MINNESOTA POLLUTION CONTROL AGENCY

Educational Forum

August 12, 2019

East Metro Rural Water Drinking Water Options

Washington County

wood.

DEPARTMENT OF HEALTH

Agenda

1. Introduction and welcome — 10 min
2. Overview of Options (from private wells to community systems —10 min
3. Operators Perspective
   - ✓ Rural water — 20 min
   - ✓ Home Owners Association (HOA) —20 min
4. Q/A and Break – 20 min
5. Considerations – 20 min
   - ✓ Homeowner's Perspective
   - ✓ System Perspective
6. How can we help? —10 min
7. Next steps and Q/A — 10 min

Introduction and Welcome

1. Who we are
   - ✓ 3M Settlement Work Group
   - ✓ Minn. Department of Health
   - ✓ Washington County
   - ✓ Wood
2. Why are we here
   - ✓ Goals and objectives
3. How we can assist you
   - ✓ Resources available

Overview of Options

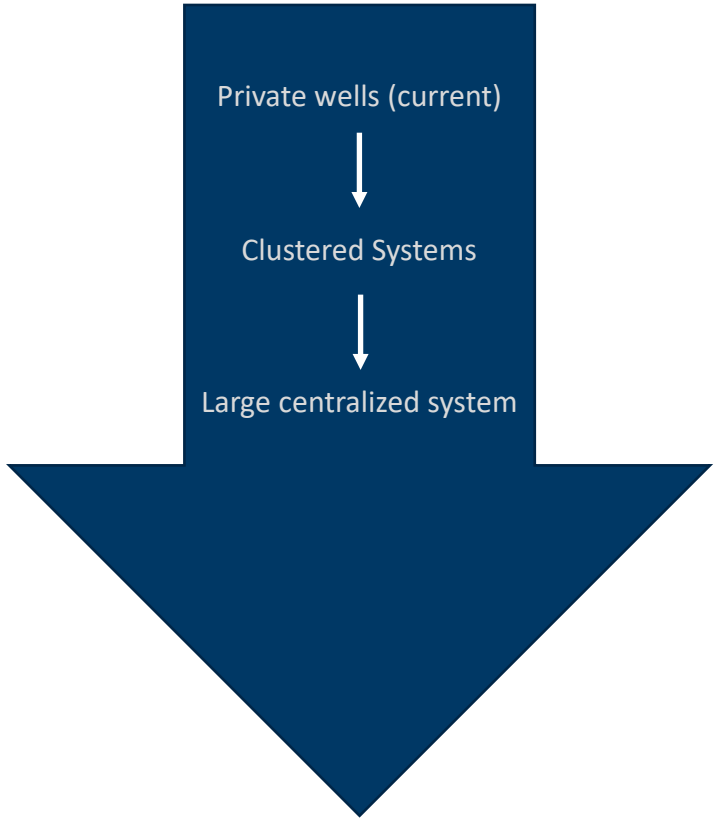
Brian Hamrick, PE

Municipal Water Practice Leader, Wood Environment & Infrastructure Solutions

Overview of Rural Options

Centralized/Decentralized Treatment Approaches

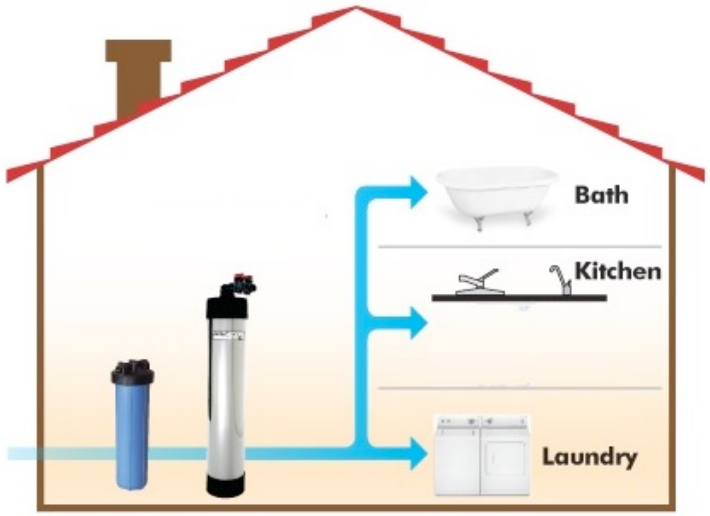
1. Point of Use / Point of Entry
2. Single Private Well-head System
3. Clustered Private Well-head System
4. Shared Groundwater Treatment
5. Centralized Groundwater Treatment
6. Regional Groundwater Treatment
7. Regional Surface Water Supply



Centralized/Decentralized Treatment Approaches

- ❑ Point of Use (individual wells)
  - Treatment unit (filter) installed at drinking water faucet
    - Only treats water intended for drinking or other consumption
    - Local and rural approach

- ❑ Point of Entry (individual wells)
  - Treatment unit installed at building entry
    - Treats all potable water in household use
    - Local approach



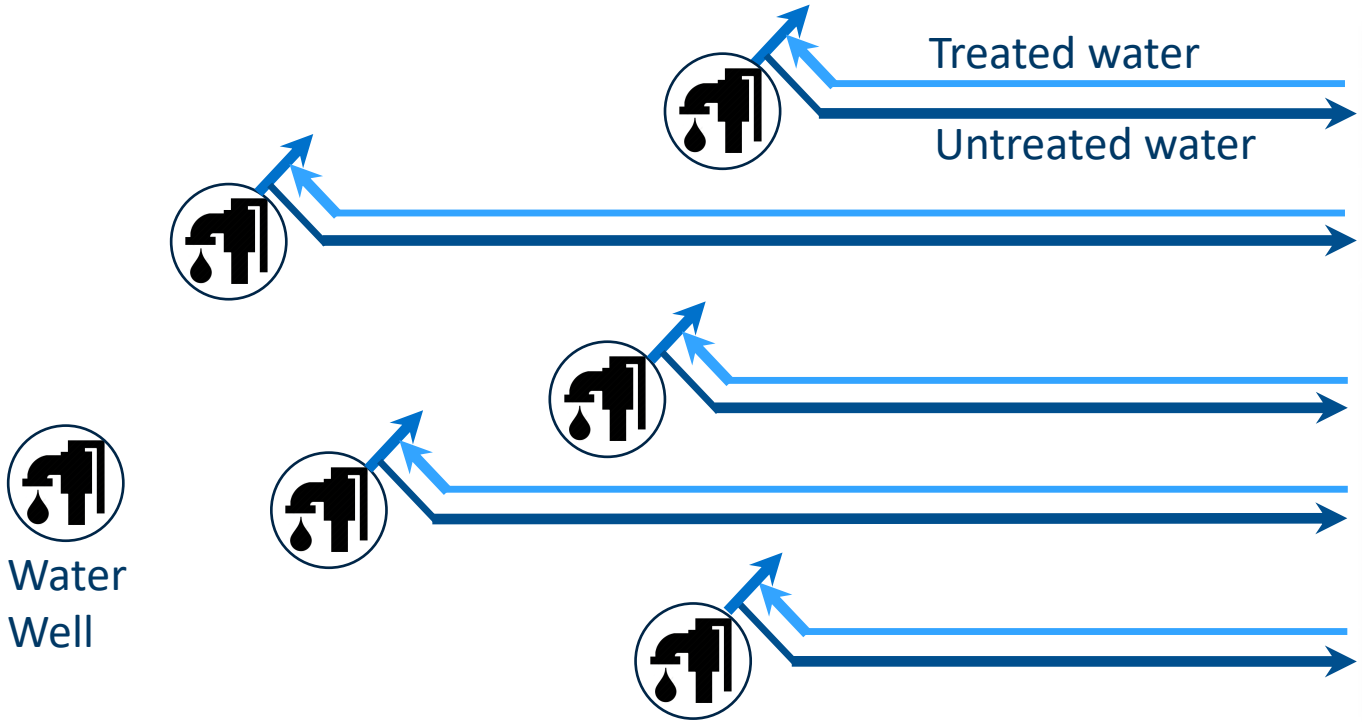
Centralized/Decentralized Treatment Approaches

- ❑ Single Private Well-head System
  - Treatment unit installed at well structure
    - Treats all water from the local private well
    - Local and rural approach

- ❑ Clustered Private Well-head System
  - Treatment unit for multiple local wells or users
    - Treats all potable water for multi-households

Centralized/Decentralized Treatment Approaches

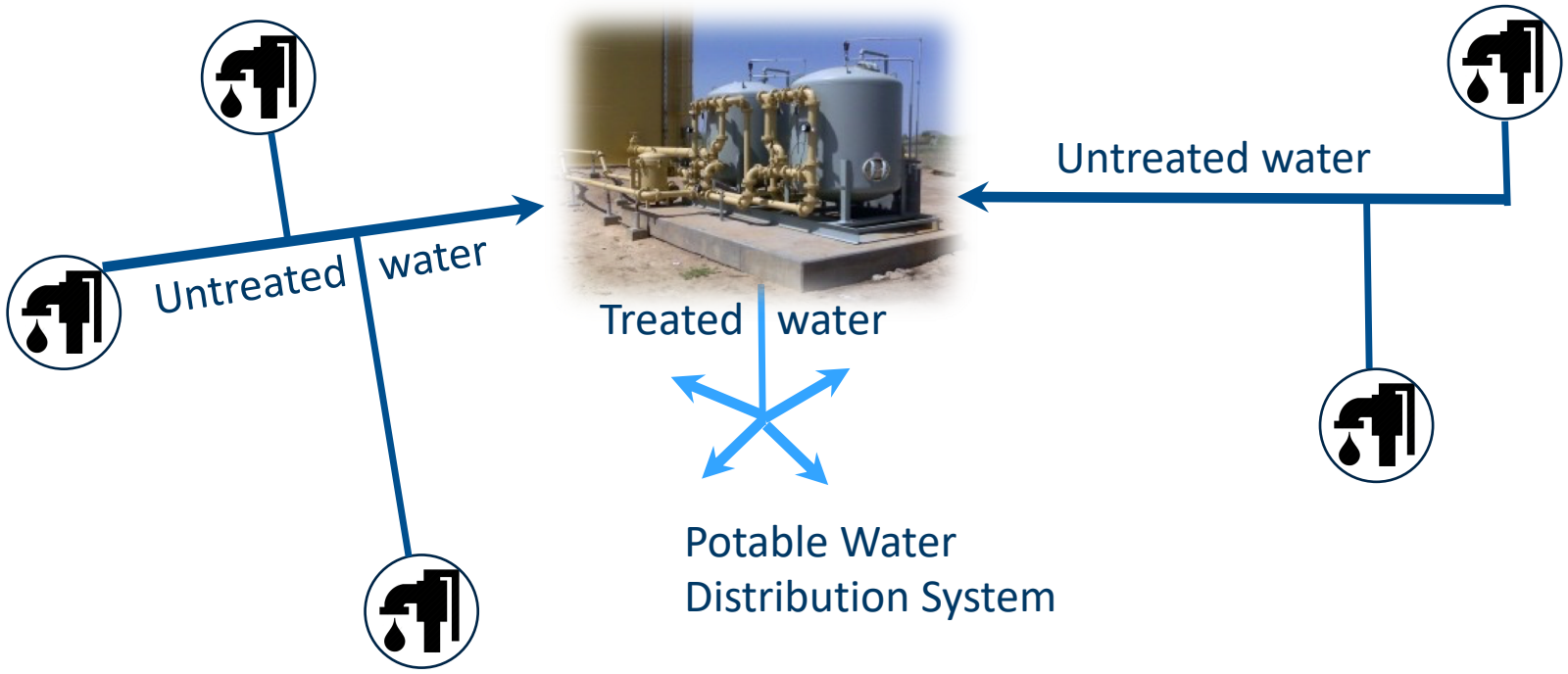
- Shared Groundwater Treatment (local cooperative or entity)
  - Local cluster treatment facility for private wells



Treatment Facility

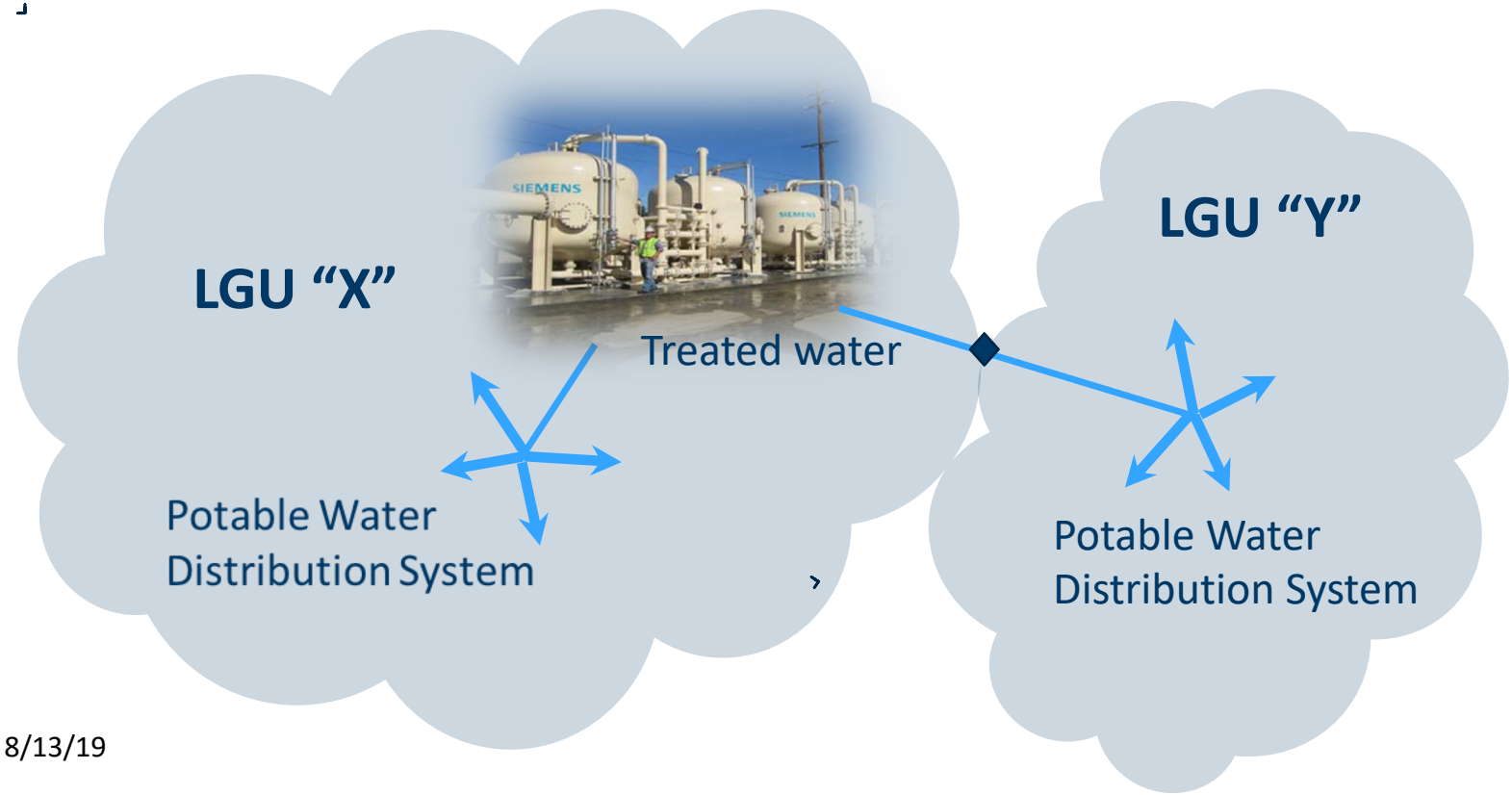
Centralized/Decentralized Treatment Approaches

- Centralized Groundwater Treatment (municipal)
  - Local cluster treatment facility for public wells



Centralized/Decentralized Treatment Approaches

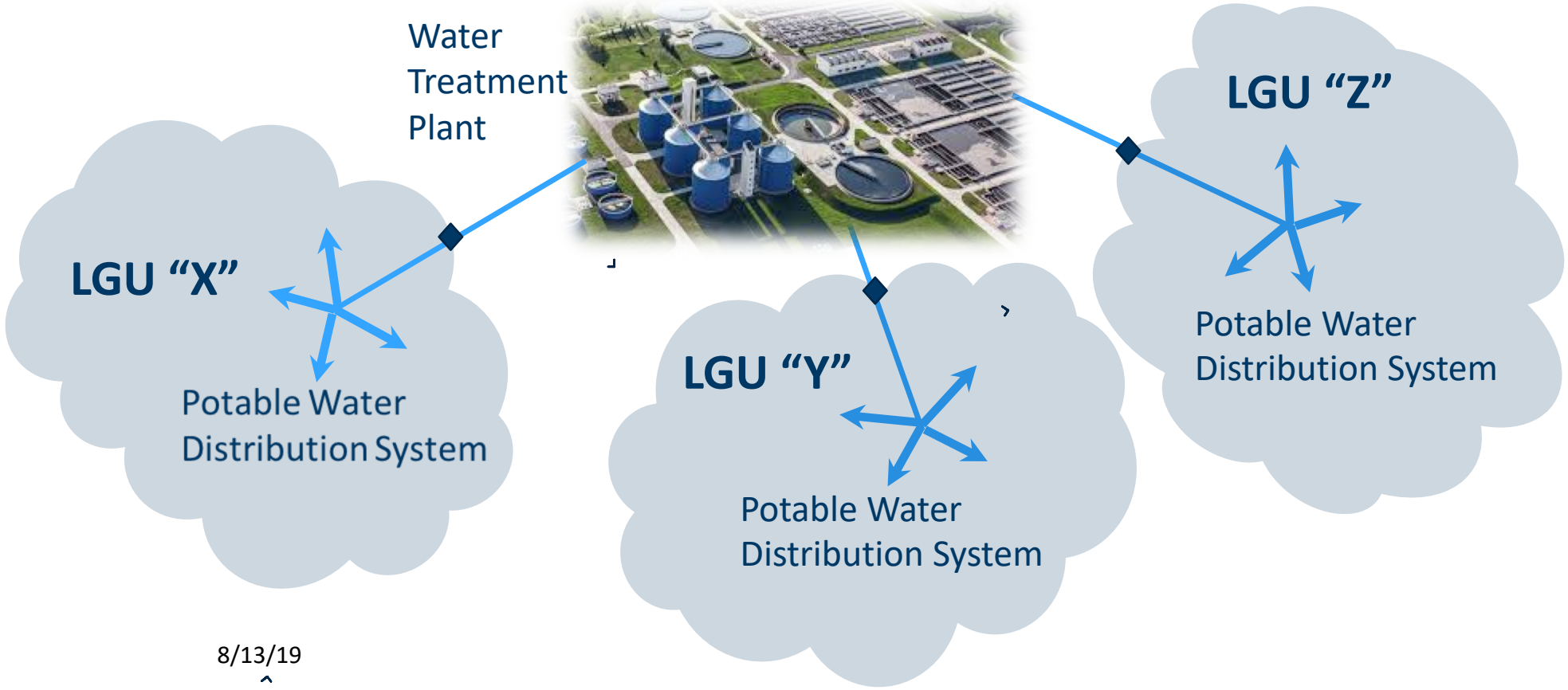
- Regional Groundwater Treatment
  - Centralized municipal groundwater treatment



Centralized/Decentralized Treatment Approaches

❑ Regional Surface Water Supply

- Centralized surface water treatment and distribution (new or existing WTP)



Centralized/Decentralized Treatment Approaches

- Combined Approach
  - Some LGU's may have communities within its service area
    - Rural, semi-rural, suburban, urban, etc.
  - A combination of approaches for different parts of its service area may be appropriate, for example:
    - Point of entry/use for existing private well users
    - Cluster groundwater treatment for isolated developments
    - Regional water supply for existing urban areas

Operator's Perspective

Karla R. Peterson

Community Public Water Supply Unit Supervisor, MDH

Jason Overby

General Manager

Lincoln-Pipestone Rural Water System

Water Supply Management via Rural Water System

✓ What is a rural water system?

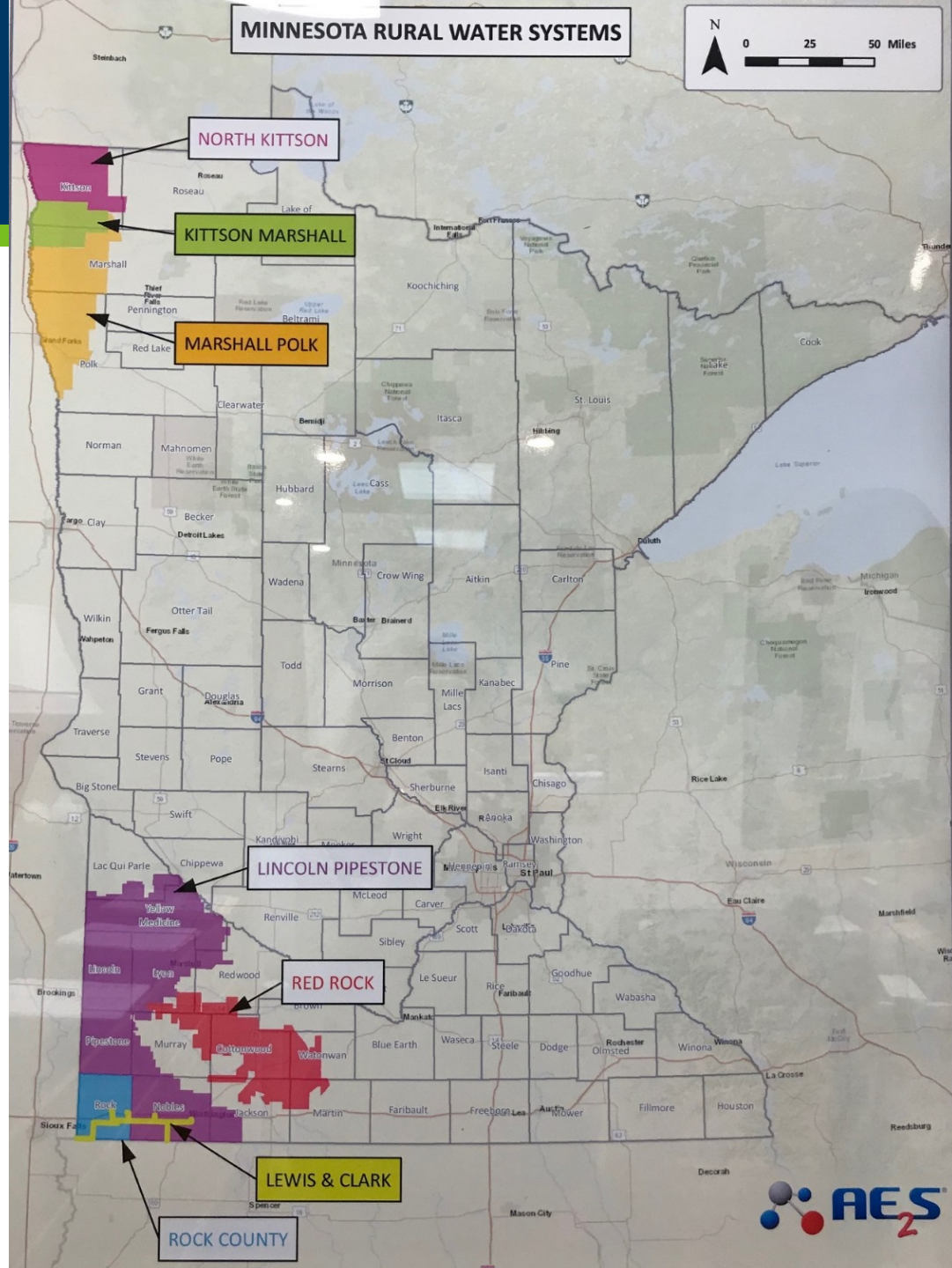
- Safe Drinking Water Act (1974)
  - National Rural Water Association (1976)
    - Minnesota Rural Water Association (1978)
      - Lincoln- Pipestone Rural Water System (December 1978)

Lincoln Pipestone RURAL WATER

Rural Water Systems in Minnesota

- ✓ North:
  - North Kittson RWS
  - Kittson-Marshall RWS
  - Marshall-Polk RWS
- ✓ South:
  - Rock County RWS
  - Red Rock RWS
  - Lincoln-Pipestone RWS

Lincoln Pipestone RURAL WATER



Water Supply Management via Rural Water System

✓LPRW Creation

- Informational meeting – county planning and development commission (1976)
- Steering committee formed
- Petitioned rural residents/communities for interest
- Legal and engineer secured
- Feasibility study
- FMHA review and approval of Feasibility study
- District court appoints water commission

MN STATUTE 116A ET AL.

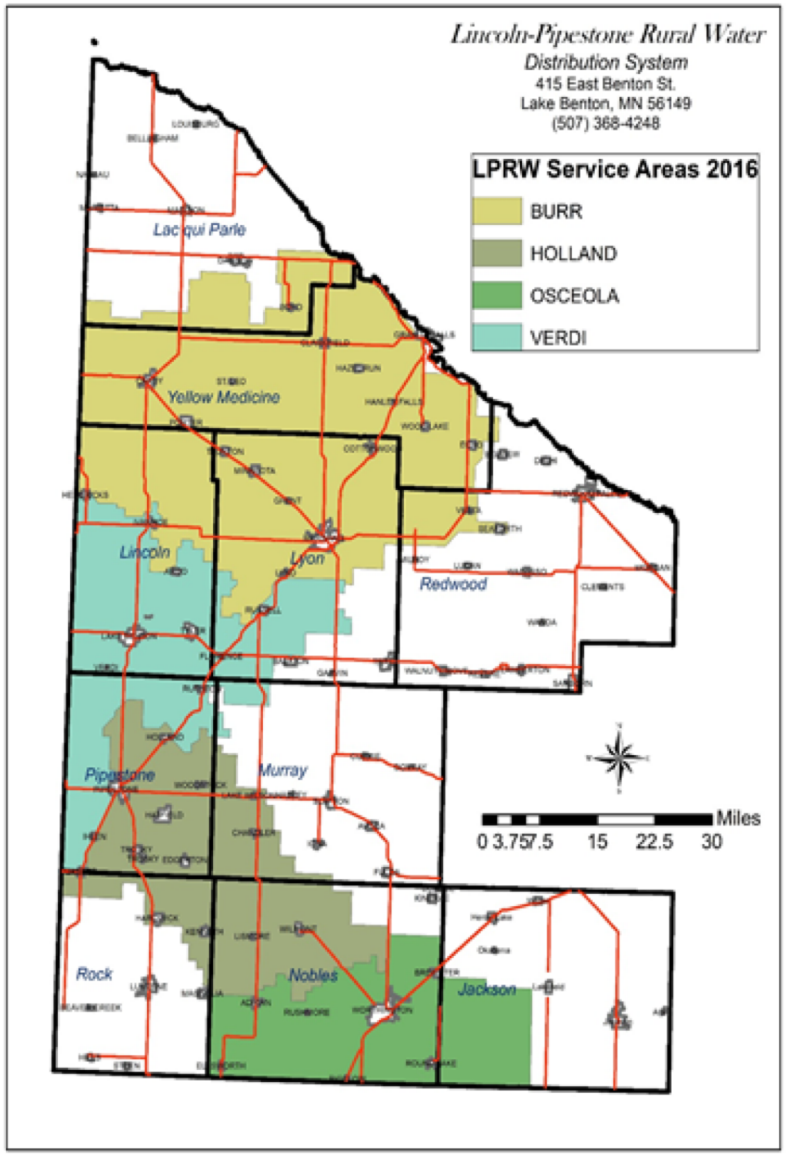
Lincoln Pipestone RURAL WATER

Water Supply Management via Rural Water System

✓System Growth

- 10 counties
- 4,600+ service connections
- 36 cities/towns
- Multiple water sources/interconnections
- Over 3,400 miles of pipeline;

  Size: 1”-14” dia.

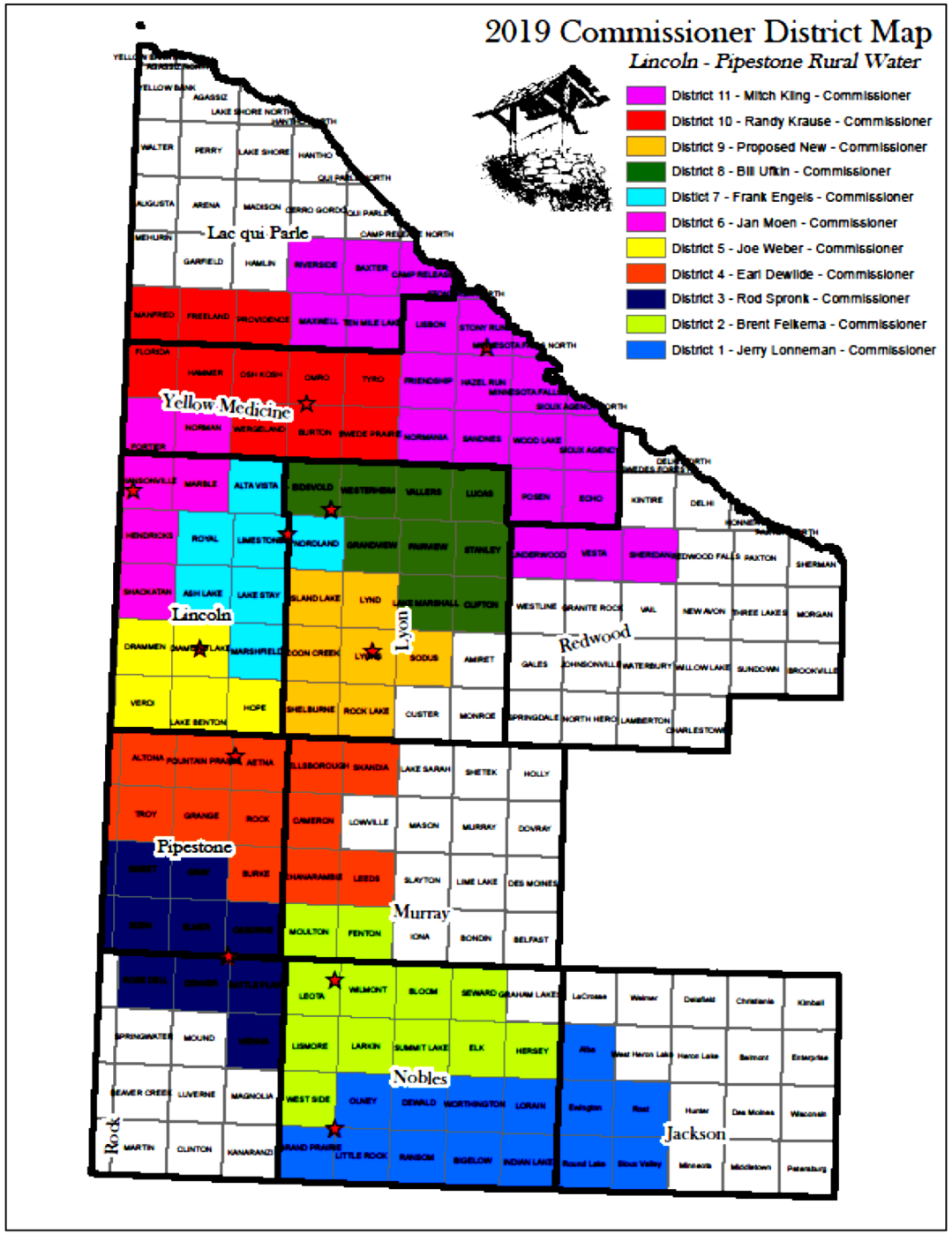


Lincoln Pipestone RURAL WATER

Water Supply Management via Rural Water System

✓ Governance

- 11 member board
- 4-year terms, rotating
- Appointment procedures
- Simple majority for approval



Lincoln Pipestone RURAL WATER

Water Supply Management via Rural Water System

✓Funding

- CIP: loans/grants
- USDA-Rural Development
- Operations: Water Sales
- No taxing authority
- LPRW can assess hookup costs on to property taxes, with court approval

Lincoln Pipestone RURAL WATER

Water Supply Management via Rural Water System

✓Stakeholders

Counties

SWCD

LGUs

DEPARTMENT OF NATURAL RESOURCES

DEPARTMENT OF HEALTH

DEPARTMENT OF AGRICULTURE

MINNESOTA ASSOCIATION OF WATERSHED DISTRICTS, INC
Land and Water Shall be Preserved

PUBLIC

USDA FSA
UNITED STATES DEPARTMENT OF AGRICULTURE • FARM SERVICE AGENCY

MN RURAL WATER ASSOCIATION

MINNESOTA POLLUTION CONTROL AGENCY

Lincoln Pipestone RURAL WATER

Water Supply Management via Rural Water System

LPRW Mission

- To enhance the quality of life for the people in the southwest Minnesota area by acquiring and providing reliable, high quality, affordable water in an environmentally responsible manner through a publicly-owned system.

Lincoln Pipestone RURAL WATER

Water Supply Management using a Home Owners Association

Considerations

- ✓ Any water source that serves more than one home should have a legal arrangement between the homeowners to help prevent legal or management difficulties.
- ✓ Home Owners Associations are often used to manage water systems.
- ✓ ~250 non-municipal CPWSs in Minnesota serve more than 15 homes or 25 residents — most are manufactured home parks, housing developments, and apartment buildings. Most of the housing developments and some of the manufactured home parks (with multiple property owners) have a HOA or similar legal agreement.

Water Supply Management using a Home Owners Association

Considerations

- ✓ Systems with multiple owners that don't have a HOA or similar legal agreement often have difficulties:
  - Collecting fees to run the system, e.g. not all homeowners contribute
  - Monitoring and managing usage, e.g. meters, conservation
  - Meeting water quality standards, e.g. SDWA, non-regulated contaminants
  - Maintaining infrastructure, e.g. replacing pressure tank, well pumps
  - Managing operations and maintenance, e.g. flushing, loss of pressure
  - Agreeing on infrastructure investments, e.g. backup well

Water Supply Management using a Home Owners Association

Considerations

✓ Systems with HOAs or similar legal agreements:

- Are managed by an elected Board
- Allow homeowners to vote on issues
- Protect homeowners from individual liability
- Protect homeowners' investment in the water system
- Provide convenience to homeowners that don't want to manage their own water system

Questions?

&

Break

Considerations
Home Owners Perspective and System Perspective

Karla R. Peterson

Community Public Water Supply Unit Supervisor, MDH

Brian Hamrick, PE

Municipal Water Practice Leader, Wood Environment & Infrastructure Solutions

Benefits and Costs of a Point of Entry Treatment System (POET)

✓ Considerations

- Need access to home for installation and annual filter change-out
- Waste disposal issues and environmental costs
- MPCA currently managing installation and change-out schedule
- Ability to maintain ownership of individual wells

Benefits and Costs of a Community Public Water System

✓ Considerations

- A CPWS is defined under the federal Safe Drinking Water Act as a water system that serves at least 15 homes or 25 year round residents.
- There are approximately 1,000 CPWSs in Minnesota, with the largest being Minneapolis and the smallest typically being manufactured home parks, housing developments and apartment buildings.
- There are both benefits and costs for homeowners connected to a CPWS. This presentation in intended to describe what a prospective homeowner should consider if changing from private well use to a CPWS.

Benefits and Costs of a Community Public Water System

✓ Benefits of a CPWS:

- Source water protection plans and action items
- Regular inspections and site visits by MDH engineers
- Certified water operators
- Annual water quality report
- Regular monitoring for 100+ contaminants
- Water quality that meets the SDWA
- Requirement for consistent pressure and volume
- Convenience of having someone else manage their water supply

Benefits and Costs of a Community Public Water System

✓ Costs of a CPWS:

- Treatment may be required, including disinfection
- Requirements associated with meeting the SDWA
- Some homeowners prefer the option of managing their own water system

Benefits and Costs of a Community Public Water System

- ✓ Other Considerations:
  - Planning and Budgeting for Homeowners:
  - Costs to use a CPWS
    - Service connection
    - Service connection repair
    - System billing (includes water quality testing)
  - Costs to use a private well
    - Well repair and replacement
    - Repair and replacement of pump and pressure tank, and energy use
    - Water quality testing

Considerations- System Perspective

- Example: Consider a small water system for 8 homes
  - If water system serves less than 25 people (approx. 9 homes at 2.7 people/home)
    - Safe Drinking Water Act regulations for Public Water Systems do not apply
    - No additional requirements for well redundancy, certified operators, or water quality testing
  - 40 gpm well versus a 10 gpm private well
  - Complexity is similar to a private well system (well, pressure tank, GAC for treatment)
  - Achieve treatment economies of scale (only 4 POETs necessary instead of 8)
    - ~$10K instead of $20K for PFAS treatment capital cost (assume $2,500 per POET)
    - ~$4K instead of $8K for annual service to changeout media (assume $1,000 per POET per year)
  - Only one well to maintain and service
  - Equipment is external to home (shed), so contractors do not enter house

GAC = Granular Activated Carbon
POET = Point of Entry Treatment

Considerations — System Perspective

- Additional considerations (a small system for 8 homes)
  - Shared Costs — reoccurring costs for; power, chemicals, maintenance, repair are shared
  - Redundancy — only one well
    - Multiple residences affected by water line breaks, well maintenance, or power outages
  - If there are large irrigation users, may need to implement an every other day schedule
    - 8 homes are unable to water large gardens or lawns at once on a 40 gpm well
  - Higher overall capital costs due to water line installation between houses
  - Replacement and repair of water mains between homes is difficult due to depth (7.5 feet deep)
    - Likely requires a contractor to perform work
  - Modify local ordinances that prohibit multiple homes on a private well

Next Steps

Shalene Thomas

Emerging Contaminants Program Manager, Wood Environment & Infrastructure Solutions

Next Steps

- ✓ August - September — Concept Project summaries drafted
  - Wood meeting with LGUs (SG-1 members) August 21-22 to discuss
  - Public submittals via online form
  - Concept Project Summaries finalized and placed into scenarios
- ✓ October – December
  - Scenarios will be modeled (Drinking Water System model/Groundwater model)
  - Wood meetings with LGUs to discuss (est. October 15-17)
  - Model results will be used to develop costs
  - Preliminary Results Summary Matrix per scenario
- ✓ January – March
  - Matrix compared to criteria and ranked (Good< Better < Best)
  - Conceptual Drinking Water Supply Plan Draft and Final

wood.

SCOPE

Public Meeting(s) planned in October

Next Steps

- ✓ Coordinate with SG-1 members on Concept Projects
- ✓ Submit concept projects via online form (public)
- ✓ Our resources (County, MDH, MPCA/DNR, Wood) are available to support:
  - Available to provide additional information (i.e township meetings, etc.)
  - Assistance with governance/planning for community systems
  - Reach out to speakers with further questions if/as necessary
  - MDH Rural Water Fact sheet will be published (September) online and at September Work Group meetings.
- ✓ MN Water Well Association (mtg held 8/9/19) — for more information, reach out to David Schulenberg, 651-497-4352 or dschulenberg@ngwa.org

Questions?

Thank you! Speakers and contributors

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