

PIONEER

NATURAL RESOURCES

IP/BEC - Challenges and Opportunities of Treatment, Beneficial Use and Management of CBM Produced Water – Industry Perspective

NYSE: PXD
www.pxd.com



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Just in case I mention anything about money, the future or I say what great investments PXD is.

Who are We?

■ Pioneer at a Glance

- Enterprise value \$9 Billion
- Proved reserves 899 Million BOE*
- Daily Prod. 115M BOE per day*
- Total Assets \$8.9 Billion*
- Net producing wells 9,100+
- Employees 1,800+*

**as of 12-31-09 Barrels Oil Equivalent (BOE)*



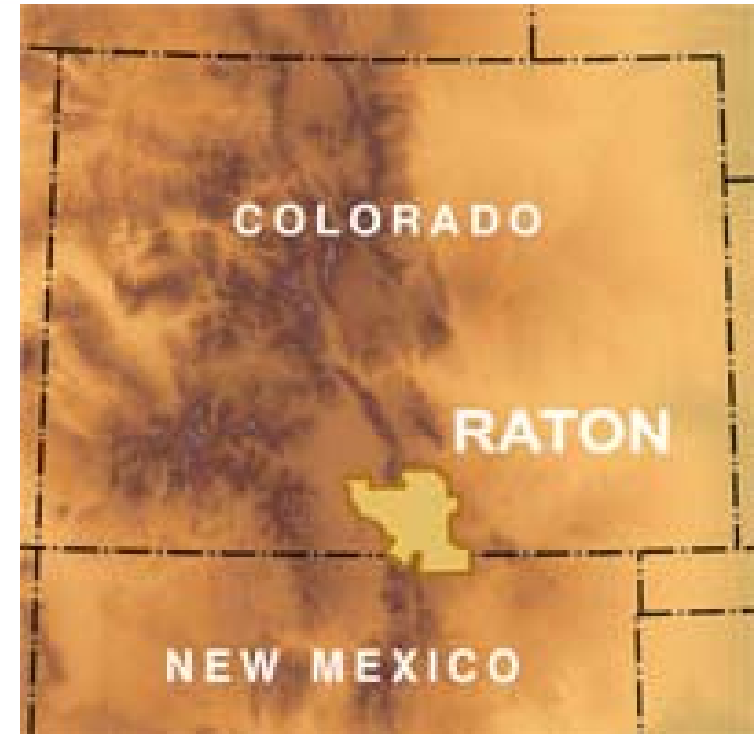
Past Treatment Experience

- San Wash Basin
- Pilot Project
- A tale of 2 treatments – same goal
 - UF / RO
 - > \$2.20 / bbl
 - < 70% runtime
 - 20% waste
 - Cation Exchange
 - \$0.40 / bbl
 - >97% runtime
 - <2% waste



Pioneer – Rockies

- Raton Basin – 3,500+ CBM wells
- Pioneer 2,300+ wells
 - Largest Employer in Las Animas County
- Evergreen Resources 1995 – 2005
- 80 BCF a year
- 1 / 0.8 Gas to Water Ratio



Produced Water

- 65 MMBY (8,500 acre-ft / year)
- Good Water Quality
- Close to front range
- Arkansas River Basin
- Long life

Currently

- **Mountainous system -
7 canyons**
- **771 miles of water pipeline**



- **65% direct discharge to
streams under NPDES permits**
- **15% Onsite pits, 20% injected**
- **\$2,000,000 a year in monitoring**
- **Water management is second largest lease operating expense after labor.**

What do we do with the Water?

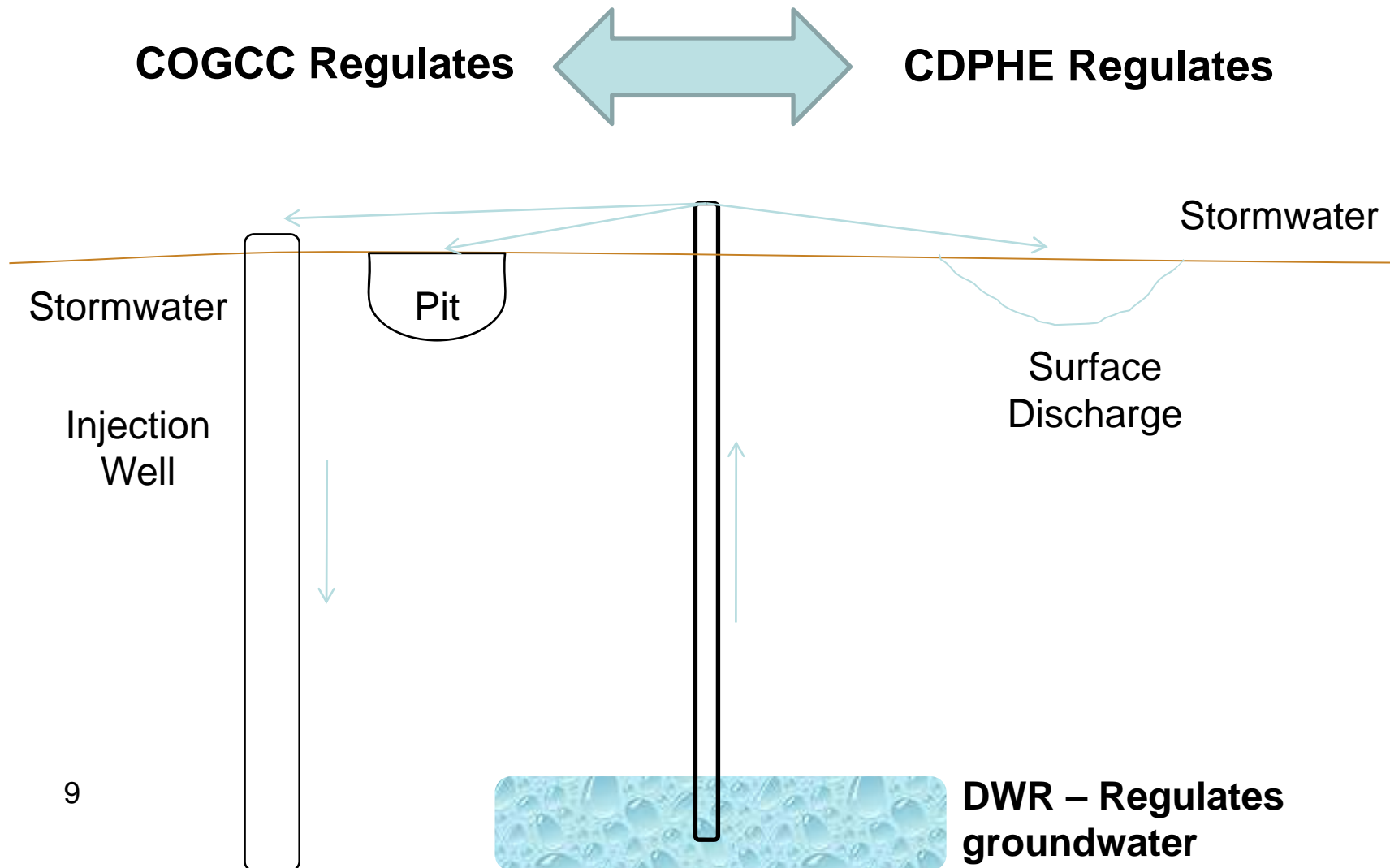
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Challenges

- **No Internal Market – fracking**
- **Not Hauling – far or much**
- **Good Disposal Zones**
- **Cost – Capital and Operating – Direct cost**
- **Ownership – we do not own the water**
- **Liability**
- **Centralization issue – system not designed for central facilities**
- **Energy – very little 3 phase power available**
- **Decline – 5% per year**
- **Loss of current uses in some places**
- **Shorting of economic life of project – Indirect cost**

Water Management Regulation



Cost – in Millions of Dollars

Case (assume 152,000 bbls/d)	Capital	OP EX	Years (facility life)	\$/bbl
Current Cost	\$ -	\$ 4.36	20	0.08
Disposal Wells take all water	\$ 66.7	\$ 2.94	15	0.13
Treat for Agriculture use	\$ 42.30	\$ 20.31	20	0.40



Using Produced water Treatment and Beneficial use Screening Tool

Case (assume 5,000 bbl/d)	Capital	OP EX	Years (based on facility life)	\$/bbl Avg.
Treat for Augmentation of municipal use	10.0	\$ 0.16	15	0.71

Possible Return of \$0.51 / bbl? Maybe?

- **No Change** – Make up depletions, No impact to agriculture established
- **Treatment – with no Return of Investment (ROI)**
 - Treat all currently discharged water that does not meet draft limits
- **Deep Subsurface Water Disposal Wells**
 - Build new facilities to handle all currently discharged water and make up for depletions some other way
- **Treatment – with some ROI?** (direct cash, tax incentive, gas price support, P&A liability, etc?)
- **Mix of these**