

Building a Water Business in the Permian Basin: *Challenges, Opportunities and Lessons Learned*

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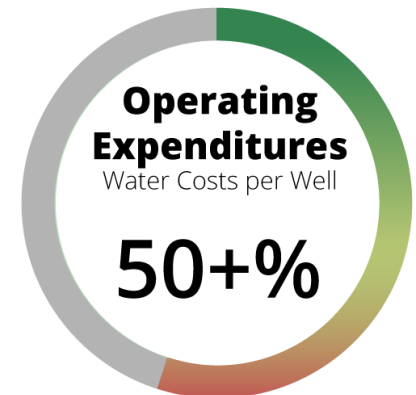
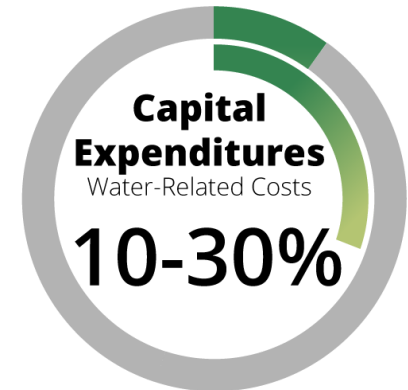


The Size of the Prize

- Onshore oil and gas activity in the United States *produces* over **20 Billion barrels** of “produced” water annually (*6X greater than crude oil*)
- Drilling and completions activity *consumes* an additional **2 billion barrels** of “source” water each year
- Nationwide, less than 2% of all produced water is re-used (In PA the rate is 90%+)

\$80 - \$100 Billion of investments in the Permian alone

Our goal of investing 1 Billion is 1% of the market





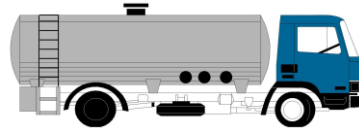
H₂O Midstream Vision

Our vision is to be a *great* water midstream company by creating *long term value* for our Customers and *transforming* the way water is managed in the oil and gas industry.

Shale Water 1.0: Trucking & Disposal



Producer
Well Pad

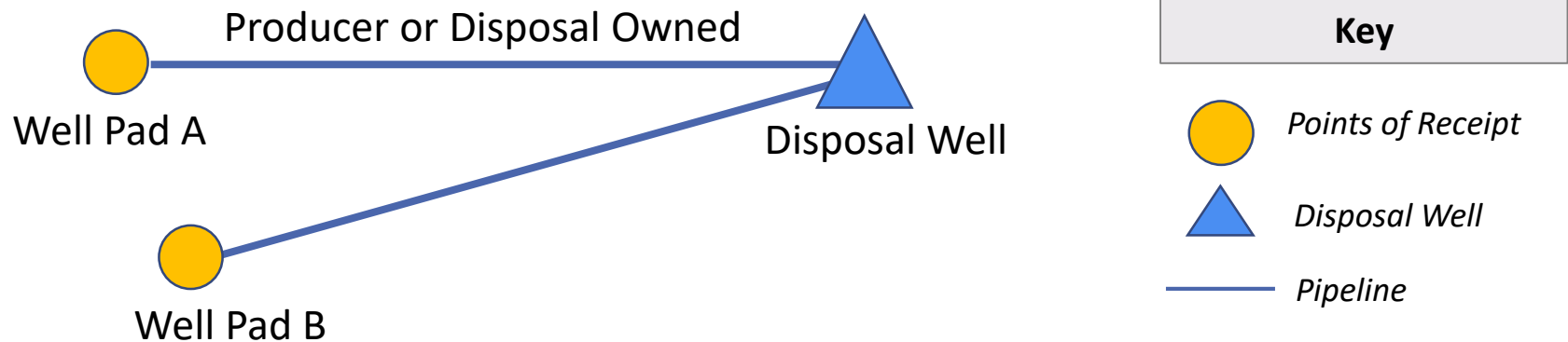


Producer or 3rd Party
Owned Disposal Well

- “Just in time” water management
- Pipeline connects and long term commitments rare

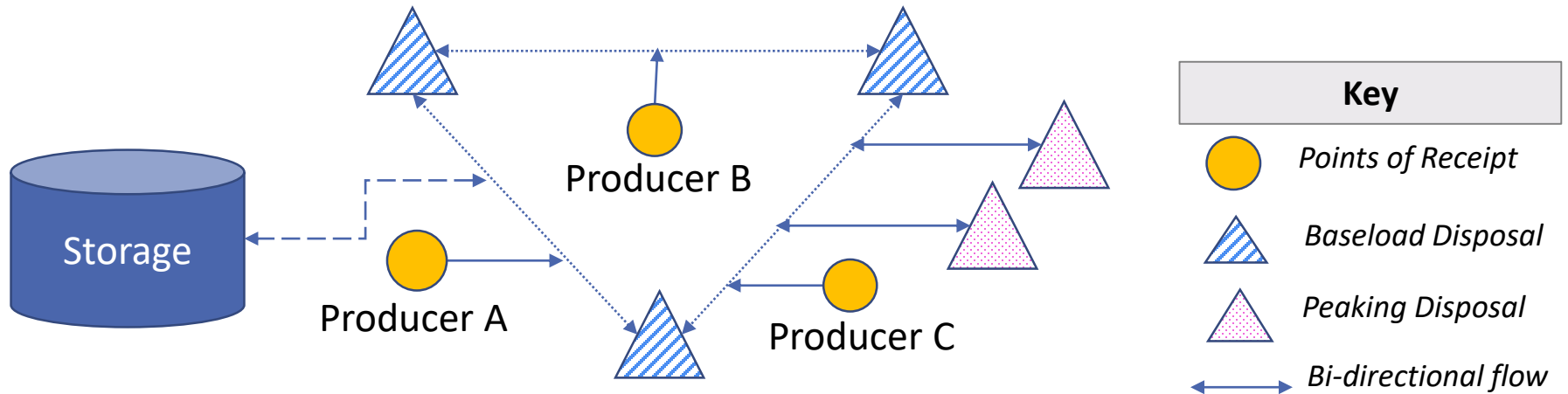
Shale Water 2.0: Pipe & Disposal

Multiple gathering lines connected to a single disposal well is the forerunner to a traditional midstream water model.



- Strong economics underpin the decision to replace trucks with pipe (costs < \$1.00/bbl)
- Some disposal operators are now installing pipe as part of their business models, most pipe is still producer owned

Shale Water 3.0: Water Midstream



- Cost reduction through common infrastructure and shared capacity utilization
- Optionality to provide multiple services – gathering, disposal, transportation, storage, sales



Common “Water Midstream” Models

Producer Self Build

- Majority of producers are at least considering some form of infrastructure build-out
- Approach varies radically from producer to producer – ranging from staffing a full water team to delegating a junior person to manage major decisions

Midstream Affiliate

- Dropdown to Midstream MLP: Anadarko (Western Gas), Noble, Antero, Rice
- Subsidiary: Pioneer Water LLC

Stand Alone Water Midstream

- Water midstream only focus (PE Backed)
- Service/Disposal company “Pivots”
- Traditional midstream “Pivots”



H₂O Midstream Howard County System

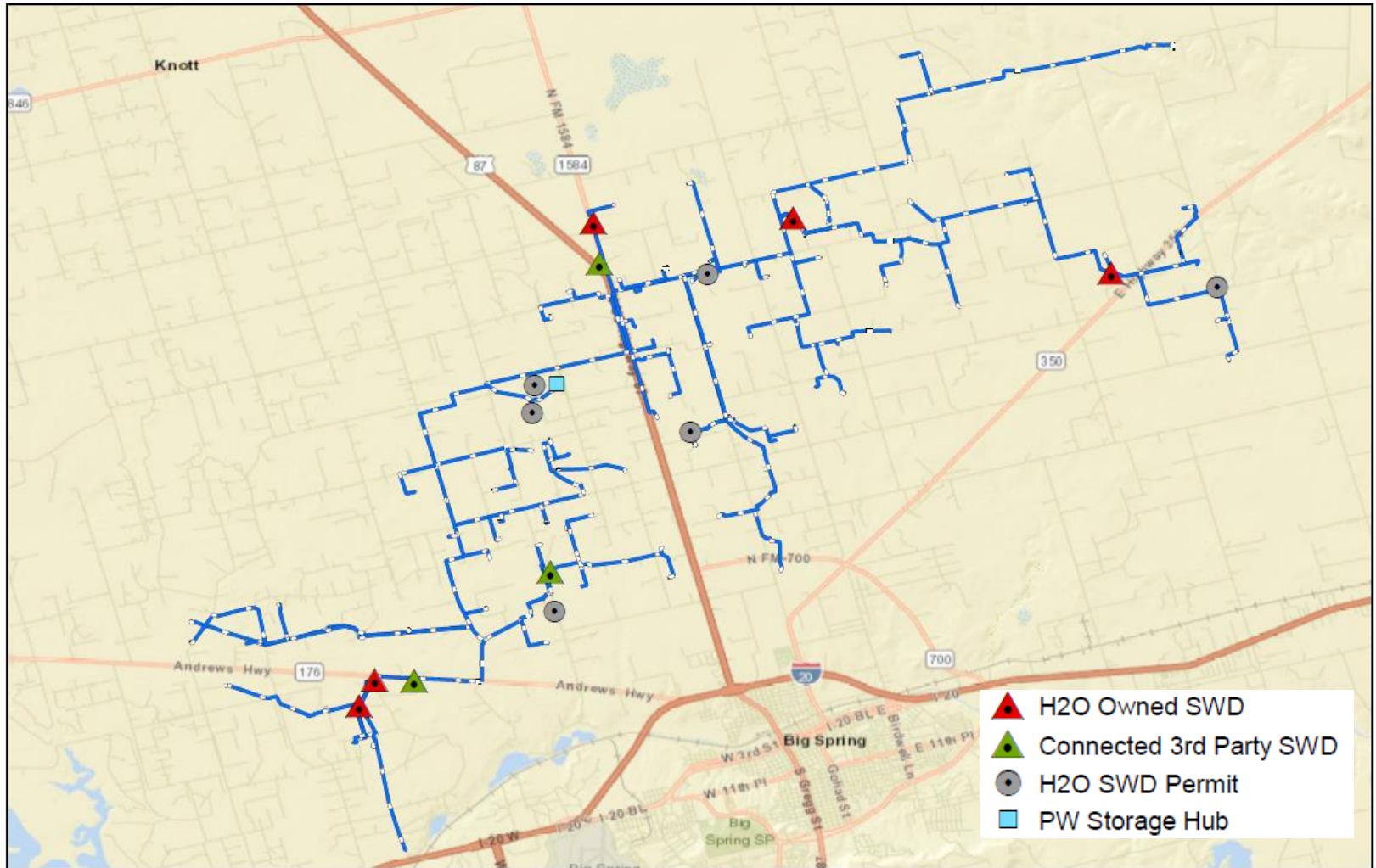
System Assets

- 120 miles of produced water pipeline covering ~200 square miles, overlapping acreage of 10+ producers
- 245,000 bpd of SWD disposal capacity at 10 locations
 - 5 owned - 85,000 bpd of permitted capacity
 - 3 third party - 90,000 bpd of incremental capacity
 - 2 New Ellenberger - 70,000 bpd combined capacity (planned)
- 1 million barrels of produced water storage (under construction)
- All SWD's and storage interconnected on a common gathering network with the ability to “wheel” water across system as necessary for receipt or re-delivery

Producer Services Available

- Acreage or Pad dedication with bundled produced water gathering, disposal, and re-use (e.g. Encana)
- Spot disposal via pipeline or truck
- Transportation
- Storage
- Produced water sales for supplemental re-use volumes
- Re-use (Re-delivery, storage, transportation, treatment)
- Firm service - The “No Truck Guarantee”

H₂O Midstream Howard County Map





Challenges, or Be Careful What You Ask For...

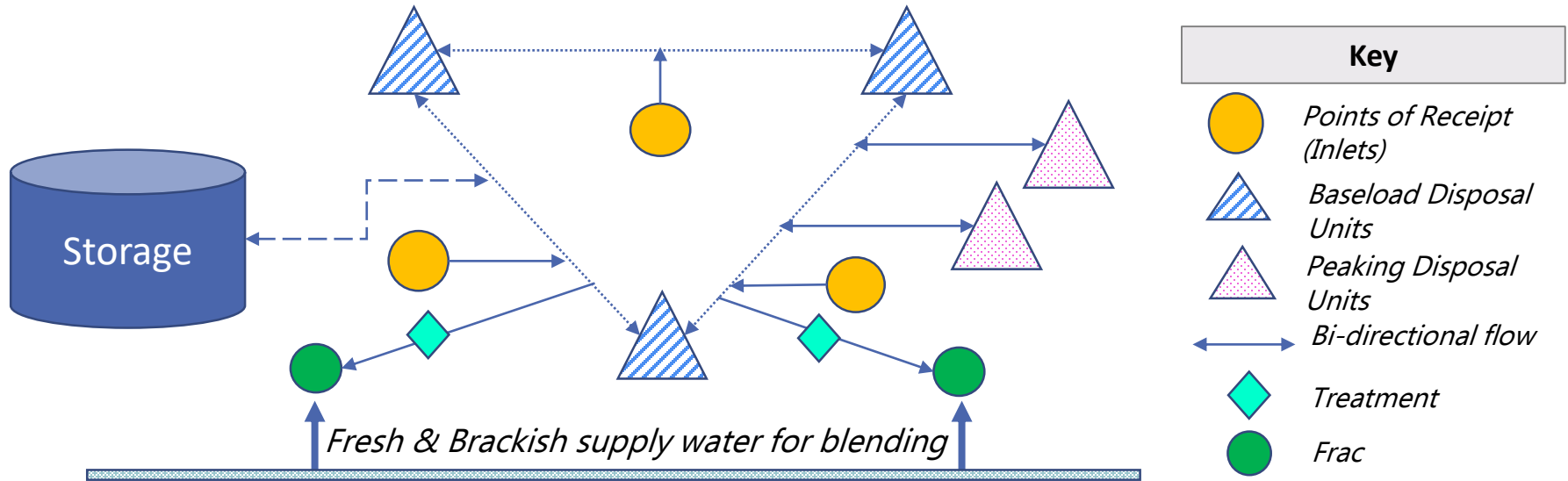
- Existing systems can be a major headache
- New volumes are almost impossible to predict
- Disposal wells are unreliable
- Trucking is a logistical nightmare
- Landowner relationships are critical
- Producers want firm service at a non-firm price
- The “culture” of traditional midstream is vastly different than the traditional water business



A Few Lessons Learned

- Don't bring a knife to a gunfight – be prepared to spend Capex, Opex & Time
- This is a complex business to run – A highly effective and collaborative team including engineering, operations, HSER, commercial, and back office is critical
- Redundancy is key to ensuring reliable operations
- Operating beyond specification limits has cost ramifications
 - Pressure (hydraulic capacity)
 - Temperature (material degradation)
 - Particulates (equipment failure/measurement error)
- Maintenance / corrosion programs require significant resources and dedication to manage effectively
- *Water Midstream is not for the feint of heart – be prepared to pay the tuition*

Shale Water 4.0: Incorporating Reuse



- Existing infrastructure can be utilized as a water distribution system (similar to a gas LDC)
- Paradigm shift from producer owned "pit & hose" methods to shared storage and distribution coupled with real time treatment and blending at the completions site

Our Playbook

Our competitive advantage does not lie in doing any one activity well, but in the connectivity of multiple activities to do something great

Choosing “what not to do” is just as important as choosing “what to do” – trade offs are essential.

The “glue” necessary to hold everything together are our **Core Values** – these must be embedded in our DNA





Thank You for Listening

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