EPA Status / Lessons learned

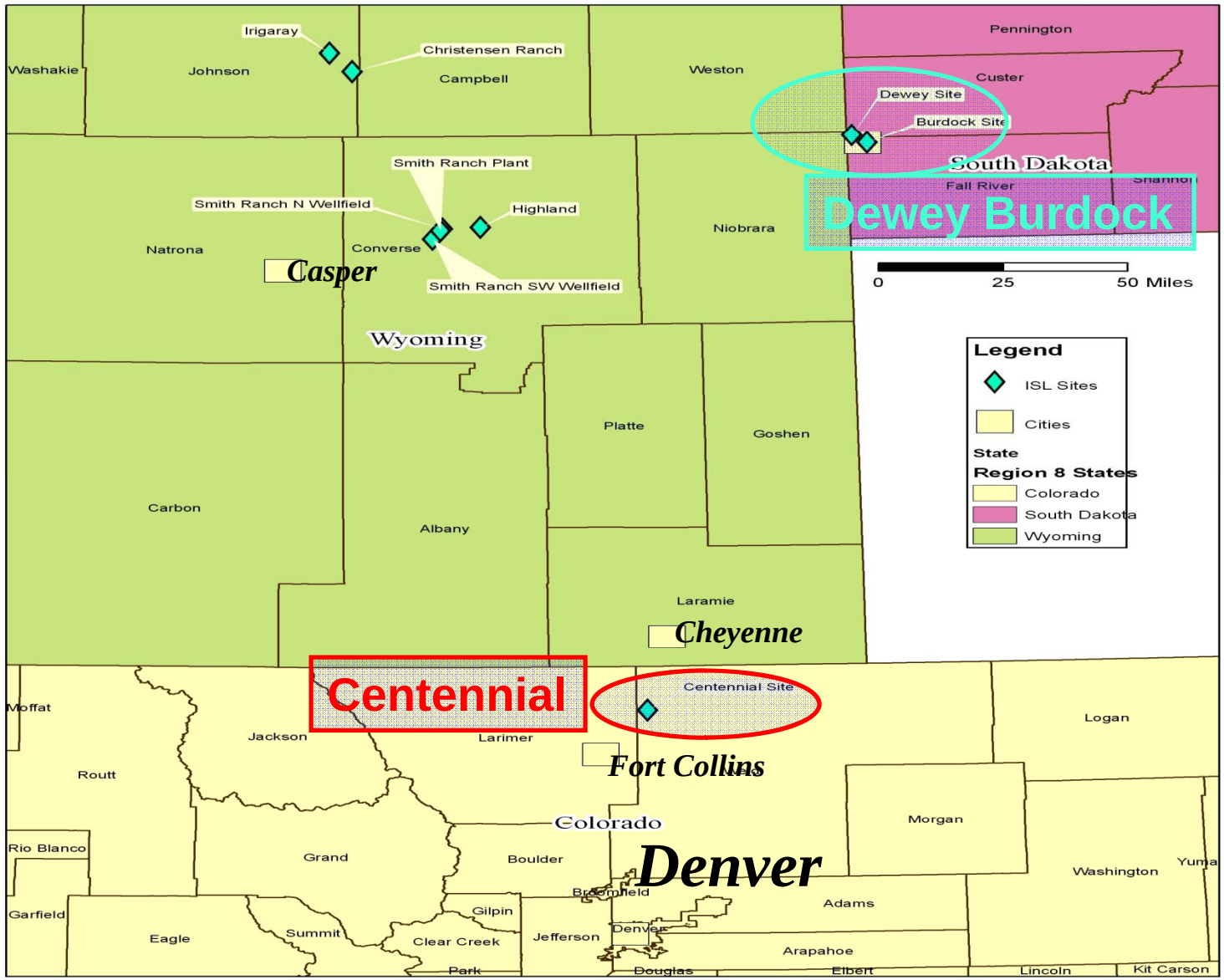
Nuclear Regulatory Commission
Uranium Recovery
Licensing Workshop

January 11 and 12, 2010
Denver, Colorado

Dan Jackson EPA Region 8

- Uranium ISL Activity in Region 8 (include RARE)
- Update on EPA activity:
  - Dewey-Burdock, SD
  - Centennial, CO
- Update on EPA Proposed part 192 Revisions
- Monitoring / Aquifer Exemption / Waste Water Disposal
- Lessons Learned
- Questions

Activity in Region 8



Update: Dewey Burdock, SD

EPA has Primacy for UIC Class I, III, IV & V injection wells

Dec 24, 2008: application for UIC Class III area permit and related aquifer exemption received. Application determined complete, and posted on Region 8 website Mar 2, 2009.

March 2010: application for four UIC Class V disposal wells received, determined complete Apr 2011. Injected fluid will be treated to below 'radioactive waste' levels. (Note: SD does not allow Class I)

Currently reviewing UIC permit applications in close cooperation with SDDENR

Complex geological setting – ore in several aquifers, need to evaluate hydrological interconnections

EIS must solidly address ESA and NHPA components - Historical sacred lands

Regional Applied Research Effort (RARE): Hydrogeologic and Geochemical Model of Potential Groundwater Impacts from Uranium ISL at Dewey-Burdock.

Update: Centennial, CO

EPA has Primacy for UIC Class I, III, IV & V injection wells

Received UIC Class V permit application on Apr, 2009 for aquifer pump test water reinjection

Issued draft UIC Class V permits Jun & Nov 2009. Held two public hearings – Jul 2009 & Dec 2009. Extensive public comment received.

Issued Final Class V permit for aquifer pump test water reinjection on Dec 3, 2010.

Two Appeals have been filed with Environmental Appeals Board.

Contract for ground water study in place; study will begin after aquifer pump test is completed.

Update: Review of 40 CFR Part 192

EPA health and environmental protection standards for uranium and thorium mill tailings

Agency currently reviewing standards to determine if they should be revised to take into account:

- Extraction technology changes (ISL/heap leaching),
- Impacts to Tribes, environmental justice concerns, children's health
- Updated factors for assessing both radiological and non-radiological dose/risk
- Potential development of uranium extraction facilities in different geographical areas
- Costs and benefits of possible revisions

Input to this ongoing review can be submitted to:
UraniumReview@EPA.gov

Monitoring

EPA UIC requirements complementary to NRC Primary Regulatory Objective with respect to groundwater.

Excursion* (**NRC**): *the movement of any fluid containing byproduct material from an ISR wellfield into surrounding environment.*

Movement of Fluid (**EPA**): *no...injection activity that allows movement of fluid containing any contaminant into a USDW. (40 CFR 144.1; 144.12)*

Contaminant (**EPA**): *means any physical, chemical, biological, or radiological substance or matter in water. (40 CFR 144.3)*

NRC - Monitor ISR wellfields so that any groundwater contamination (excursion*) outside wellfield is detected and corrected.

NRC - Monitor ring around wellfield, and in overlying and underlying aquifers, every 2 weeks.

EPA - Monitor fluid level and water quality in injection zone, every two weeks. *(40 CFR 146 Subpart D)*

EPA - Monitor for injection fluids, processing by-products or formation fluids outside the mining area or zone. *(40 CFR 146 Subpart D)*

Aquifer Exemption

Underground Source of Drinking Water (USDW) (40 CFR 144.3) means an aquifer or its portion:

(a)(1) Which supplies any public water system; or (2) Which contains a sufficient quantity of ground water to supply a public water system; and

- (i) Currently supplies drinking water for human consumption; or
- (ii) Contains fewer than 10,000 mg/l total dissolved solids; and

(b) Which is not an exempted aquifer.

Aquifer Exemption (40 CFR 146.4) An aquifer or a portion thereof may be determined to be an "exempted aquifer" if:

(a) It does not currently serve as a source of drinking water; and

(b) It cannot now and will not in the future serve as a source of drinking water because:

- (1) It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible.
- (2) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;
- (3) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or
- (4) It is located over a Class III well mining area subject to subsidence or catastrophic collapse; or

(c) The total dissolved solids content of the ground water is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.

Boundary of ISL–related Class III exemption tied to mineral-bearing zone

Waste Water Disposal

Injection options:

- Class I – MUST inject below lowermost USDW
- Class V - cannot contain radioactive waste.
- Class V – depending on aquifer situation, waste possibly would need treatment above threshold levels to meet MCLs or otherwise not adversely affect human health.

Non-injection options?

Lessons Learned

Waste water disposal options important to consider and evaluate in Impact Statement.

Important to coordinate & communicate with all stakeholders.

Groundwater / drinking water long-term safety of extremely high concern – public & regulators

Many complex issues remain – we're not at the end yet, only in the middle…

Thank you!

Questions ?

Contact Dan Jackson: 303-312-6155 or jackson.dan@epa.gov