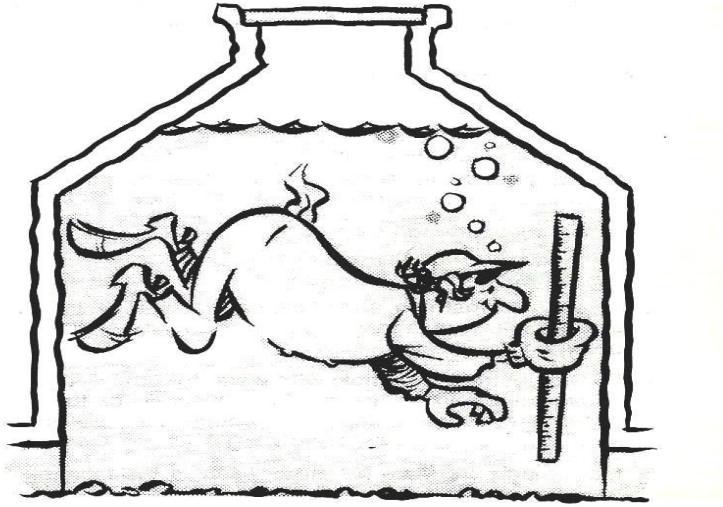
US-EPA's "Clean Watershed Needs Survey" Results Compared to Field Surveys

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



Underground Infrastructure Conference
Construction. Rehabilitation. Asset Management.
March 4-6, 2025 | Houston, TX
CELEBRATING 30 YEARS 1995 - 2025

Objectives

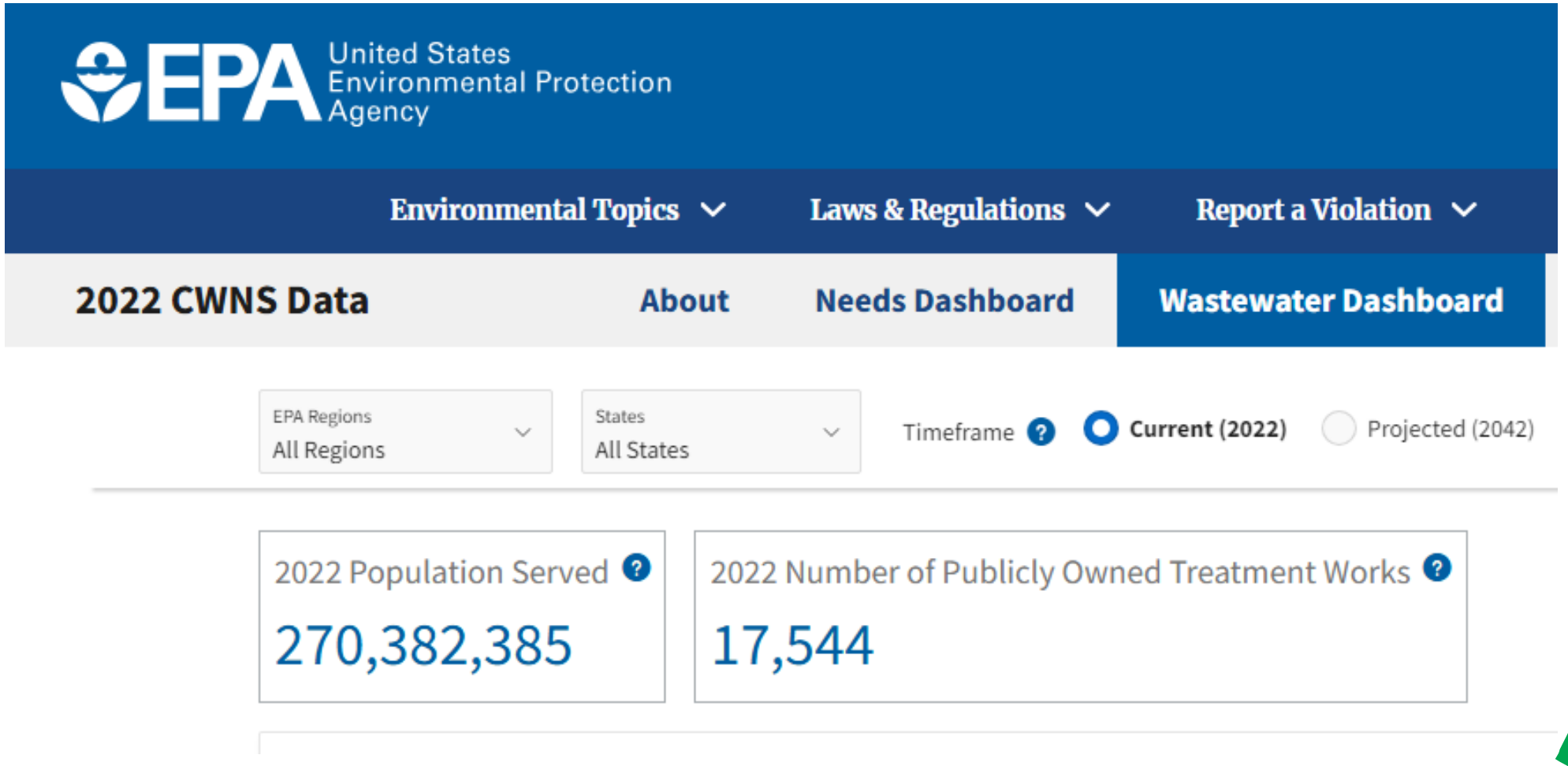
- Introduce the EPA CWNS (Clean Watersheds Needs Survey)
- CWNS as a resource for Vendors, Operators, & Engineers
- Underground Infrastructure information in the CWNS
- Shortcomings of the CWNS
- Direct Measurement of I/I (Inflow & Infiltration)
- Compare results
- Conclusions – Suggested path forward

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**

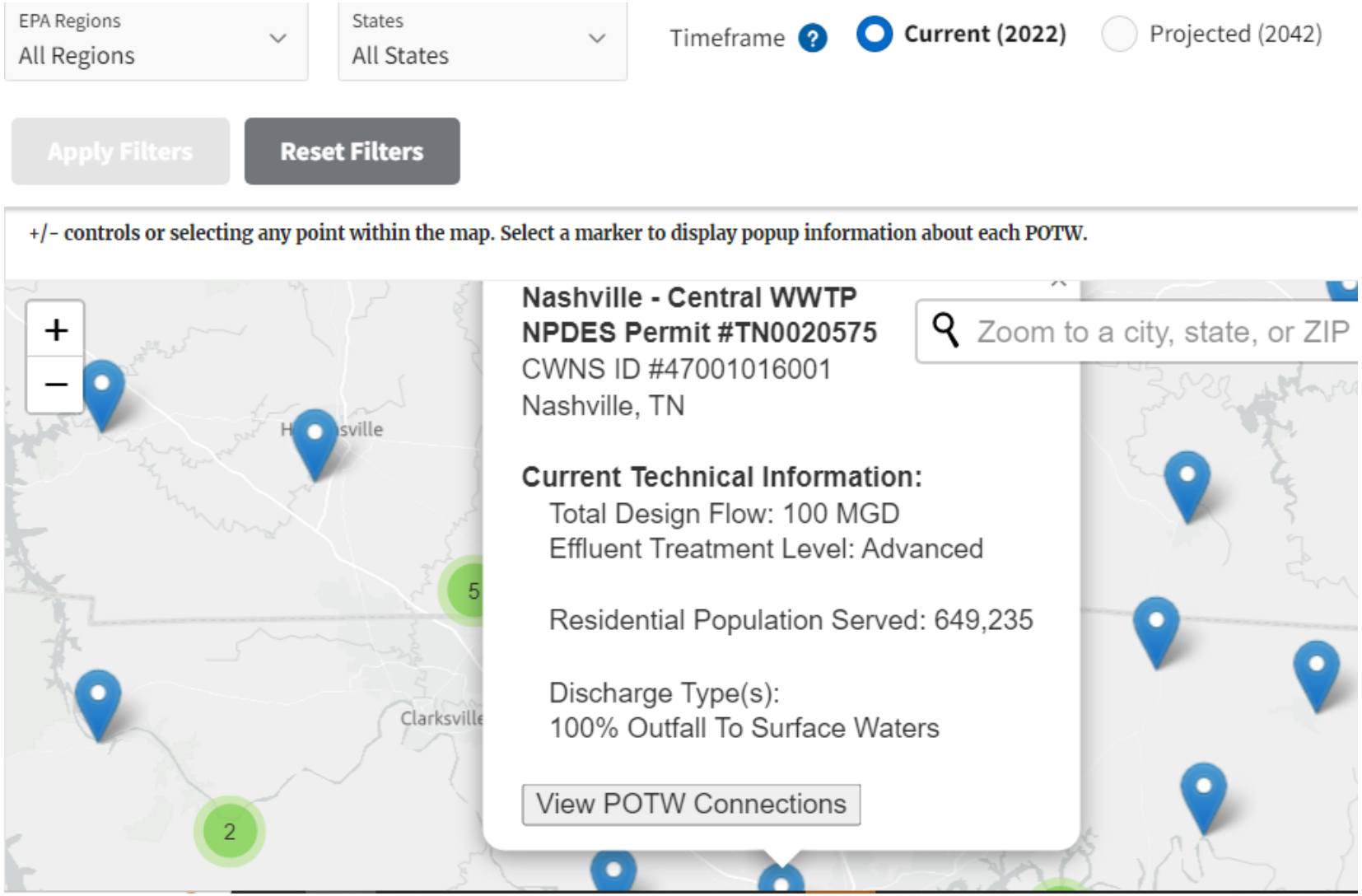
Data Dashboard

epa.gov/cwns



Map Tool

Locate individual wastewater facility



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

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

Needs – Cost Comparison

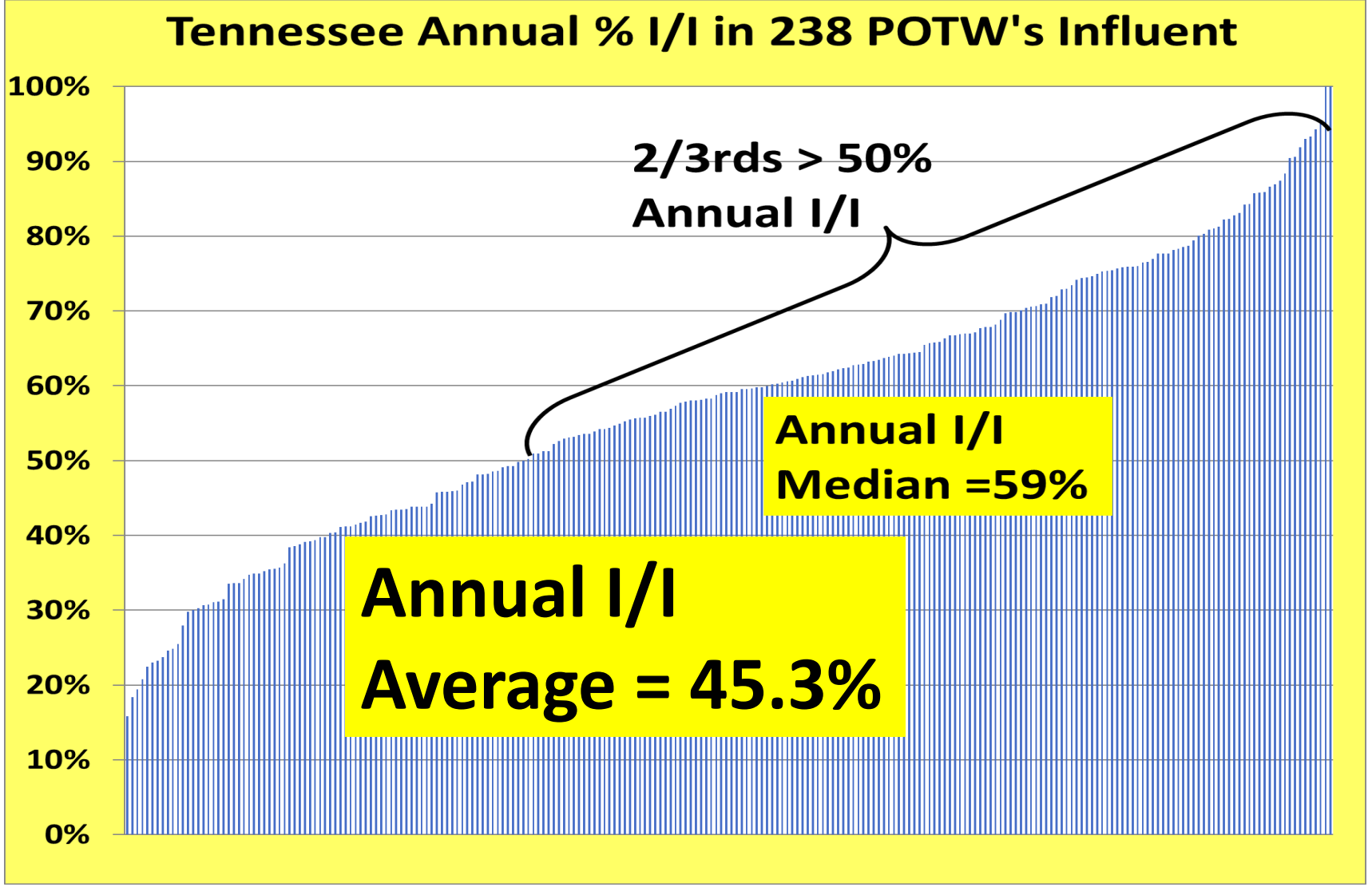
	Estimated Costs ($)	Number of Municipal POTWs	Number of Responding POTWs	Number of Projects
All Wastewater Needs	$346 Bill	17,544	10,565	21,679
Collection Systems – Repair & Rehabilitation (Category III)	$110 Bill	17,544	6,852	10,033
All I/I Needs (Category III-A)	$12.6 Bill	17,544	2,124	2,384

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
Tennessee I/I Needs	$294 Mill	251	42	145

Tennessee 2023

Statewide I/I



Comparison to EPA 2022 CWNS - TN

EPA CWNS (Item III-A)	Tenn. MOR Study
• 42 systems with “I/I problems”	• **182 Systems Exceed Plant Capacity for 2-year, 24-Hr Storm** • **66 Systems Exceed Plant Capacity > 60 Days/Year**
• Estimated cost: $294 Mill.	• **Estimated cost to cut I/I By 50%: $1.14 Bill.**
• Based on survey of agencies	• **Based on 100% data**

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 !

Preliminary Conclusions

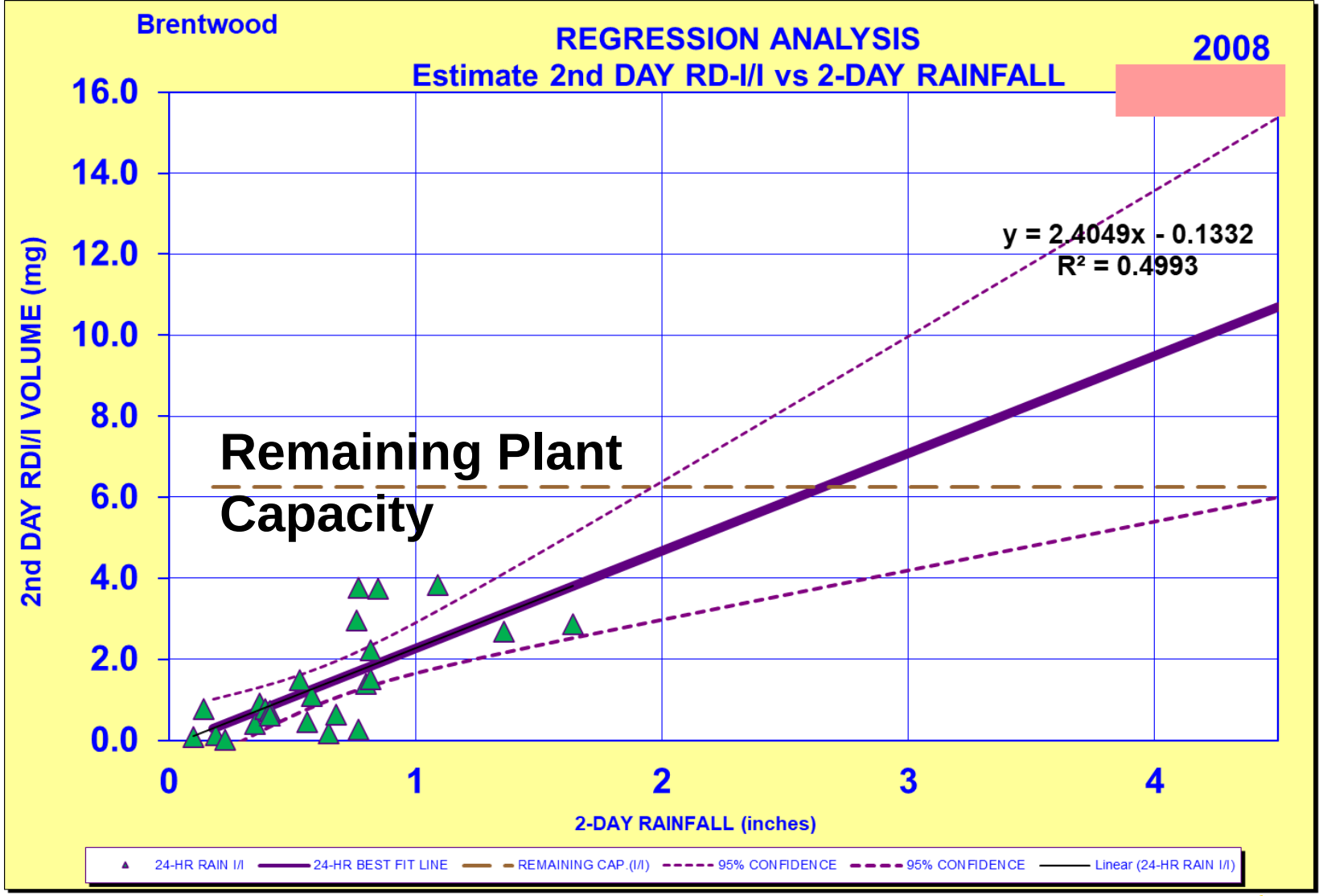
- The CWNS significantly underestimates the cost of I/I and I/I correction for Tennessee.
- It appears likely that this problem is underestimated nationally.
- Therefore, developing a national strategy is hindered.
- For I/I – tools and data are available for a better estimate.

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

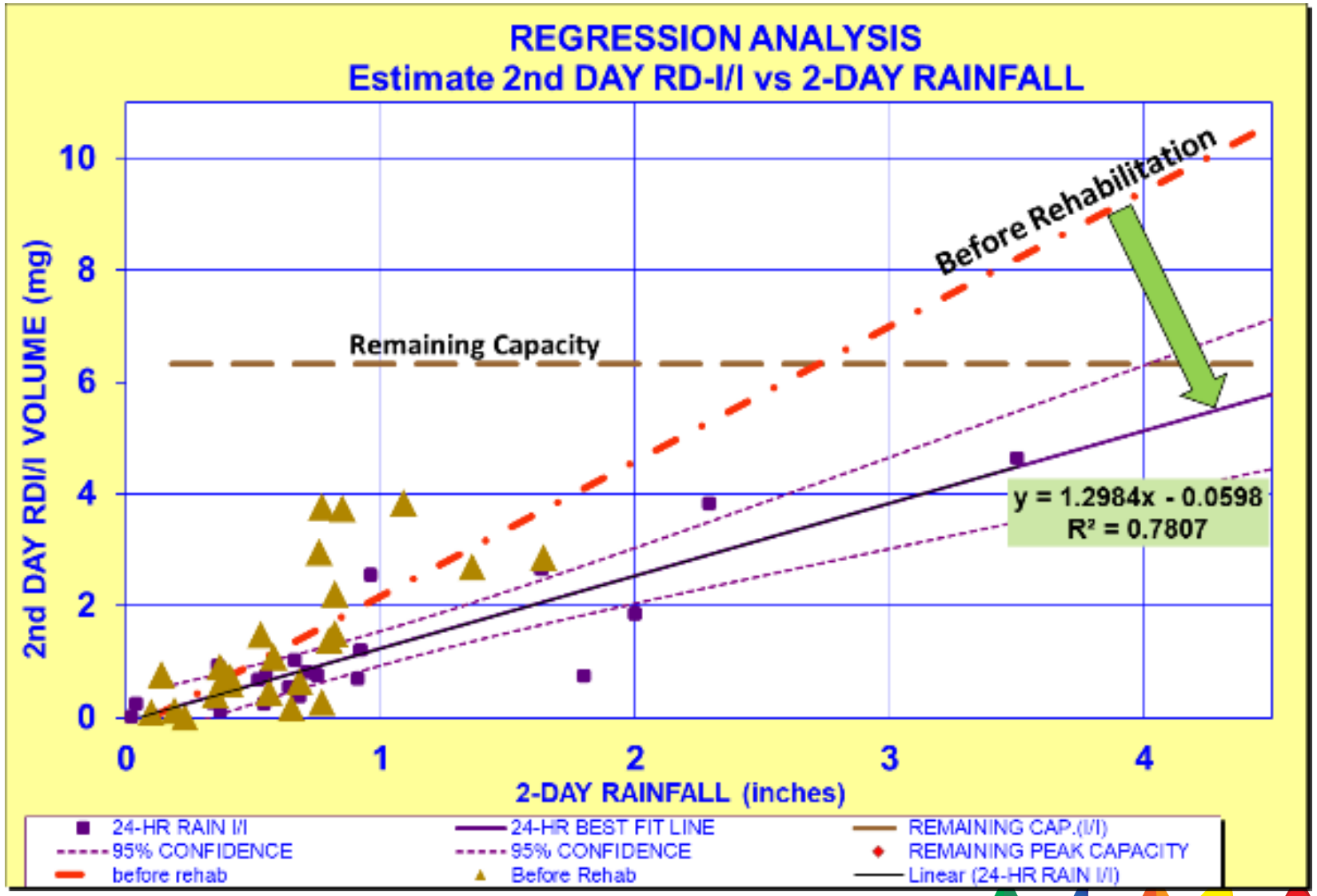
Brentwood

RDI/I beginning in 2008



Brentwood Reduction

~ 46% Reduction
By 2016



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**

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 !**

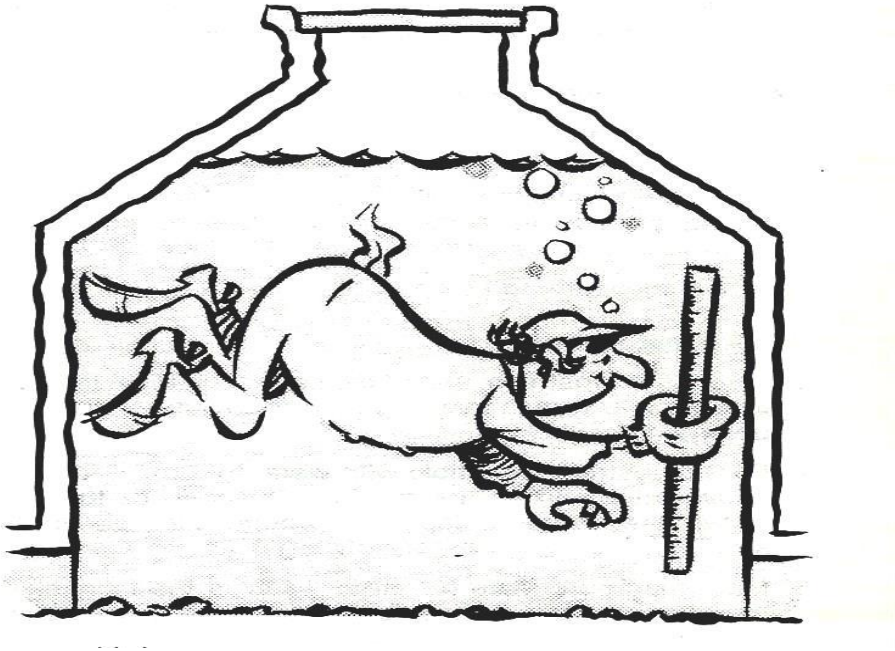
ACKNOWLEDGEMENTS

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)

QUESTIONS ?



George Kurz, P.E., DEE
(615) 714-6120
George.kurz@comcast.net
www.sewercapacitymanagement.weebly.com