Handling Flushable Wipes in Wastewater.

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Aug 14 – 16,

Presented by Randy Crowe
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Houston, TX

Local representative is Granich Engineered Products: John Hayes

Handling Flushable Wipes in Wastewater.

The purpose of this presentation is to offer everybody here another potential solution to a very difficult situation.

As an operator think of it as another option to offer to management for a solution.

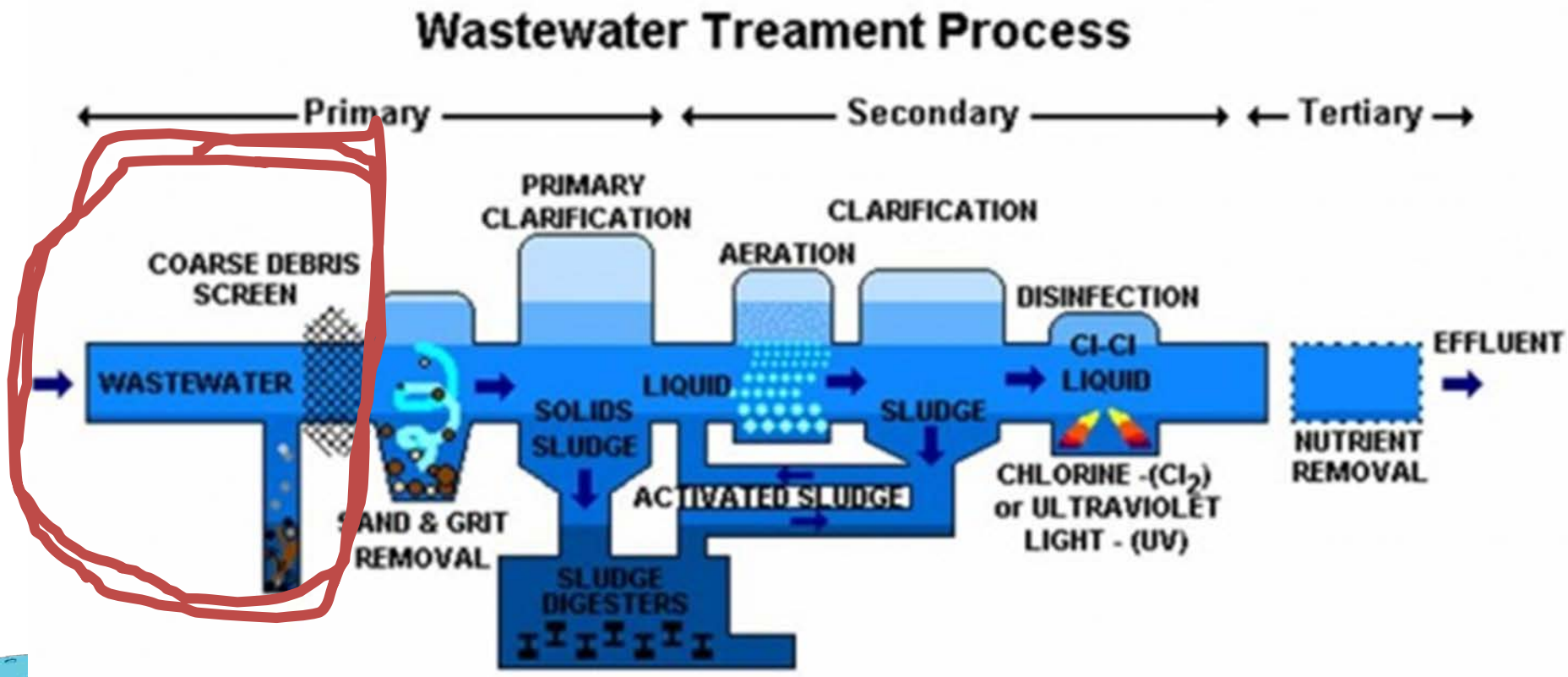
For a specifying engineer, think of this as a potential solution to a problem before it occurs.

Handling Flushable Wipes in Wastewater.

Focus of this presentation will be:

Offering a potential solution to a major problem:

Removing “Flushable” wipes at the **preliminary treatment area**



Handling Wipes…

- Problem does not appear to be getting worse, because of some activists getting very vocal on the subject.
- However, It also does not appear to be getting better…
- The stories are from the WEF website
- They are actual occurrences from plants that have had significant issues due to wipes.
- First let's look at the wipes….

“Flushable” ? Baby Wipes

WEF Stories on Flushable Wipes

Quantity of wipes causes new problems in Illinois

Downers Grove Sanitary District (DGSD; Downers Grove, Ill.) had to repair a 250-hp pump in one of its lift stations in the spring of 2013 because it was clogged by wipes. DGSD spent about $30,000 to repair the pump and an additional $5000 to install vibration-monitoring equipment to alert staff of blockages so they could prevent future damage, said Nick Menninga, general manager for DGSD.

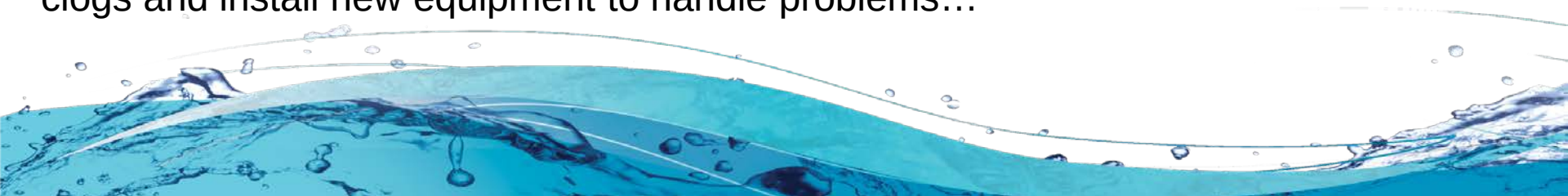
In 2006, the Portland Water District (PWD; Portland, Maine) completed upgrades to improve the ability to deliver peak flows during wet weather events, said session speaker Scott Firmin, director of wastewater services for PWD. The upgrades included replacing pumps at two stations feeding the Westbrook/Gorham Wastewater Treatment Facility. …..continued on next page.

WEF Stories on Flushable Wipes

When changing pump impellers, modifying controls to increase the speed of pump operation, and investigating possible pump replacement did not offer a solution, PWD began a $4.3 million project to install screens with throttling gates to control influent flow, Firmin said.

The screens, which began operating at each station in 2009, have eliminated pump clogs and enabled the Cottage Place station to provide the required maximum flows during wet weather, Firmin said. And PWD can pull materials from the screens and try to categorize them. Analysis has revealed that of these materials, 42% were paper products, 24% were baby wipes, 17% were feminine hygiene products, and 17% were a variety of other debris, he said. **83% are flushed paper products!**

"Modern trash—it's the number one enemy of municipal wastewater collection systems," said another speaker Robert Domkowski, business development manager for Xylem Inc. (Rye Brook, N.Y.). Many collection systems are reporting problems from "flushables" where facilities must repair the equipment broken by clogs and install new equipment to handle problems…



WEF Ideas on Flushable Wipes

"From an equipment side, you have three choices: it's either screen it and dispose of it, grind it and move it along, or pump it," Domkowski said. Each has its benefits and drawbacks and choosing a solution depends on the individual installation needs, he added.

So we have three choices:

1. Screen it and dispose of it
2. Grind it and move it along
3. Or Pump it.

Interpretation of 3 choices

3. R…er …

…wh…

Interpretation of 3 choices

2. Grind it and move it along, so it has to be removed later in a much smaller size…. a good idea?.....it can work.

Interpretation of 3 choices

Screen it and dispose of it, get it out of the plant.

Is **the** solution….take rags out of the flow.

The consideration of 3 choices

1. Money. Always seems to be the issue.

2. The lowest “cost” solution will be just pump it along.

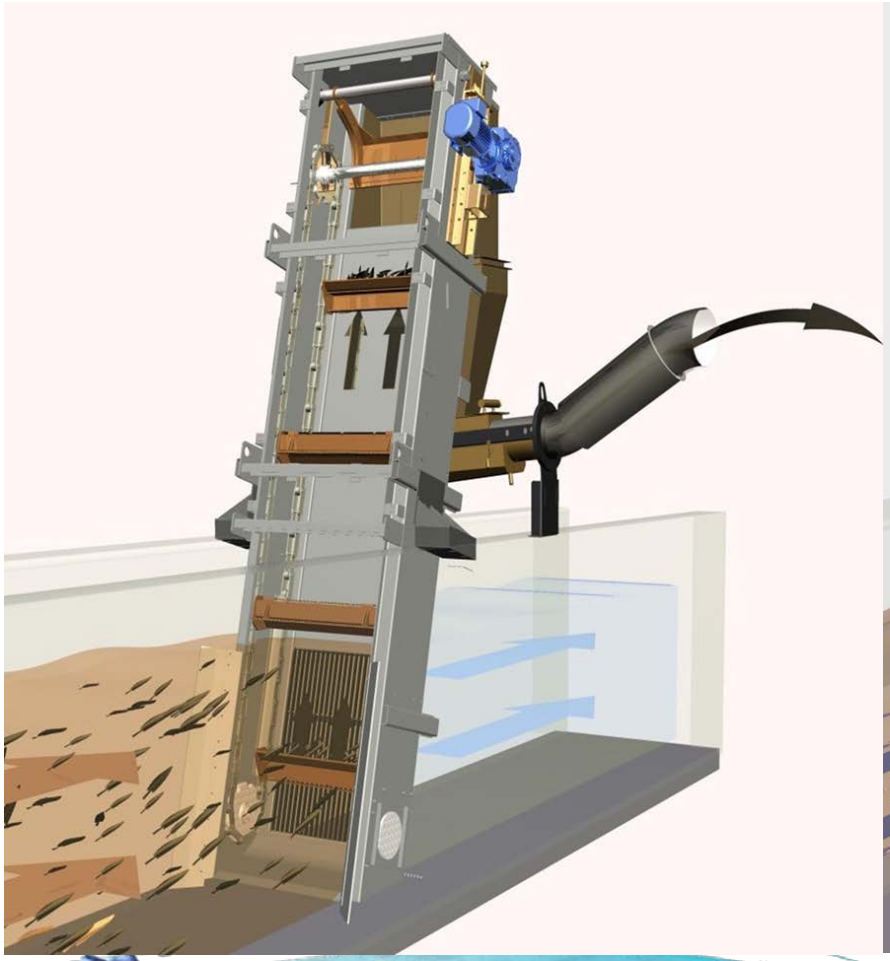
3. The next lowest “cost” will be grind it.

4. The most effective solution will be the highest of the three. But what costs are saved?

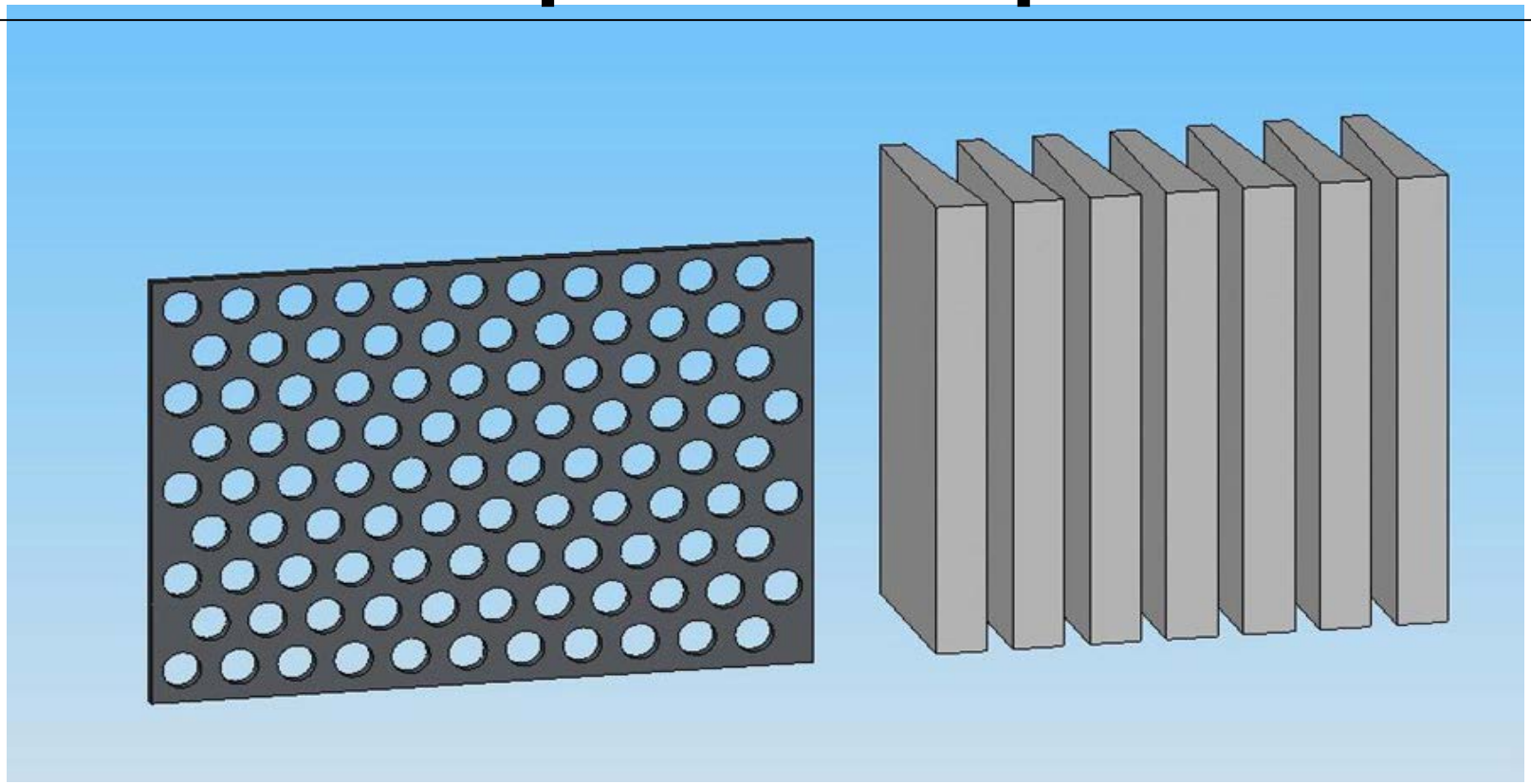
Costs saved.

- Maintenance
- Up time of equipment
- Permit issues?
- Opportunity costs

Choices for primary screening

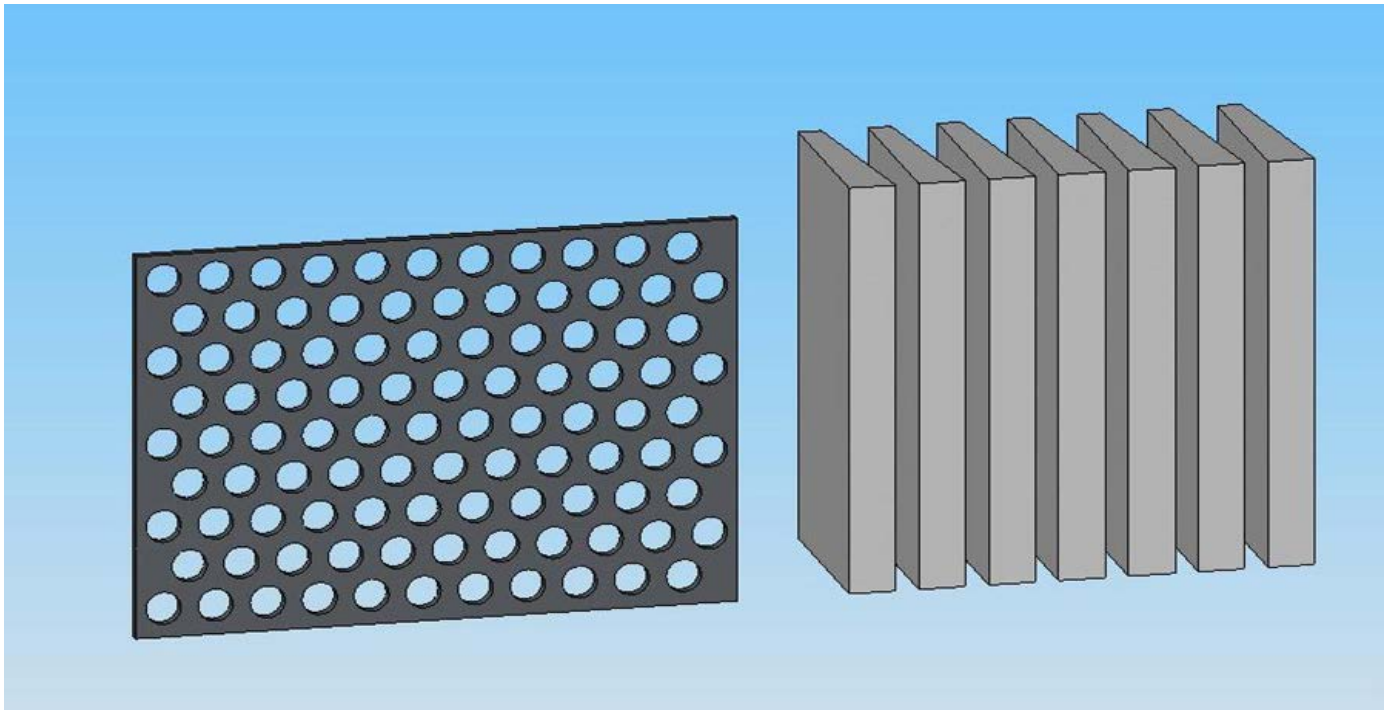


Then you have a choice, Bars or perforated plate….



This presentation will focus on bars…..because of cost and maintenance…..

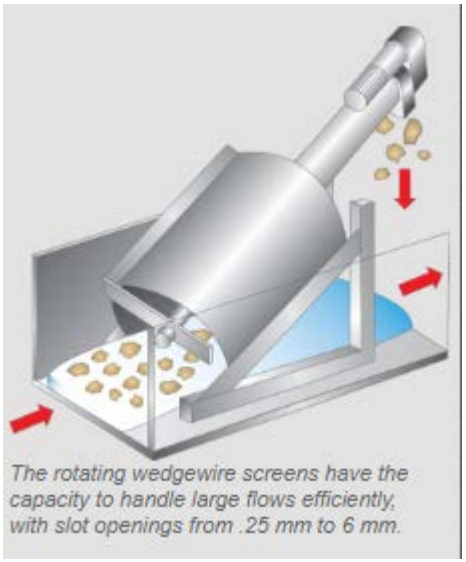
Important NOTE:

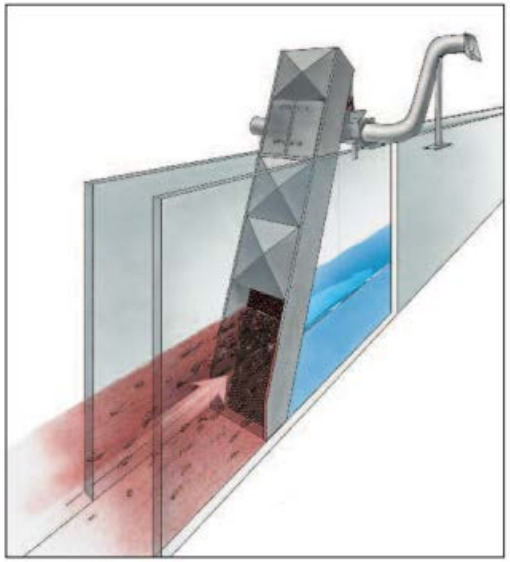


Do not get fooled by claims of “screen capture ratios” or SCRs. WEF has not established a SCR test for bar screens. Nor is there an agency in the US offering independent testing. Now a sidetrack….

A little side track

Drum screen, step screen, many others….





There are many types of screens available…..

Spiral Screens

Not a good idea from our experience….

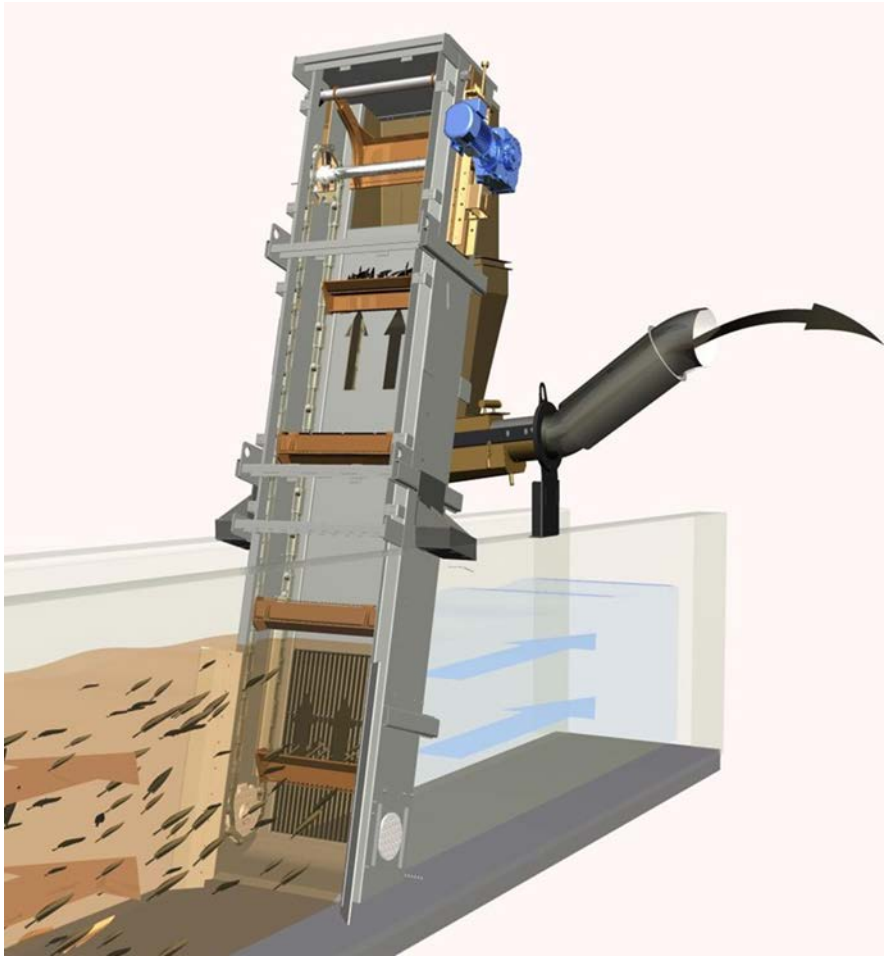
A little side track …..

The number of manufacturers is large.

And each of the screen designs has a niche market that is ideal for them.

Could spend days on this discussion.

Bar Screens

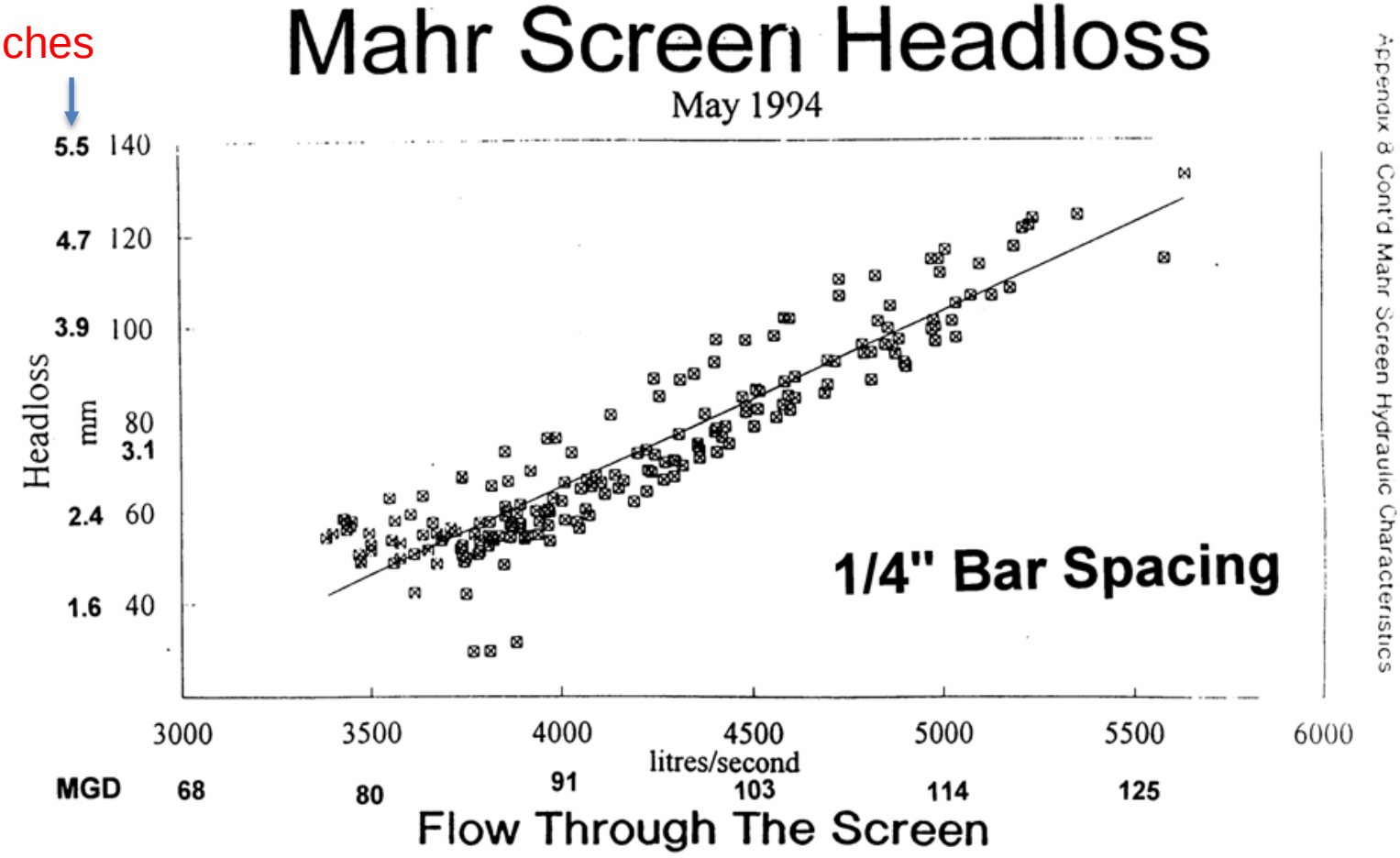


Great choice based on:

- Lowest operating cost
- Longest life
- lowest head loss
- lowest maintenance req.

Tested by Severn Trent Environmental Services
at the Minworth, Birmingham, UK WWTP

Inches



Perforated Plate screens…

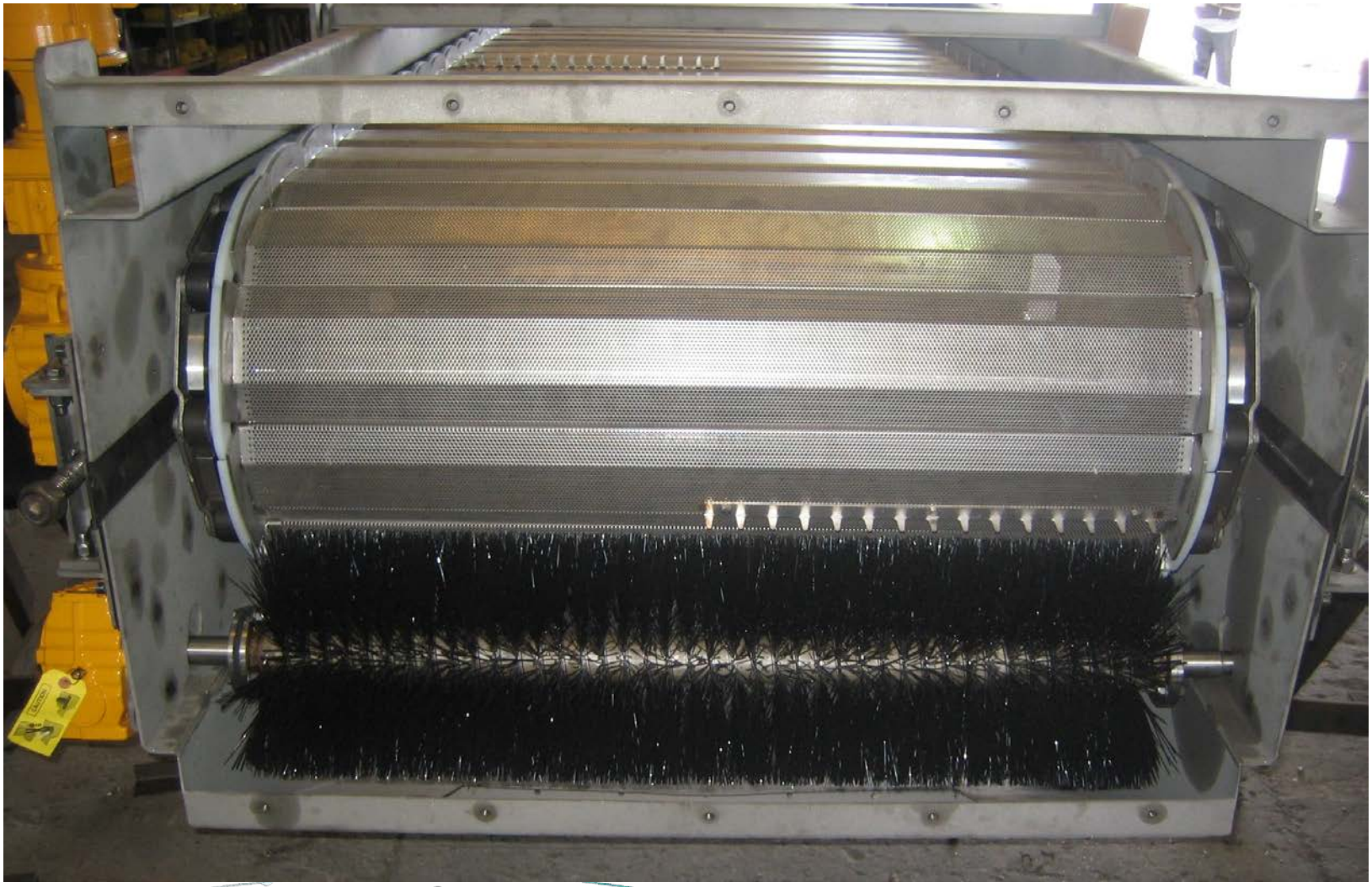
… requires spray water to clean plates

Has a brush and a brush drive to wipe off plates

Requires significant maintenance schedule to keep it running efficiently

Cannot handle impact loading

Perforator ™ brush location



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Bar screen with compaction, dewatering, and transport of screenings…..

Show the 1.5 minute video of a test done in 2016 at the Glenbard WWTP in Western suburbs of Chicago IL plant.

Test done in March or April.

Dropped 100 high visibility baby wipes into entry of WWTP

Collected wipes manually from screen to assess “capture rate”

Bar Screen removed over 95% of them

Discussion…

Summary and Conclusions.

Many solutions possible for wipes issue

- Pump them along
- Grind them
- Remove them from the flow.

The solution chosen is application dependent

- Flows
- Costs
- Space available, location
- Other factors.

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