

# AWWA PNWS Inland Empire – Well Operation, Assessment and Rehabilitation

## Presentation Outline

Well Design, Construction and Operations (45-50 min w/ 10-15 min for questions)

- Well types and designs
- Construction and testing
- Lifecycle of a well
  - Design → construct → operate → maintain → rehabilitate → retire
  - Design Life: 30-50 years?
  - Casing not what it used to be
- Ongoing performance monitoring
  - Baseline information
    - Well logs and construction reports
    - Resources: Ecology + OWRD + ID
    - Operational monitoring of performance and uses of data
- Types of problems and symptoms (e.g., well problems, aquifer problems, pump problems)

\*\*\*\*\* 15 min Break \*\*\*\*\*

Well Condition Assessments (45-50 min w/ 10-15 min for questions)

- Possible indicators of a decline in well performance
  - Loss of efficiency
  - Water quality issues
- Observed performance decline – now what?
  - Compile and review available information
    - How was well designed, constructed, and developed?
    - How was well operated?
    - Previous issues or construction alterations?
  - Conduct field investigation to establish existing conditions
    - Pumping tests
    - Video surveys
    - Casing thickness surveys
    - Inspect pumping system
    - Water quality assessment
- Well Integrity
  - Casing, liners and screens
  - Seal
  - Diagnosis and remediation

\*\*\*\*\* 15 min Break \*\*\*\*\*

### Biogeochemistry in the Well Environment (45-50 min w/ 10-15 min for questions)

- Geochemistry
  - Corrosion
  - Mineral scale and encrustation
  - Conditions for microbiological activity
- Well microbiology
- Zones of microbial activity
- Common groups of bacteria
- Biological testing

\*\*\*\*\* Lunch Break \*\*\*\*\*

### Well Rehabilitation and Reconditioning (45-50 min w/ 10-15 min for questions)

- Planning
  - Develop a targeted plan
  - Rehab or not?
  - Rehab vs. replacement well (maintenance schedule and costs)
  - Risks?
- Well Rehabilitation
  - Mechanical
  - Impulse generation
  - Chemical
- Retrofitting and reconstruction – Patch or replace?
- Preventative program/ongoing monitoring
- Action planning
- Case studies?

\*\*\*\*\* Session Complete \*\*\*\*\*