Agenda Item 6.5

Study No. 3
Regionalization Strategies to Assist Small Water Systems in Meeting New SDWA Requirements

October 29, 2008

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Purpose and Scope

- ✓ Identify two candidate systems for regionalization
  - Safe Drinking Water Act compliance issues
  - Documented interest in being evaluated
- ✓ Evaluate candidate systems
  - Engineering considerations
  - Financial considerations
  - Other regionalization considerations

Spectrum of Regionalization

→ Increasing Transfer of Responsibility →

Internal Changes	Informal Cooperation	Contractual Assistance	Joint Powers Agency	Ownership Transfer
Completely self-contained. Requires no cooperation or interaction with other systems	Work with other systems but without contractual obligations	Requires a contract, but contract is under system's control	Creation of a new entity by several systems that continue to exists as independent entities (*e.g.* regional water system)	Takeover by existing or newly created entity
Examples: • Installing meters • Changing billing system • Implementing an environmental management system	***Examples:*** • Sharing equipment • Sharing bulk supply purchases • Mutual aid arrangement	***Examples:*** • Contracting operation and management •Outsourcing engineering services • Purchasing water	***Examples:*** • Sharing system management • Sharing operators • Sharing source water	***Examples:*** • Acquisition and physical interconnection • Acquisition and satellite management • One system transferring ownership to another to become a larger existing system or entity

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Methodology

- Obtained TCEQ data and regional inspector recommendations
- Identified geographic groupings of "problematic" PWSs
- Contacted PWSs in three areas to gauge interest in regionalization and determine biggest issues of concern
  - ✓ Burleson-Washington County area
  - ✓ Falls-Hill-Limestone-McLennan County area
  - ✓ Abilene area (3 subgroups)

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PWS Screening Statistics

- ✓ **Evaluated PWSs using chemical MCL violations, MCL exceedences, coliform (TCR) violations, turbidity violations, and deficiency scores**

Screening Criterion	Number per PWSs (2005-2008)	
	Max	Median*
MCL Violations	19	4.5
MCL Exceedences	57	3
70% MCL Exceedences	95	5
TCR Violations	11	1
Turbidity Violations	12	1
Deficiency Scores	206	7

*Median is the median value for a subset of data containing non-zero values

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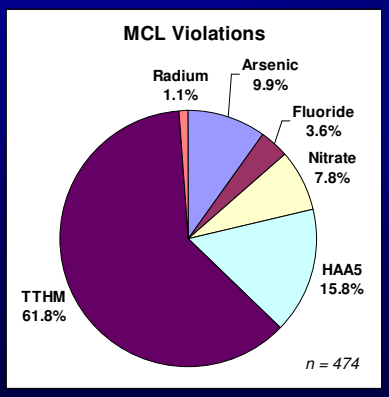
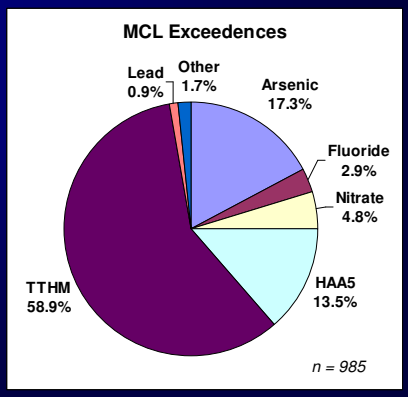
PWS Screening Statistics

- ✓ **Most commonly violated and exceeded MCL chemicals were the TTHM and HAA5 disinfection byproducts, arsenic, and nitrate**





TTHM = total trihalomethanes, HAA5 = haloacetic acids

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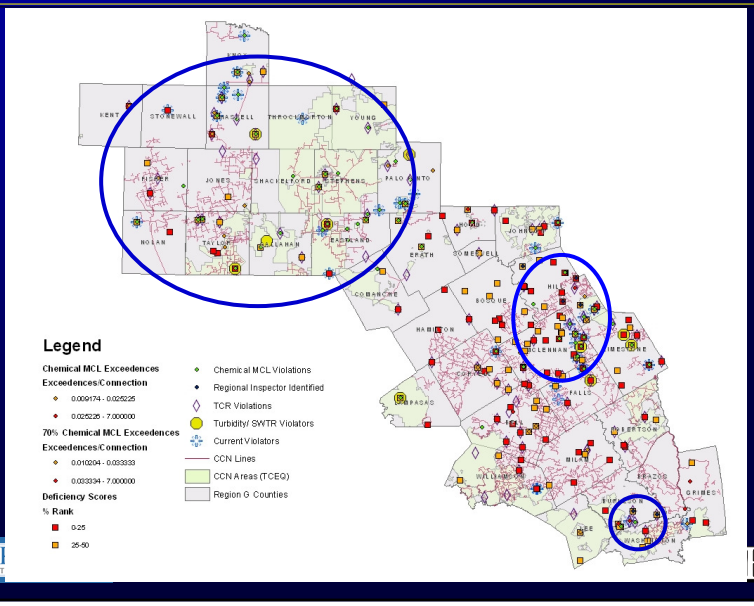
Initial Screening of Region G PWSs



Survey Responses

- ✓ 71% response rate for targeted PWSs
- ✓ Over 80% of surveyed PWSs have an interest in regionalizing resources

Regional Group	Number of PWS Responding	Interested?	
		Yes	No
Burleson-Washington Group 1	7	5	2
Falls-Hill-Limestone-McLennan Group 2	14	10	4
Abilene Group 3A	10	9	1
Abilene Group 3B	11	11	0
Abilene Group 3C	11	8	3

PWS Issues of Concern

✓ Many systems have unique needs and priorities

Issue	Burleson-Washington Group1	Falls-Hill-Limestone-McLennan Group 2	Abilene Group 3A	Abilene Group 3B	Abilene Group 3C	All
Treatment (MCL, taste/ odor)		8	6	3		17
Water lines	2	3	2	3	5	15
Other infrastructure (tanks, clarifiers, pumps, meters, valves)	1	2	1	2	2	8
Qualified operator	2	3			1	6
Operator training				2		2
Backup operator	2	2	1		1	6
Financial	3	1		3	4	10
Administrative and billing	1	2	1	3		6
Water resources		3		2		5
Equipment	1	2	3	3		8
Testing/ Inspection/ Repairs	2		1	1		4
Energy/ Electric		2		2		4
Mechanical		1				1
Mapping				1		1
Number of PWSs responding	7	14	10	11	11	53

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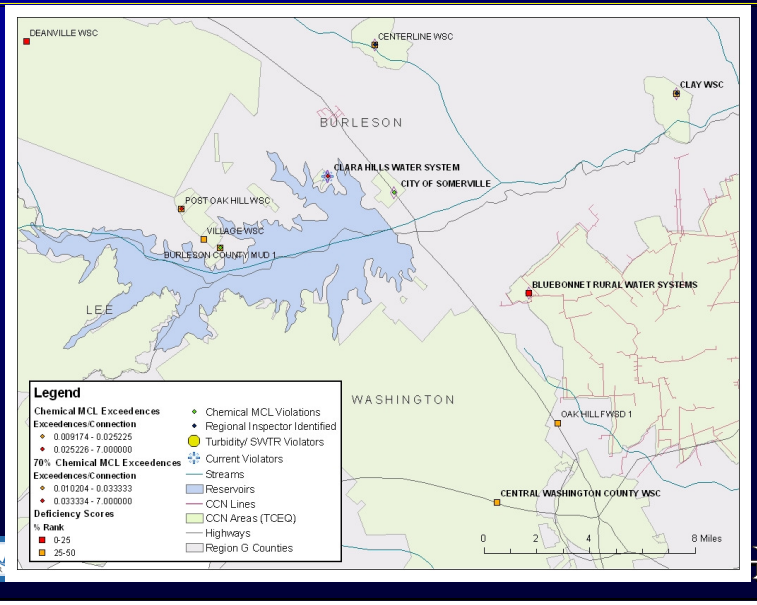
Group 1: Burleson-Washington Area



Group 1: Burleson-Washington Area

- ✓ Issues of concern
  - Funding for projects
  - Infrastructure improvements (e.g. water lines)
  - Qualified, licensed operators
- ✓ Five interested systems
  - Some history of working together
- ✓ Not recommended as a candidate area for regionalization
  - No overwhelming SDWA compliance issues
  - Sporadic interest
  - …But regional sharing of operators or managerial oversight a possibility

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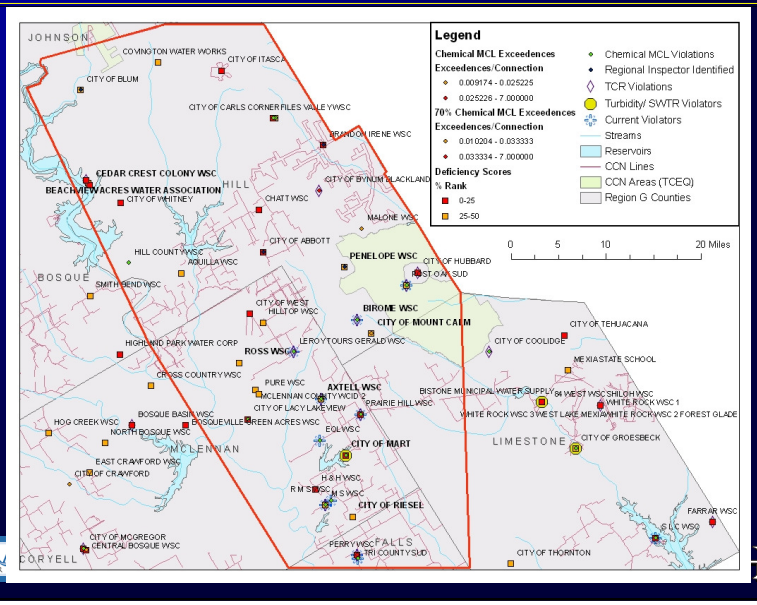
Group 2: FHLM Area



Group 2: FHLM Area

- ✓ Issues of concern
  - High arsenic concentrations in groundwater affecting 15 systems
  - High TTHM concentrations affecting 5 systems (western Hill County)
- ✓ Ten interested systems
  - FHLM partnership already formed to look at arsenic mitigation alternatives
- ✓ Recommended as candidate group for regionalization
  - High risk to human health
  - High political feasibility of working together

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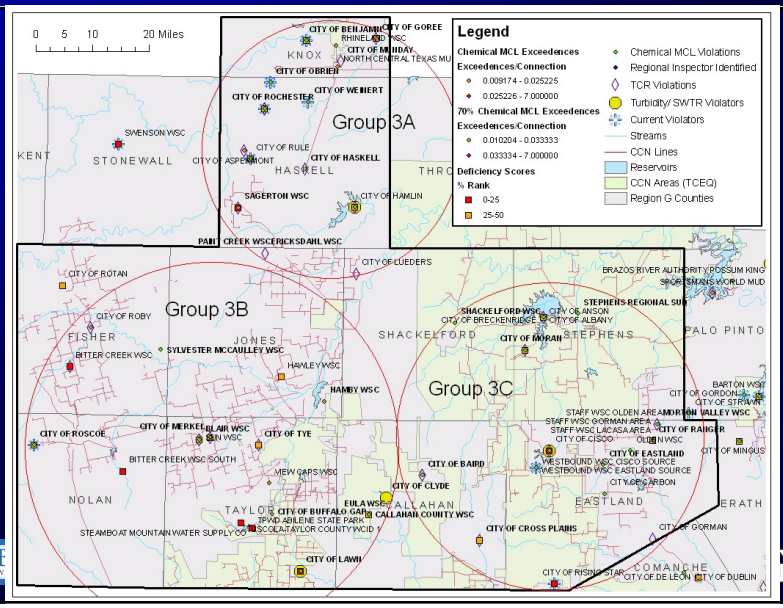
Group 3: Abilene Area



Group 3A: Abilene Area

Haskell, North Jones, Northwest Shackelford, and South Knox

- ✓ Issues of concern
  - High nitrate concentrations in groundwater
  - Need for infrastructure improvements
  - Equipment/ parts/ contract repair sharing
- ✓ Nine interested systems
  - Four non-member* systems: nitrate biggest concern
  - Five other systems: infrastructure and other issues biggest concern
- ✓ Recommended as candidate group for regionalization
  - High risk to human health
  - Non-member systems express interest in working together to find solution

* Non-member signifies not a member of North Central Texas Municipal Water Authority

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Group 3B: Abilene Area

Fisher, South Jones, Nolan, Taylor, West Callahan

- ✓ Issues of concern
  - Infrastructure replacement
  - Equipment sharing
  - Emergency power
  - Elevated DBPs for purchased water systems
    - ✓ Mentioned as issue of concern by only one system
    - ✓ 31 DBP violations for five systems since 2005 (9 violations since 2007)
    - ✓ Systems boost disinfection occasionally
- ✓ Eleven interested systems
  - Some history of working together (interlocal agreements, purchased surface water arrangements, etc.)
- ✓ Not recommended as candidate group for regionalization
  - Issues of concern not strongly shared by other systems
  - …But can remaining DBP issues be solved with shared managerial or operational resources?

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Group 3C: Abilene Area

Stephens, Eastland, East Shackelford, East Callahan

- ✓ Issues of concern
  - Financial issues
  - Water distribution lines and other infrastructure
  - Elevated DBPs
    - ✓ 116 violations for 14 systems since 2005 (14 violations for 5 systems since 2007)
    - ✓ Not mentioned as a concern by PWSs
    - ✓ Four systems also have coliform issues so complications of simultaneous compliance
- ✓ Eight interested systems
  - Some history of working together (shared operators, purchased surface water arrangements, etc.)
- ✓ Not recommended as candidate group
  - Mostly infrastructure (and not SDWA) concerns
  - …but can remaining DBP (and coliform) compliance issues be solved by sharing managerial/ operational resources?

Candidate Group: FHLM Area

- ✓ Interested Systems
  1. Axtell WSC
  2. City of Mount Calm
  3. City of Riesel
  4. Ross WSC
  5. Birome WSC
  6. City of Mart
  7. Penelope WSC
  8. Parker WSC
  9. Cedar Crest Colony WSC
  10. Beachview Acres Water Association

Candidate Group: 3A – Abilene Area

- ✓ Interested Systems
  1. City of Benjamin (non-member)
  2. City of Rochester (non-member)
  3. City of Weinert (non-member)
  4. City of Obrien (non-member)
  5. City of Goree (member)
  6. City of Munday (member)
  7. Paint Creek WSC (member)
  8. City of Haskell
  9. Sagerton WSC

Candidate Groups: Engineering Considerations

- ✓ FHLM Group 2: Arsenic mitigation options
  - Blending with low-arsenic source
    - ✓ Nearest large source of low-arsenic water is City of Waco (up to 22 miles away)
  - Treatment, i.e. coagulation-filtration, ion-exchange, activated alumina, reverse osmosis, etc.
    - ✓ Arsenic disposal regulated and is expensive
- ✓ Abilene Group 3A: Nitrate mitigation options
  - Source protection
    - ✓ Difficult to control and long-term solution
  - Blending with low-nitrate source
    - ✓ Millers Creek Reservoir is closest source but financially infeasible for non-member systems
    - ✓ Lake Stamford is next closest (up to 27 miles away)
  - Treatment, i.e. ion-exchange, reverse osmosis
    - ✓ A regional treatment facility could be physically located a maximum of 8-10 miles from interested systems

Candidate Groups: Financial Considerations

- ✓ Funding to meet SDWA compliance a concern for most PWSs
- ✓ Internal vs. external financial considerations
  - Internal option: Raising rates to pay for improvements may be unaffordable for customers
    - ✓ All counties comprising candidate areas have a MHI less than Texas median
    - ✓ Several counties and municipalities are below 75% of the Texas MHI
  - External option: Grants and low-interest loans most popular
- ✓ TWDB Financial Assistance Programs:
  - Safe Drinking Water Act Revolving Fund
  - Economically Distressed Areas Program
  - Rural Water Assistance Fund
  - Water Infrastructure Fund
  - State Loan Program (Development Fund II)

Candidate Groups: Financial Considerations (cont'd)

- ✓ Other Texas Financial Assistance Programs
  - ORCA Community Development Block Grant Program
  - Texas Small Town Environment Program
  - Texas Association for Resource and Conservation Development Areas
- ✓ National-Level Assistance Programs
  - USDA Rural Utilities Program
  - Other financing and loan organizations: Co-Bank, Community Resource Group, Government Capital Corporation, United Financial of Illinois

Candidate Groups: Financial Considerations (cont'd)

- ✓ Both Candidate Groups
  - Blending strategy
    - ✓ Capital costs: Conveyance for purchased water (transmission lines, pump stations, mixing equipment)
    - ✓ O&M costs: Energy for pumping and mixing, training and maintenance of licensed operators
  - Treatment strategy
    - ✓ Capital costs: Treatment plant infrastructure and equipment, conveyance to and from treatment plant
    - ✓ O&M costs: Treatment media, chemicals, energy, waste disposal, training and maintenance of licensed operators

Other Considerations : FHLM Group 2

- ✓ Blending is likely the preferred arsenic mitigation strategy
- ✓ Regional partnerships provide specific advantages
  - Better negotiating power for purchased water contracts
  - Greater "creditworthiness" and ability to secure grants and loans
  - Shared costs for new blending water conveyance infrastructure and equipment
  - Shared operators for increased reporting, monitoring, and license requirements
  - Shared managerial oversight (i.e., satellite management via SCADA)
- ✓ The degree of regionalization is up to participating PWSs

Other Considerations: Abilene Group 3A:

- ✓ Treatment is likely the preferred nitrate mitigation strategy
  - PWSs have only considered treatment at the level of individual systems
  - Centralized treatment facility would incur large capital costs but lower total O&M costs
- ✓ Regional partnerships provide specific advantages
  - Economies of scale for treatment media and chemicals
  - Shared operators for increased reporting, monitoring, and license requirements
  - Shared managerial oversight i.e., satellite management via SCADA (multiple treatment facilities)
  - Shared capital costs (centralized treatment facility)
- ✓ The degree of regionalization is up to participating PWSs
- ✓ Red River Authority may be able to provide regionalization advice or technical assistance

Conclusions

- ✓ FHLM Group 2
  - Politically feasible partnership of ten or more systems can mitigate arsenic using blending strategy
- ✓ Abilene Group 3A
  - Four systems can mitigate nitrate by sharing resources and investing in a treatment strategy
  - Five other systems can share resources and free up money for investment in infrastructure improvements
- ✓ All areas could benefit from regionalization of resources, not just the two candidate systems
  - Over 80% of surveyed systems expressed interest
  - "Spectrum" of regionalization has something for everyone