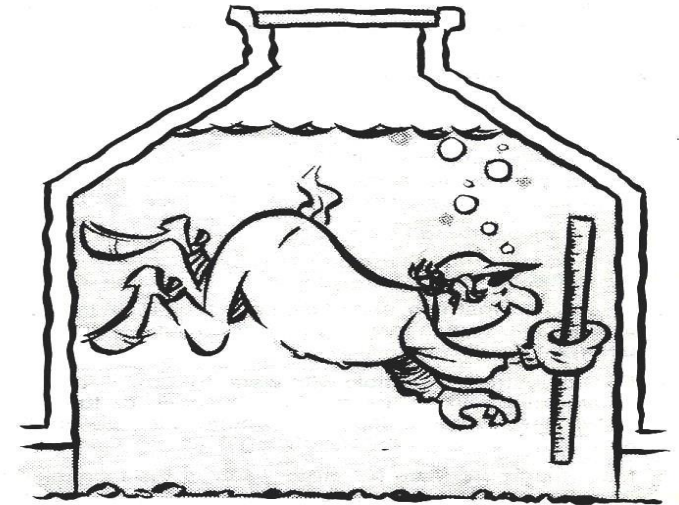


US-EPA's "Clean Watershed Needs Survey" Results Compared to Field Surveys

George E. Kurz, P.E., DEE
Independent Consulting Engineer &
Researcher



Objectives

- Introduce the EPA CWNS (Clean Watersheds Needs Survey)
- CWNS as a resource for Vendors, Operators, & Engineers
- Underground Infrastructure information in the CWNS
- Shortcomings of the CWNS
- Direct Measurement of I/I (Inflow & Infiltration)
- Compare results
- Conclusions – Suggested path forward



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EPA Clean Watersheds Needs Survey (CWNS) – 2022 Report and Data

- Estimates funds needed for the next 20 years
- Information collected from voluntary surveys by states
- 17th CWNS Report published in 2022
- A CSV file of all the results is available for download at:
https://sdwis.epa.gov/ords/sfdw_pub/r/sfdw/cwns_pub/data-download?session=7152800183851
- I/I needs are in Category III-a



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Data Dashboard

epa.gov/cwns



United States
Environmental Protection
Agency

Environmental Topics ▾

Laws & Regulations ▾

Report a Violation ▾

2022 CWNS Data


About


Needs Dashboard

Wastewater Dashboard


EPA Regions ▾
All Regions

States ▾
All States

Timeframe  ☒ Current (2022) ☐ Projected (2042)

2022 Population Served 

270,382,385

2022 Number of Publicly Owned Treatment Works 

17,544



Map Tool

Locate
individual
wastewater
facility

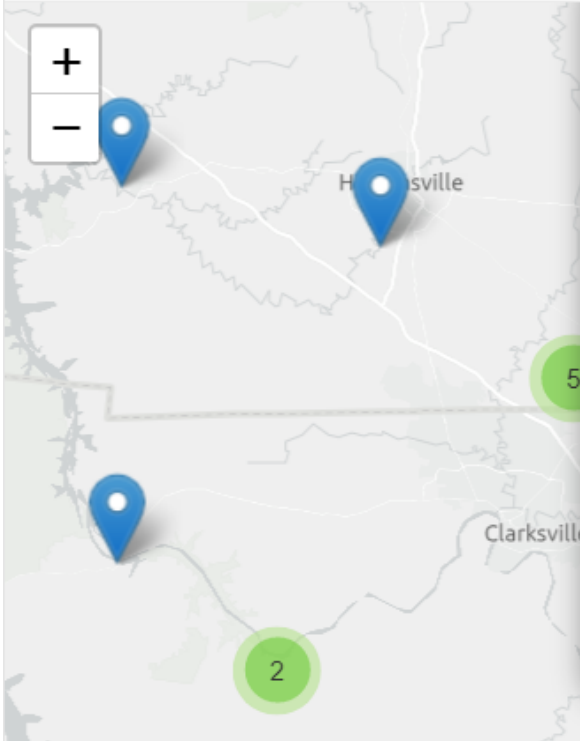
EPA Regions
All Regions

States
All States

Timeframe ☒ Current (2022) ☐ Projected (2042)

Apply Filters Reset Filters

+/- controls or selecting any point within the map. Select a marker to display popup information about each POTW.



Nashville - Central WWTP
NPDES Permit #TN0020575
CWNS ID #47001016001
Nashville, TN

Current Technical Information:
Total Design Flow: 100 MGD
Effluent Treatment Level: Advanced

Residential Population Served: 649,235

Discharge Type(s):
100% Outfall To Surface Waters

View POTW Connections

Zoom to a city, state, or ZIP



Needs – Cost Comparison

	Estimated Costs (\$)	Number of Municipal POTWs	Number of Responding POTWs	Number of Projects
All Wastewater Needs	\$346 Bill	17,544	10,565	21,679



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Needs – Cost Comparison

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Needs – Cost Comparison

	Estimated Costs (\$)	Number of Municipal POTWs	Number of Responding POTWs	Number of Projects
All Wastewater Needs	\$346 Bill	17,544	10,565	21,679
Collection Systems – Repair & Rehabilitation (Category III)	\$110 Bill	17,544	6,852	10,033
All I/I Needs (Category III-A)	\$12.6 Bill	17,544	2,124	2,384



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Needs – Cost Comparison

	Estimated Costs (\$)	Number of Municipal POTWs	Number of Responding POTWs	Number of Projects
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All I/I Needs (Category III-A)	\$12.6 Bill	17,544	2,124	2,384
Tennessee I/I Needs	\$294 Mill	251	42	145



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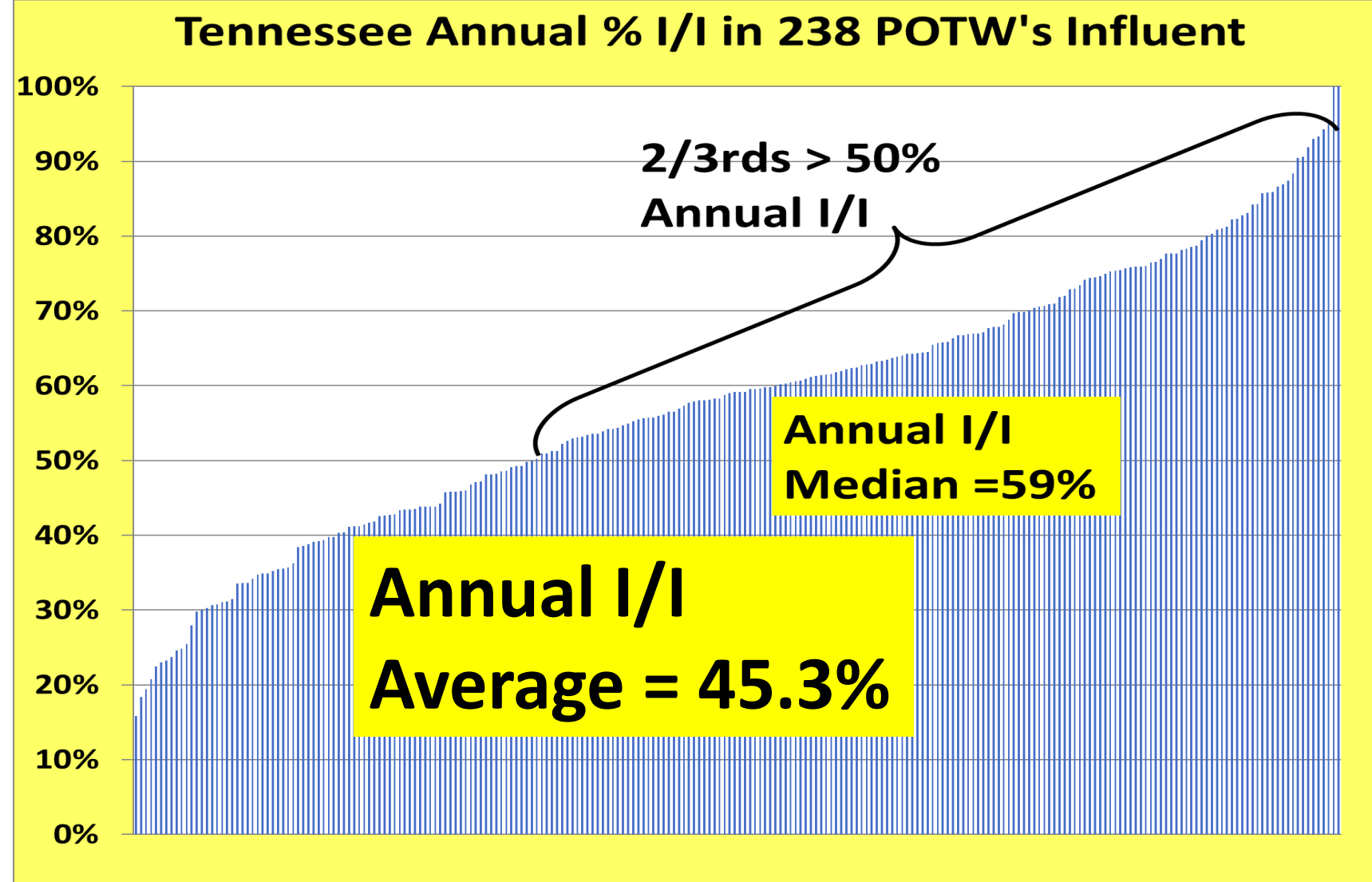
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Tennessee 2023

Statewide I/I



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Comparison to EPA 2022 CWNS - TN

EPA CWNS (Item III-A)

- 42 systems with “I/I problems”
- Estimated cost: \$294 Mill.
- Based on survey of agencies

Tenn. MOR Study

- 182 Systems Exceed Plant Capacity for 2-year, 24-Hr Storm
- 66 Systems Exceed Plant Capacity > 60 Days/Year
- Estimated cost to cut I/I By 50%: \$1.14 Bill.
- Based on 100% data



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I/I Perception vs. Reality

Tenn. NPDES Permit Applications

Average I/I =

20.2%

Tennessee ASCE Report Card

Annual Average I/I =

45.3%

**Most Public Agencies likely do not know
how to measure their own I/I !**

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Preliminary Conclusions

- The CWNS significantly underestimates the cost of I/I and I/I correction for Tennessee.
- It appears likely that this problem is underestimated nationally.
- Therefore, developing a national strategy is hindered.
- For I/I – tools and data are available for a better estimate.



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Simple Tools Are Available for Measurement

- Non-proprietary Excel spreadsheet publicly available
- Uses existing Monthly Operating Reports (MORs)
- Tennessee uses MOR spreadsheet to evaluate requests for moratorium relief
- Brentwood Tennessee Example: Before-After rehab – Using MOR spreadsheet



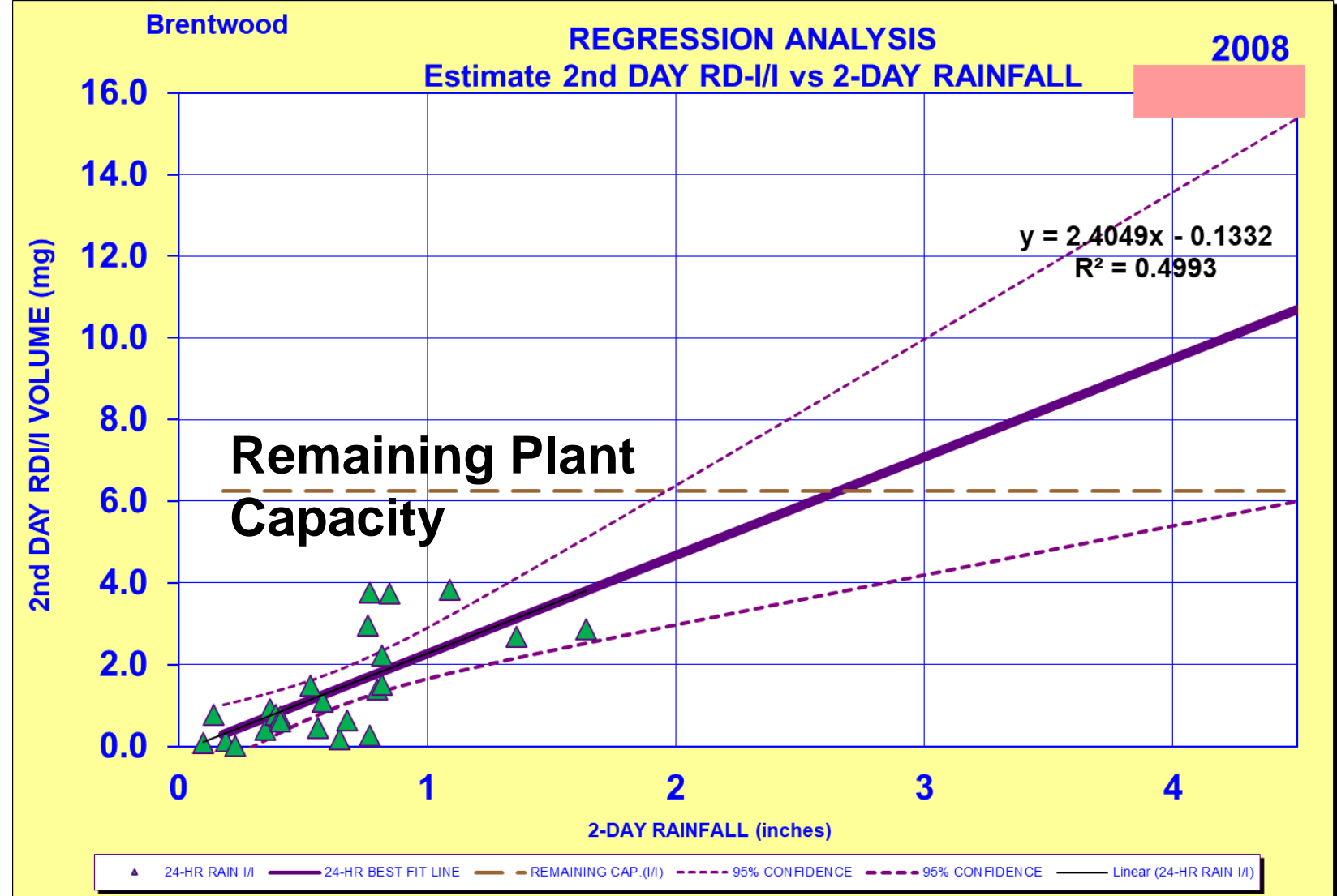
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Brentwood

RDI/I beginning
in 2008



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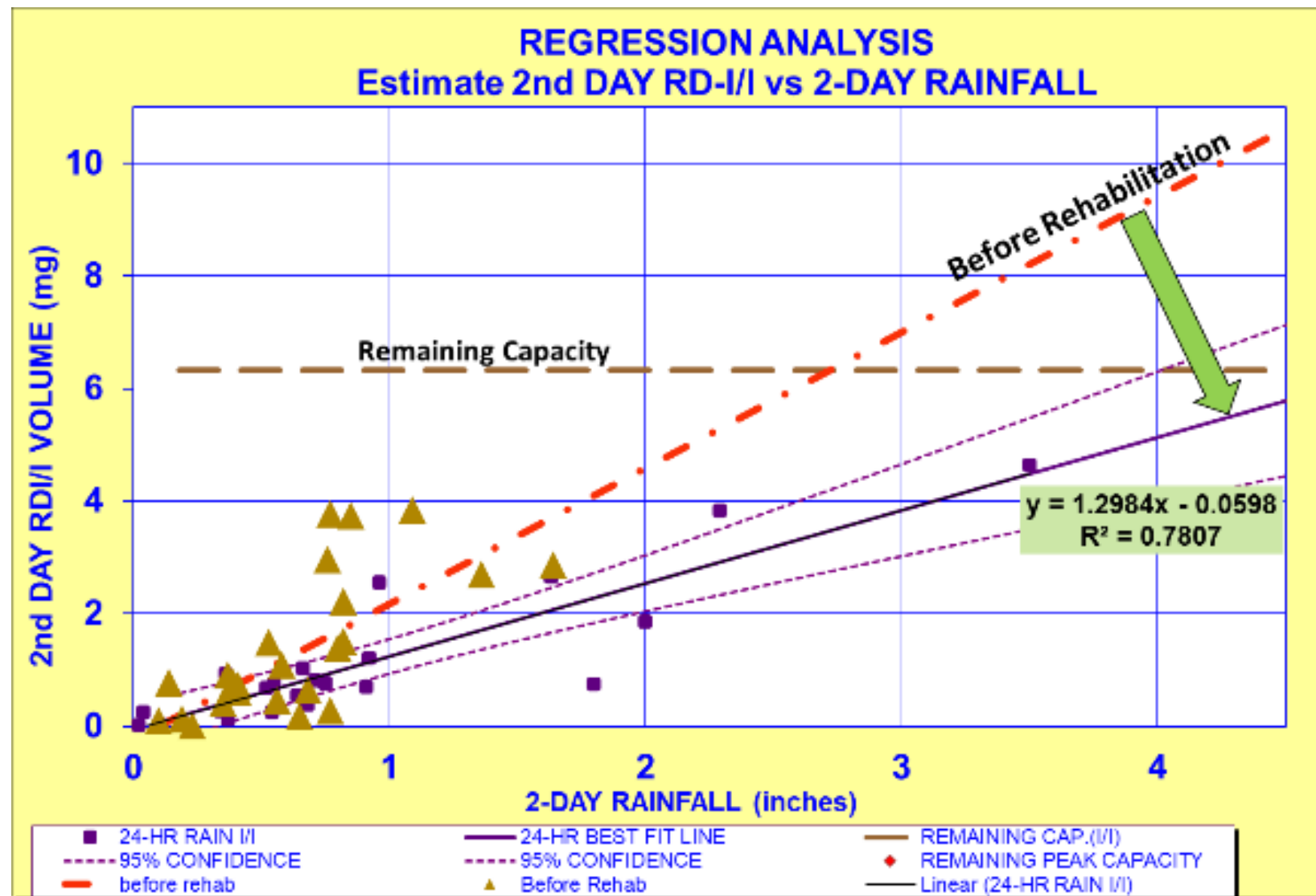
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Brentwood Reduction

~ 46% Reduction
By 2016



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Brentwood Summary Results

	2008	2016-17	% Reduction
Annual Rainfall (in)	46.62	52.56	
ADDWF-7 (mgd)	3.048	2.971	3%
Annual I & I (MG)	940	349	63 %
5-year projected RDI&I (MG)	10.69	5.78	46 %
24-hr Rainfall When RDI/I Exceeds Capacity (in)	2.6	4.9	Capacity OK



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Deficient I/I Control Strategies – Based on Poor Understanding of the Problem

- Stop Migration – Not Just “Stop Leaks” or “Stop SSOs”
- Regulatory Agencies Use the Number of SSOs (Overflows) to Quantify the Problem
 - ❖ - Like Waiting for a Heart Attack to See if You Have a Problem
 - ❖ - Use the Measurements of I/I !



ACKNOWLEDGEMENTS

Tennessee Division of Water Resources personnel:

For their daily service, and assistance in gathering MOR reports for this study

Cartoon illustrations from: Operation & Maintenance of Wastewater Collection Systems (Ken Kerri & John Brady – “Sacramento State course” US EPA)



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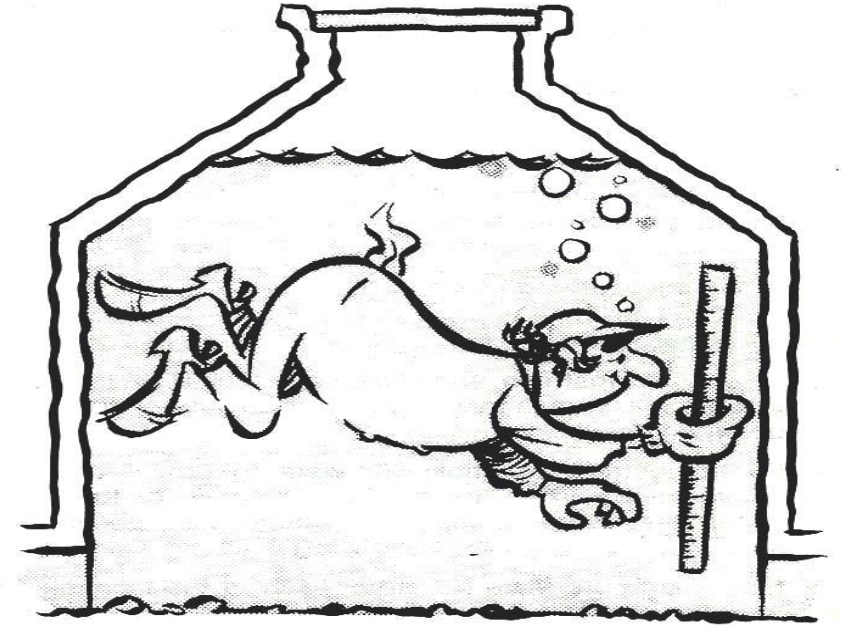
QUESTIONS ?

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