OWRB Produced Water Working Group & Reuse/Recycling Study

Presented at: Oklahoma Governor’s Water Conference

October 11, 2016
Background

1. Governor Mary Fallin announced plans for Produced Water Working Group (PWWG) at Oklahoma Governor’s Water Conference in December, 2015

2. OWRB forms PWWG
   A. 17 members with a broad spectrum of expertise
   B. JD Strong as chairman
   C. Three meetings to date

3. DOE funding for study related to re-use and recycling (started in late August)
Defining the Challenge

- Too much produced water
- Long term need to conserve fresh water sources
- What are the economically viable alternatives?

Chart from Kyle Murray, PhD presentation to PWWG on June 7, 2016.
PWWG Committee

Members

- J.D. Strong (Chairman)
- Secretary of Agriculture Jim Reese (Oklahoma Department of Agriculture, Food & Forestry)
- Tim Rhodes (Oklahoma Corporation Commission)
- Scott Thompson (Oklahoma Department of Environmental Quality)
- Michael Dunkel (CH2M)
- Jesse Sandlin (Oklahoma Oil & Gas Association)
- Mike Mathis (Oklahoma Independent Petroleum Association)
- Brent Kisling (Enid Regional Development Alliance)
- Alan Riffel (Oklahoma Municipal League)
- Mark Matheson (Oklahoma Rural Water Association)
- Dr. Garey Fox (Oklahoma State University)
- Terry Stowers (Coalition of Oklahoma Surface & Mineral Owners)
- Bud Ground (Environmental Federation of Oklahoma)
- Usha Turner (Oklahoma Gas & Electric)
- Mike Ming (GE Global Research)
- Mike Paque (Groundwater Protection Council)
- Fred Fischer (Oklahoma Panhandle Agriculture & Irrigation Association)
PWWG Subcommittees

1. Agriculture
   A. Spread across state
   B. Seasonality for irrigation – Desalination required

2. Water Users and Water Discharge
   A. Power, chemical plants, other or discharge to stream
   B. Desalination required

3. Oil and Gas
   A. Re-use requires minimal treatment

4. Regulatory and Challenges
   A. How can legislators or regulators help?
Scope of Work

1. Gather data about **produced water** and **users of water**
   A. Volumes and use by county
   B. Produced water volumes
   C. Potential users of treated produced water
   D. Quality of produced water and quality needed by users
   E. Spatial relationship of supply and demand

2. Evaluate appropriate water treatment technologies
   A. Solicit cost estimates from vendors

3. Evaluate economic options and costs

4. Assess challenges and impacts

5. Prepare Final Study Report
   A. Document methods, data and findings
   B. Recommendations to support planning and policymaking
Options Overview

**Oil & Gas Produced Water**

- **Reuse for O&G as clean brine**
- **Reuse for other industry as brine**
- **Desalinate to “fresh” water**
- **Forced Evaporation**

**Limitations/Impacts**

1. **Local transfer (within 5 miles)**
   - Limited volume
2. **Distant transfer**
   - A. Via truck
   - B. Permanent line
   - Trucking impact
   - Lg. volume needed
3. **Reuse for agriculture or other industry**
   - Solid waste, Regulations
4. **Discharge to waterway, aquifer**
   - Solid waste
5. **Dispose of concentrated brine**
   - One new commercial operation
Economic Proposition for Recycling

Disposal cost savings + Value of useable water

Versus

Produced Water transport + Treatment costs
Agricultural Water use by County

Data from ODEQ
Commercial Water use by County

Data from ODEQ
Industrial Water use by County

Data from ODEQ
Irrigation Water use by County

Data from ODEQ
Mining Water use by County

Data from ODEQ
Power Industry’s Water use by County
Recreation, Fish & Wildlife - Water use by County
Produced Water Disposal & Water Users
Preliminary Matches of PW & Water Users

High produced water volumes in dark blue

Large water users in red and green

Data from ODEQ and OCC.
Study Summary Points

1. Started work in late August
2. PWWG is resource to study effort
3. Hope to draft report by December 2016
4. Emphasis on scoping evaluation of possibilities
Thank You