

Frac Water Quality: How Much Processing is needed?

Prepared for

Water & Natural Resource Committee

Sept 5, 2019

Robert Huizenga

Headlines

TRASH OR TREASURE: HOW IS PRODUCED WATER'S ECONOMIC VALUE EVOLVING IN THE PERMIAN BASIN?

GABRIEL COLLINS

Presentation

WATER CHALLENGES IN PERMIAN BASIN FRACTURING OPERATIONS

From source water to produced water, technologies help E&P operators solve growing water challenges in Permian Basin fracturing operations.

JULIE VILLALOBOS — SEPTEMBER 27, 2018

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Fracking-Related Water Problems Raise Issues in West Texas

By David Hunn | August 3, 2017

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Science News

from research organizations

Study quantifies potential for water reuse in permian basin oil production

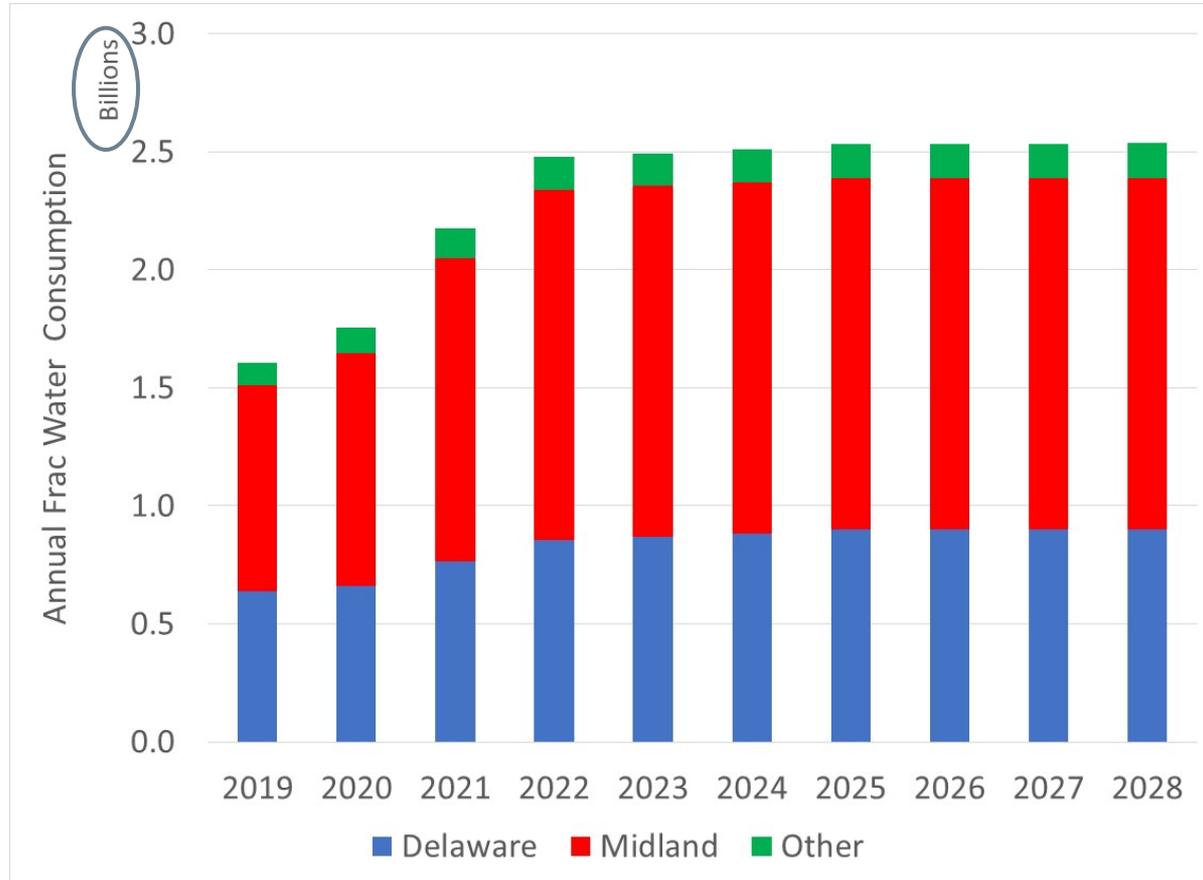
Date: September 6, 2017

Source: University of Texas at Austin

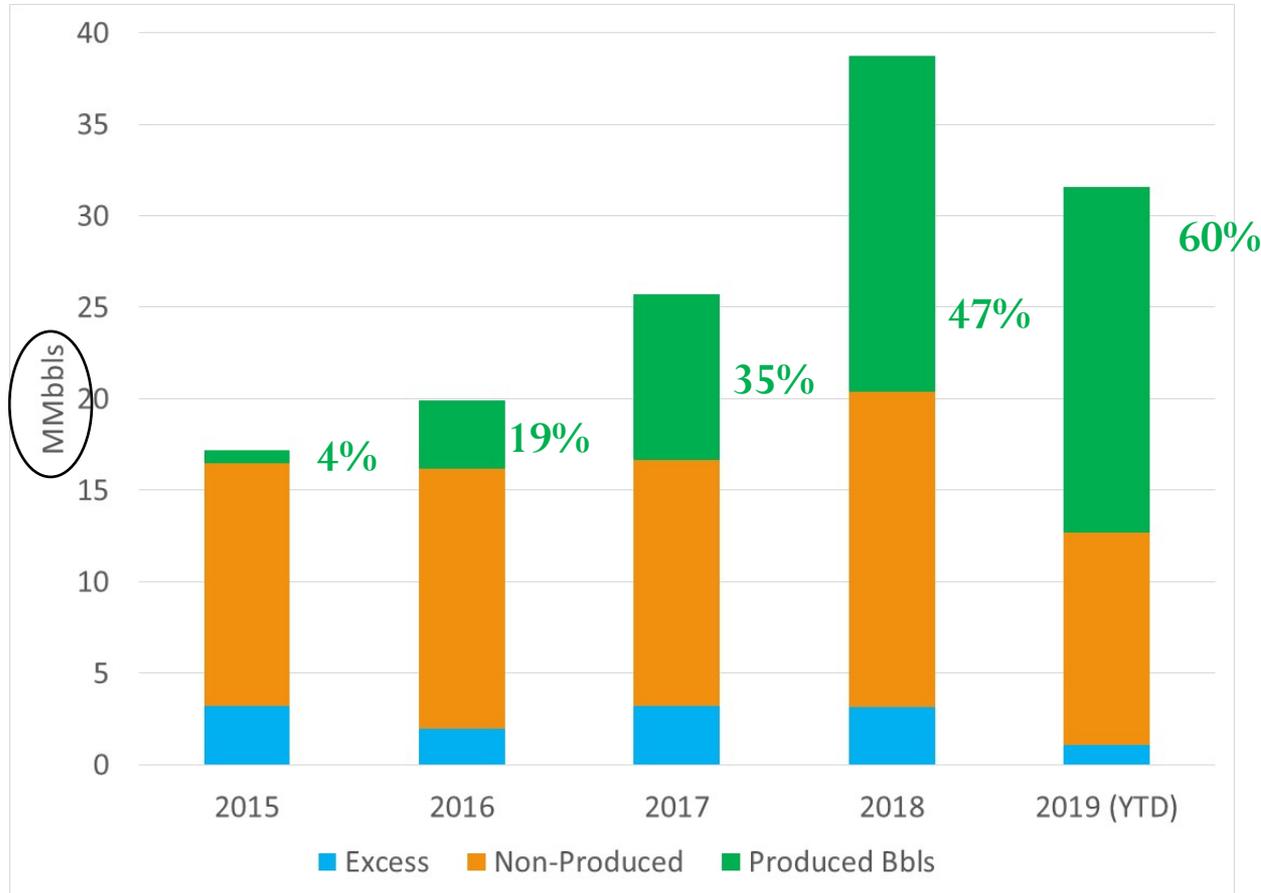
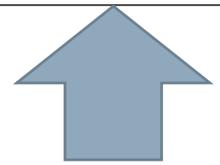
Summary: Hydraulic fracturing has once again made the Permian Basin one of the richest oil fields in the world. But the improved reserves come with some serious water management issues. Drilling for oil uses water upfront, and brings up large volumes of water that need to be managed. The study found that recycling the water produced during operations at other hydraulic fracturing sites could help reduce potential problems associated with the technology.



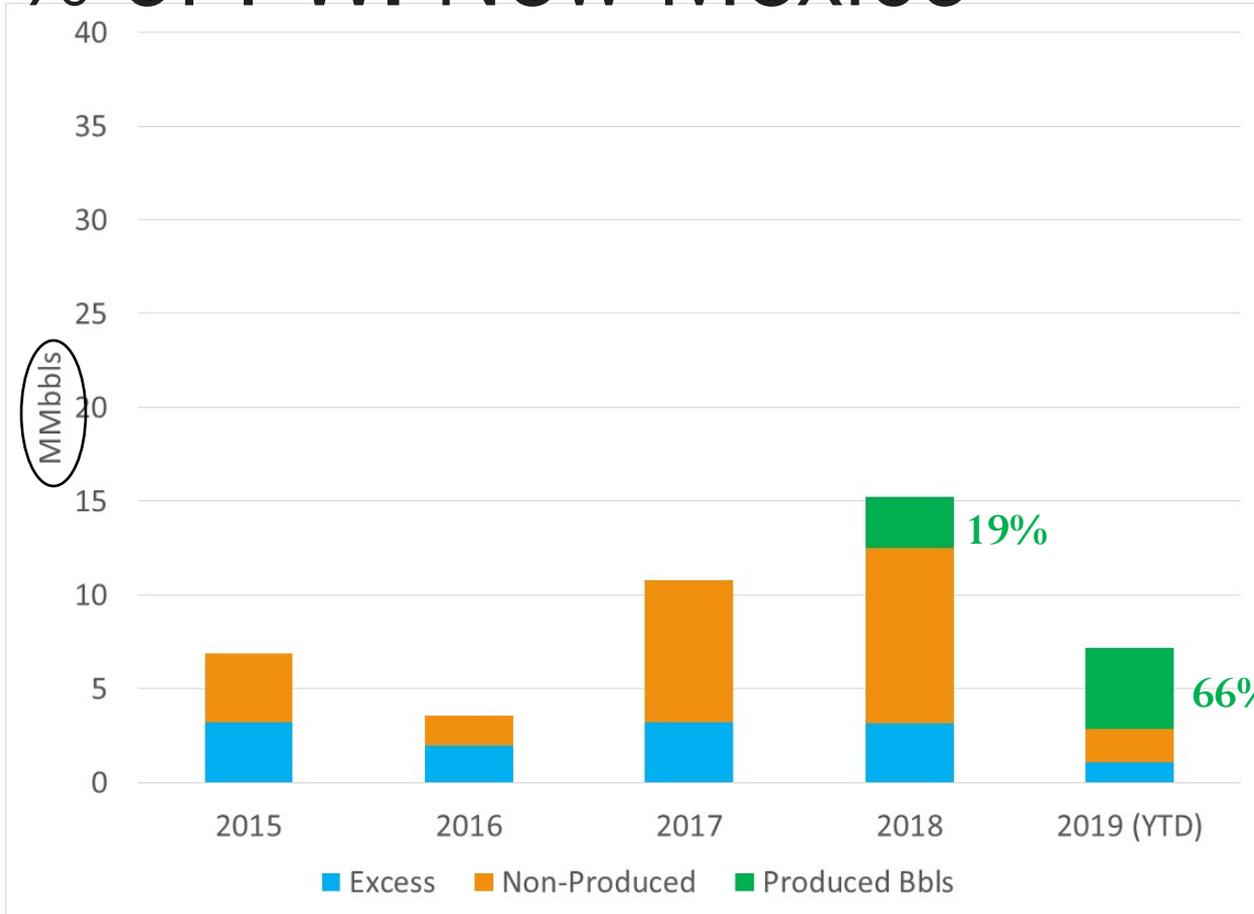
Frac Water Forecast



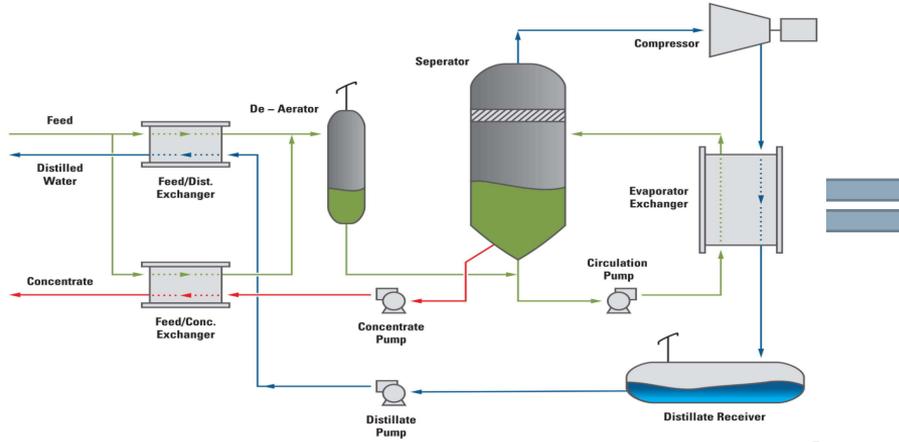
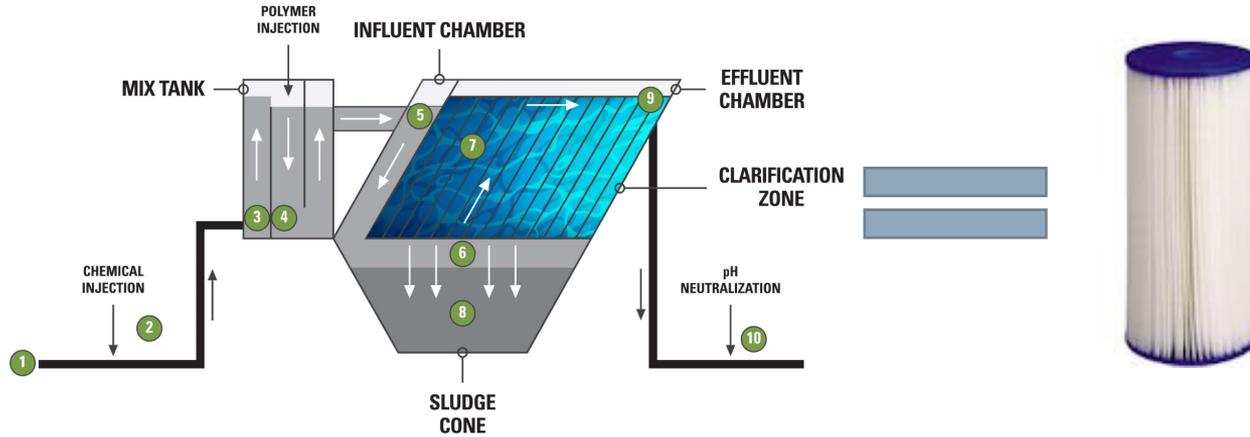
XEC's % of PW: Permian Basin



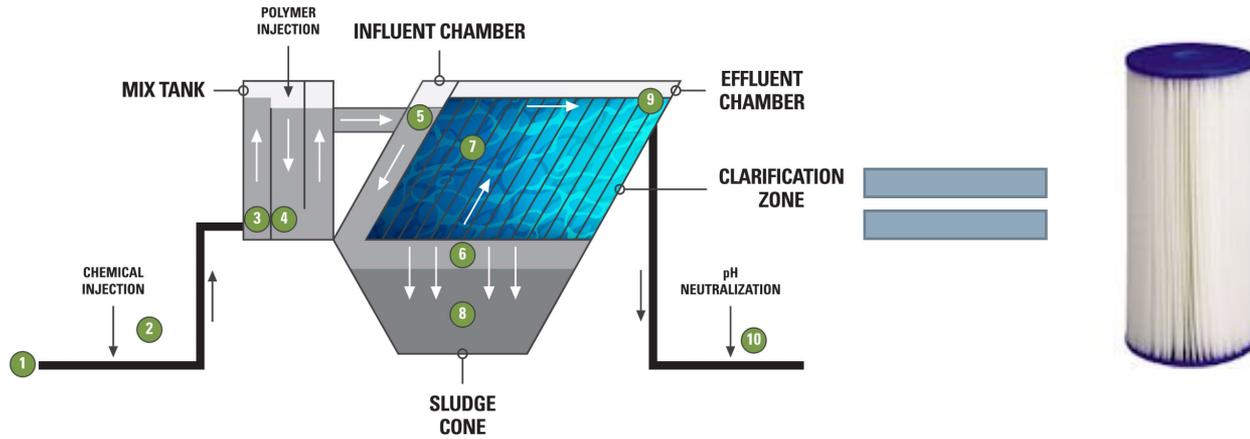
XEC's % of PW: New Mexico



Reuse Ver. 1.0: 2013-2014



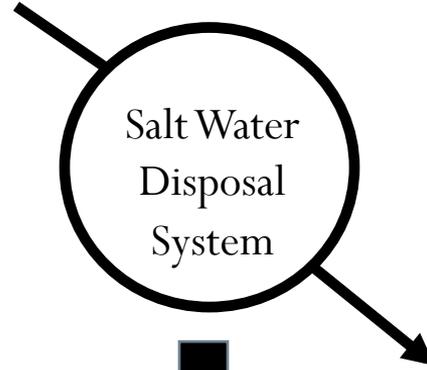
Reuse Ver. 1.1: 2015



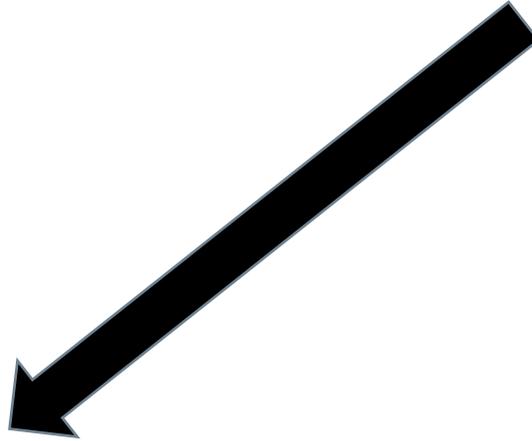
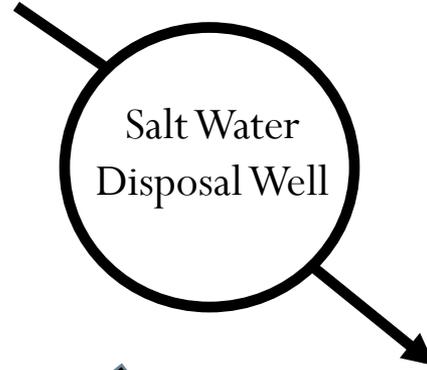
Reuse Ver. 2.0: Goals

- Water Quality
 - Control Total Suspended Solids $>$ 25 microns
 - Control Bacteria
- Operational
 - Flexible process rate
 - On-Demand system
 - Minimal Surface Storage

Reuse Ver. 2.0: 2016-2018



Reuse Ver. 2.1: 2019



Reuse 2016-2019:

- Pros
 - No Capital Outlay/Long-Term Contracts
 - Less operational “maintenance” cost
 - Reduced environmental liability
- Cons
 - Field or Hydraulically limited to water production
 - Balancing act with production operations
 - ~~Disposal of solids~~

What keeps us up at night!

- H₂S
- Spills
 - Permanent Line
 - Lay Flat
 - Over filling of Tanks
- Shutting in Production

Conclusions

- Process PW to Distilled Water: **Lots of Processing**
- Minimal Processing is needed: **No Processing**
- Able to use existing infrastructure
- Reuse inside the oilfield is an evolving process