SLIDES: Development of Shale: Water Resource Concerns and Policy Considerations

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SHALE PLAYS IN THE INTERMOUNTAIN WEST: LEGAL AND POLICY ISSUES

Development of Shale: Water Resource Concerns & Policy Considerations

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November 12, 2010
Presentation Overview

I.  Context

II.  Common water concerns across all shale plays

III.  State laws and policies that may be implicated in shale gas development

IV.  Recommended water resource protections
Hydraulic Fracturing

Hydraulic fracturing, or "fracing," involves the injection of more than a million gallons of water, sand and chemicals at high pressure down and across into horizontally drilled wells as far as 10,000 feet below the surface. The pressurized mixture causes the rock layer, in this case the Marcellus Shale, to crack. These fissures are held open by the sand particles so that natural gas from the shale can flow up the well.
Common surface water concerns related to shale gas development
Water withdrawals in the East

- Large volumes of water used in the hydrofracking process is being taken from streams and rivers
- Withdrawal regulations are absent in NY, PA and WV
Water withdrawals in the West

• Irrigation is main water use in intermountain-states

• Energy companies and water supply districts have conditional water rights tied to more than 200 separate structures that could be used to support oil shale development

• Rights to divert annually more than 10,000 cfs and store more than 1.7 million acre-feet

• Rights in > 100 existing irrigation districts

“WATER ON THE ROCKS: Oil Shale Water Rights in Colorado”
Report by Western Resource Advocates.
Wastewater treatment in East

- Drinking water supply for 350,000 people
- Frac wastewater discharged into the river caused high levels of TDS and Chloride, violating WQ standards
Wastewater treatment in West

Advanced technology being employed to recycle flowback water on-site or pipe it to treatment plant

Mobile Filtration Unit, designed by Western Pump & Dredge
Spills and leaks of wastewater from inadequate storage and transportation in East Pennsylvania 970 Marcellus violations from January – October 2010
Spills, leaks and storage of wastewater in West

- 100 incidents from oil & gas spills since mid-August
- Wastewater stored in reserve pits or evaporation pits
Pipelines and stream crossings in East

Photo credit: Splashdown PA
Pipelines and stream crossings in West

RUBY pipeline:
- Crosses several ephemeral streams
- Use of dry-ditch method for streams with high quality fisheries
- Ancillary impacts from construction

Map credit: BLM
Stormwater runoff & sedimentation in East

Drilling mud running down hillside

Sediment plume
Stormwater runoff & sedimentation in West

• Water needed for hydraulic fracturing process leads to significant increases in truck traffic

• Increased sedimentation can contribute to Whirling disease, impacting salmonid health
Methane bubbling in streams in East

Potential impacts on fish:
- Quick absorption
- Disturbance of main functional systems
- Effect on fish behavioral nature

Photo Credit: Susquehanna River Sentinel
State Water Laws and Policies implicated by Shale gas drilling

Map credit: U.S. Environmental Protection Agency
Shale gas exemptions from federal laws that could affect water resources

- Comprehensive Environmental Response, Compensation, and Liability Act
- Resource Conservation and Recovery Act
- Safe Drinking Water Act
- Clean Water Act
- National Environmental Policy Act
- Toxic Release Inventory under the Emergency Planning and Community Right-to-Know Act
State Water Laws & Policies Implicated in Shale Gas Drilling

- Water Allocation laws
- Water Quality laws
- Instream flow laws
- Riparian corridor policies
- Floodplain protection
- Wastewater treatment
- Stormwater management
- Colorado River Compact, Upper Basin Compact
Water resource protections that should be implemented in light of shale gas development

1. Comprehensive hydrogeological test should be required to be conducted by an independent source.

2. Prohibit withdrawals from small headwater streams/limit drilling in sensitive watersheds.

3. Prohibit drilling processes (including water withdrawals, discharging treated effluent) in trout streams during spawning season.

4. Pre-drilling monitoring should be required to create baseline data.

5. Water quality monitoring should occur monthly or more frequently when drilling infrastructure is near surface water.
Water resource protections that should be implemented in light of shale gas development (contd.)

6. Prohibit well pad development and construction of impoundments in 100-year floodplain

7. Limit construction of well pad and drilling infrastructure within 300 ft of surface water source

8. Require closed-loop wastewater storage; create a plan for treating the anticipated volume of frac wastewater (before issuing drilling permits)

9. Require riparian buffers to be vegetated in 300 ft. buffers

10. Conduct long-term planning for water supplies and projected future uses
Thank You!

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