



Trinity River Authority of Texas
Enriching the Trinity basin as a resource for Texans

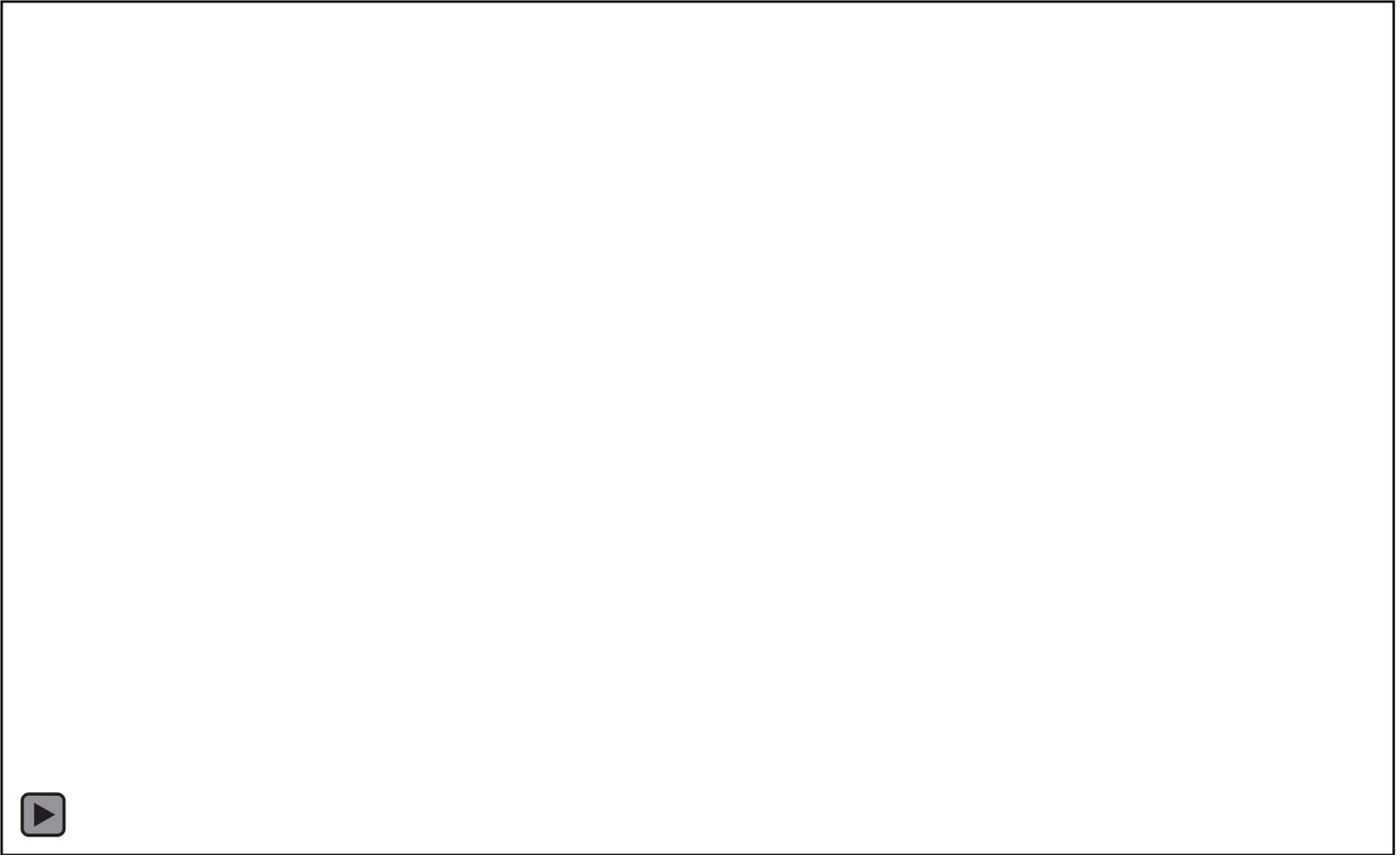
Characterizing Non-Dispersibles:

Methodology, Visualization, and Data
Driven Outreach-Based Mitigation

Dale Burrow



TRA: Non-Dispersible Video

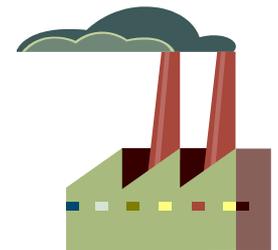


TRA Northern Region Wastewater Plants

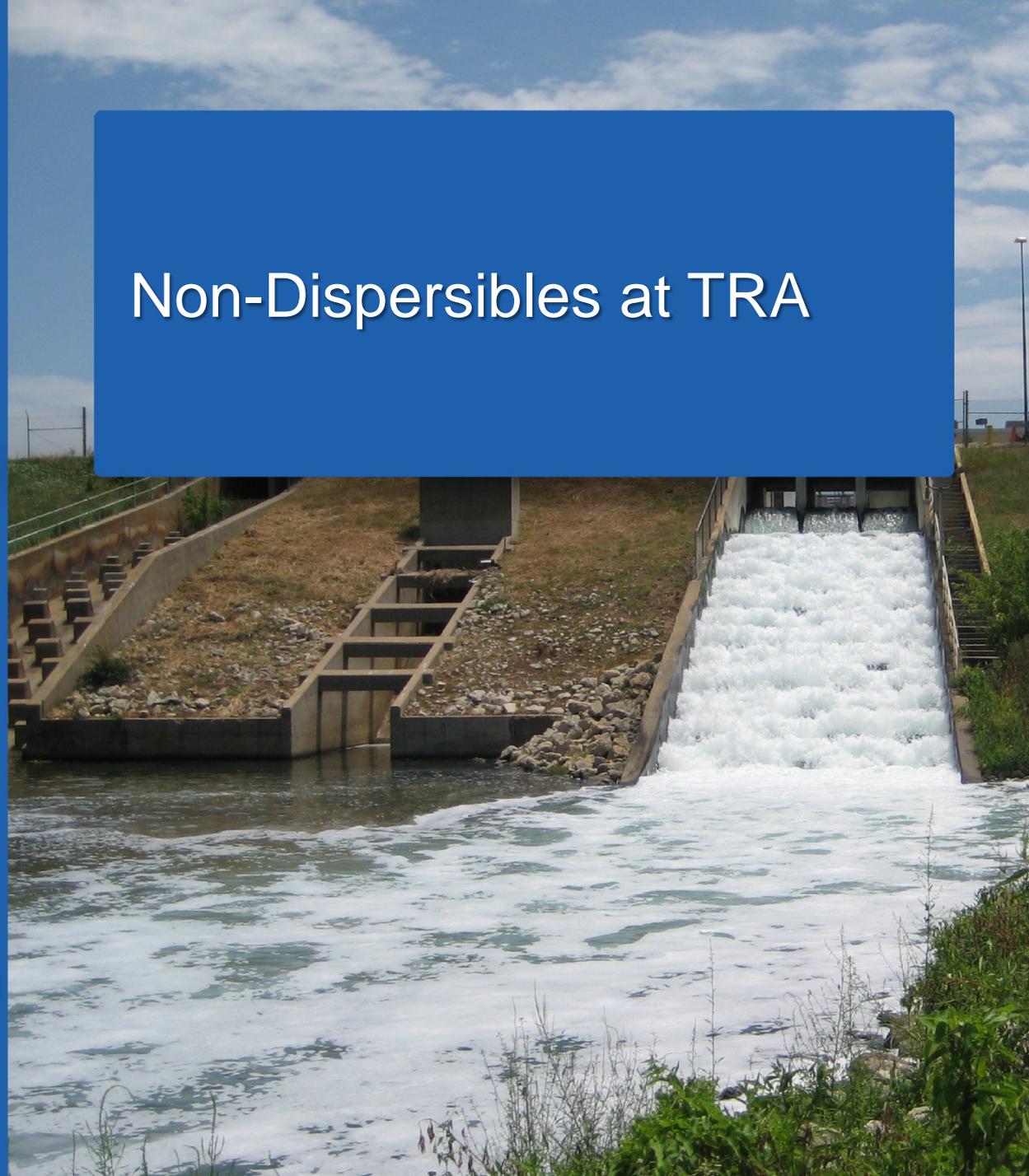
- Central Regional Wastewater System (CRWS) – 162 mgd
 - 21 Contracting Parties
 - Pretreatment Program (154 SIUs)
- Ten Mile Regional Wastewater System (TMCRWS) – 24 mgd
 - 5 Contracting Parties
 - Pretreatment Program (13 SIUs)
- Denton Creek Regional Wastewater System (DCRWS) – 11.5 mgd
 - 11 Contracting Parties
 - Pretreatment Program in the works (8 SIUs)
- Red Oak Regional Wastewater System (ROCRWS) – 6 mgd
 - 6 Contracting Parties
 - No Pretreatment Program Required (1 SIU)
- Mountain Creek Regional Wastewater System (MCRWS) – 3 mgd
 - 4 Contracting Parties
 - No Pretreatment Program Required (4 SIUs; 2 Zero Discharge)

TRA Pretreatment Organization

- The Pretreatment Program is TRA's responsibility as holder of the Texas Discharge Elimination System (TPDES) permit
- TRA is the signatory and contact for the Pretreatment Program
- We have no ordinance of our own
- We have no enforcement capability with industry
- Must rely on our Contracting Parties to assist with Pretreatment Program implementation and operation
 - Wastewater Contract
 - Technical Service Contract (optional)



Non-Dispersibles at TRA



Problems

Flushing the Non-dispersible...

- Overwhelms the Collection System
 - Lift Station Pumps
- Causes Septic System Troubles
- Creates Backups in Private Plumbing
- Damages and Strains the WW Headworks
- Increases WW Treatment Cost
- Non-Regulated
- Harms Public Health, Water Quality, and the Environment



TRA Lift Stations

CRWS Lift Station #1

Example:

- May 2008 De-ragged zero times
- May 2013 De-ragged 19 times



Deragging pump at CRWS LS #1

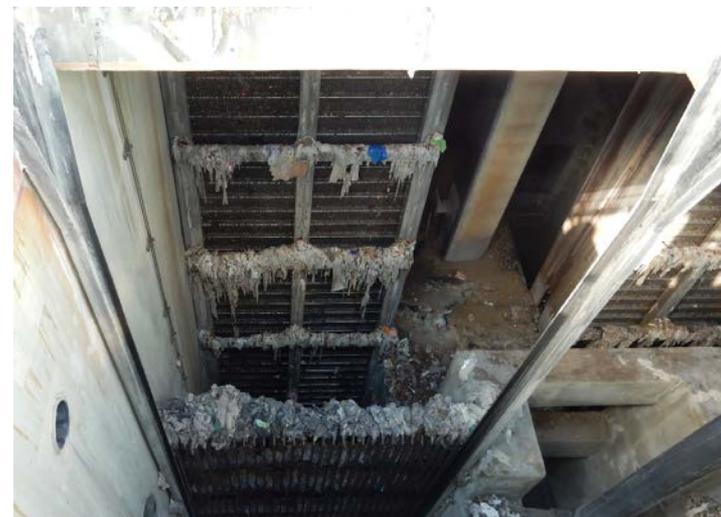
MCRWS Lift Station #9P

- Routine dragging



Rags pulled from LS#9P

CRWS Headworks Rough and Fine Screens



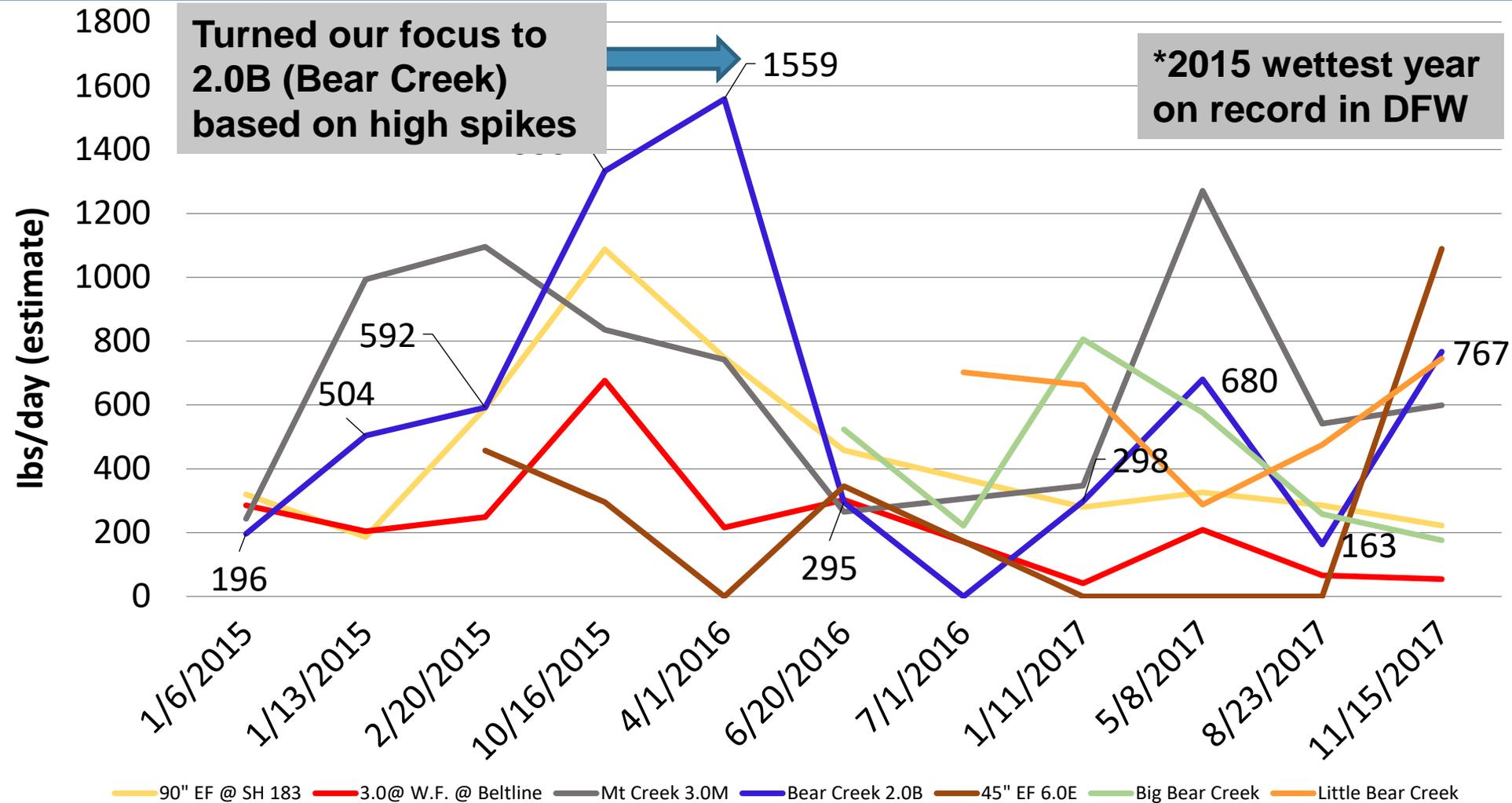
CRWS Headworks Overwhelmed



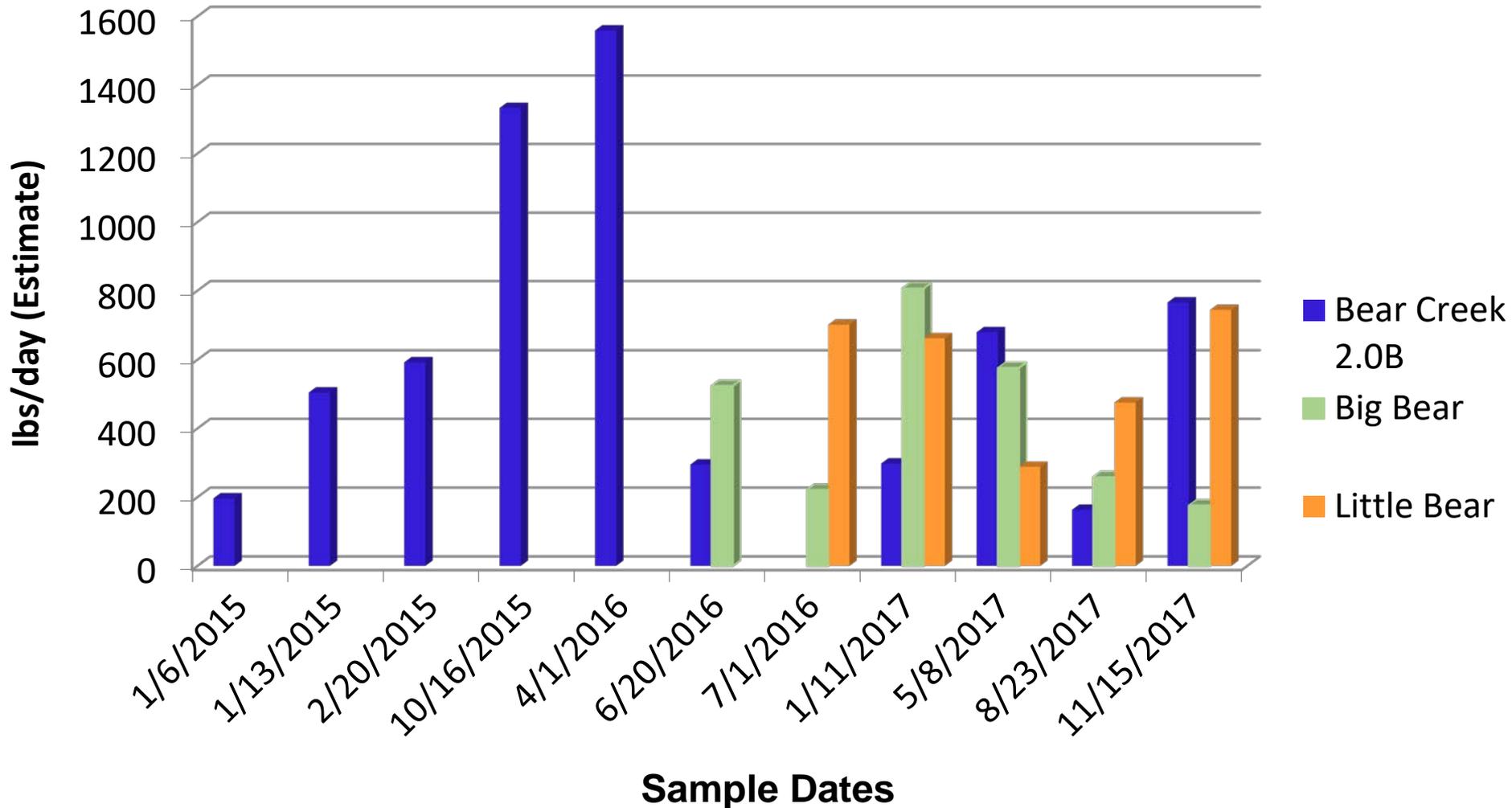
CRWS North Primaries



Non-Dispersible Sampling (Trunk Lines)

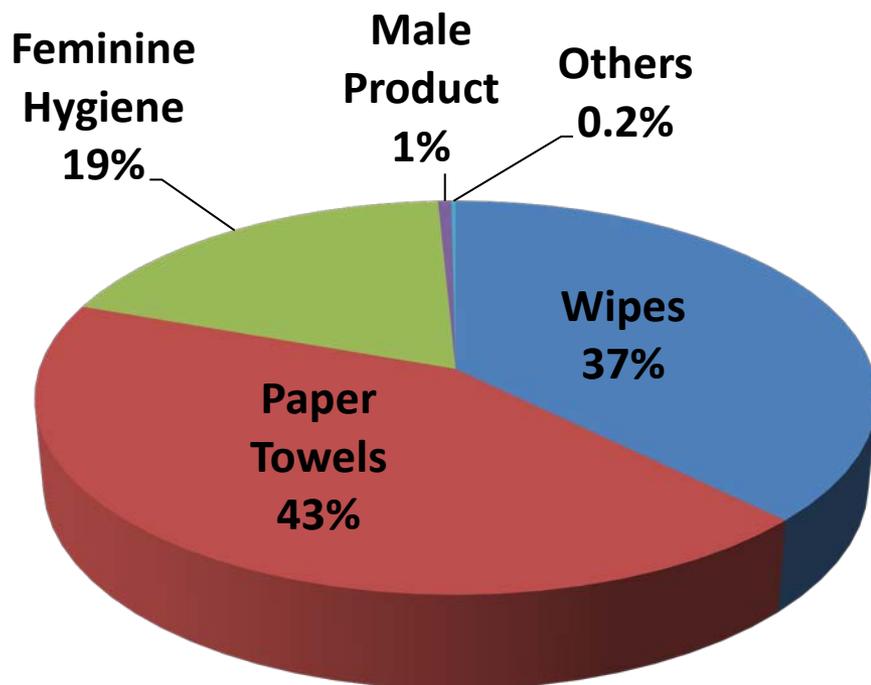


Non-Dispersible Sampling Bear Creek Focus

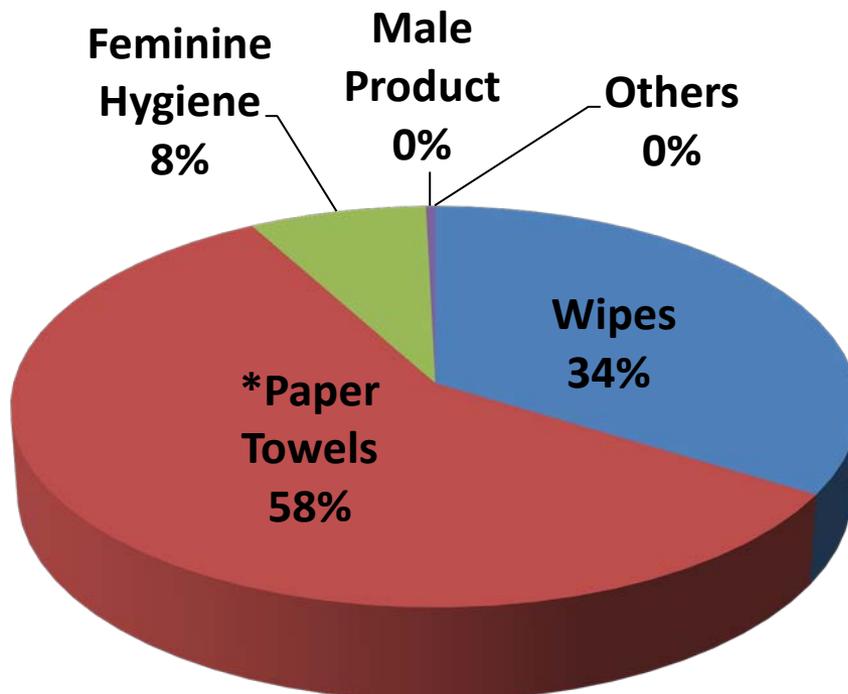


CRWS Non-Dispensible Collection System Survey

2015 Average



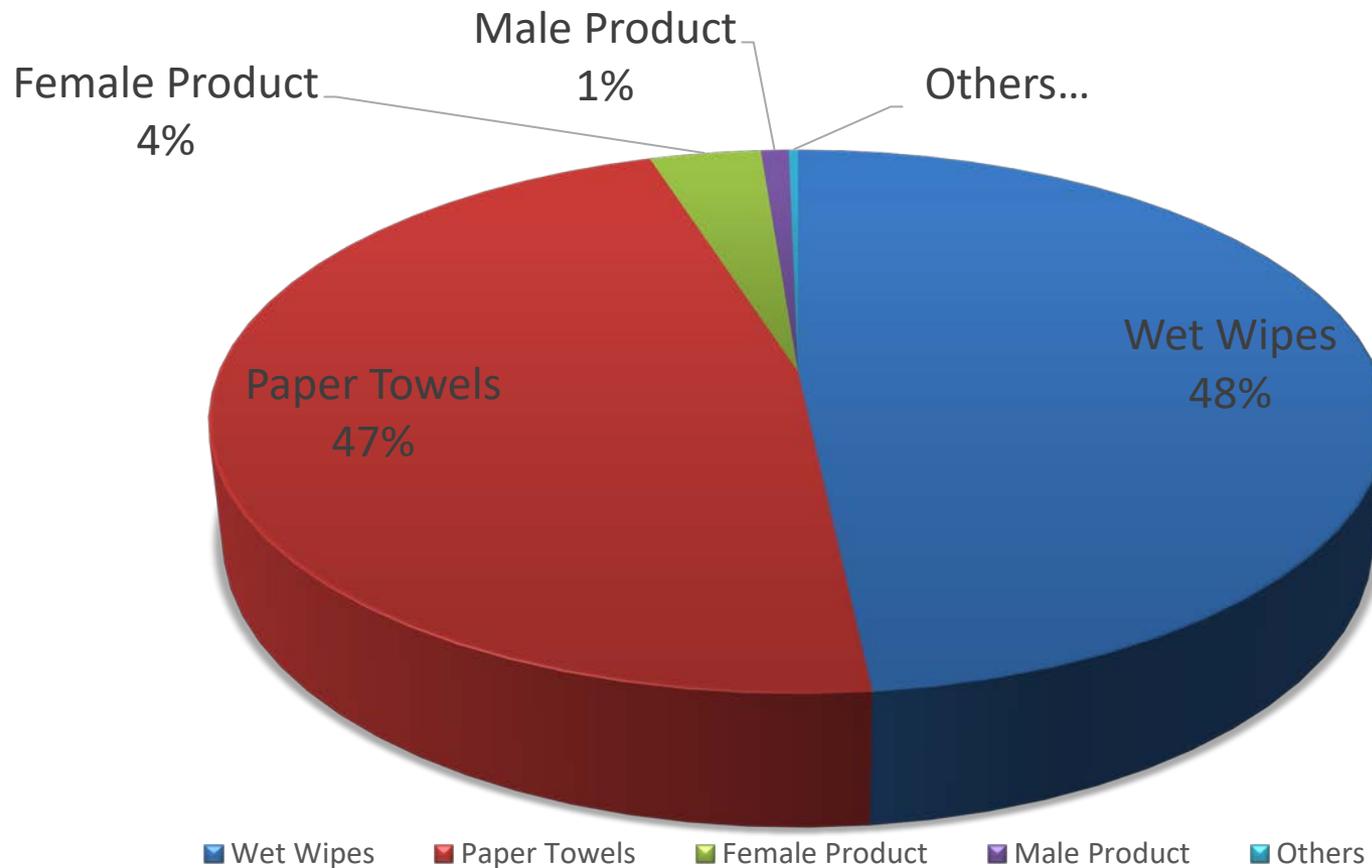
2016 Average



***Does not include outlier site.
2.0B April 2016 location had
162 paper towels.**

CRWS Non-Dispersible Collection System Survey

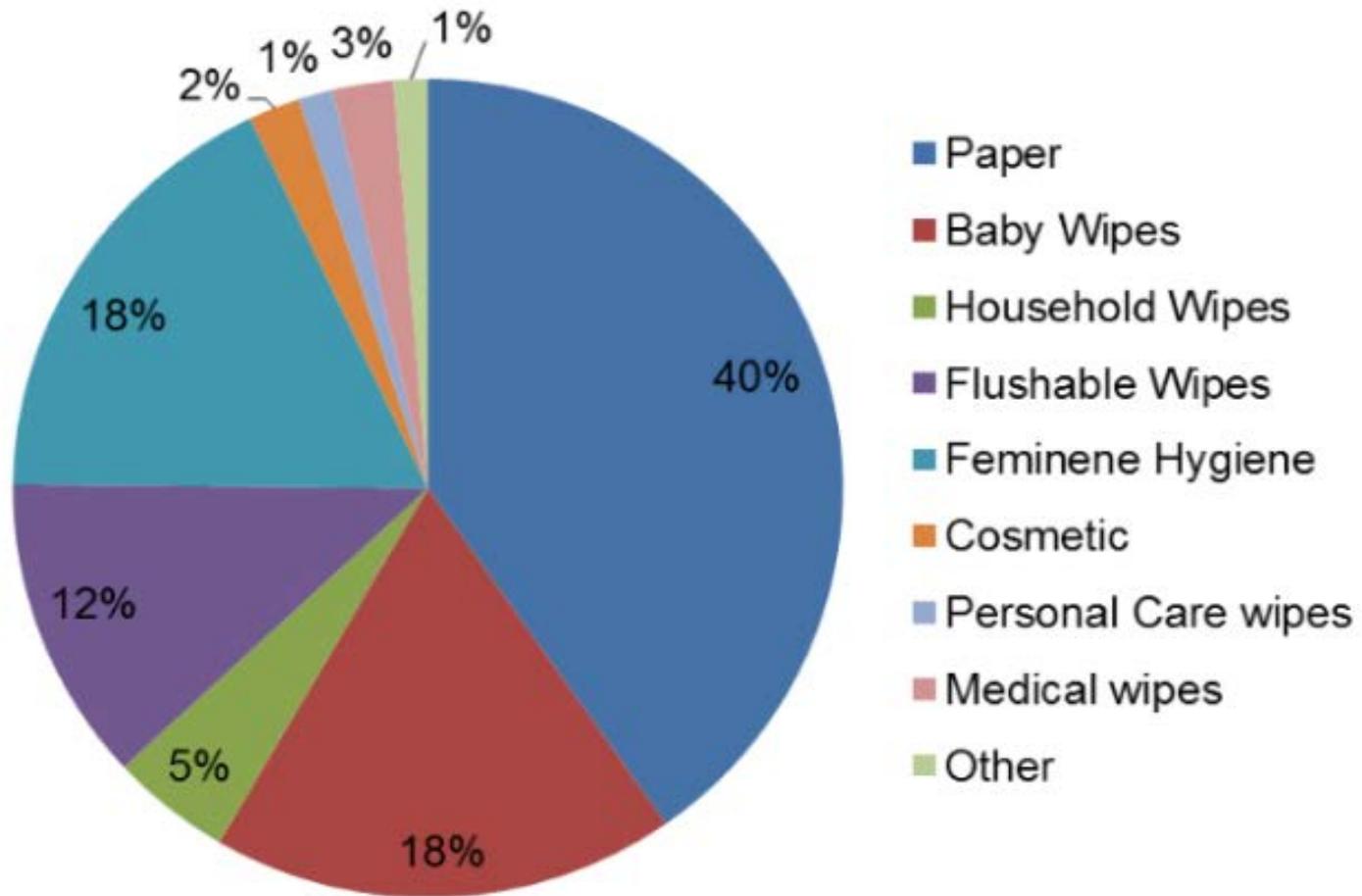
2017 Non-Dispersible Average



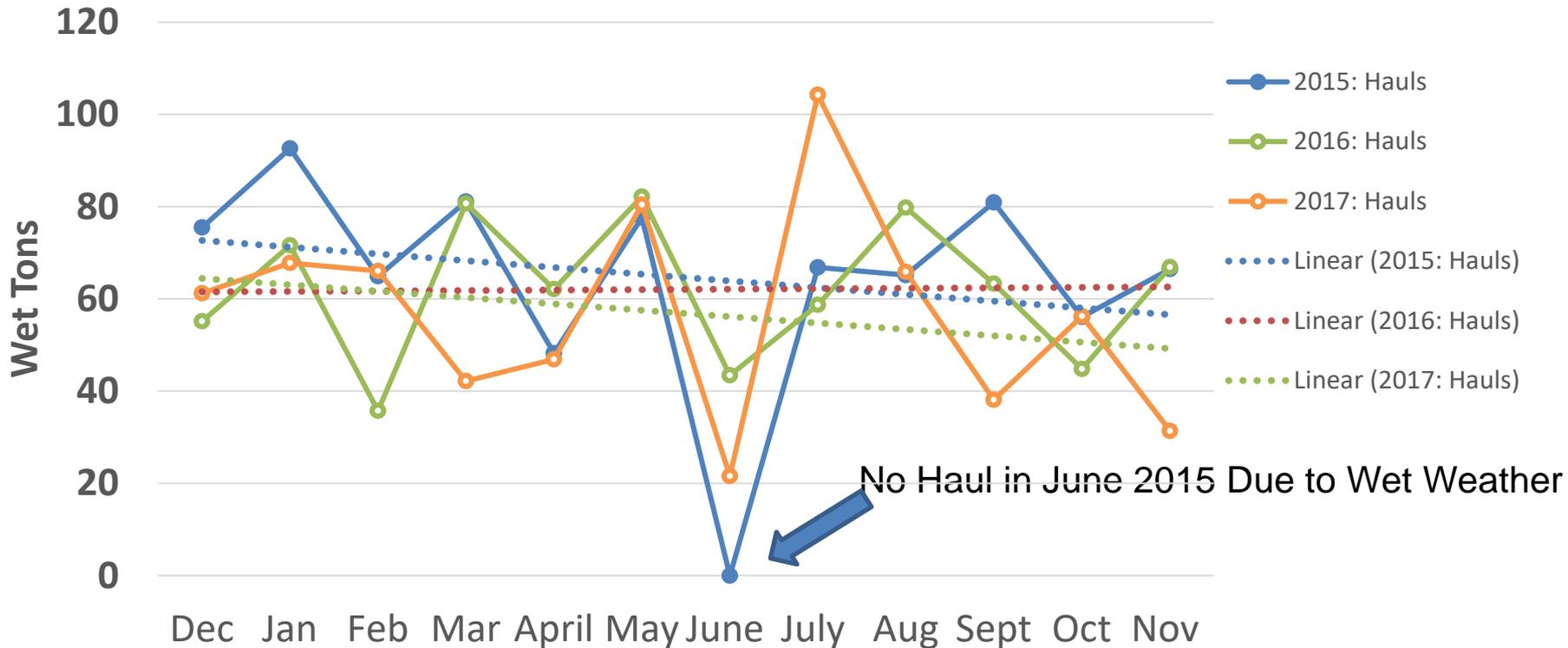
CRWS Non-Dispersible Collection System Survey

- Three consecutive sampling years yielded consistent non-dispersible paper towels and wet wipes
- Notable commercial/household grade paper towels were identified throughout CRWS collection system and baby wipes were the bulk of non-dispersible
- Paper towels three year average = 49%
 - Wet Wipes three year average = 40%
 - Feminine Products = 10%

INDA Breakdown of Items (2015)



CRWS Non-Dispersible Hauling Comparison by Weight 2015 – 2017 (In Plant)



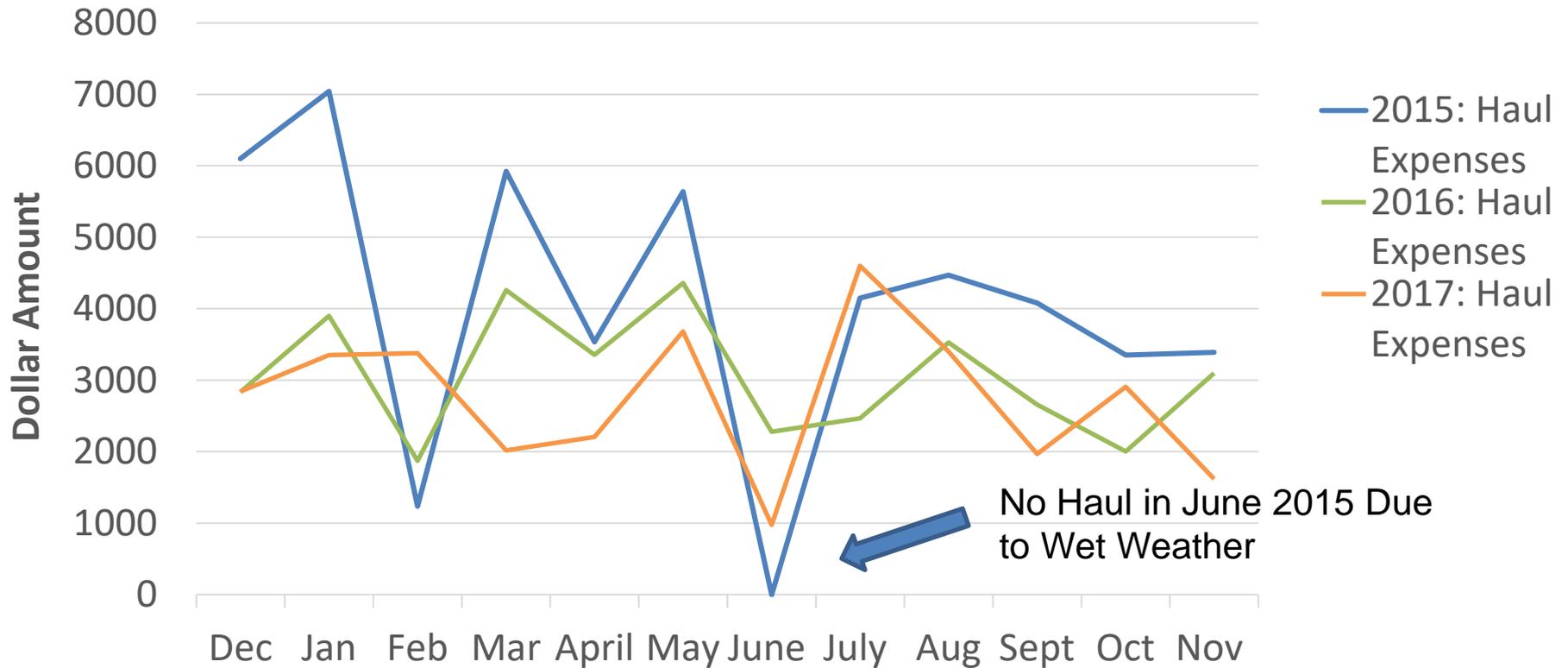
2015 Total = 775 Wet Tons

2016 Total = 744 Wet Tons

2017 (12 months) = 682 Wet Tons

Grand Total Since 2015: 2202 Wet Tons = 4,404,000 lbs.

CRWS Non-Dispersible Hauling Comparison by Cost 2015 – 2017 (In Plant)



2015 Total = \$48,915

2016 Total = \$36,618

2017 (12 months) = \$32,953

Grand Total Since 2015: \$118,486

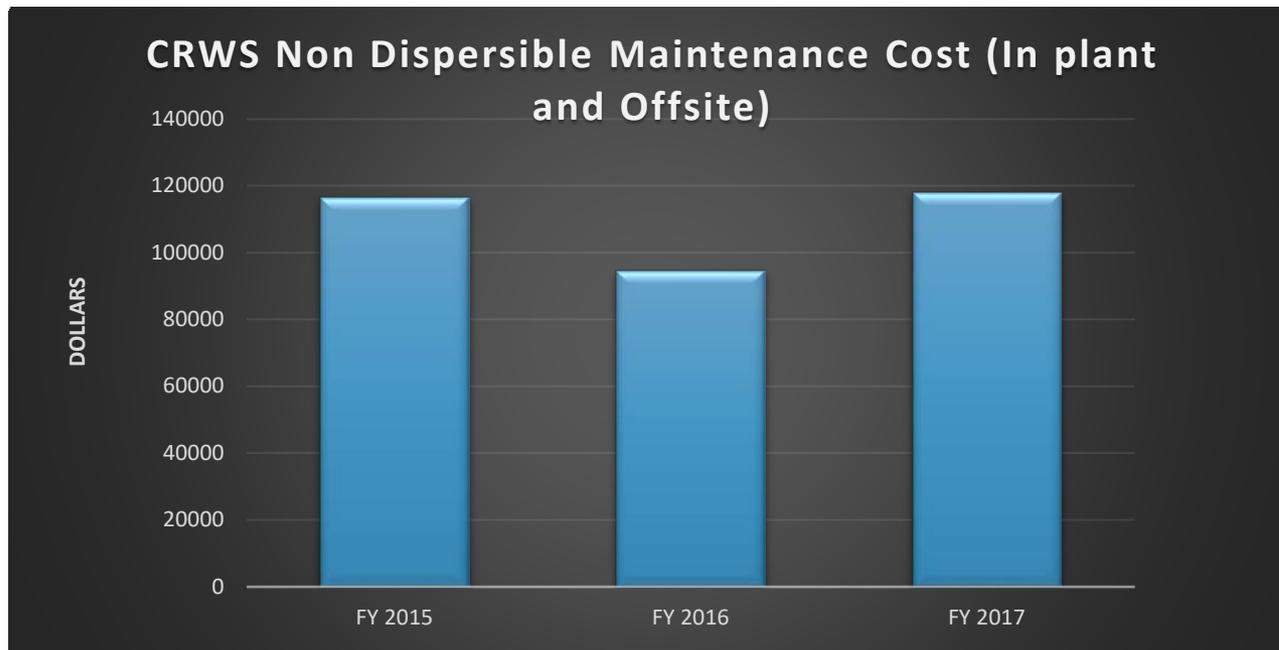


CRWS Mechanical Maintenance Costs Related to Non-Dispersibles

- All CRWS mechanical maintenance activity Costs (in plant and off site):

2013	2014	2015	2016
\$2,276,310	\$2,724,886	\$3,027,341	\$3,002,201

- CRWS Non-Dispersible Maintenance Related Costs



Pretreatment Program Approach

- TRA Pretreatment Program Function
 - “First line of defense”
 - Historically protects the POTW from non-domestic users.
- Further evolution of TRA Pretreatment function
 - Protecting the POTW also from unwanted contributions from domestic users
 - Hands off for Enforcement under Pretreatment Program
 - Study/Investigate the unwanted contribution
 - TRA Pretreatment partnering with TRA Public Relations



CRWS Non-Dispersible Collection System Survey

Goals of the Survey:

- Phase 1
 - Determine the type (general) of non-dispersible materials entering the CRWS drainage basin;
 - Determine where the source of non-dispersibles are coming from;
 - Establish baseline data
- Phase 2
 - Catalog wipes for future analysis and quick reference;
 - Are wipes we find labeled as “flushable”?

CRWS Non-Dispersible Collection System Survey

The Results of the Survey should:

- Better focus outreach materials
 - Based on type of non-dispersible material
- Provide some type of metrics
 - Help determine if the issue is getting better/worse
 - Feedback for Public Relations and data to communicate with the public
- Allow for traditional Pretreatment involvement if investigation identifies industrial/commercial sources

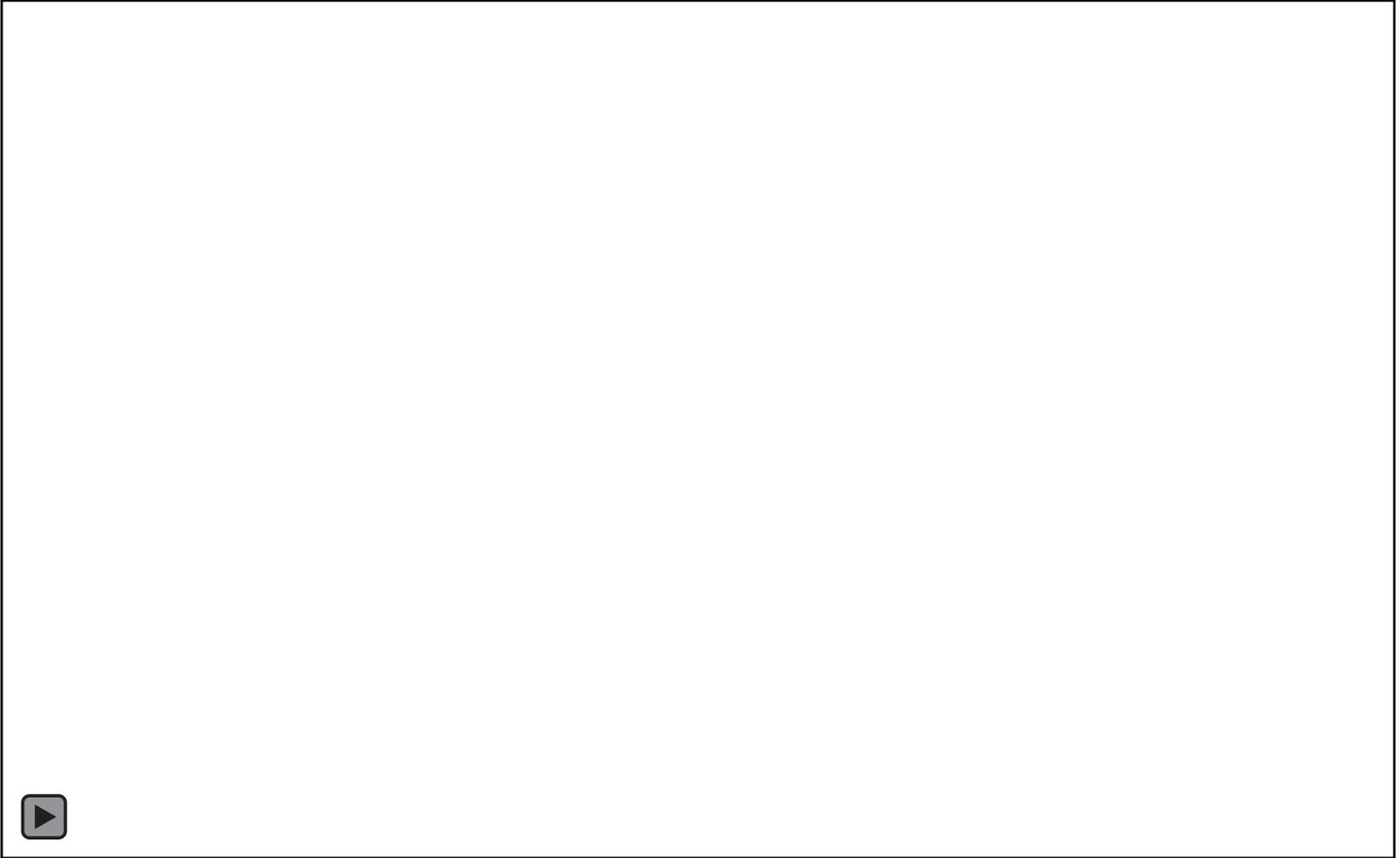
CRWS Non-Dispersible Collection System Survey

Tools of the Trade

- Custom built aluminum screen (3ft x 2ft)
- 5, 6 foot long aluminum poles
- Plenty of elbow grease !



CRWS Non-Dispersible Collection Video



CRWS Non-Dispersible Collection System Survey

Methodology:

- Attempt to rest the screen on the bottom of the line.
- Allow screen to collect for 5 minutes.
- Take pictures of catcher immediately after pulled out of flow.
- Manually separate larger non-dispersibles from other non-dispersibles in plastic bags.
- Weigh the bags while still wet.
 - Calculate the 5 min weight to allow for projection
- Count non-Dispersibles and general ID of Type



CRWS Non-Dispersible Collection System Survey

Sometimes the “Real World” gets in way

- Sample Date impacts (goal was qtr./yr.)
 - Rainfall impact
- Challenges with the sample catcher
 - Strong flow stream, it bends the aluminum pole
 - Catcher not staying perpendicular against the current and not catching the non-dispersibles.
 - The non-dispersibles turning the screen into a sail, thus, unscrews the aluminum poles.
- Construction and Backup of Flow
 - Lift Station #1 (Non-dispersible settles on bottom of sewer line)

CRWS Non-Dispersible Collection System Survey

Conclusions So Far

- Found an area of the system that we need to encourage more active Contracting Party outreach activities.
 - Isolation points upstream of the 2.0B site contain more affluent communities.
- Maybe outreach specific to paper towels would be beneficial in addition to wipes
 - We see more volume of paper towels, but wipes seem to cause more trouble by the way they break down – “rope effect”
 - Consumer confusion



CRWS Non-Dispersible Collection System Survey

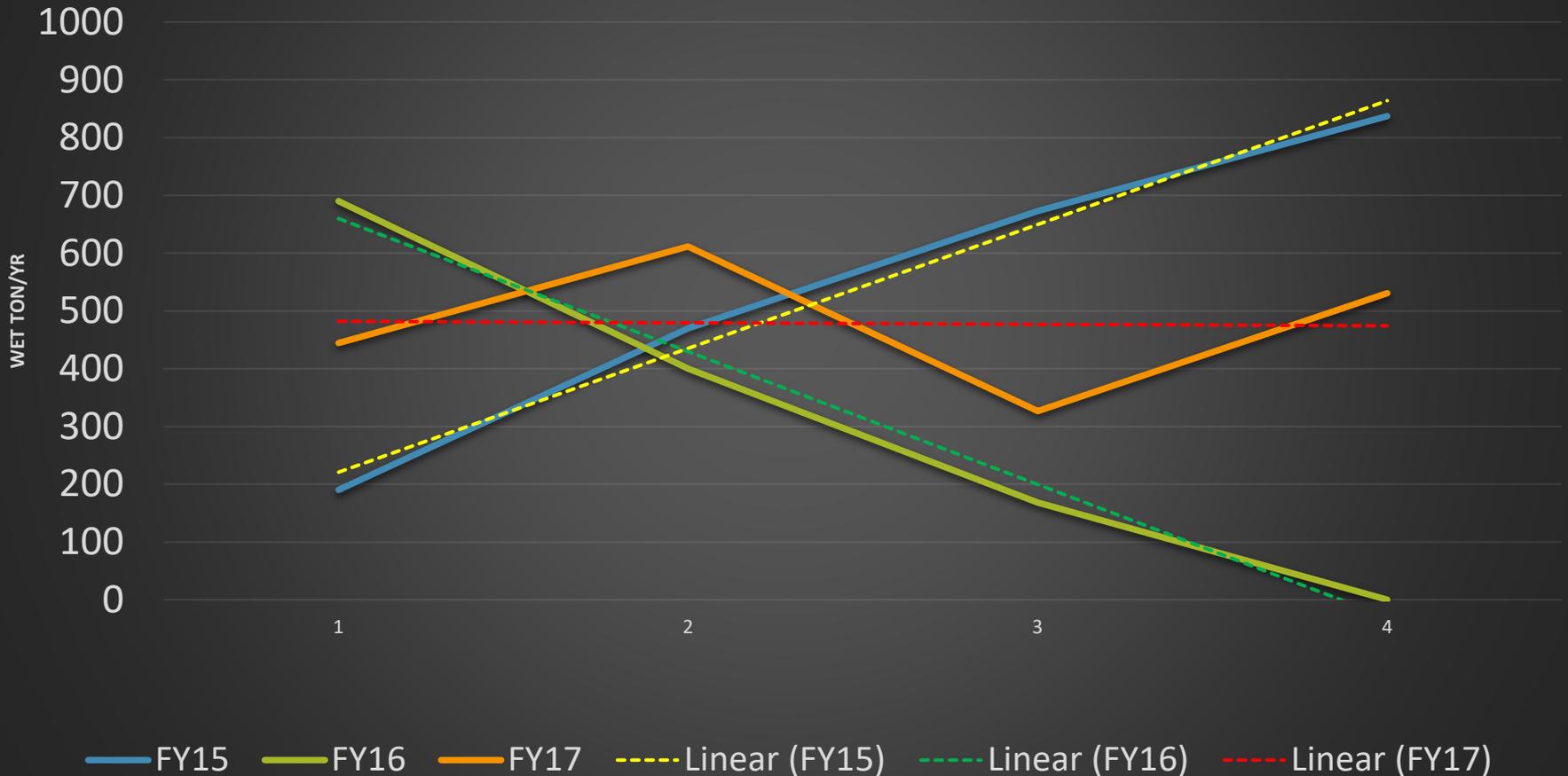
Conclusions So Far

- Rainfall events may have affected the inconsistency we have seen so far with study
 - first flush concept
- Did we see an affect of regional outreach launches?
 - Saw a trend down in volume of non-dispersibles in mid 2016
 - Several TRA Contracting Parties began outreach activities in 2016
- Time collected
 - Time of day
 - Detention time

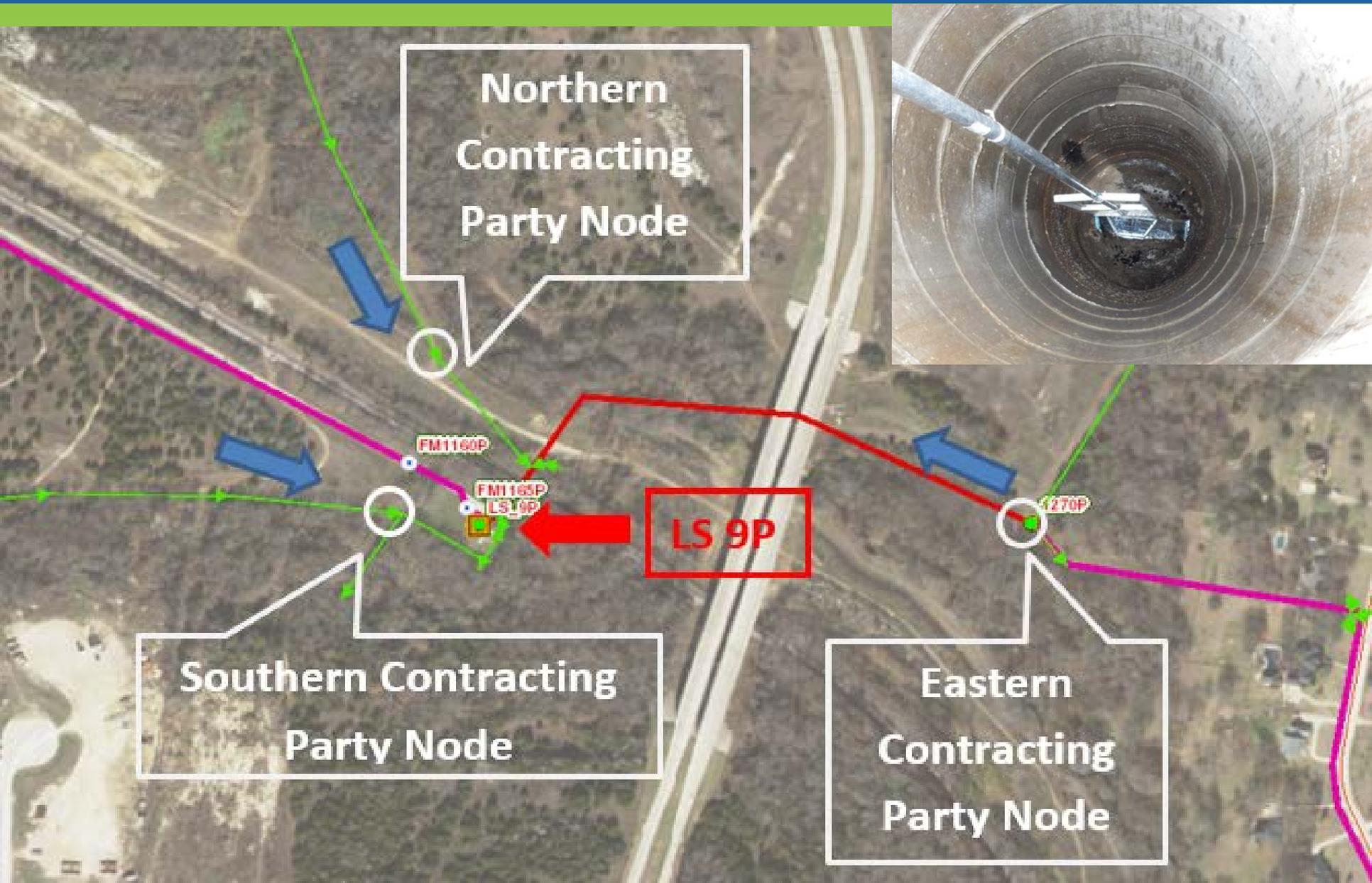


Effectiveness of Outreach Program

2015 vs. 2016 vs. 2017



MCRWS LS #9P Survey



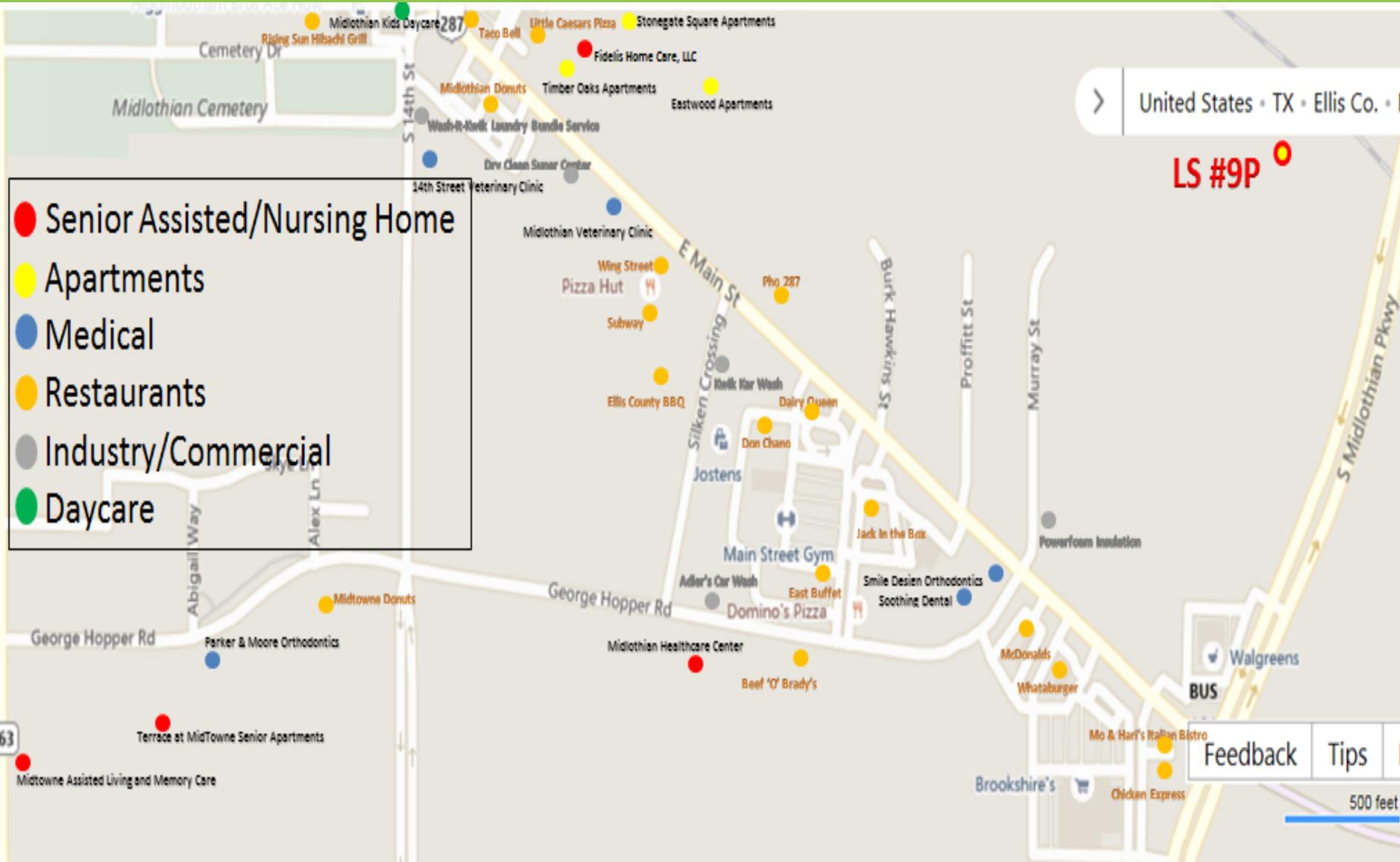
Northern
Contracting
Party Node

Southern Contracting
Party Node

LS 9P

Eastern
Contracting
Party Node

MCRWS LS #9P Survey



MCRWS LS #9P Survey

We were led back to:

- Apartments
 - Encountered a plumber
- 3 Senior Assisted Living Centers
 - Had wipes problems
 - Wanted Help
- 1 Nursing Home
 - Not available to discuss

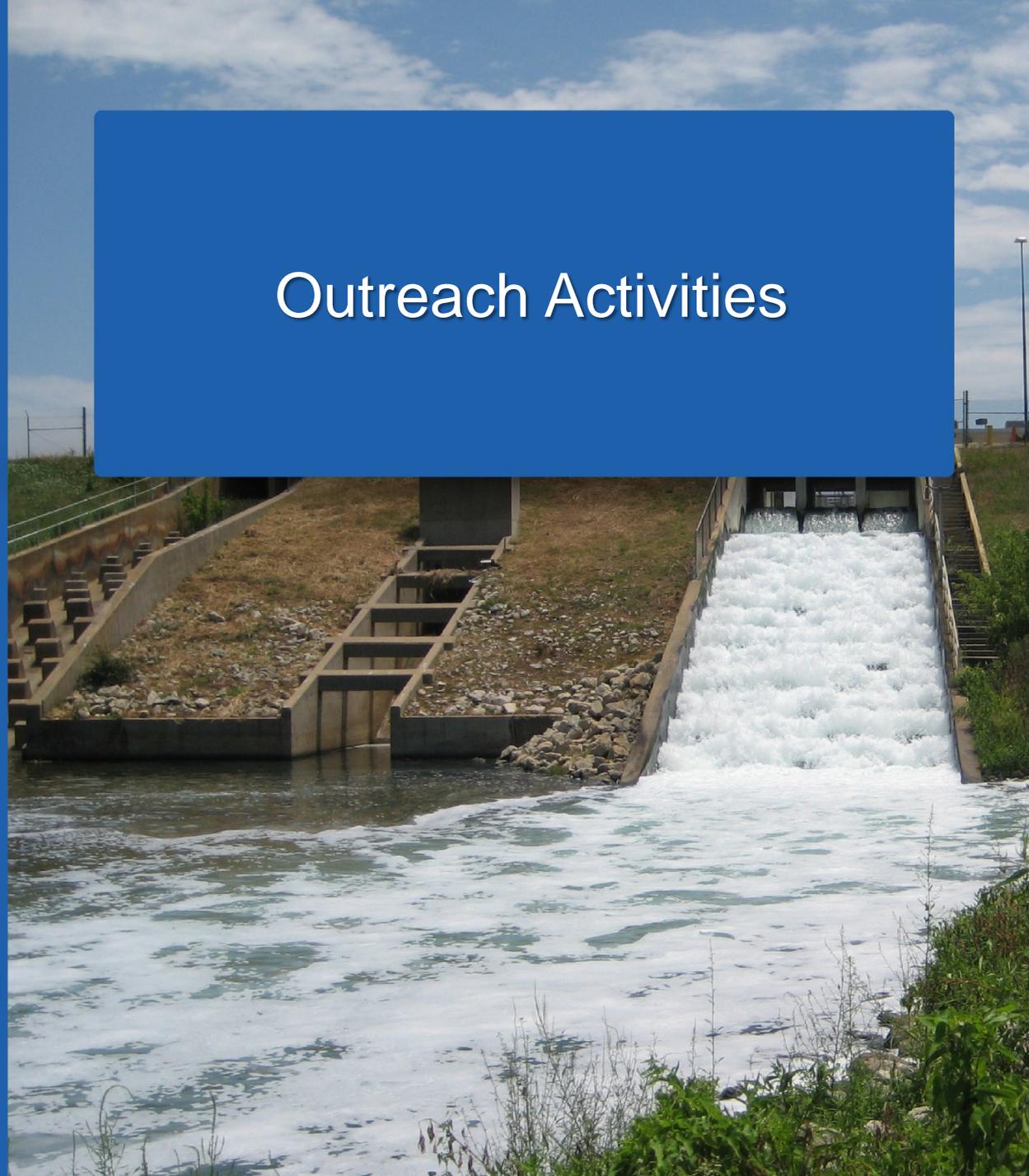
Ruled out in this area

- Daycare
 - Disposal trash only
- IUs



**Portion of Large Cleaning Wipe
from LS#9P Possible Bath Wipe**

Outreach Activities



Wastewater Etiquette Campaign

TRA's Approach: Foster Partnerships to Spread Outreach

- Wastewater And Treatment Education Roundtable (WATER)
 - North Central Texas Council of Governments
 - Allows the Region to share resources to teach wastewater etiquette
 - Dallas has been a big reason for the success of WATER
 - Helped create and drive the regional message



<http://www.defendyourdrainsnorthtexas.com/>

Wastewater Etiquette Campaign

TRA's Approach: Foster Partnerships to Spread Outreach

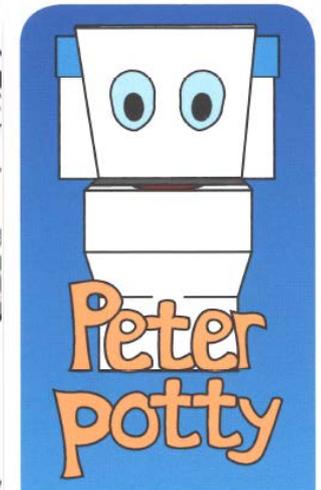
- Contracting Parties
 - Keeping them apprised in Advisory meetings
 - Challenges and impacts
 - Sharing resources from WATER
 - Pretreatment Division assisting as necessary



Wastewater Etiquette Campaign

TRA Attends Regional Events to teach WW Etiquette

- Outreach focused to Children
 - Developed by TRA Public Relations



Keep wipes out of your pipes!

Bathroom tissue is the only item you should flush down the toilet. Other items may cause major issues with your plumbing and cause problems at wastewater treatment plants.

Questions

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