Initial Insights from Compliance Information

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TCRDS Federal Advisory Committee
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This Meeting's Presentations

Objectives

Provisions

System compliance

Improvement

Research

TCR Compliance Analysis

FAC Questions Addressed in Presentation

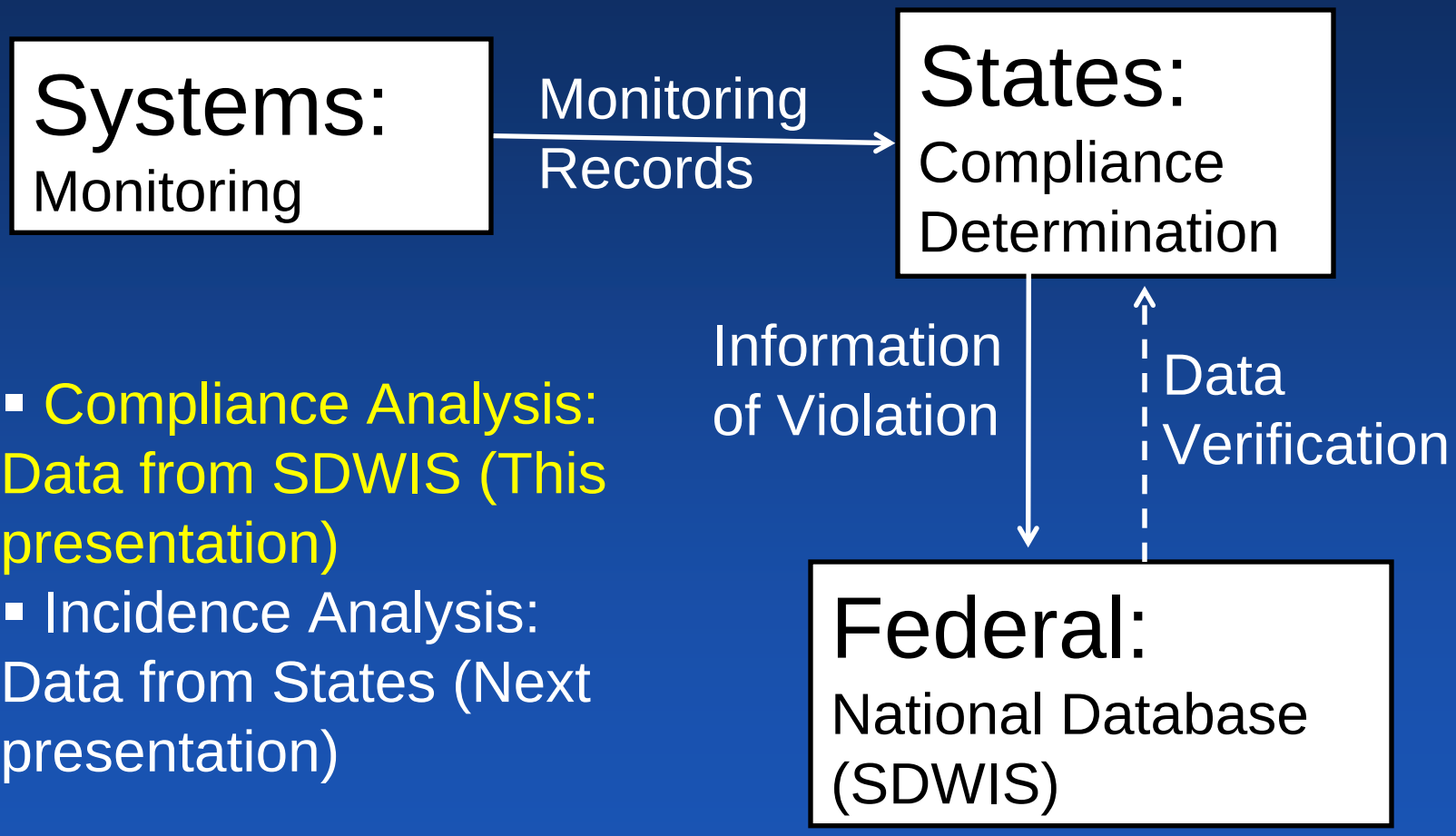
- How well are systems complying with the TCR?
- What types of systems are having problems with compliance?
- Differences in violation rates between states
- What else can we learn from the compliance information? For example, inform current national burden of current TCR, e.g. public notification

Purpose of Presentation

- Characterize MCL Violation Rates by System Type and Size
- Characterize MCL Violation Rates by State

- Analysis is based on the CY 2005 data
  - (See the Appendix for Year Trend of Violation Rates)

Data Collection Process



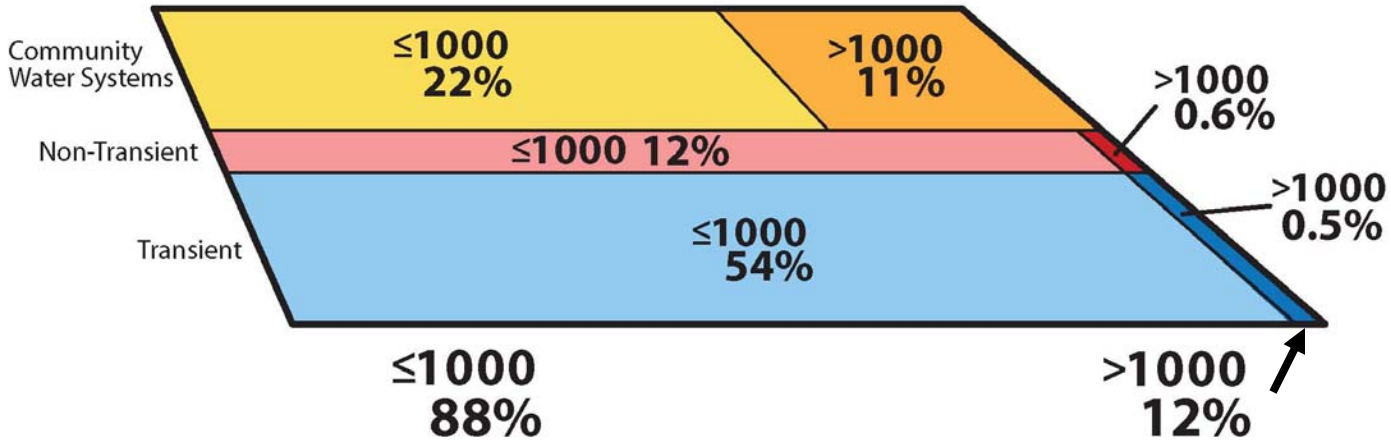
- Compliance Analysis: Data from SDWIS (This presentation)
- Incidence Analysis: Data from States (Next presentation)

Context—Most Systems are Small

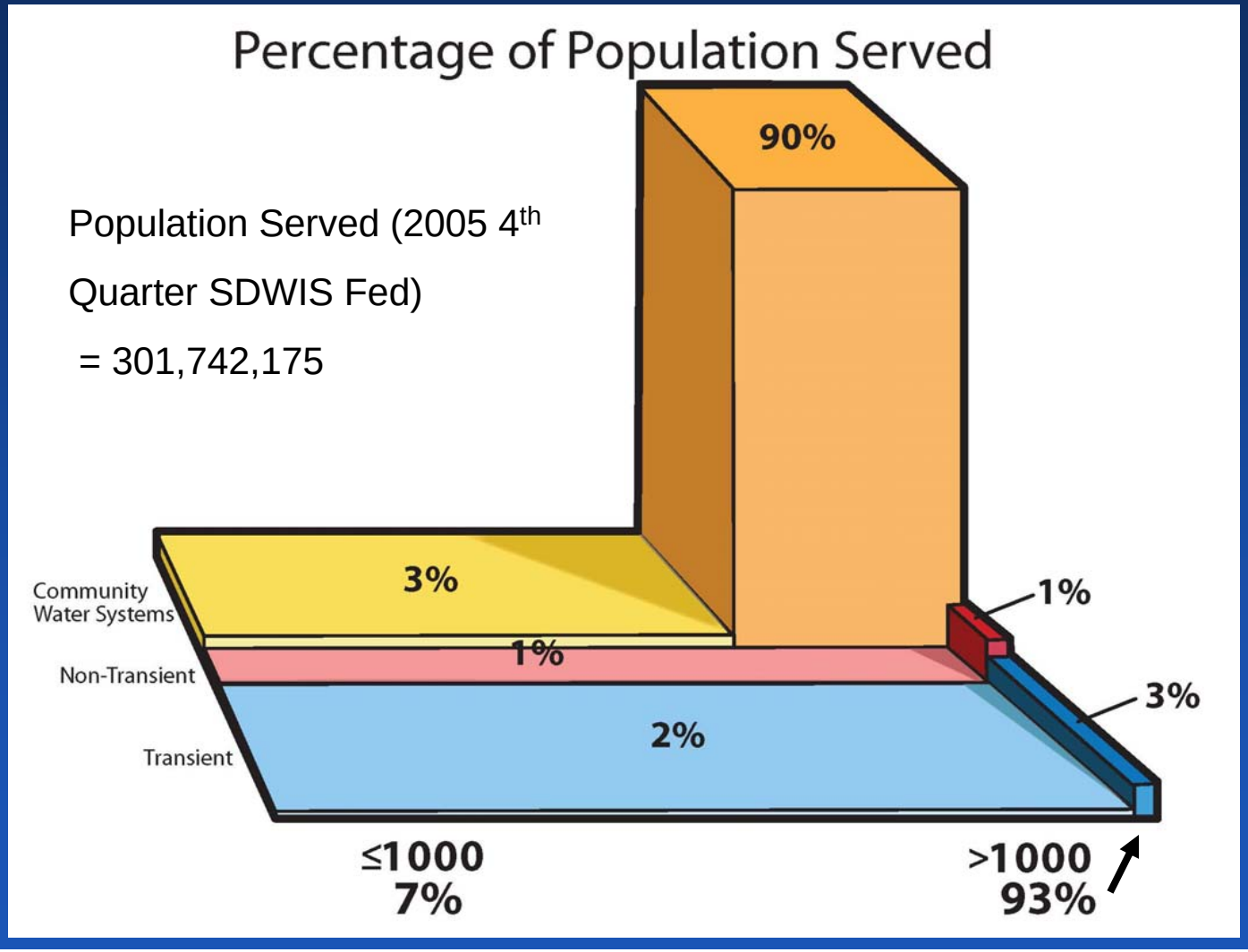
Percentage of Systems

Number of Systems (2005 4th Quarter SDWIS Fed)

= 157,945



Context—Most People Are Served by Systems Serving Over 1,000



General Caveats for Interpretation of Violation Data

- MCL violation rates may be underestimated because of missing measurements
- This analysis does not include Monitoring & Reporting violations (work in progress)
- Completeness and accuracy of SDWIS-FED
  - Some violations aren't reported (incompleteness)
  - Some reported "violations" are not truly violations (inaccuracy)
  - Information available from DV process
- TWG has not yet resolved impacts of above issues

Definitions

- Nonacute MCL Violation
  - For systems taking fewer than 40 routine samples per month with more than one sample/month TC+

    <u>OR</u>
  - For systems taking more than 40 routine samples per month with more than 5.0% samples/month TC+
- Acute MCL Violation
  - PWS has at least two TC+ samples (routine / repeat) and at least one of those is fecal coliform- or E. coli-positive
- Monitoring and Reporting Violations
  - Not included in this presentation

Nonacute MCL Violation by System Type

Key Observations:

- Little difference on nonacute violation rates across system types
- Most systems having violations had only one in 2005

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System Type	Systems with No Violation	Systems with One Violation	Systems with More Than One Violation
CWS	47,587 (95.48%)	1780 (3.57%)	471 (0.95%)
NTNCWS	17,038 (95.33%)	653 (3.65%)	182 (1.02%)
TNCWS	79,464 (95.94%)	2755 (3.33%)	606 (0.73%)
All	143,089 (95.69%)	5,188 (3.47%)	1,259 (0.84%)

Note: Based on the data in 2005. State of Ohio, Tribes, and Territories are not included

Acute MCL Violation by System Type

Key Observations:

- Little difference on acute violation rates across system types
- 99.6% of systems have no acute violation
- Majority of violations occur in TNCWS and NTNCWS

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System Type	Systems with No Violation	Systems with One Violation	Systems with More Than One Violation
CWS	49,682 (99.69%)	150 (0.30%)	6 (0.01%)
NTNCWS	17,802 (99.60%)	68 (0.38%)	3 (0.02%)
TNCWS	82,454 (99.55%)	348 (0.42%)	23 (0.03%)
All	148,938 (99.60%)	566 (0.38%)	32 (0.02%)

Note: Based on the data in 2005. State of Ohio, Tribes, and Territories are not included

MCL Violation Rates by System Size

Key Observation:

- Systems taking more than 40 samples per month (serving >33,000) have lowest nonacute violation rates

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System Size	Nonacute		Acute	
	# of Systems Having at Least One Violation	% of Systems Having at Least One Violation	# of Systems Having at Least One Violation	% of Systems Having at Least One Violation
<=1,000	5,690	4.28%	544	0.41%
1,001-4,100	424	4.09%	23	0.22%
4,100-33,000	309	5.15%	22	0.37%
33,001-100,000	19	1.94%	6	0.61%
>100,000	5	1.34%	3	0.80%

Note: Based on the data in 2005. State of Ohio, Tribes, and Territories are not included. Those systems with unknown source water type are not included.

MCL Violation Rates by "Conventional" System Size Category

Key Observation:

- Systems >100,000 have significantly lower nonacute violation rates

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System Size	Nonacute		Acute	
	# of Systems Having at Least One Violation	% of Systems Having at Least One Violation	# of Systems Having at Least One Violation	% of Systems Having at Least One Violation
<=500	5,345	4.32%	513	0.41%
501-3,300	717	3.91%	52	0.28%
3,301-10,000	232	4.94%	13	0.28%
10,001-100,000	148	4.29%	17	0.49%
>100,000	5	1.34%	3	0.80%

Note: Based on the data in 2005. State of Ohio, Tribes, and Territories are not included. Those systems with unknown source water type are not included.

MCL Violations by System Type among Systems <=500

Key Observations:

- 73% of systems with violations are TNCWS and NTNCWS

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System Type	Nonacute		Acute	
	# of Systems Having at Least One Violation	% of Systems Having at Least One Violation	# of Systems Having at Least One Violation	% of Systems Having at Least One Violation
CWS	1,418	5.02%	94	0.33%
NTNCWS	718	4.69%	60	0.39%
TNCWS	3,209	4.01%	359	0.45%
All	5,345	4.32%	513	0.41%

Note: Based on the data in 2005. State of Ohio, Tribes, and Territories are not included. Those systems with unknown source water type are not included.

MCL Violations by Source Water Type among CWSs

Key Observations:

- GWs have about two times higher nonacute violation rate than SWs
- Difference among acute violation rates is small among GW CWS vs SW CWS

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MCL Violation Type	GW CWS		SW CWS	
	# of Systems Having at Least One Violation	% of Systems Having at Least One Violation	# of Systems Having at Least One Violation	% of Systems Having at Least One Violation
Nonacute	1,982	5.23%	269	2.42%
Acute	123	0.32%	33	0.30%

Note: Based on the data in 2005. State of Ohio, Tribes, and Territories are not included. Those systems with unknown source water type are not included.

GW CWS MCL Violation Rates by Disinfection Status

Key Observation:

- GW systems of unknown disinfection status have higher MCL violation rates than disinfected GW system

(see the appendix for disinfecting systems by state)

	Nonacute	Acute
Disinfected (26,804 systems)	3.3%	0.3%
Unknown (11,795 systems)	8.4%	0.6%

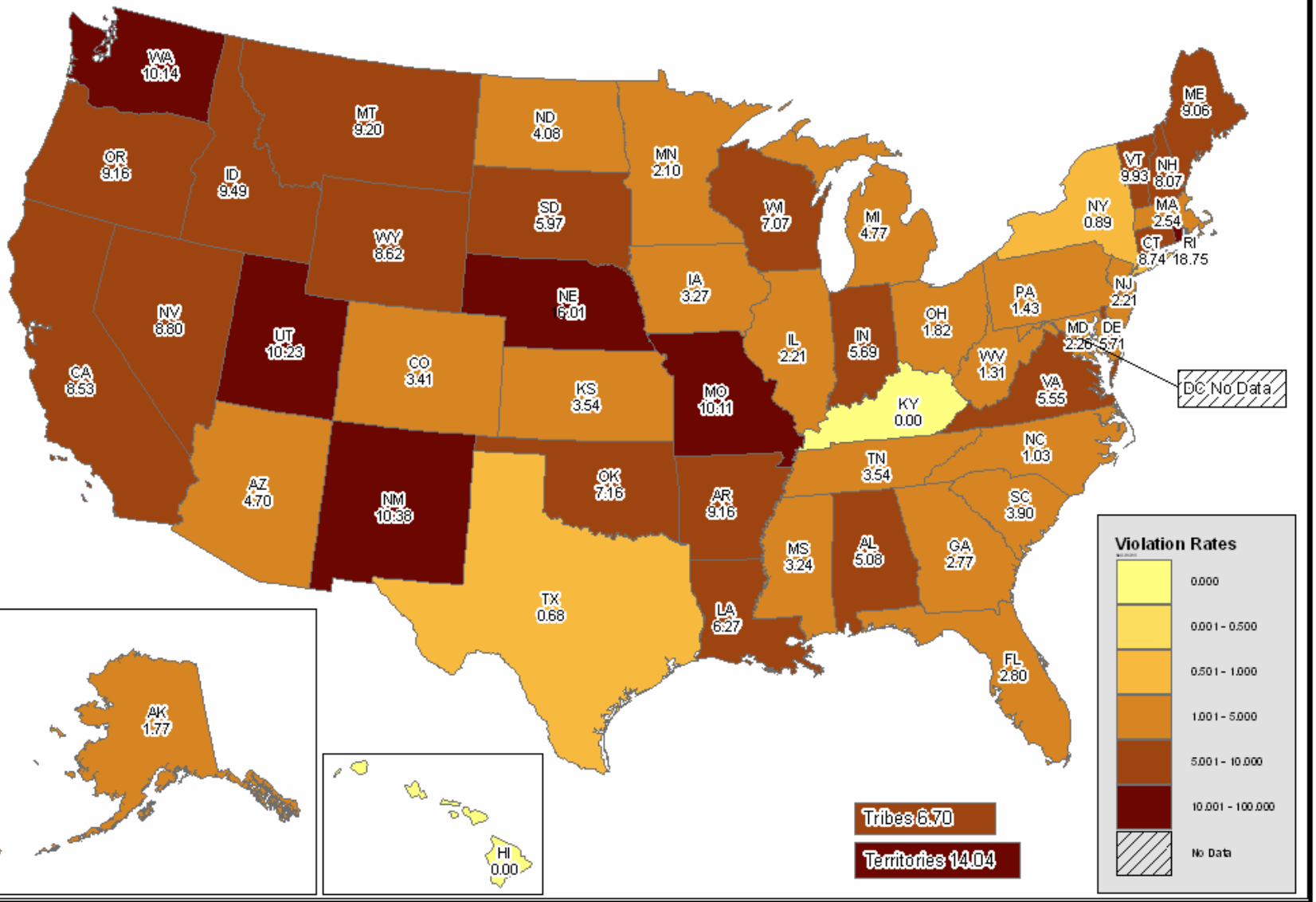
Note: Disinfected systems are those systems indicating disinfection as one of their treatment objectives in SDWIS. Based on 2005 data.

State Variability of MCL Violation Rates

- Nonacute and acute MCL violation rates differ by more than ten fold across states
- See next slide for example map

(See appendix for additional maps and numbers)

Non-Acute Violation Rates among GW CWSs <= 1000
(Percentage of Systems with at least one violation in 2005 By State)



Key Observations on MCL Violations

- Annual violation rates are about 0.4% (acute) & 4.3% (nonacute) for all systems
- Relatively small difference on violation rates between CWS & NCWS
- Nonacute violation rates are about twice as high among GW CWS vs SW CWS
  - Little difference among acute violation rates

Key Observations on MCL Violations (continued)

- Small difference in violation rates among size categories
  - Systems taking more than 40 samples per month (serving >33,000) have lowest nonacute violation rates
- Most systems having MCL violations have only one per year
- GW CWS of unknown disinfection status have about twice as high violation rates as disinfected GW CWS

Appendices for MCL Violation Analysis

1. System Inventory Information in 2005
   - By System category (1 page)
   - By state (1 page)
2. Year Trend of MCL Violations
   - By System category (2 pages)
   - By state (4 pages)
3. MCL Violations by Size & Source Water Types (4 pages)
4. Inventory Info. and Violations by State in 2005
   - Number (5 pages)
   - Maps (16 pages)
5. Percentages of GW CWS with Disinfection by State (2 pages)