

TPL Innovation | Produced Water Desalination and Beneficial Reuse

TPL Desalination Project Overview



TPL has developed a process for produced water desalination that leverages the differing water freeze points across salinity levels



Close collaboration with top-tier technology partner in the industrial freezing industry



Fractional freezing more energy efficient than alternative desalination techniques



Continue to make equipment and process optimizations



Successful R&D trial at TPL facility in Midland; constructing larger test facility with capacity of ~10,000 barrels of water per day (Phase 2B)

Produced Water Desalination Benefits



Reduces produced water subsurface injection



Long-term, sustainable produced water solution



Beneficial reuse and commercial/industrial applications

Key Milestones



Proof of concept: freeze produced water desalination works and pathway to affordable cost



Collaborating with a top-tier technology and manufacturing partner in the industrial refrigeration and freezing industry



Secured exclusive use-rights for equipment towards produced water applications



Filed a process patent utilizing fractional freeze desalination to treat produced water and surface discharge



Granted Land Application Pilot Permit by RRC to grow alfalfa from treated water in Midland



Research partnership with New Mexico State University & Texas Tech to analyze water quality & process improvement



Validation of water quality acceptability for use with aquatic species and agriculture



Receive 2nd Land Application Permit from RRC for Orla Native grassland restoration & quail habitat enhancement with TX PW Consortium & Quail Safe



Receive draft Texas Pollutant Discharge Elimination System ("TPDES") permit through Texas Commission on Environmental Quality ("TCEQ")



1H 2026 Commission Phase 2 facility (~10k bbl/d capacity)



2026 Evaluate synergies with behind-the-grid gas to electric generation for use in microgrids and/or data centers



2027+ Equipment procurement of commercial-scale facility ~100k bbl/d facility (Phase 3)



2027+ Advance full scale commercial operations throughout the Permian



Phase 1 desalination test unit



TPL beneficial reuse greenhouse



Phase 2 desalination facility (Orla, TX)