

PIONEER

NATURAL RESOURCES

Hydraulic Fracturing Sustainable Development Initiatives

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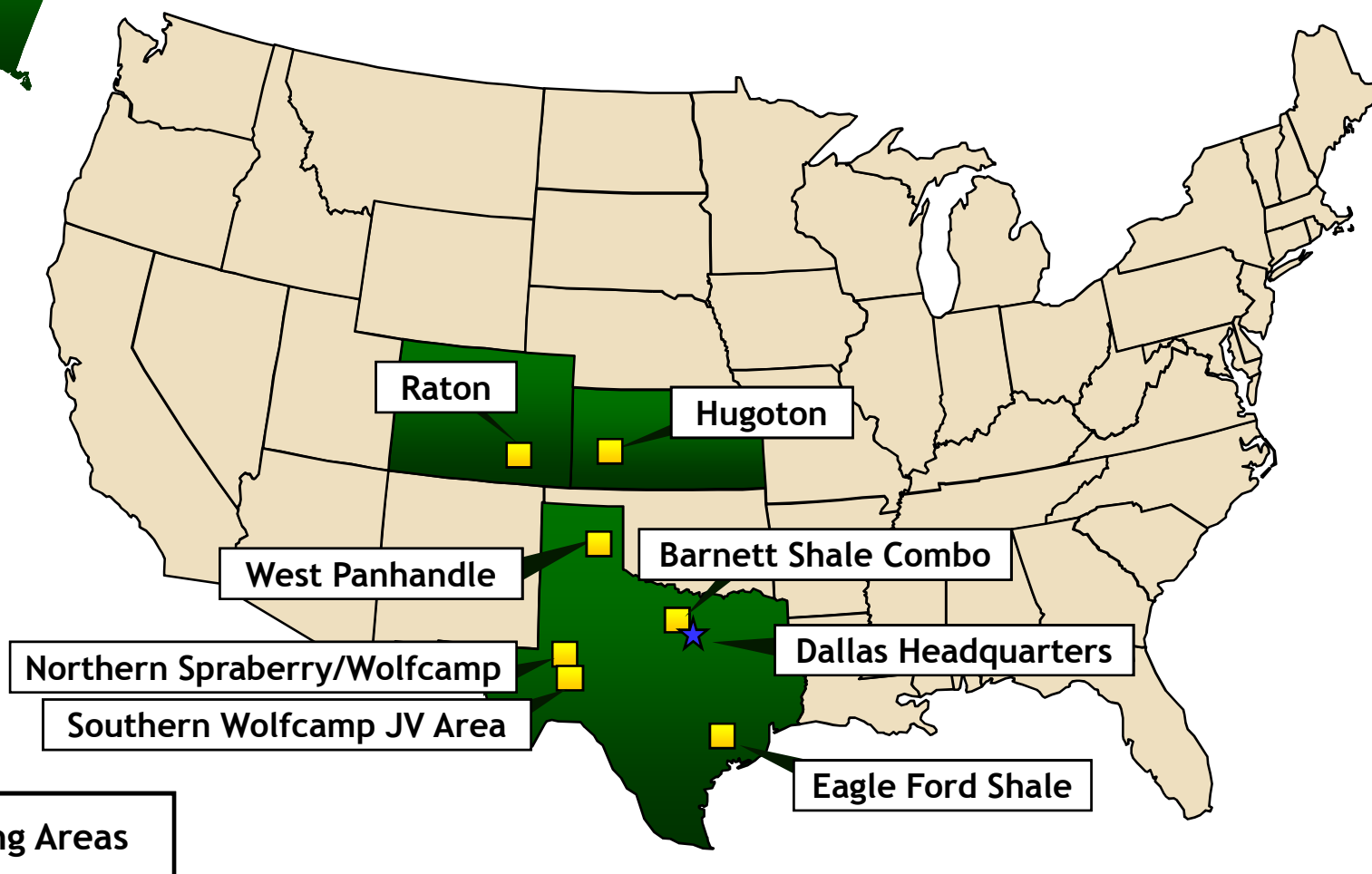


Pioneer Overview- Large Independent U.S. E&P Company

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| | |
|---|--------|
| Total Enterprise Value (\$B) | \$30 |
| 2013E Operating Cash Flow (\$B) | ~\$2.3 |
| 2013E Drilling Expenditures (\$B) | ~\$2.8 |
| Q3 2013 Production - 65% Liquids (MBOEPD) | 173 |
| YE 2012 Proved Reserves (BBOE) | 1.1 |

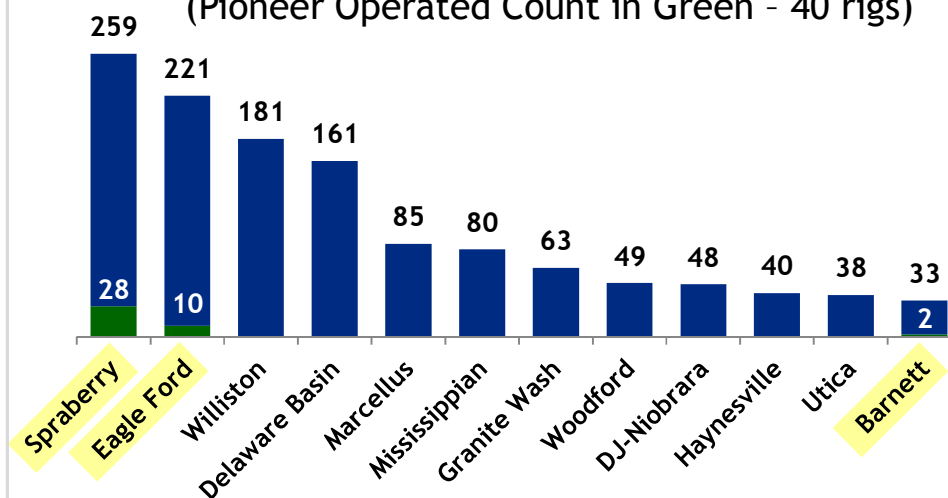


Pioneer At A Glance: Midland Basin Focus

- **Second largest oil producer in Texas**
- Resource-focused strategy, with activity concentrated in 3 of the most active U.S. fields
- **Best performing energy stock in S&P 500 since 2009**
- **Operating in core Spraberry/Wolfcamp asset since early 1980s**
 - PXD holds ~900,000 acres in Spraberry/Wolfcamp
 - **Largest producer in Spraberry/Wolfcamp** with 28 rigs operating (13 horizontal and 15 vertical) and 7,000+ producing wells
 - Preeminent, low-cost operator benefitting from vertical integration strategy

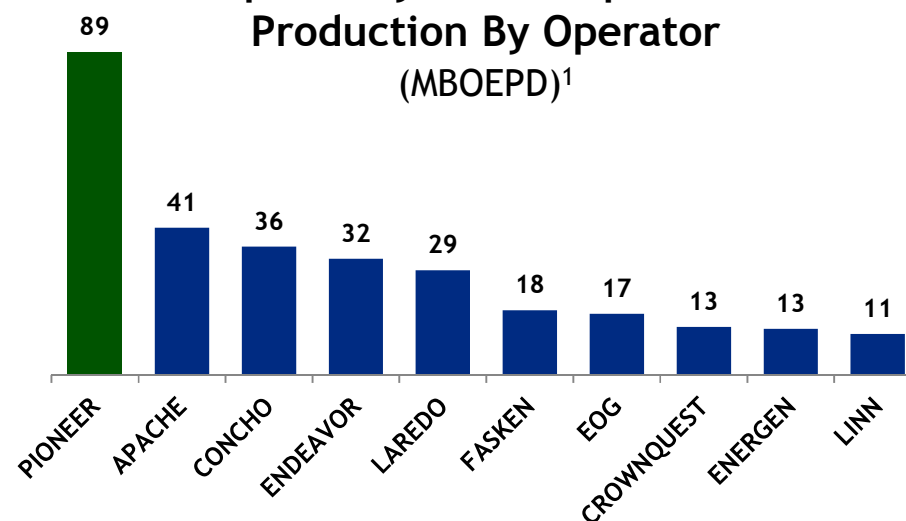
Top U.S. Fields By Rig Count¹

(Pioneer Operated Count in Green - 40 rigs)



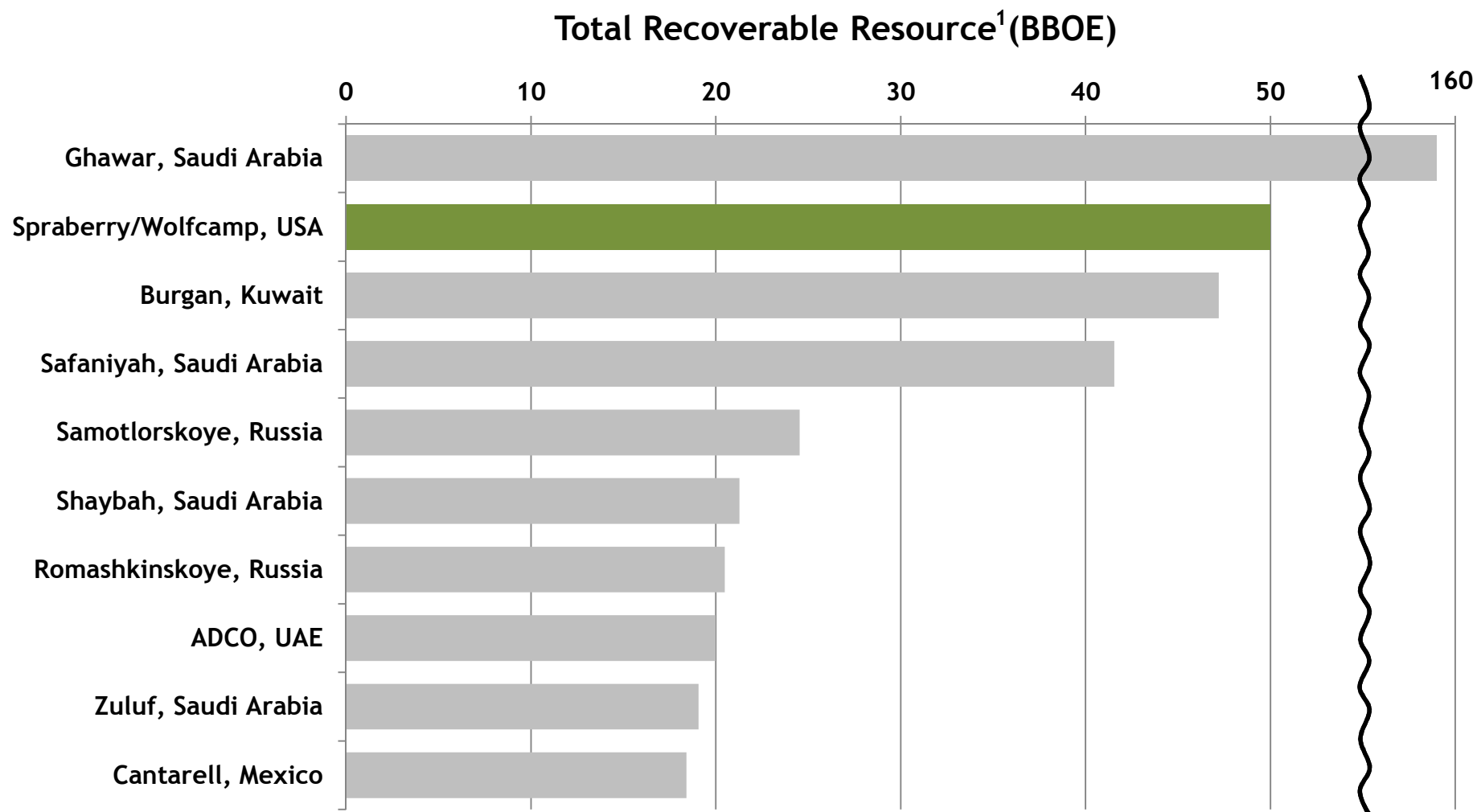
1) Baker Hughes Rig Count (9/20/13) and PXD Internal

Spraberry/Wolfcamp Gross Production By Operator (MBOEPD)¹



1) Year-end 2012 IHS data, gross reported oil and wet gas

Largest Oil Fields Worldwide

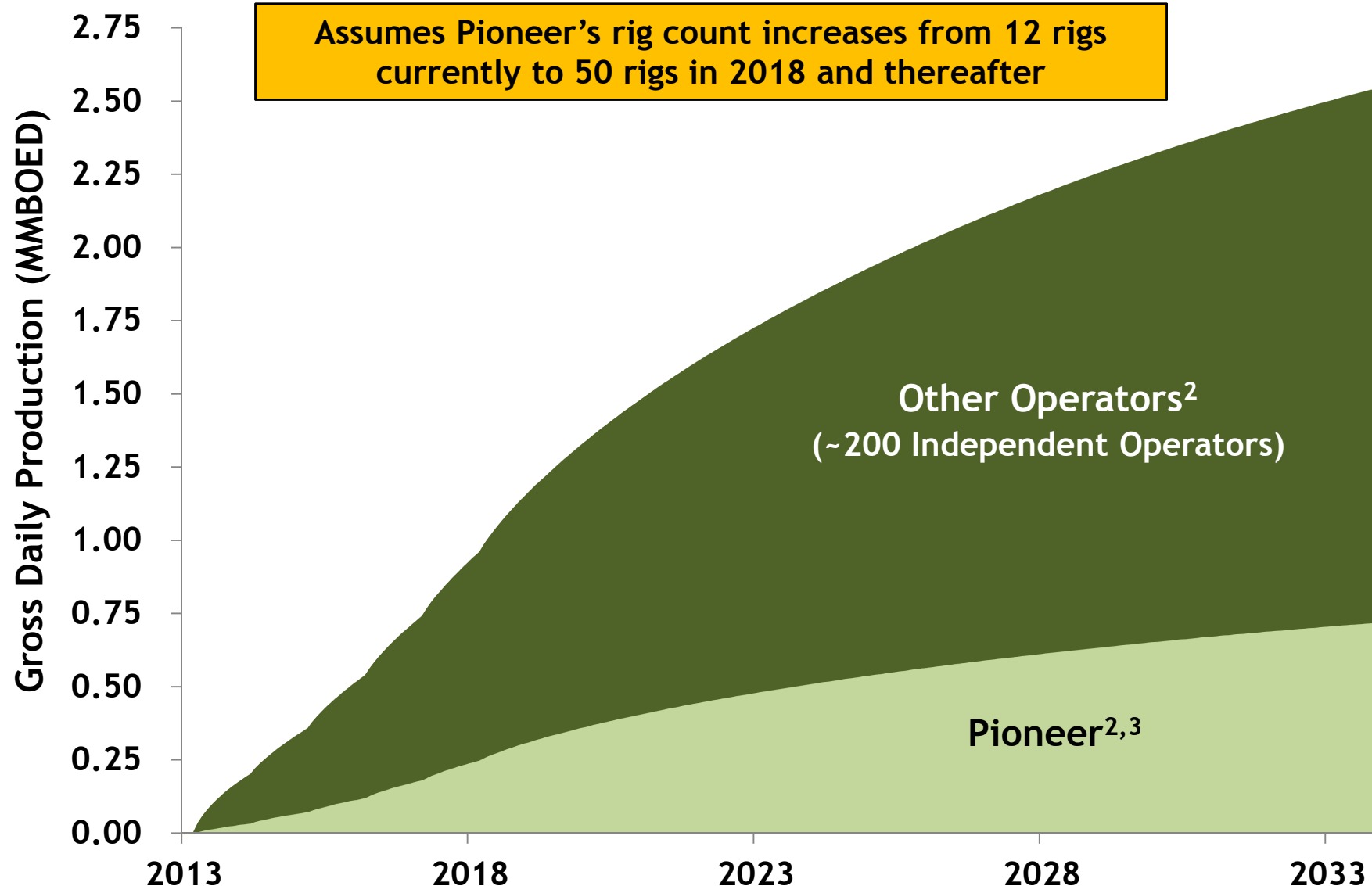


Spraberry/Wolfcamp is the 2nd largest oil field in the world

1) Total recoverable reserves includes oil and gas for all fields

Source: Wood Mackenzie for international fields; Spraberry/Wolfcamp from Pioneer

Spraberry/Wolfcamp Horizontal Drilling Production Growth Profile¹



1) Potential impediments to achieving this forecast include oil price, capital, infrastructure (Midland and oil field) and people

2) Assumes industry rig count ramps up from ~65 horizontal rigs currently to ~120 rigs per year in 2018 and thereafter (excludes Pioneer's portion)

3) Includes royalties and joint interest partner's share of production in southern Wolfcamp

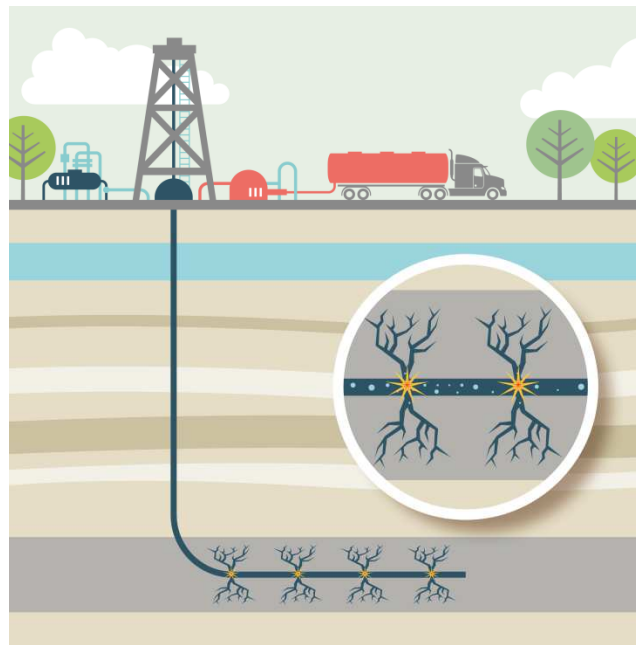
Public Questions

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Wellbore
Integrity

Seismicity

Air Quality



Endangered
Species

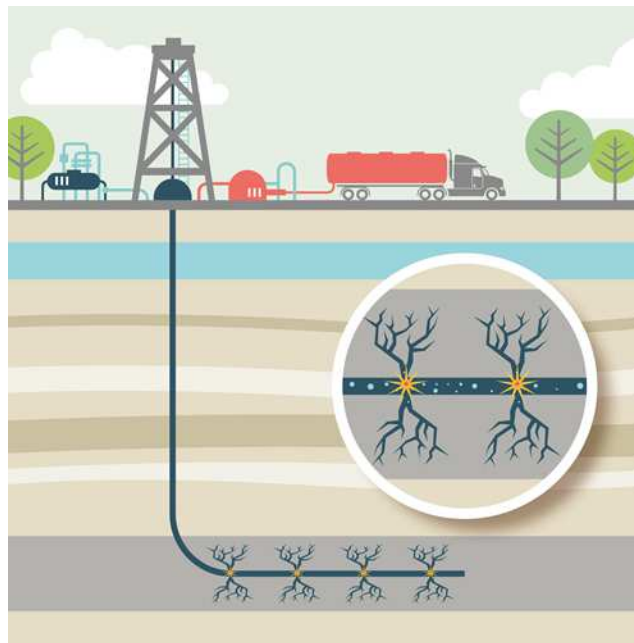
Water Use

The Players

Communities

Oil & Gas
Producers

Universities



Regulators

Lawmakers

NGOs

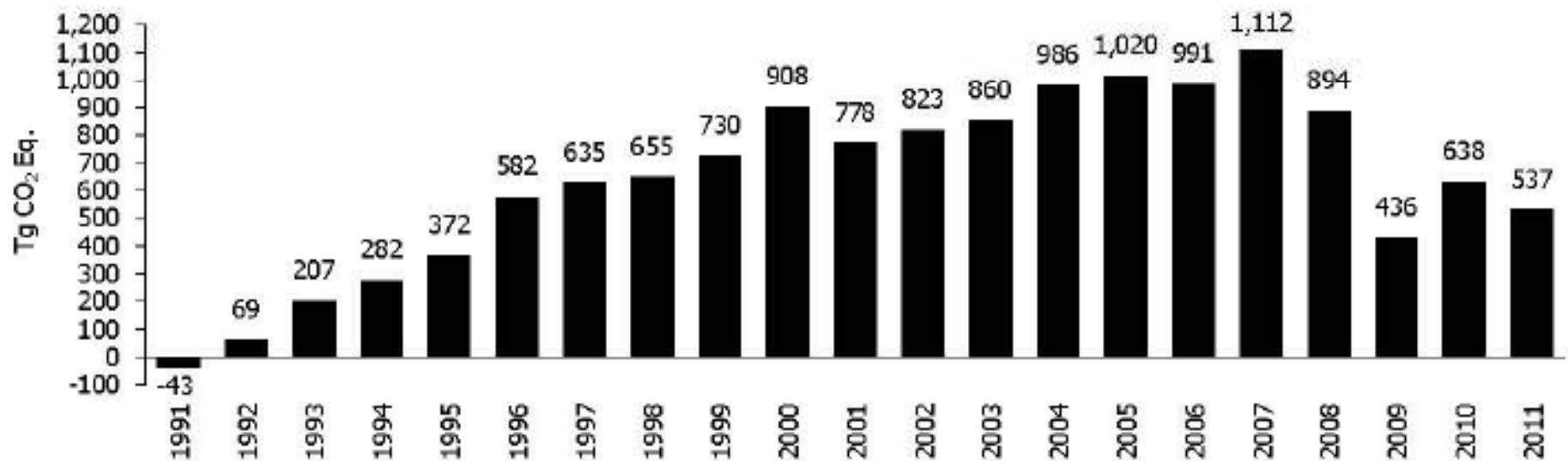
Service
Companies

- **Objectives**
 - Control wellbore pressure
 - Prevent pollution or groundwater contamination
 - Safely drill to total depth and produce oil/gas
- **Texas Rule 3.13 revisions**
 - Upgrade regulations for drilling and completions
- **FracFocus reporting**
- **Fracture additive product assessment**

Air Initiatives—Reducing GHG

- US GHG emissions are lower due in a large part to natural gas substitution for coal.

ES-3: Cumulative Change in Annual U.S. Greenhouse Gas Emissions Relative to 1990



- Source: Draft EPA U.S. Green house gas emissions and sinks: 1990-2011

Air Initiatives—Methane Measurement Project

Part 1 Results

- Most hydraulically fractured well completions sampled had equipment in place that reduces methane emissions by nearly 99%. Methane emissions from well completions are 97% lower than calendar year 2011 national emission estimates, released by EPA in April 2013.
- Emissions from pneumatic devices are approximately 70% higher than current EPA net emissions estimates, and equipment leaks are ~50% higher than current EPA net emission estimates; collectively these emissions account for more than 40% of methane net emissions from natural gas production.
- Methane emissions from gas production, from all sources measured in the study, were comparable to the most recent EPA estimates
- Emissions for completion flowbacks, pneumatics and equipment leaks, coupled with EPA national inventory estimates for other categories, leads to estimated 0.42% methane emissions from natural gas gross production.

Part 2 Plan

- Additional emission measurements from liquid unloadings (100 events) and pneumatic controllers (500 controllers) to supplement and enhance the data collected in Part 1 of the study.
- Conduct sampling September 2013 through early 2014 and submit final report for publication in March 2014.

Air Initiatives—Internal Plans

■ Internal Plans

- Estimate comprehensive emissions inventory
- Evaluation of upwind/downwind measurement methods
- Direct emissions measurement (ex. pneumatic devices)
- Voluntary emissions reduction measures (instrument air pneumatic controllers, green completions, infrared surveys on production equipment, natural gas-fueled fleet and drilling rigs)

■ Compliance with new rules

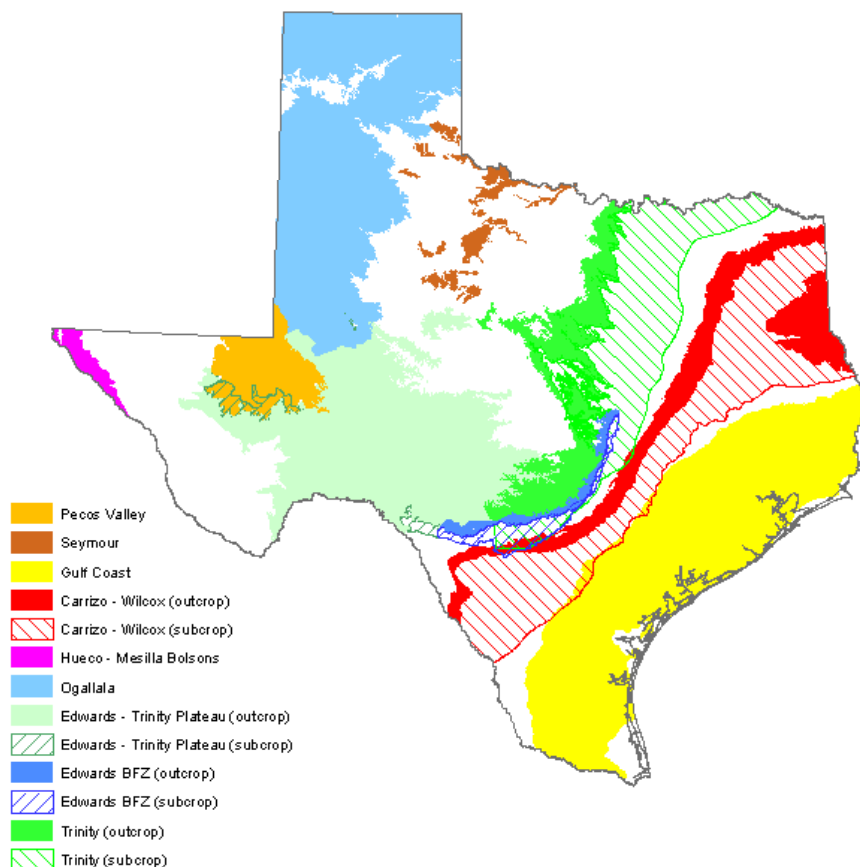
- New Source Performance Standards (NSPS) – EPA



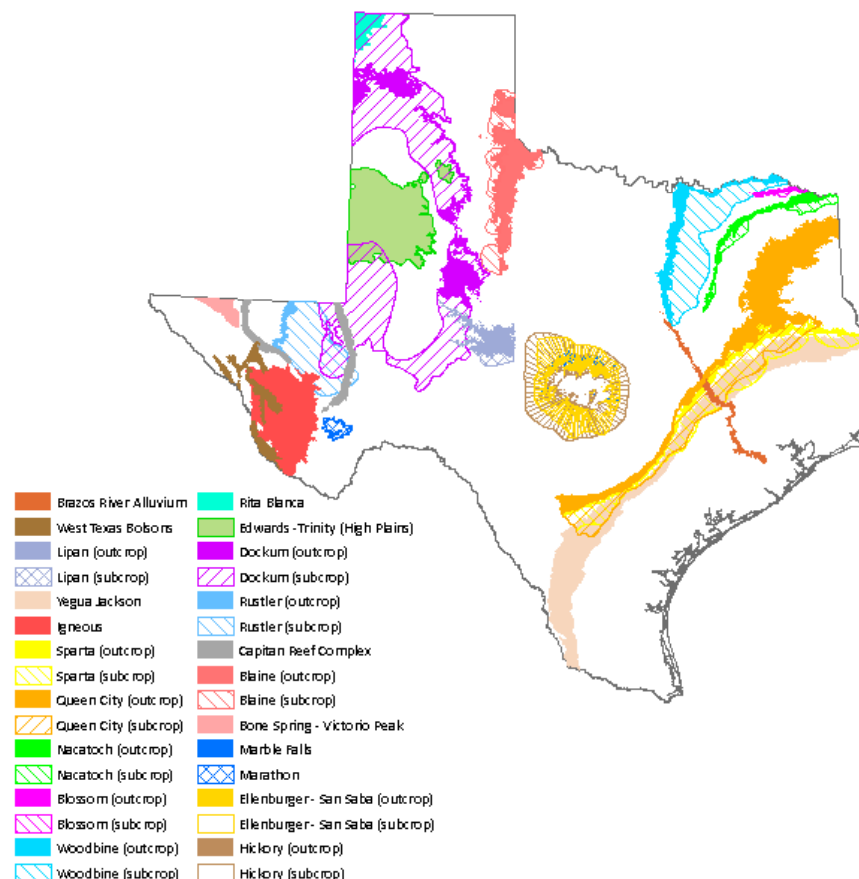
Source Water Background

- TWDB data indicates that West Texas aquifers have been stable or slightly rebounding since the 1980's
- Most O&G activity used fresh nearby groundwater

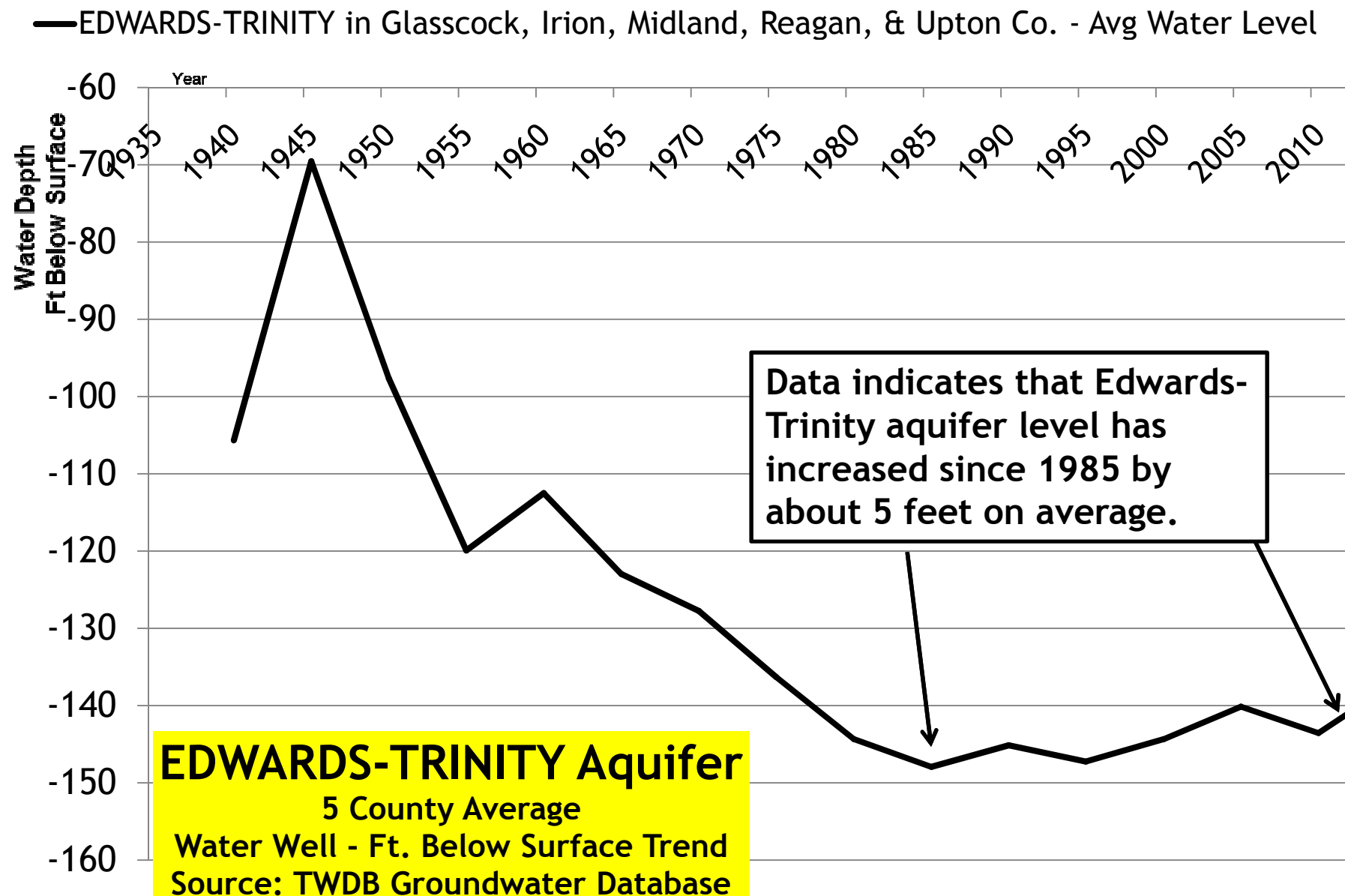
TWDB Major Aquifers



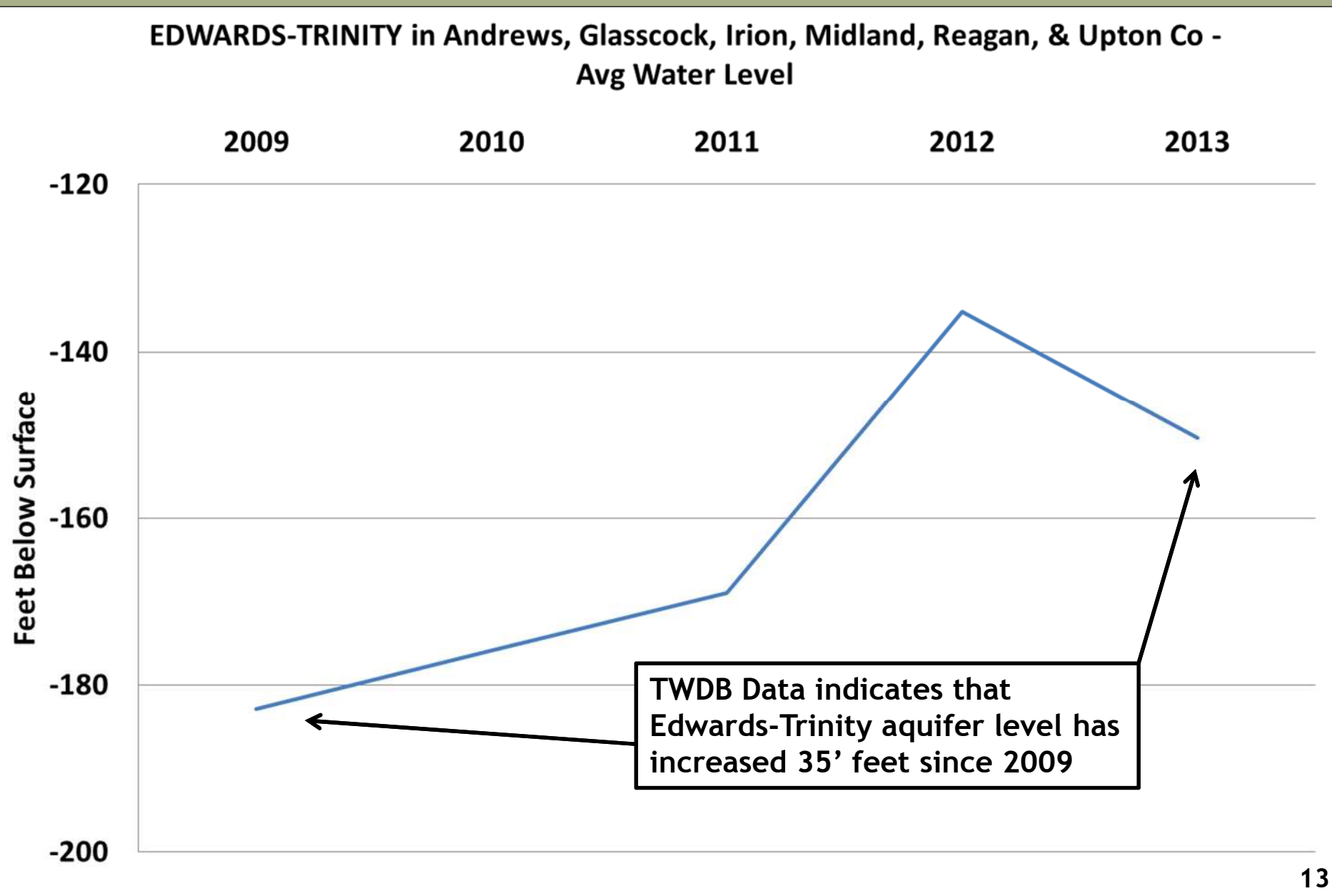
TWDB Minor Aquifers



Edwards-Trinity Aquifer Average (TWDB data)



Recent Average Edwards-Trinity Aquifer Level



Permian Water Sources

| <u>Source</u> | <u>Summary of Challenges</u> | <u>Volume</u> |
|--|---|---------------|
| Fresh (less than 1,000 ppm TDS) | | 5.4 B ac-ft* |
| Local | Concern that volumes are limited. | |
| Distant | Texas still has limited fresh water & cost to transport | |
| Brackish (1,000 – 10,000 ppm TDS) | | 2.7 B ac-ft* |
| Local | Drilled 40 wells for brackish water with mixed results | |
| Distant | Cost to transport is significant | |
| Recycling | | |
| Clean Brine | ~Low cost; Storage, transport & frac chemistry challenges | |
| Desalination | Highest cost; Solids or brine concentrate disposal | |

All options have challenges...

***Volumes statewide per TWDB**

Pioneer's Permian Water Plans:

- **Brackish sourced water**
- **Blending and Treating water to keep TDS below 3,000**
- **Positives:**
 - Reduces fresh water demand
 - Provides long-term water source for Pioneer
 - TDS below 3,000 reduces risks in transport and storage
- **Challenges:**
 - Requires long term commitment
 - Transportation required



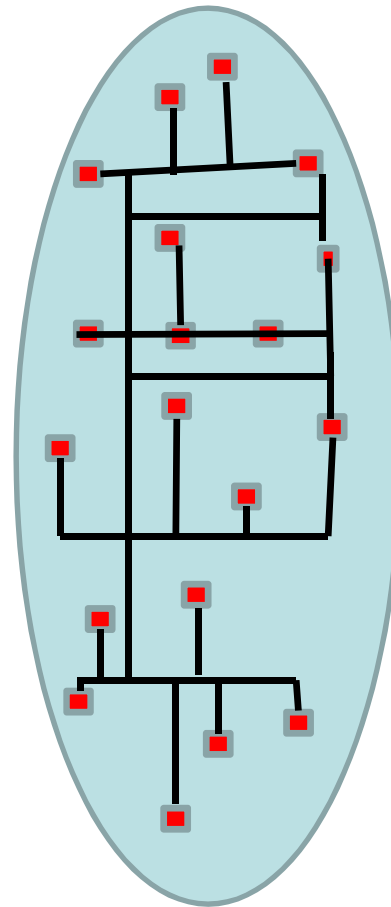
Network to Distribute Useable Water

Plan:

- Build a network to move useable water close to frac sites
- Build storage ponds spread around acreage (red dots)

Why?

- Reduced need for trucking water
- Transport water more effective for long term
- Allows flexible use of water sources and storage capacity



Other Parts of the Plan

Continue to evaluate other sources

- In-field brackish wells
- Municipal waste water sources
- Pipelines from outside of basin

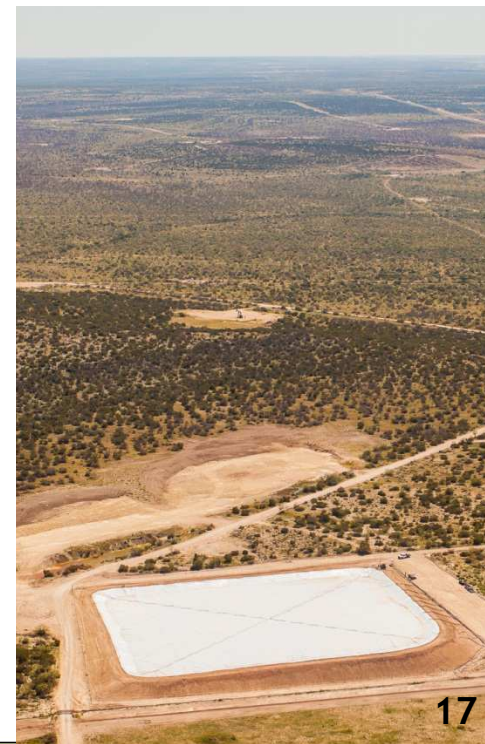


Recycling projects

- 4 recycling projects by Q1 2014 - 20,000 BWPD
 - 3 desalination projects
 - 1 clean brine project

Evaporation Control Covers (ECCs)

- Can save 6 feet of evaporation per year in W. Texas
- Economically viable if pond needed for several years
- Approximately 6 ECCs installed by year-end 2013
- More installations planned



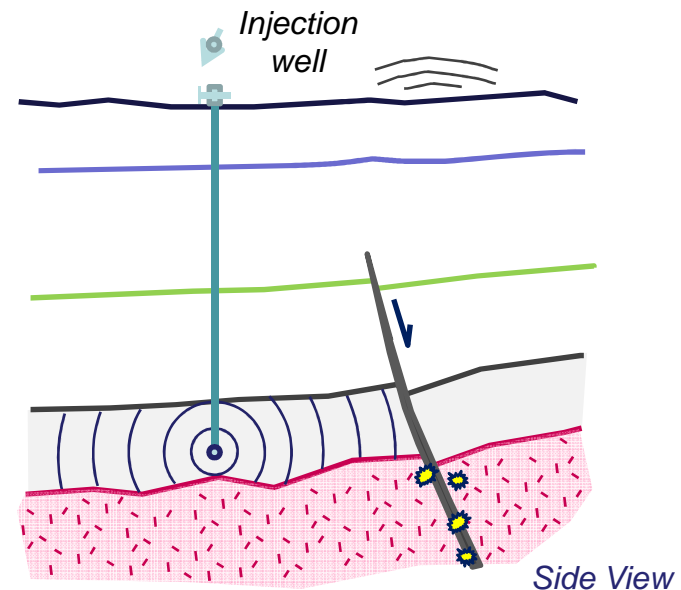
Endangered Species

- **Endangered Species Act Reform**
 - Industry groups lobbying Congress for targeted reforms to ESA that are pragmatic and based on sound science, not politics
 - ESA should not be utilized as a land and water management tool but for its intended purpose of wildlife protection
- **An “endangered” or “threatened” listing places communities and future development at risk**
- **250+ candidate species must be reviewed by 2016**
- **Voluntary Conservation Agreements help protect species and may prevent listings**



Induced Seismicity from Fluid Disposal

- **Long history of water injection by O&G**
 - Very few cases of seismicity, minimal surface impact
- **Studies are ongoing**
 - Induced seismicity is hard to differentiate from natural seismicity
 - Nature is often hard to predict
- **Potential impact may be evaluated case-by-case**
 - Risks can be managed
 - Industry and States addressing



Conclusions

- **Hydraulic Fracturing of shale is game changing and very positive for the USA**
- **O&G has taken steps on the major areas**
- **Many studies and programs are ongoing**
- **O&G cares about community support & sustainability**

