Passaic River Institute Floatables Conference

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Overview: The Floatables Problem

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Overview of Presentation

- What *Are* “Floatables”?
- The Floatables Problem
- Sources and Fate of Floatables
- Controlling Floatables
- Floatables Characteristics

What *Are* "Floatables?"

- Generally: *any coarse solids that when discharged to a waterway are a visual nuisance in the water or on the shoreline.*
- Many regulations are ambiguous as to what specific material is targeted and/or what an acceptable ambient level is
- NJDEP prohibits CSO solids/floatables larger than ½"

The Floatables Problem: Shoreline/Beach Wash-Ups

- degrade aesthetics of shorelines and beaches
- adverse effect recreation and business in area
- “toilet litter” and other sensitive items, if present,

can intensify impacts because of public health concerns

The Floatables Problem: Waterway Slicks

- degrade aesthetics of waterways
- transport floatables to/from other areas
- hazard to boating
- “toilet litter” items are health concern
- adverse effect on area economy

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The Floatables Problem: Hazards to Wildlife

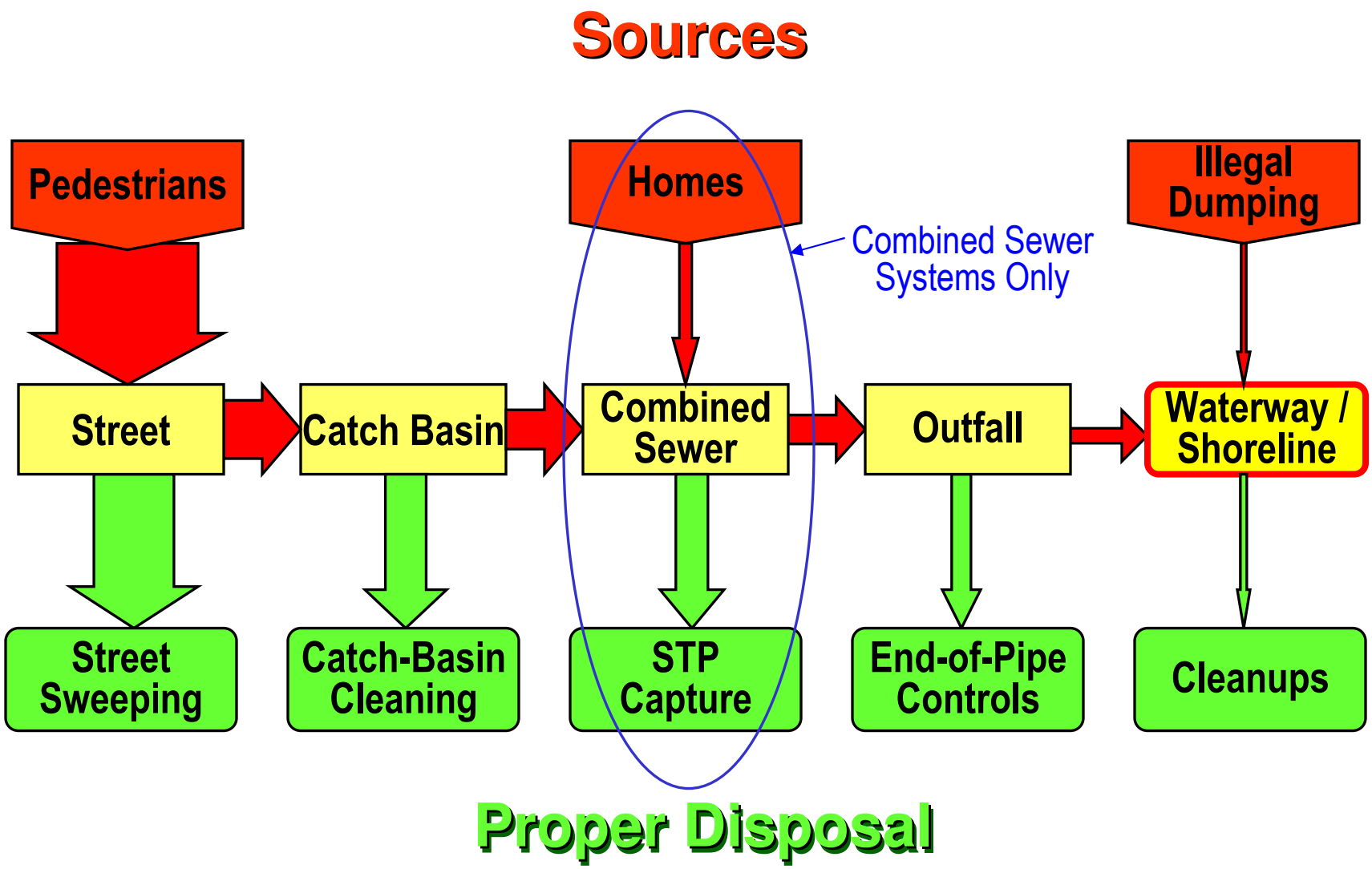
- Entanglement
- Ingestion
- Chemicals enter food chain

b) Ingestion - Plastic debris found in the stomach of a juvenile Pygmy Sperm Whale

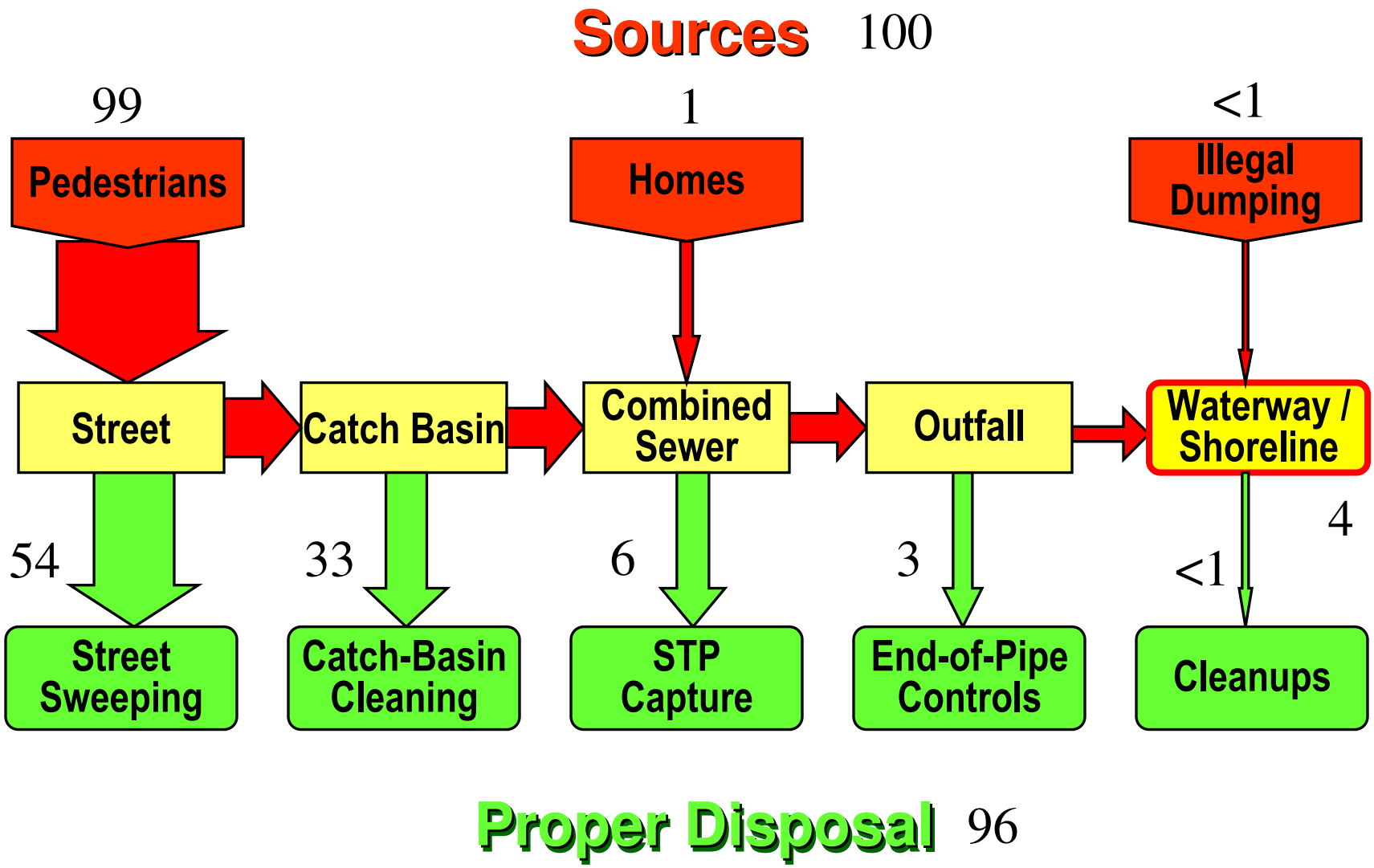
Sources of Floatables

- In Urban areas:
  - Storm or combined sewers: street litter
  - Combined sewers: “toilet litter” and fecal matter
  - Illegal dumping: miscellaneous materials
  - Decaying piers & vessels: lumber
  - Natural sources: (e.g. leaves, sticks, grass)

Sources and Fate of Floatables



Sources and Fate of Floatables



Controlling Floatables

- Two Approaches:
  - Prevention (Source Control)
    - Reduce littering, illegal dumping, careless operations
  - Management (Discharge Control/Cleanup)
    - Improve capture via street sweeping, catch basins, baffles, maximizing flow capture at STPs, end-of-pipe controls, cleanup of water body or shoreline
  - Visual monitoring can be used to track conditions and assess performance of controls
    - Such a system is being implemented in NYC

Controlling Floatables

- Costs and effectiveness can vary
- Can balance multiple controls for an effective control strategy
  - Changing control at one point in process train will affect amounts at downstream points
- Depending upon the point of control, materials will have different characteristics
  - This can affect materials handling issues and choice / balance of control methodologies

Controlling Floatables

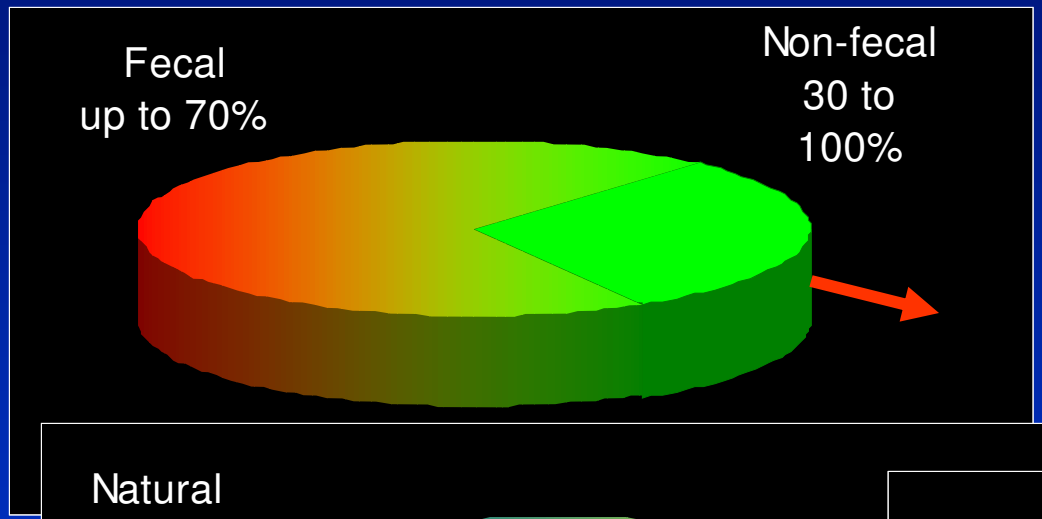
- Information is available about the amount and character of material at various locations within the “process train”:
  - Streets and Sidewalks
  - CSO/Storm-Sewer Discharges
  - Shoreline Wash-Ups
- This information is useful to estimate expected performance and generated material quantities for certain controls applied at certain locations
- Previous paper compiled this information Example….

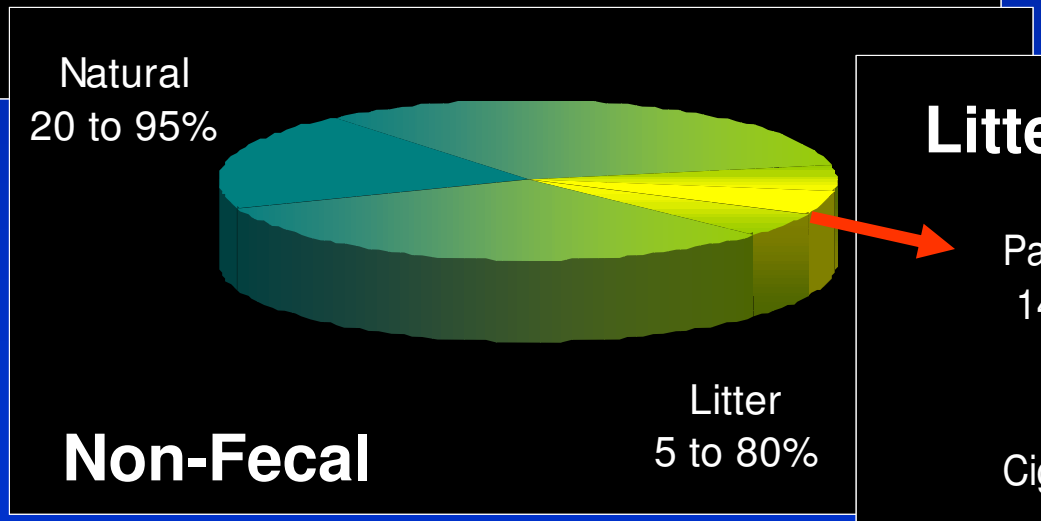
Characterization of Floatables

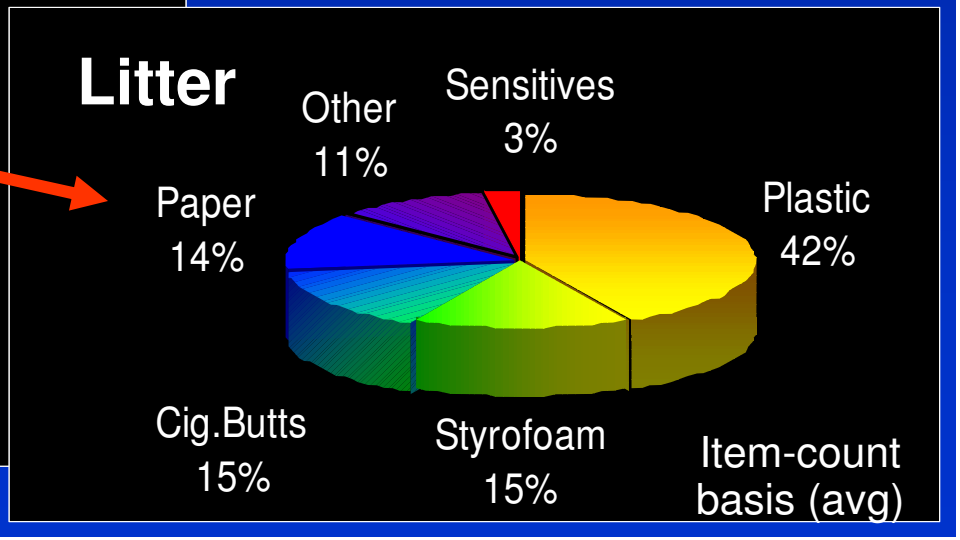
- Discharges from CSOs/Storm Sewers
  - Compiled information:
    - Quantity of discharged material
      - 0.2 – 2.3 lbs/ac/in
      - 4.7 lb/cf (dry) to 23 lb/cf (wet)
    - Composition of discharged material
      - Can be mostly fecal / natural
      - Litter is mostly plastic (60%), Toilet Litter is 5%
    - Most common discharged items
      - Cigarette butts, foamed plastic pieces, plastic food wrappers/straws
    - Size distribution of discharged items
      - 10% pass ½ " screen; 50% pass 1"
    - Rise velocity of discharged items
      - 20% sinkers; median 5 cm/s; 22% exceed 7 ft/sec

Characterization of Floatables

- Discharges from CSOs/Storm Sewers
  - Material composition of discharge







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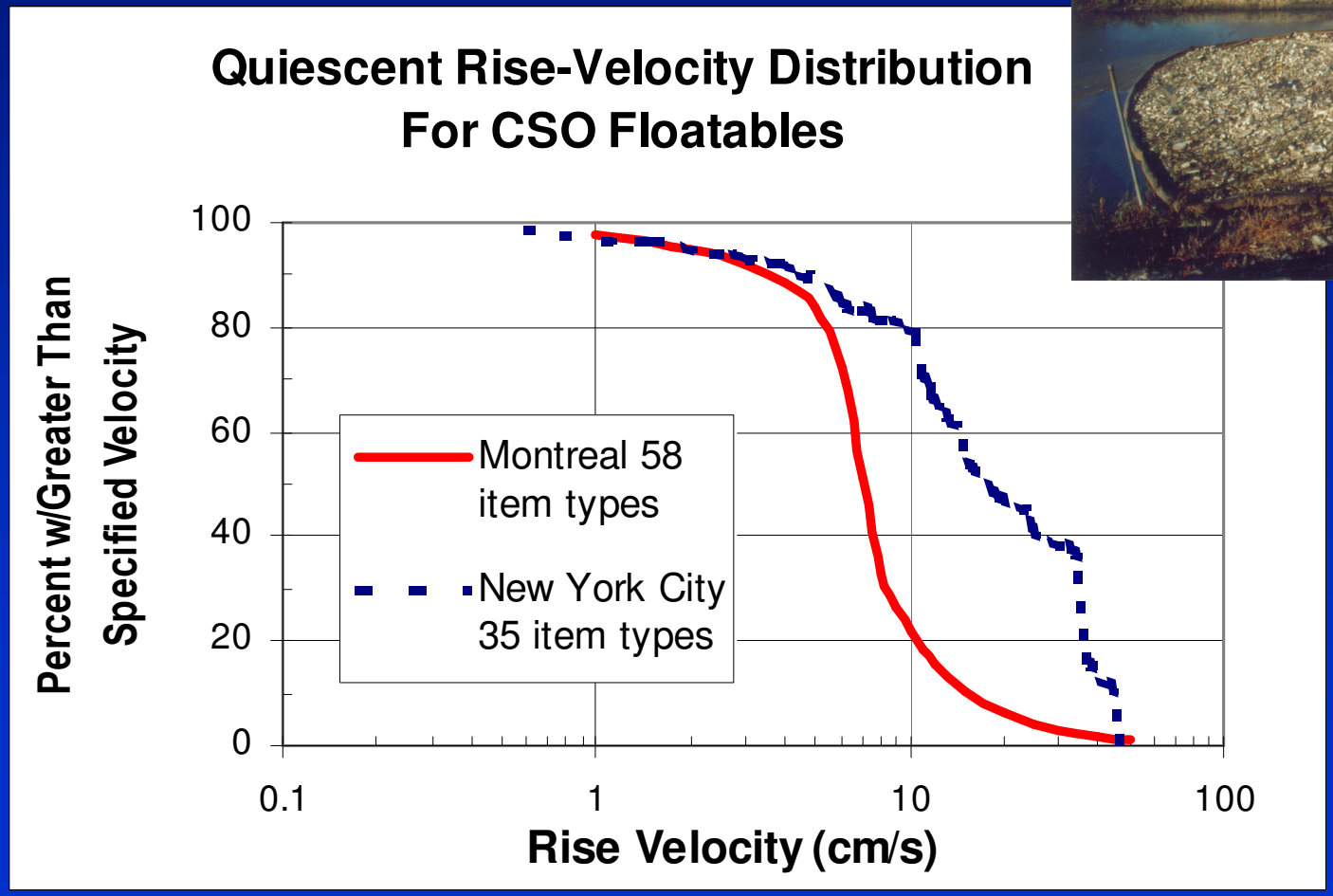

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Summary

- Floatables can be a problem in urban areas with either storm or combined sewer systems
- There are multiple control opportunities; effective control could involve a balance of source controls and management controls
- Floatables characteristics are different at different locations in the “process train” and can be used to help find a cost-effective control strategy and to predict how much targeted and non-targeted materials to handle

For More Information

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