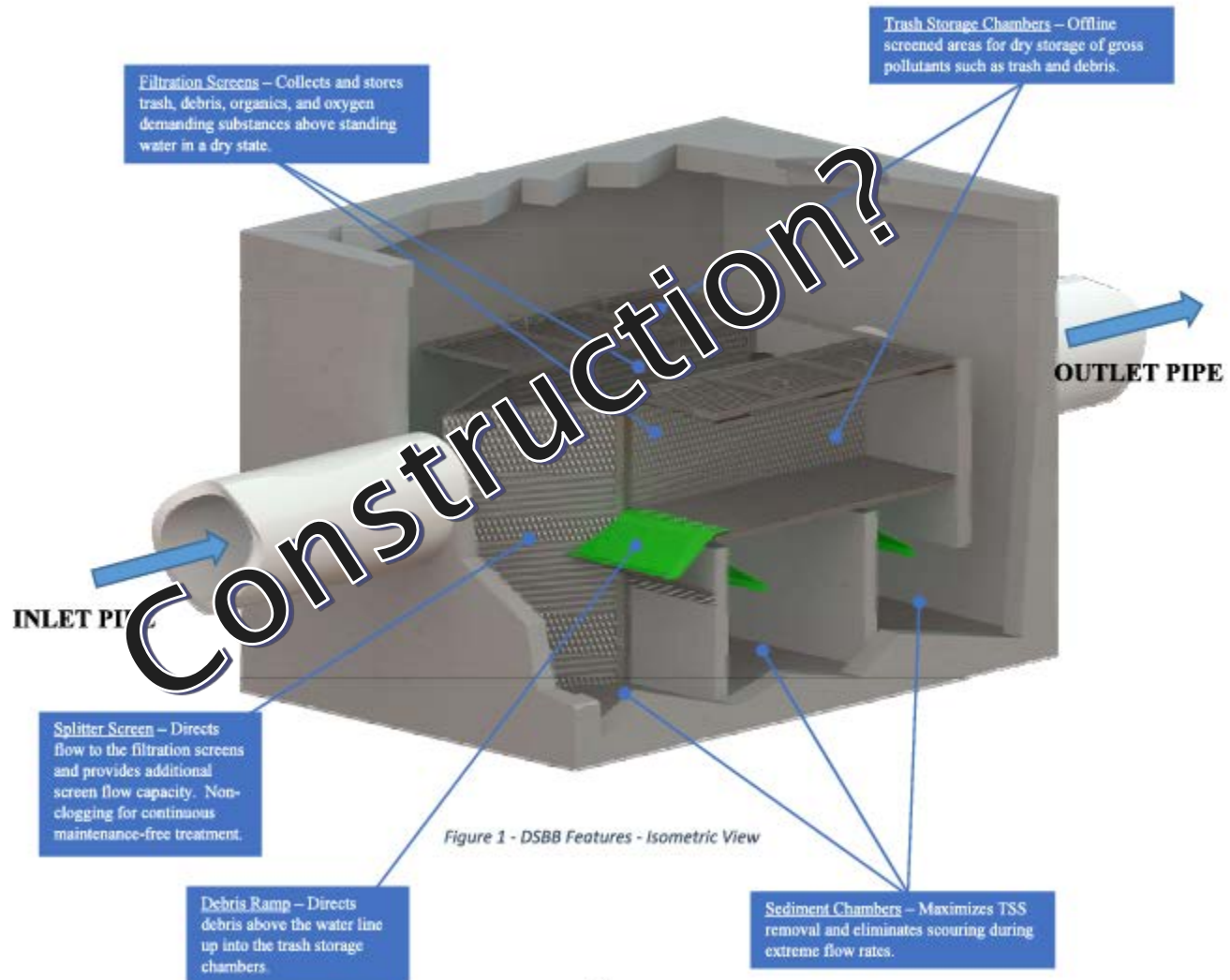
Maintenance?



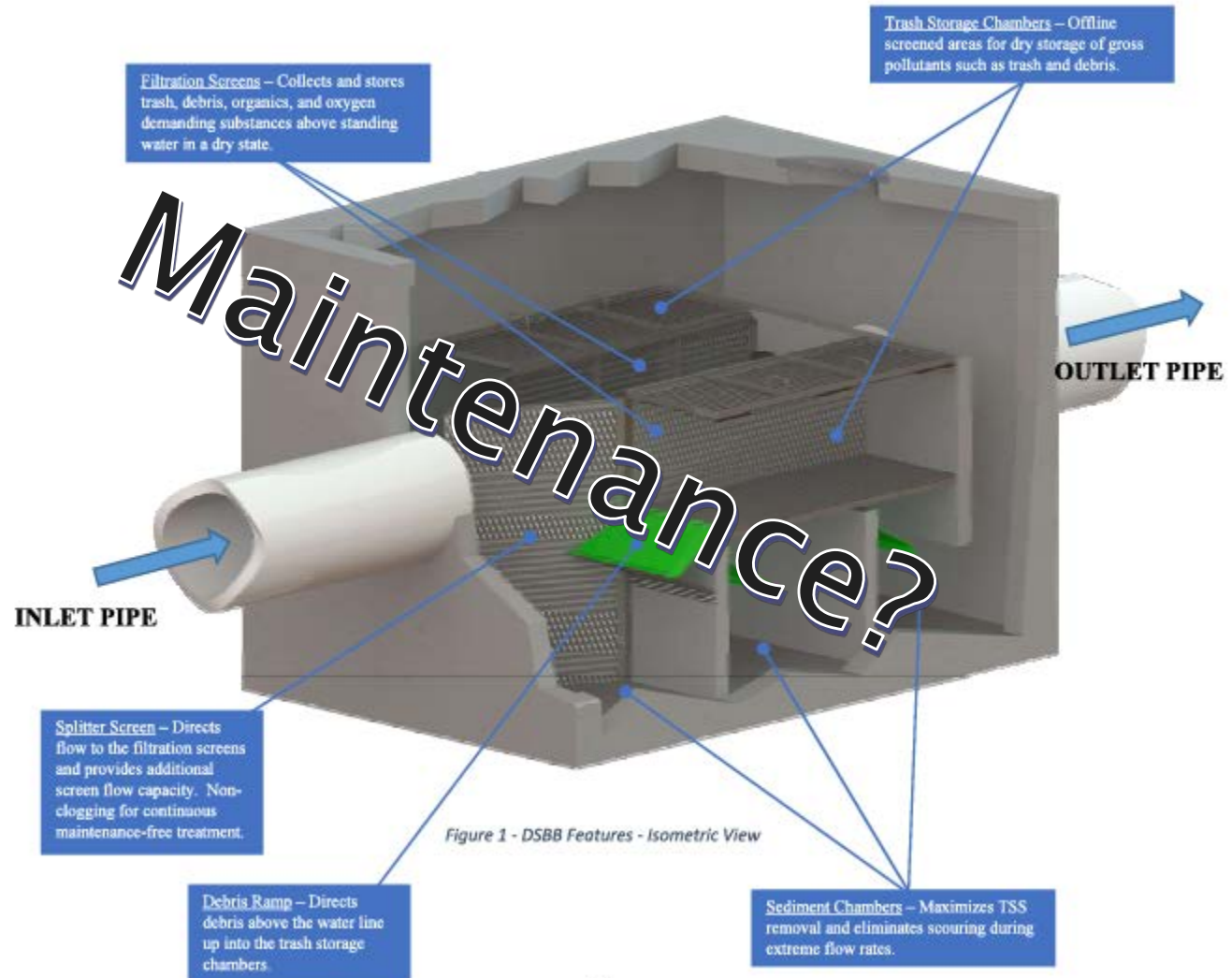
# Debris Separating Baffle Box



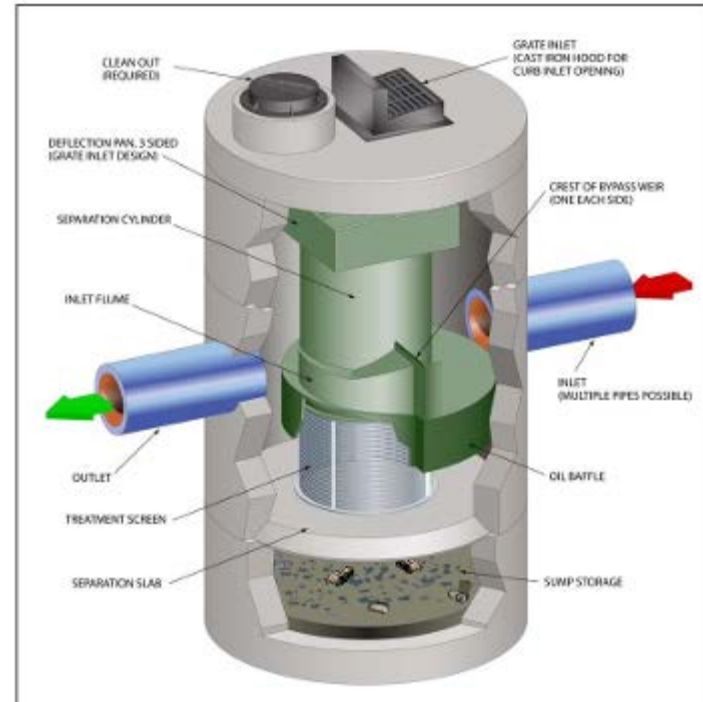
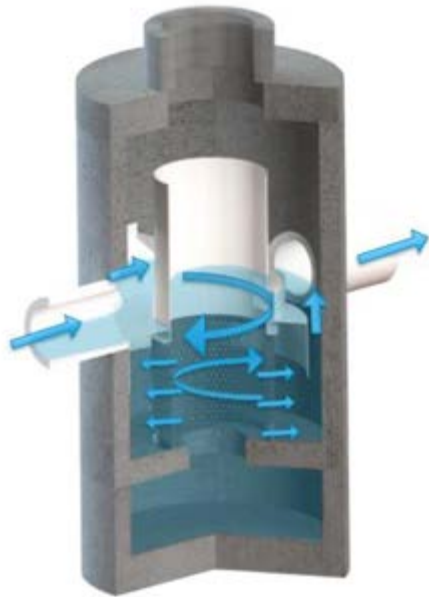
# Debris Separating Baffle Box



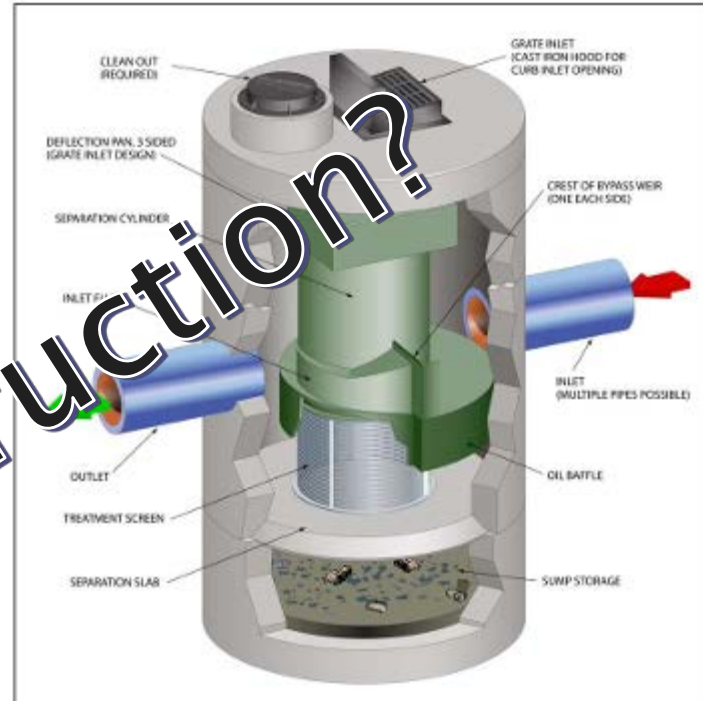
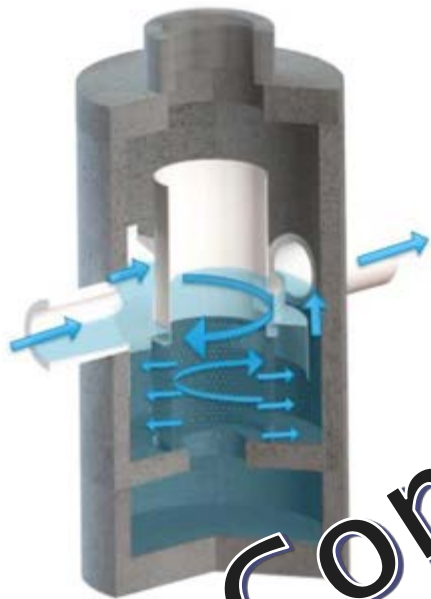
# Debris Separating Baffle Box



# Hydrodynamic Separator

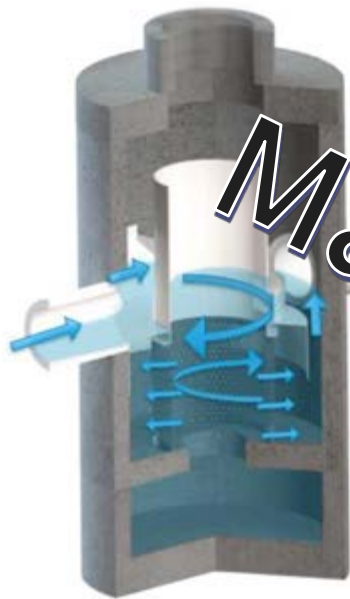


# Hydrodynamic Separator

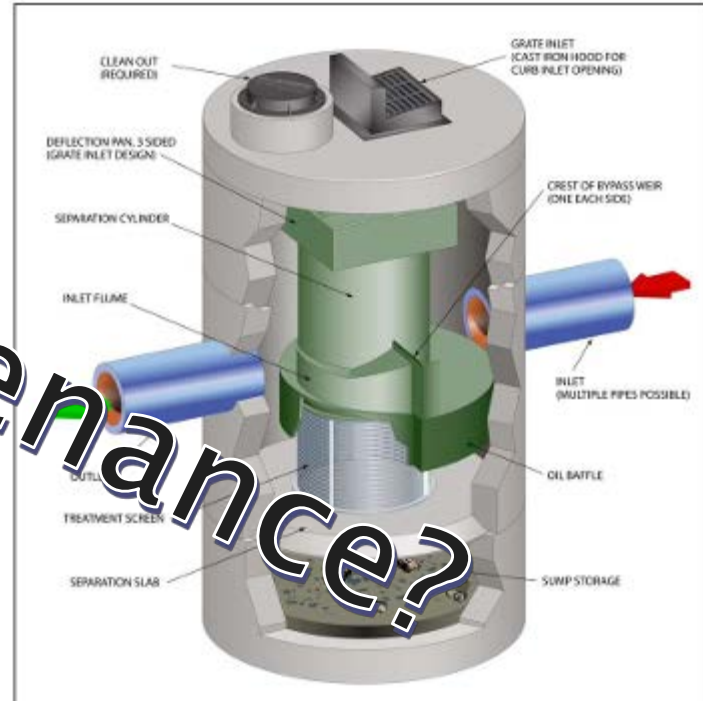


Construction?

# Hydrodynamic Separator



Maintenance?



# Hydrodynamic Separator





# Hydrodynamic Separator



# Hydrodynamic Separator



# End-of-Pipe Netting



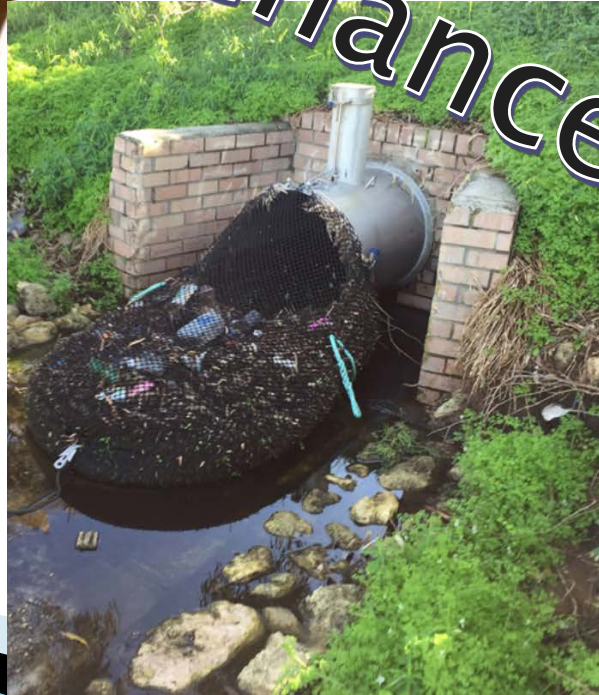
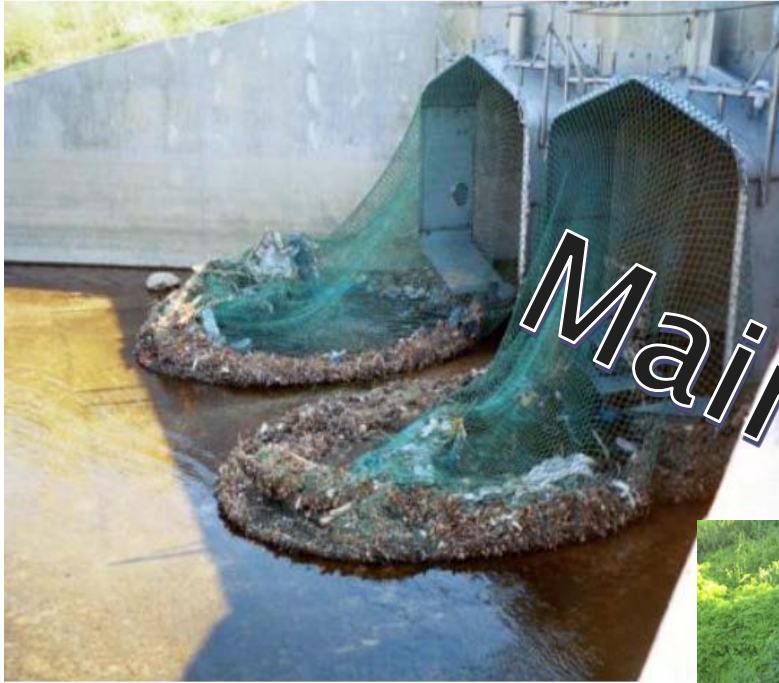
# End-of-Pipe Netting

Construction?



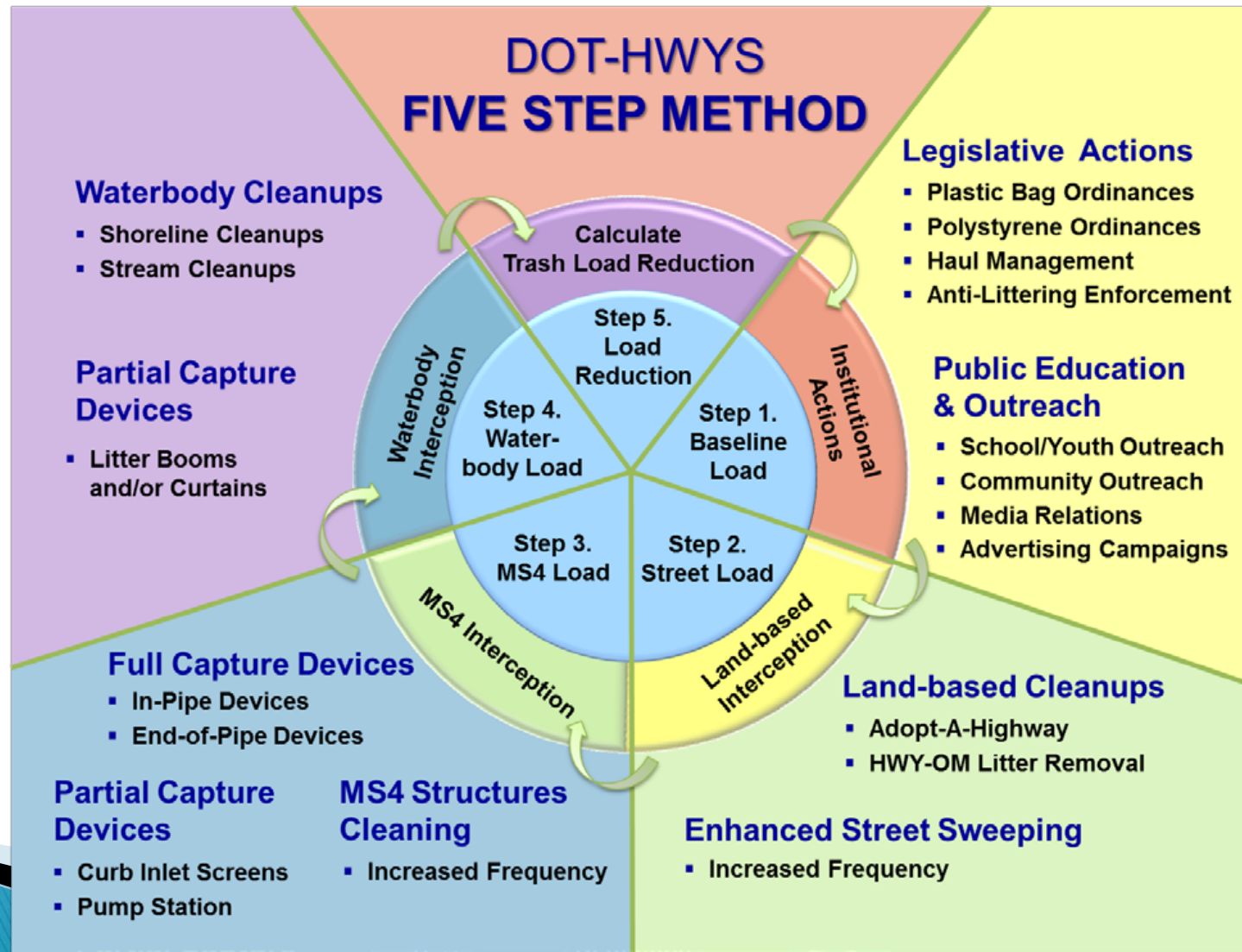
# End-of-Pipe Netting

Maintenance?



# Waterbody Interception

Not in use in Hawaii for the most part right now...



# Litter Booms



# Bandalong Litter Trap





# Trash Skimmer Vessel



# Baltimore Trash Wheel



# Trash Talk from Elsewhere

A few ideas that may be coming out way!



# City of Alameda Regulation And Public Outreach

✓ REUSABLE IS THE BEST OPTION



Durable dishware that is washed and reused saves money and the planet.

! COMPOSTABLE FIBER IS COMPLIANT



Straws Available Only By Request

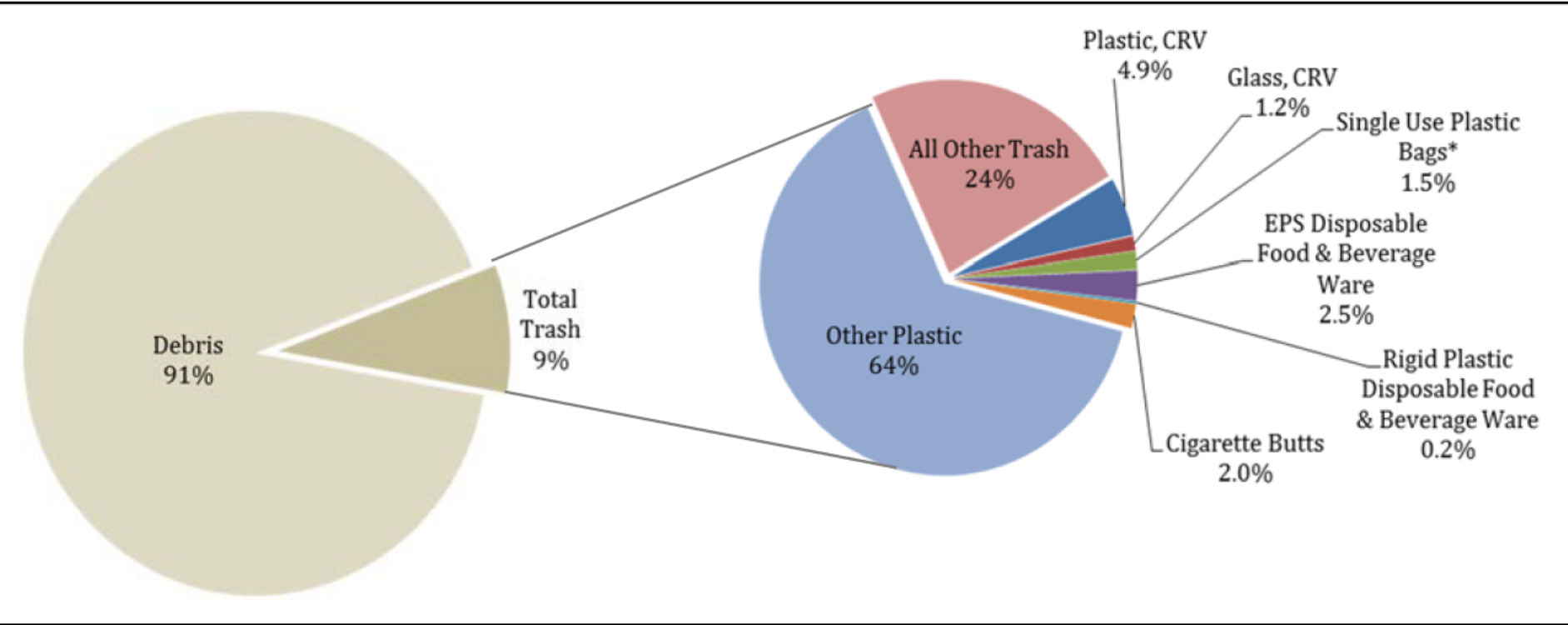
Paper-like, wooden or bamboo options break down more readily than any alternatives.

✗ PLASTIC IS NOT ALLOWED



These single-use items are rapidly polluting our oceans, and are no longer acceptable in Alameda.

# Trash vs. Debris



Trash types identified in municipal stormwater conveyances in the San Francisco Bay Area, CA (BASMAA 2014)

# Take Home

- 1. Short-Term Trash Reduction Plan (50%) Complete!**
- 2. Long-Term Trash Reduction Plan (100%) Just beginning**
- 3. New Types of BMP Coming Your way...**
- 4. Ask Questions!**

# Questions?

