WASHINGTON STATE DOH – ASR REGULATORY UPDATE

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Overview for today

- Regulatory Framework for ASR in WA – overview of Dept of Ecology and DOH roles
- DOH rule highlights
- Future Possibilities
- Wrap-up

Regulatory Framework for ASR in WA

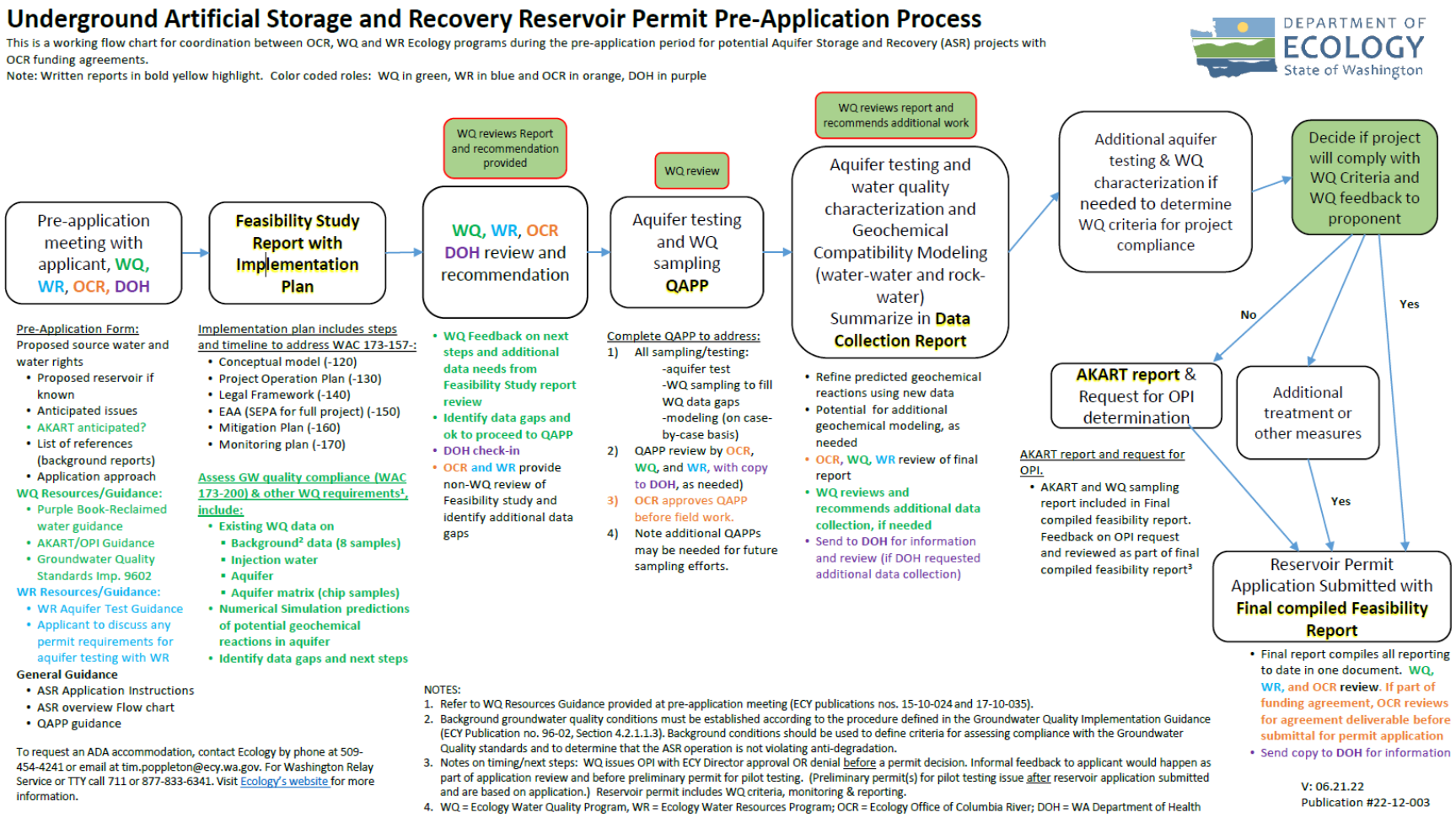
- What is ASR?

  "those projects where the intent is to artificially store water in an underground geological formation through injection, surface spreading and infiltration, or other department-approved method, and to make subsequent use of the stored water."

  WAC 173-157-040

Focus for this presentation: drinking water ASR projects with direct injection of water to be stored.

Regulatory Framework for ASR in WA



Regulatory Framework for ASR in WA

- Dept of Ecology has broad authority and responsibility for regulating waters of the state (quality and quantity). Example: ASR Rules in WAC Chapter 173-157.
- Dept of Health has authority and responsibility for protecting public health by regulating Public Water Systems as they obtain and distribute potable water for drinking and other uses (quality and quantity) – see WAC Chapter 246-290.

Regulatory Framework for ASR in WA

- Spotlight on DOH rule on Engineering Requirements - WAC 246-290-040:

WAC 246-290-040 Engineering requirements.

(1) Purveyors shall ensure that all work required to be prepared under the direction of a professional engineer, including, but not limited to, water system plans, project reports, corrosion control recommendation reports, tracer studies, construction documents and construction completion reports, and engineering design review reports for distribution-related submittal exceptions, is prepared under the direction, and bears the seal, date, and signature of a professional engineer:

(a) Licensed in the state of Washington under chapter **18.43** RCW; and

(b) Having specific expertise regarding design, operation, and maintenance of public water systems.

(2) Exceptions to this requirement are projects identified under WAC **246-290-125** (1)(a) through (d).

Regulatory Framework for ASR in WA

- Spotlight on DOH rule for Source Approval - excerpt from WAC 246-290-130:

WAC 246-290-130 Source Approval

(1) Every purveyor shall obtain drinking water from the highest quality source feasible. **Every purveyor shall, prior to using a source as a public water supply, obtain approval from the department for:**

(a) All new sources.

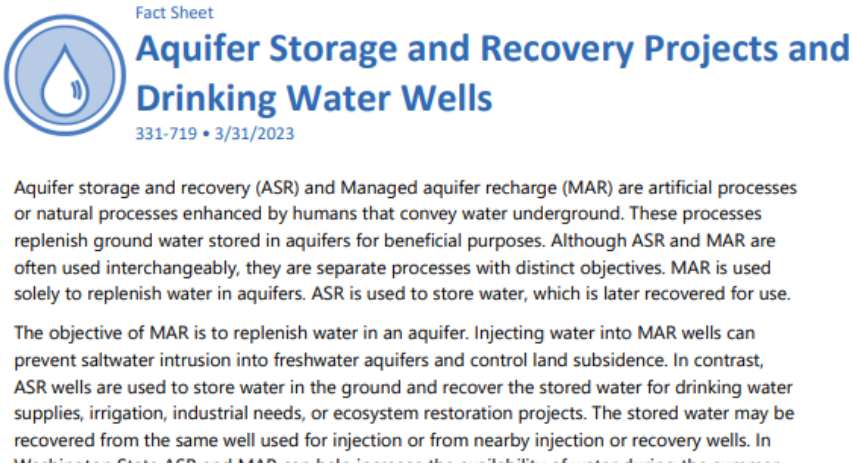
(b) Previously unapproved sources.

(c) Modifications to existing sources.

(2) In no case may a purveyor maintain an intake or other connection between a public water system and a source of water not approved by the department.

Regulatory Framework for ASR in WA

- Drinking water ASR projects with direct injection into the aquifer: injected water must be potable and have DOH written approval before it goes into the ground.
- DOH Fact Sheet 331-719:



Fact Sheet

Aquifer Storage and Recovery Projects and Drinking Water Wells

331-719 • 3/31/2023

Aquifer storage and recovery (ASR) and Managed aquifer recharge (MAR) are artificial processes or natural processes enhanced by humans that convey water underground. These processes replenish ground water stored in aquifers for beneficial purposes. Although ASR and MAR are often used interchangeably, they are separate processes with distinct objectives. MAR is used solely to replenish water in aquifers. ASR is used to store water, which is later recovered for use.

The objective of MAR is to replenish water in an aquifer. Injecting water into MAR wells can prevent saltwater intrusion into freshwater aquifers and control land subsidence. In contrast, ASR wells are used to store water in the ground and recover the stored water for drinking water supplies, irrigation, industrial needs, or ecosystem restoration projects. The stored water may be recovered from the same well used for injection or from nearby injection or recovery wells. In

Regulatory Framework for ASR in WA

- If you can – use ASR injection water from an existing DOH-approved source. Very limited DOH involvement in ASR permitting process in this case.
- If the water source is not DOH-approved, we are very happy to work with you through the source approval process including whatever treatment is needed.

Regulatory Framework for ASR in WA

- Spotlight on DOH rule for Surface Water Treatment - WAC Chapter 246-290 Part 6:
  - If using surface water as source for ASR injection water, treatment plant must have DOH written approval.
  - Microbial water quality standard are filtration and disinfection treatment techniques, not a numerical MCL.
  - Microbial treatment credit is granted based on filtration and disinfection treatment techniques and operational standards identified in WAC 246-290-660 and -662

Spotlight on Surface Water Treatment Rule (cont'd)

- Surface water treatment operation involves:
  - Daily O&M by a WA state-certified operator
  - Frequent or continuous monitoring of various water quality parameters to verify treatment effectiveness of both the filtration and disinfection components
- Development of a new surface water treatment plant generally can involve a couple of years of detailed raw water characterization and pilot testing of the proposed treatment approach

Future Possibilities

- Ecology is pursuing working with UW Researchers to study virus reduction in basalt aquifers between an injection well and a recovery well, and DOH is participating in the discussions.

- Purpose is to evaluate what factors might be used to one day have a protocol for DOH to be able to assign treatment credit for viruses as water moves in the subsurface if surface water is used for injection.

Future Possibilities

- Assuming the study has favorable results, there are barriers to be overcome DOH to be able to assign treatment credit for viruses:
  - "Aquifer treatment" is not a listed technique that surface water treatment credit may be assigned to in WAC 246-290-660 and -662.
  - How would the required frequent/continuous treatment performance monitoring be addressed in an aquifer setting?

Future Possibilities

- Other Considerations:
  - If nonpotable water is injected, water system should own/control the land between injection and withdrawal wells so no other drinking water wells are installed there.
  - Site-specific modeling and/or tracer studies would likely be needed.

Wrap-Up

- Dept of Ecology and DOH have a process in place to coordinate on drinking water ASR projects in Washington State

- Drinking water ASR projects with direct injection into the aquifer: injected water must be potable before entering the ground and have DOH written approval.

Questions?

Thank you!

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