



Radioactive and Hazardous Materials Committee
Second Meeting, Carlsbad, July 14, 2021
Produced Water Issues In and Out of the Oil Field

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WATER SOLUTIONS

- Transports, treats, recycles and disposes of produced and flowback water generated from crude oil and natural gas production. Disposes of solids such as tank bottoms, drilling fluids and drilling muds and performs other ancillary services such as truck and frac tank washouts
- Owns the largest integrated network of large diameter produced water pipelines, recycling facilities and disposal wells in the Delaware Basin
- Underpinned by long-term, fixed fee contracts, acreage dedications and minimum volume commitments



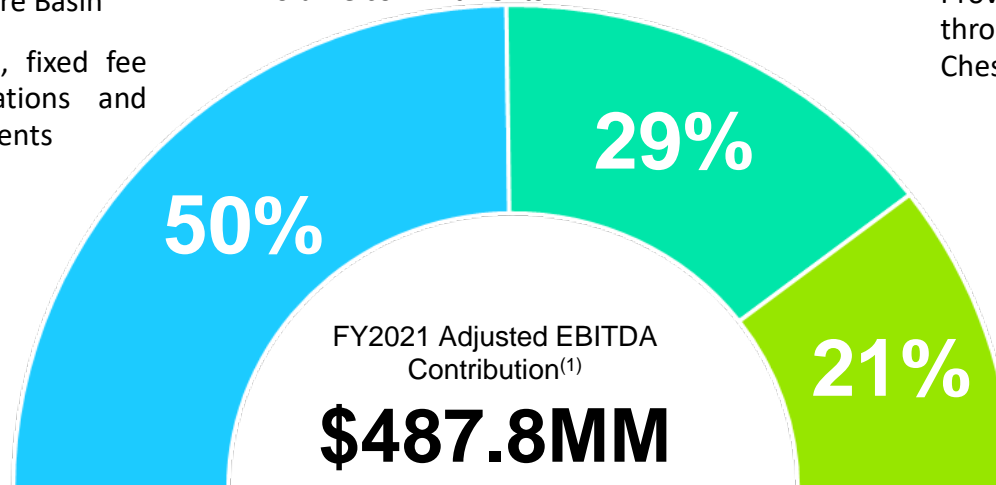
CRUDE OIL LOGISTICS

- Purchases crude oil from producers and marketers and transports it to refineries or for resale at pipeline injection stations, storage terminals, barge loading facilities, rail facilities, refineries, and other trade hubs
- Provides storage, terminaling and transportation services through its owned assets
- Supported by certain long-term, fixed rate contracts which may include minimum volume commitments

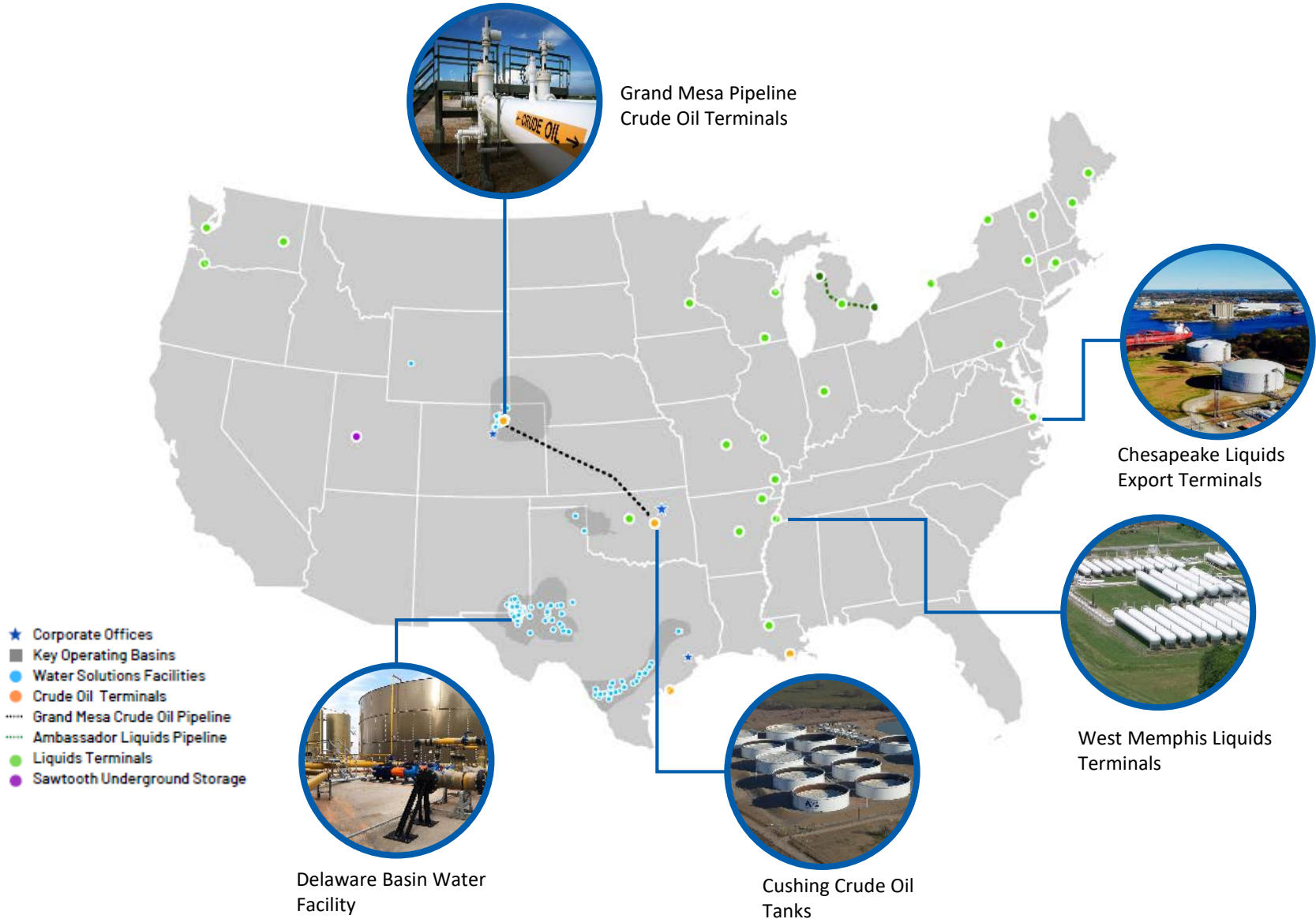


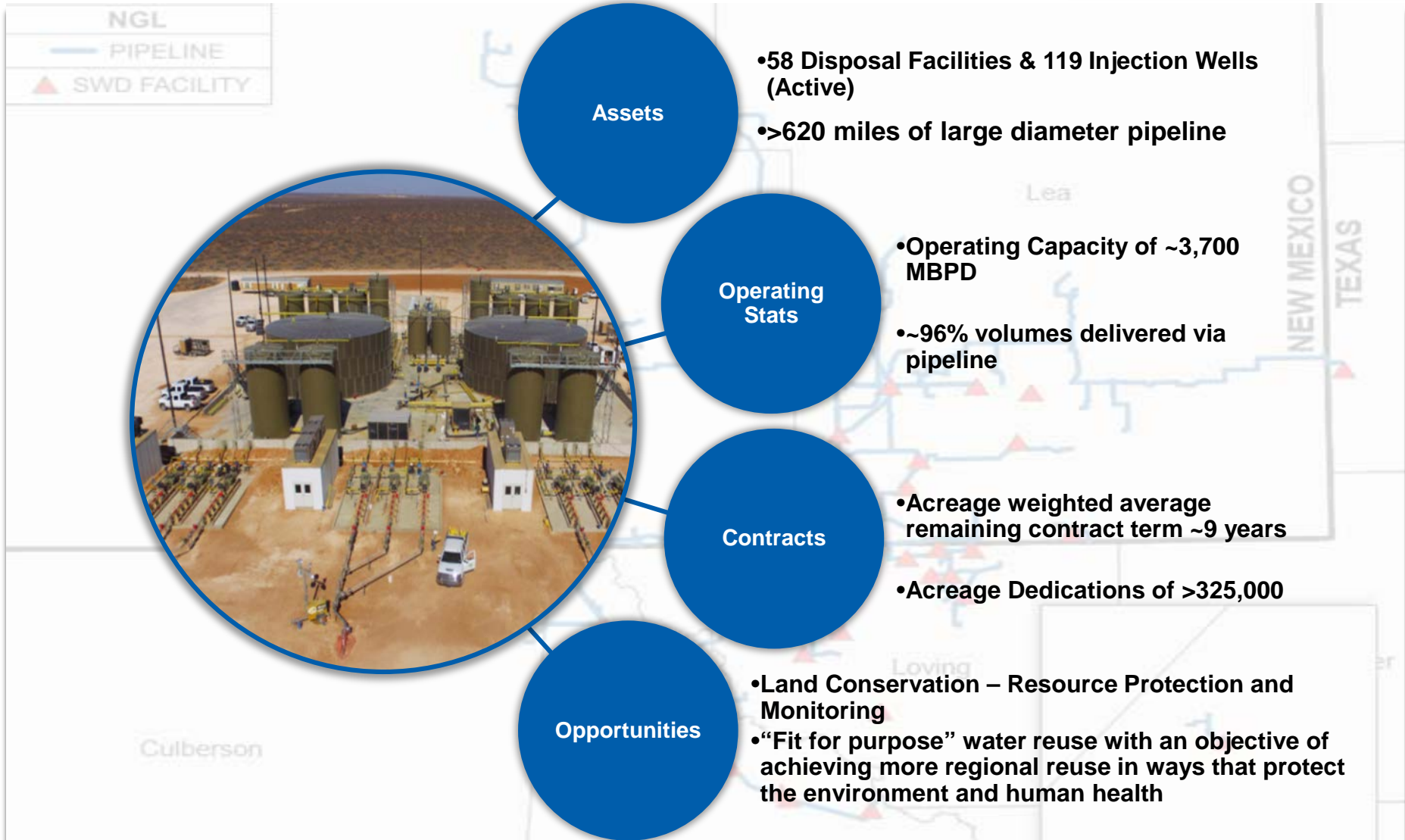
LIQUIDS LOGISTICS

- Conducts wholesale operations for NGLs, refined petroleum products and biodiesel to a broad range of commercial, retail and industrial customers across the US and Canada
- Operations are conducted through 28 company-owned terminals, other third party storage and terminal facilities, common carrier pipelines and a fleet of leased railcars
- Provides marine exports of butane through a facility located in Chesapeake, VA



(1) Excludes Corporate & Other FY2021 Adjusted EBITDA of (\$39.6) million





LARGEST INTEGRATED PRODUCED WATER SYSTEM IN THE DELAWARE BASIN



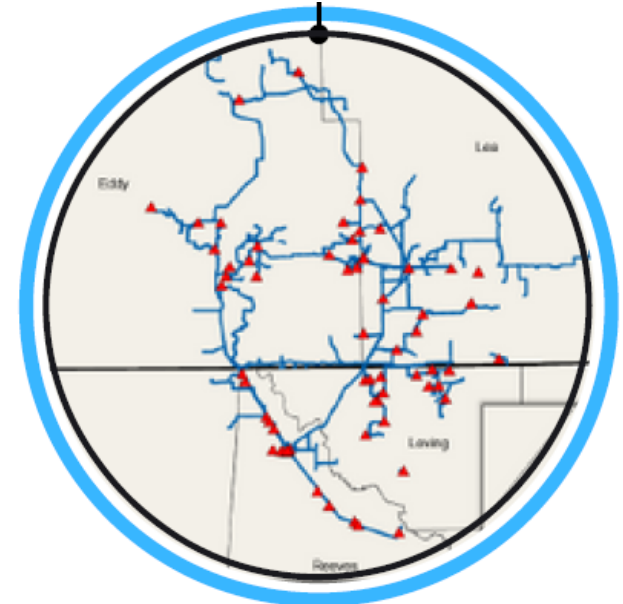
- > 100 NGL employees operating in Delaware Basin
- Offices in Santa Fe & Carlsbad



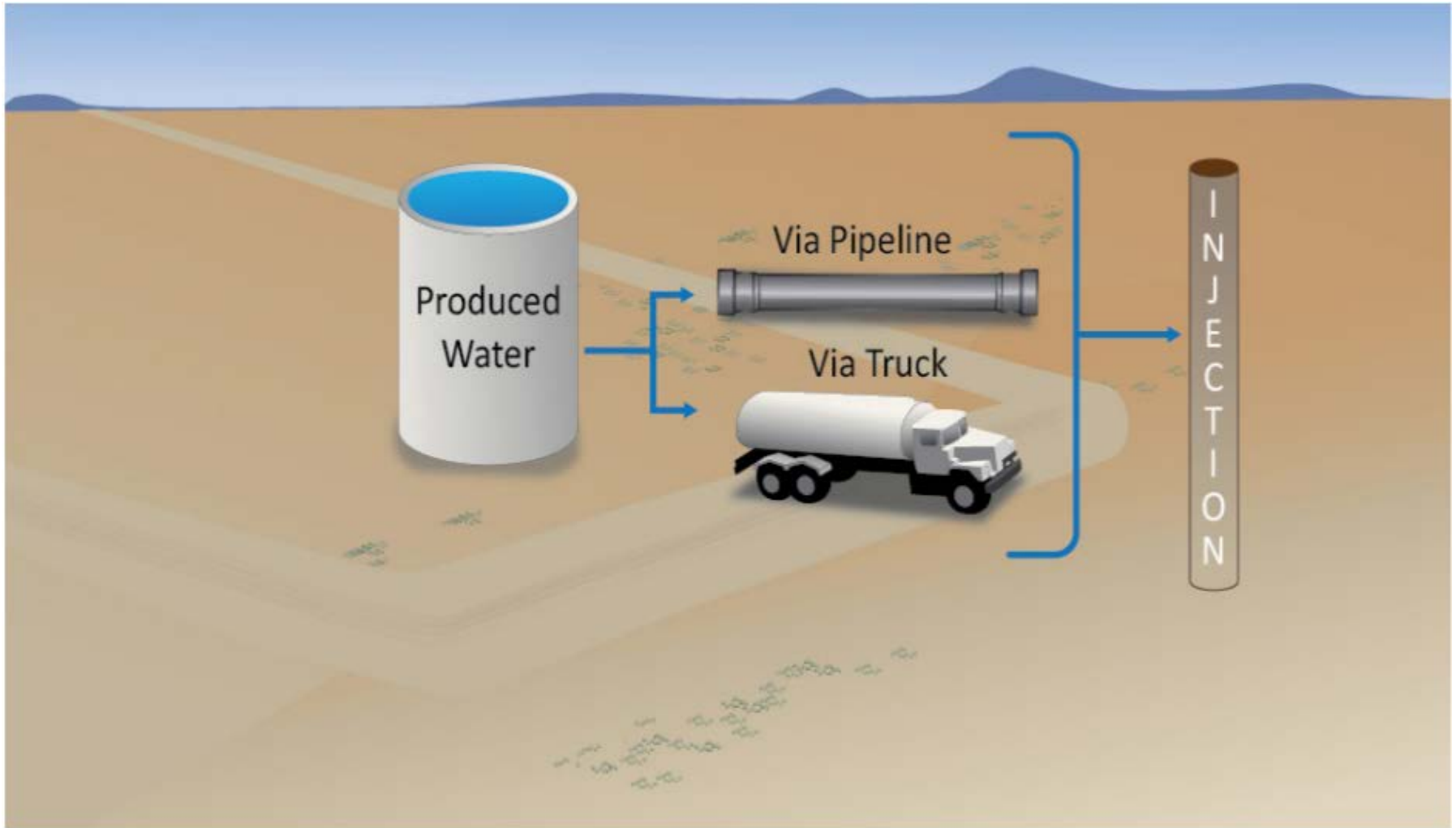
- 119 injection wells in the Delaware Basin (NM & TX)
- 29 injection wells in NM

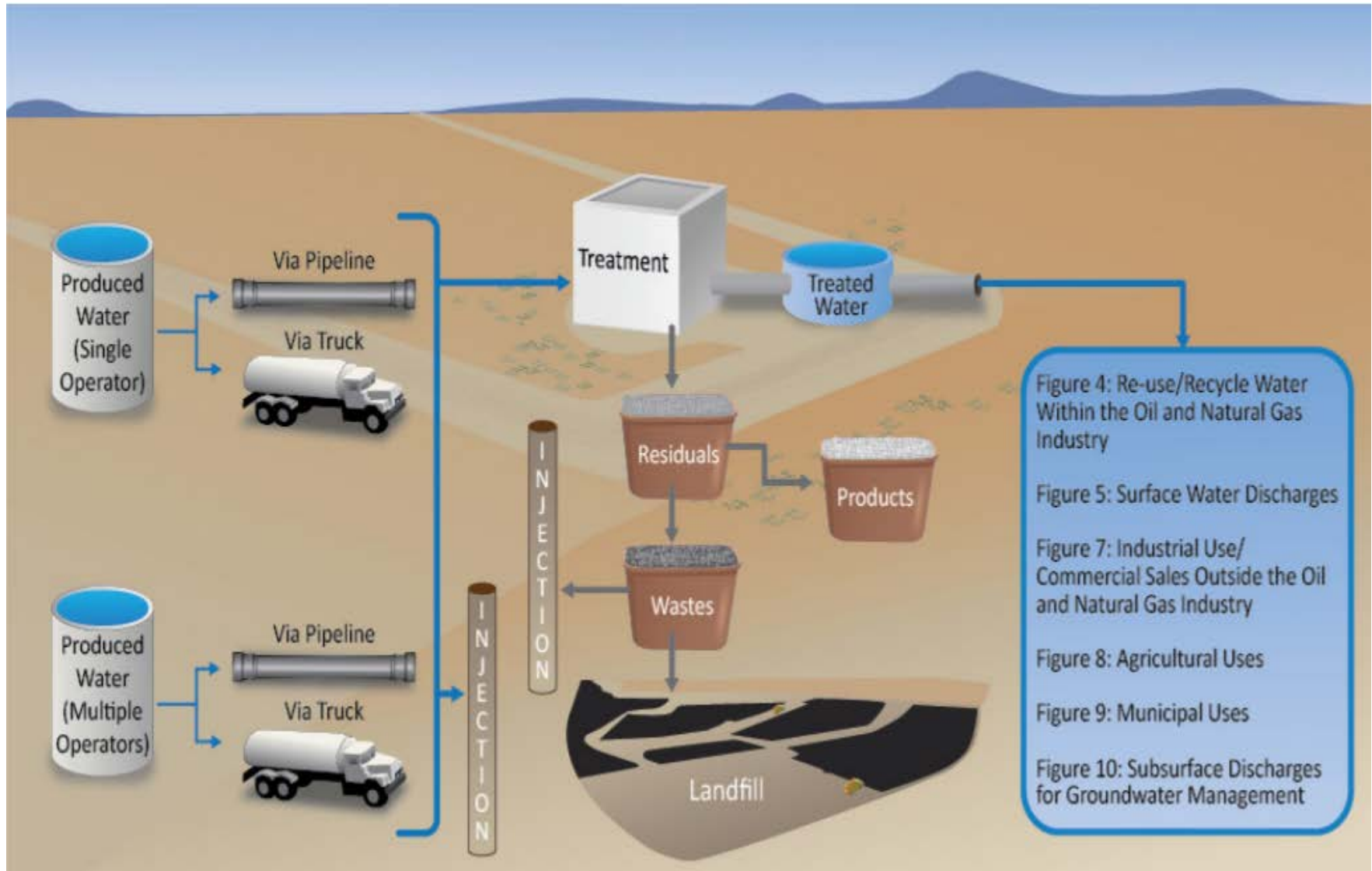


- System manages > 1.25 MBPD
- ½ of that volume is recoverable fresh water
 - 64 acre feet / day



Delaware Basin Water Pipeline Infrastructure
New Mexico & Texas





- Figure 4: Re-use/Recycle Water Within the Oil and Natural Gas Industry
- Figure 5: Surface Water Discharges
- Figure 7: Industrial Use/ Commercial Sales Outside the Oil and Natural Gas Industry
- Figure 8: Agricultural Uses
- Figure 9: Municipal Uses
- Figure 10: Subsurface Discharges for Groundwater Management

Wastewater for in-field reuse

- We provide wastewater to third-party operators (producers and recyclers) for use in their operations—satisfying demand for water resources via reuse
- We treat wastewater for reuse in up-stream production operations
- NGL provided >14 million barrels of wastewater for in-field reuse in 2020—a 336% increase from 2019
- We have treated wastewater to appropriate CWA standards in Wyoming to augment regional fresh water supplies, as part of a process called “Fit for Purpose”



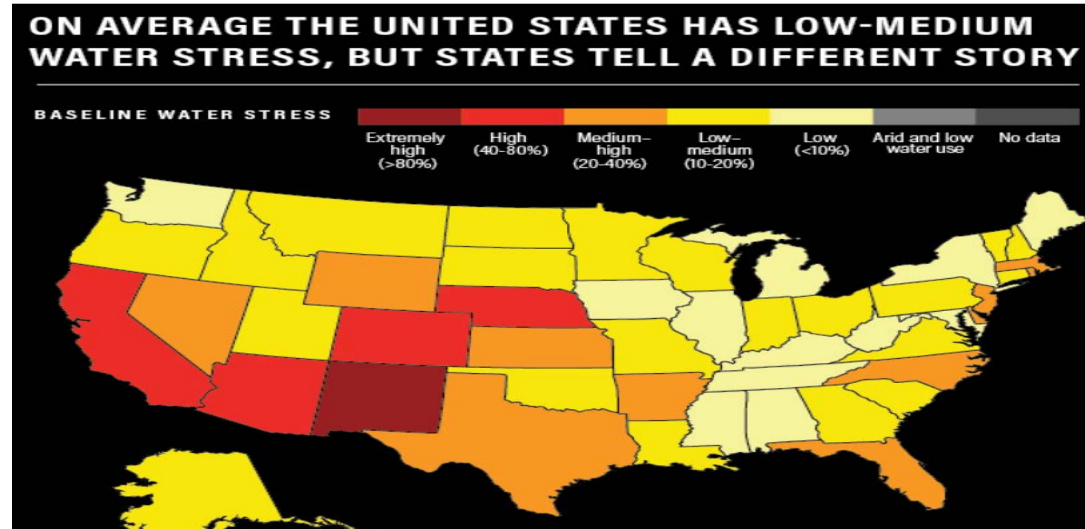
“Why would the poorest state in the nation invest tremendous amounts of resources into finding a mechanism to turn one of the most toxic substances out there into potable water?”

*Wastewater, wastewater everywhere: In the Permian Basin, a new kind of boom, NM Political Report
Feb 2020*

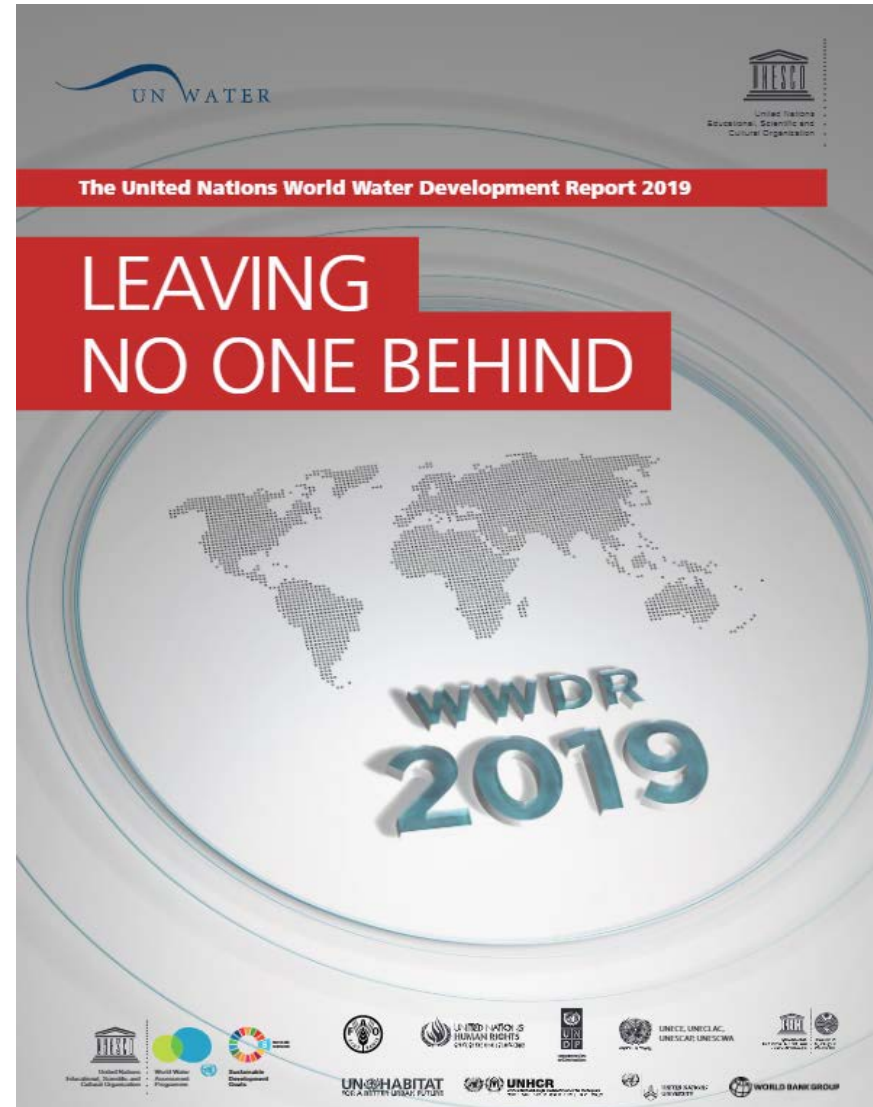
All Politics. All New Mexico. **NM** **POLITICALREPORT**

- NM is the only U.S. state under “extremely high” water stress, on par with the United Arab Emirates, which is the globe’s 10th most water stressed nation.
- \$1 Billion U.S. investment in expanding water supply would directly result in 100,00 jobs.

1. Qatar
2. Israel
3. Lebanon
4. Iran
5. Jordan
6. Libya
7. Kuwait
8. Saudi Arabia
9. Eritrea
10. United Arab Emirates



- “An estimated three out of four jobs that make up the global workforce are either heavily or moderately dependent on water. This means that water shortages and problems of access to water and sanitation could limit economic growth and job creation in the coming decades.”
- “This analysis highlights the fact that water is work – it requires workers for its safe management and at the same time it can create work and improve conditions.”



- NGL's Anticline Recycling Facility is located in Sublette County in Southwest Wyoming
- Single, large-scale facility that treats oilfield wastewater generated from drilling and production activities on the Pinedale Anticline and Jonah Field
- 99% of incoming and outgoing water is transported via pipeline
- Can treat to either a recycle standard (for re-use in hydraulic stimulation) or a discharge standard (to a better than drinking water quality primarily for discharge into the New Fork River)
 - Treatment capacity for recycle of 60,000 barrels per day

**NGL's Anticline Facility
has been recycling since
2008**

**Over 62 million barrels
have been recycled or
treated since 2008**

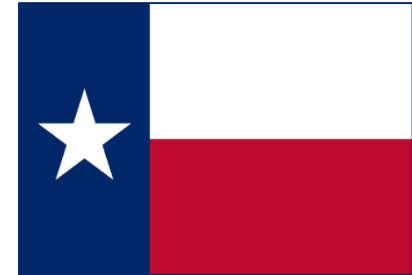




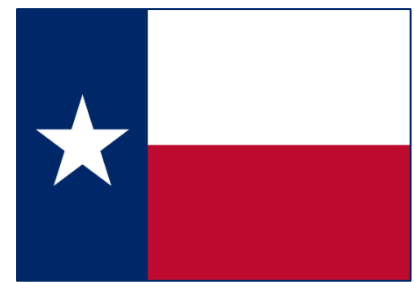
- No NPDES Primacy
 - NPDES Applications to EPA Region 6
- NM fulfills § 401 Cert.
- TODAY: NM not prepared to certify



- NPDES Primacy
- WY DEQ issues WYPDES permit
- TODAY: Anticline Disposal operates under WYPDES permit (orig. 2009).




- NPDES Primacy
- TCEQ issues TXPDES permit
- TODAY: TX will review individual applications for permit to discharge



Social License to Operate

Regulatory Pathway

Cost Competitive



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Social License to Operate

Regulatory Pathway

Cost Competitive



Pathway to fit-for-purpose water . . .

New Mexico Produced Water Research Consortium

BE BOLD. Shape the Future.
New Mexico State University



Identify Gaps in Knowledge and Technology



Research New Approaches to Water Use



Inform Policy Making



Michelle Lujan Grisham
@GovMLG

Today in Carlsbad I announced that [@NMEnvDep](#) and [@nmsu](#) are partnering to advance scientific and technological water solutions by creating a produced water consortium. This public-private partnership will reinforce New Mexico's national leadership in this important innovation.



4:10 PM · Sep 12, 2019 · [Twitter Web App](#)

NGL strives to provide sustainable transport and management of waste-water. To help achieve this end, we have forged strategic partnerships to facilitate research and innovation.



Colorado School of Mines

- ✓ 2019, NGL donated our water research laboratory to the School of Mines WE²ST Water Technology Hub;
- ✓ research aimed at bridging the gap between lab and commercial scale water treatment technologies.



New Mexico State University

- ✓ NGL was the first to support the NMSU Produced Water Research Consortium—\$1M commitment.
- ✓ The Consortium is working to advance scientific and technological solutions related to the treatment and reuse of oil and gas produced water..



The Environmental Council of States

- ✓ NGL joined ECOS Oil and Gas Caucus as one of two industry Project Partners.
- ✓ Assist state regulators to better understand the produced water management space

Thank You

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