



WATER ANALYSIS

Corpus Christi, Texas

150 MGD Seawater Desalination for Corpus Christi

Privately funded | 24 months to water | \$0 municipal debt | American-built

Texans Leading a Solution for Texas

Prepared by AXE H2O Leadership

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ABBREVIATIONS AND ACRONYMS

Abbreviation	Definition
ACFR	Annual Comprehensive Financial Report
BMD	Barney M. Davis Power Plant
BUILDER Act	Bipartisan, Unleashing Innovation, Lifting Development, Enhancing Reforms Act (2023)
CCDP	Corpus Christi Desalination Partnership
CO2	Carbon Dioxide
COD	Commercial Operation Date
CPI	Consumer Price Index
CWA	Clean Water Act
DAF	Dissolved Air Flotation
DBO	Design-Build-Operate
DSC	Debt Service Coverage
ERCOT	Electric Reliability Council of Texas
ESA	Endangered Species Act
FAST-41	Fixing America's Surface Transportation Act, Title 41
FEED	Front-End Engineering Design
FERC	Federal Energy Regulatory Commission
FID	Final Investment Decision
GCGV	Gulf Coast Growth Ventures (ExxonMobil/SABIC)
GLO	Texas General Land Office
gpg	Grains per Gallon (hardness measure)
gal/kWh	Gallons per Kilowatt-Hour
HB	House Bill
HDPE	High-Density Polyethylene
kgal	Thousand Gallons
LNRA	Lavaca-Navidad River Authority
LNG	Liquefied Natural Gas
MGD	Million Gallons per Day
MRP	Mary Rhodes Pipeline
MW	Megawatt
NAS	Naval Air Station
NOAA	National Oceanic and Atmospheric Administration
NRA	Nueces River Authority
OBBBA	One Big Beautiful Bill Act
ONS	O.N. Stevens Water Treatment Plant
PPP	Public-Private Partnership
ppm	Parts per Million
RO	Reverse Osmosis
SDI	Steel Dynamics, Inc.

SPMWD	San Patricio Municipal Water District
SWIFT	State Water Implementation Fund for Texas
SWRO	Seawater Reverse Osmosis
TCEQ	Texas Commission on Environmental Quality
TDS	Total Dissolved Solids
TPWD	Texas Parks and Wildlife Department
TWDB	Texas Water Development Board
TWC	Texas Water Code
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
WPA	Water Purchase Agreement
WSC	Water Supply Corporation

Executive Summary

Corpus Christi faces a generational water supply challenge. Combined reservoir storage stands at approximately 8% of capacity, the Governor has renewed the drought disaster proclamation for 44 consecutive months, and Stage 3 mandatory restrictions are in effect. On April 30, 2026, the Nueces County Commissioners Court voted unanimously to declare a local state of disaster over the water emergency, with County Judge Connie Scott stating that the county is “fully aware that our community is facing severe and ongoing drought conditions that have significantly reduced our available water supply.” The federal government has separately recognized the severity of the situation through FAST-41 designation of the Harbor Island Desalination Project, completing all eight federal agency reviews in approximately four months. This is a powerful validation that the region’s water emergency warrants expedited federal action.

The region has responded with an ambitious portfolio of supply initiatives: surface water pipelines, groundwater programs, brackish and seawater desalination, and industrial reuse. Each project addresses a portion of the supply gap. Collectively, these initiatives represent a determined effort by city leadership and regional agencies to diversify water supply under extraordinary pressure.

AXE H2O proposes to complement this portfolio with a 150 Million Gallons per Day (MGD) Seawater Reverse Osmosis (SWRO) desalination facility, the largest in the United States, privately funded, requiring zero municipal debt, and designed to deliver first water within 24 months of Final Investment Decision (FID). This assessment reviews the regional supply and demand picture to identify where AXE H2O’s capacity fits within the broader portfolio.

AXE H2O is additive security.

Part I: Regional Water Context

1. The Nueces Basin

The Nueces River Basin is the primary surface water source for the Corpus Christi metropolitan area. Two reservoirs (Choke Canyon Reservoir and Lake Corpus Christi) provide storage for the system, supplemented by diversions from Lake Texana via the Mary Rhodes Pipeline (MRP).

1.1 Rainfall and Streamflow

The 78-year precipitation record at Corpus Christi International Airport (National Oceanic and Atmospheric Administration [NOAA] Station USW00012924) shows that current drought rainfall is approximately 89% of the long-term normal. During the 1950s drought of record, rainfall was approximately 70% of normal. The current drought is moderate in rainfall terms.

Streamflow tells a different story. At U.S. Geological Survey (USGS) Station 08210000 (Nueces River near Three Rivers), current drought streamflow averages approximately 22% of the long-term mean, compared to approximately 54% during the 1950s drought of record. The basin is producing materially less streamflow per unit of precipitation than it produced seventy years ago.

This decoupling (moderate rainfall deficit but severe streamflow deficit) is the structural signal underlying the current crisis.

Sources: NOAA NCEI Station USW00012924 (1948–2026); USGS NWIS Station 08210000 (1916–2025).

1.2 Reservoir Status

As of early 2026, the combined Choke Canyon/Lake Corpus Christi system stood at approximately 8% of capacity (7.8% as of April 28, 2026). Lake Texana, which supplies approximately 65% of the city's current treated water via the MRP, reached the Lavaca-Navidad River Authority (LNRA) 50% curtailment trigger. Governor Abbott directed LNRA to modify its drought policy to delay cuts to Corpus Christi's supply.

1.3 The 2001 Agreed Order

The 2001 Agreed Order between the Nueces River Authority (NRA), the City of Corpus Christi, and the Texas Commission on Environmental Quality (TCEQ) governs water releases from Choke Canyon and Lake Corpus Christi to maintain environmental flows in the Nueces Delta and Estuary. The Order constrains the city's ability to retain all captured inflow during drought conditions, balancing municipal supply against ecological requirements. This is a fixed institutional constraint that any supply plan must account for.

Source: TCEQ 2001 Agreed Order between NRA, City of Corpus Christi, and TCEQ.

Part II: Current Supply Portfolio

The Corpus Christi region has assembled an extensive portfolio of water supply initiatives. The following sections describe each project using publicly available data. Design capacities are stated as reported by project sponsors; actual delivery will depend on execution, permitting, and operational factors specific to each project.

2. Surface Water: Mary Rhodes Pipeline

The Mary Rhodes Pipeline (MRP) system is the backbone of the current supply, delivering water from Lake Texana (approximately 42 MGD design capacity) and the Colorado River via the Garwood Irrigation Company contract (approximately 31 MGD). Both sources are subject to drought curtailment: Lake Texana is at the Lavaca-Navidad River Authority (LNRA) 50% trigger, and the Colorado River allocation faces seasonal variability and competing demands.

Sources: LNRA curtailment protocols; Garwood Irrigation Co. contract; CC SEC Supplemental (Mar 2026).

3. Inner Harbor Desalination (CCDP)

The Corpus Christi Desalination Partnership (CCDP) Inner Harbor project is a brackish/seawater desalination facility proposed at the Inner Harbor industrial area. The project has been through several phases of development since approximately 2013. The City Council canceled the project in September 2025 and subsequently initiated discussions about potential revival with a revised contract value of approximately \$979 million. The council vote on the revised proposal was rescheduled from April 28 to June 2, 2026.

Design capacity for Phase 1 is approximately 30–36 MGD. The project draws from the Corpus Christi Ship Channel and discharges brine into the same waterway.

Sources: CC City Council records (Sep 2025, Apr 2026); TCEQ TPDES Permit WQ0005289000; CC public presentations.

4. Harbor Island Desalination (NRA)

The Nueces River Authority (NRA) Harbor Island Desalination Project is a 100 Million Gallons per Day (MGD) (initial) / 500 MGD (ultimate) Seawater Reverse Osmosis (SWRO) facility proposed on Harbor Island near Aransas Pass. The project achieved a significant regulatory milestone: U.S. Army Corps of Engineers (USACE) Permit SWG-2025-00112 was processed under FAST-41 designation with all eight federal reviews completed in approximately four months.

This FAST-41 precedent is valuable for the entire region. It demonstrates that large-scale desalination projects in the Corpus Christi area can achieve expedited federal permitting, a pathway that applies directly to AXE H2O's facility as well. The Bipartisan Unleashing Innovation, Lifting Development, Enhancing Reforms (BUILDER) Act and One Big Beautiful Bill Act (OBBBA) further strengthen this framework.

Harbor Island's announced water price of \$10–15 per thousand gallons (kgal) reflects the project's specific site conditions and construction requirements. First water delivery is projected no earlier than 2028–2029, contingent on securing offtake agreements and a Public-Private Partnership (PPP) partner. In April 2026, the Texas Water Development Board (TWDB) did not include Harbor Island in the funded projects for the 2026 SWIFT cycle; the NRA has indicated it will pursue alternative funding sources and reapply in the next cycle.

Sources: USACE SWG-2025-00112; FAST-41 Federal Permitting Dashboard; NRA public presentations.

5. Evangeline Groundwater Program

The city's Evangeline groundwater program targets approximately 24 MGD from the Carrizo-Wilcox aquifer system in the Orange Grove area. The program represents a significant capital commitment of approximately \$665 million. Wells are in the drilling phase.

Groundwater development in this region involves considerations common to all deep aquifer programs: drawdown rates, recharge uncertainty, and the relationship between pumping volumes and neighboring groundwater users. The Evangeline formation in the Coastal Bend is deep and confined, with recharge rates well below planned extraction volumes. Formal challenges have been filed by Sinton, St. Paul Water Supply Corporation (WSC), and other regional groundwater users. Monitoring of adjacent aquifer zones shows approximately 17 feet of existing drawdown.

These are standard groundwater development considerations. The program's ultimate yield over its amortization period will depend on how these factors develop.

Sources: CC water supply program documents; TCEQ groundwater permit records; South Texas Geological Society publications.

6. Other Groundwater and Reuse Projects

The regional portfolio includes additional supply initiatives:

Project	Type	Design Capacity	Status
Brackish Groundwater Desal	BWRO	~21 MGD	Preliminary design
Wastewater Reuse	Reuse	~17 MGD	Feasibility stage
Alice BWRO	BWRO	~2.7 MGD	Development
STWA BWRO	BWRO	~3.0 MGD	Development
Municipal GW Wells	Groundwater	Various	Phased
Industrial Reuse (Valero, FHR)	Reuse	Facility-specific	Operational / planned

Each of these projects serves a specific geographic or customer need. Collectively, they contribute to the region's supply diversification strategy.

7. CC Polymers Desalination

Corpus Christi Polymers LLC (CCP) owns a seawater desalination plant at 7001 Joe Fulton International Trade Corridor, approximately 90–95% complete as of October 2025. On March 24, 2026, the City Council voted 7–1 to begin negotiations with CCP for a water purchase agreement. Under the proposed structure, Aquatech would complete and operate the plant at approximately 9 MGD, with delivery projected roughly twelve months after contract signing.

Sources: CC City Council records (Mar 24, 2026); TCEQ TPDES Permit WQ0005019000.

8. Industrial Water Strategy

Several of the region's largest industrial water users have developed or are evaluating on-site water treatment infrastructure. Cheniere Corpus Christi Liquefaction operates on-site seawater reverse osmosis for its LNG cooling requirements, with only 0.2 MGD of fresh water purchased via San Patricio Municipal Water District (SPMWD). On April 15, 2026, the Federal Energy Regulatory Commission (FERC) filed Environmental Information Request 1 (Docket CP26-82) for the Stage 4 expansion, explicitly asking

Cheniere to document water supply reliability under Stage 3 drought restrictions, confirming that water supply certainty is now a federal permitting consideration for major industrial projects in the region.

The industrial sector's need for supply security is also a municipal concern because industrial customers represent the majority of the city's water revenue. A large-scale facility producing high-quality reverse osmosis (RO) water can serve both the city's residential customers and its industrial base from a single source, helping preserve the rate base that funds the city's water infrastructure for everyone.

Sources: FERC Docket CP26-82, Accession 20260415-3049 (Apr 15, 2026); TCEQ Central Registry RN104104716.

9. Supply Portfolio Summary

The combined design capacity of all current and planned supply projects, if fully realized, would significantly expand the region's water supply. Each project carries its own development timeline, and not all projects will reach full design capacity simultaneously. The region's supply strategy benefits from diversification, and from additional capacity that can come online quickly with private capital and no municipal debt burden.

Part III: Demand Outlook

10. Current System Demand

Total system water demand is approximately 106 Million Gallons per Day (MGD), comprising 71 MGD of treated water and 35 MGD of raw (untreated) water across the Corpus Christi service area. This includes residential, commercial, municipal wholesale, and industrial customers. Total water revenue is approximately \$152.3 million (FY2025). The top 10 industrial customers generate \$51.5 million in annual revenue, more than all 90,452 residential accounts combined (\$36.7 million). The system's financial health depends on industrial demand, and industrial demand depends on water supply certainty.

This figure reflects demand under active Stage 3 restrictions. Unrestricted demand (the level the system must be designed to serve when restrictions are lifted) is higher.

Source: CC FY2025 SEC Supplemental Disclosure (Mar 2026); SPMWD FY2024 audited financials.

11. Drought Suppression and Recovery

Stage 3 restrictions suppress residential outdoor use, commercial irrigation, and general non-essential consumption. The empirical pattern from prior Texas droughts is a demand recovery of 10–20% over the restricted baseline once restrictions are lifted. Applied to Corpus Christi's current demand, this implies an additional 15–25 MGD of recovered demand above the current suppressed level.

This recovery effect is important for long-range planning: any supply infrastructure being designed today will operate in a post-restriction environment where demand returns to its unrestricted trajectory. Note: the 10–20% recovery range is an AXE H2O estimate anchored on general Texas drought-cycle patterns; the city's forthcoming long-term demand forecast may refine this estimate.

12. Industrial Growth

Industrial demand growth in the Corpus Christi region is driven by the refining, petrochemical, and LNG sectors. Key demand increments include:

Project / Sector	Incremental Demand	Status	Source
GCGV Phase 2 (ExxonMobil/SABIC)	+3–4 MGD	Expansion planning	SPMWD / public reporting
Confidential industrial expansion	+5–20 MGD	Planning stage	Stakeholder discussions
Tesla Robstown (lithium refinery)	+1–8 MGD	Announced, no water contract	Public capex disclosure
Cheniere Stage 4 (LNG)	+2–6 MGD	FERC EIR filed Apr 2026	FERC CP26-82
Refinery expansion (various)	+3–8 MGD	Incremental	EIA / TCEQ permits
Steel/manufacturing growth	+2–4 MGD	Incremental	SPMWD / public reporting
Agricultural / rural users	+2–10 MGD	Drought-stressed	AXE estimate; Nueces Co. testimony

The conventional forecasting methodology counts only contracted industrial demand. Projects in the announced or feasibility stage, which may represent 10–30 MGD of additional demand over the next decade, are not yet reflected in published forecasts. Recognizing this, the city has recently engaged a consulting firm to develop a long-term demand forecast, with initial meetings beginning this week. AXE

H2O welcomes this initiative and stands ready to share its demand intelligence to support the effort. Until that forecast is complete, all forward demand estimates are provisional.

AXE H2O has received informal estimates from industrial stakeholders regarding their expected growth requirements. These estimates, while not contractually binding, indicate demand growth significantly above the historical baseline. At least one major industrial user has indicated potential additional demand of up to 20 MGD over the coming years, separate from the publicly announced GCGV, Cheniere, and Tesla expansions. Agricultural users in the region, including active ranching operations across the Coastal Bend, represent an additional demand layer that is not captured in any current industrial or municipal forecast but is real and growing as drought conditions stress rural water supplies.

13. ERCOT Load Growth and Water Coupling

The Electric Reliability Council of Texas (ERCOT) 2025 Long-Term Load Forecast projects significant electricity demand growth driven by data centers, industrial expansion, and electrification. Electric generation requires cooling water: depending on cooling technology, water intensity ranges from 0.1 gallons per kilowatt-hour (gal/kWh) for dry-cooled systems to 0.5 gal/kWh for conventional closed-loop combined-cycle gas turbines.

The Coastal Bend's share of ERCOT's Coast weather zone load growth could add 5–30 MGD of water-coupled demand over the planning horizon. The wide range reflects uncertainty in both the load forecast itself and the cooling technology mix. This demand increment is an AXE H2O estimate derived from ERCOT data and is not captured in the city's water forecast because it is driven by electric-sector decisions made independently of the water planning process.

Sources: ERCOT 2025 Long-Term Load Forecast (Apr 2025); EIA State Energy Data System Table CT3.

14. SPMWD Contract Expiration

The San Patricio Municipal Water District (SPMWD) potable water contract expires in March 2027. This contract currently supplies approximately 35 MGD to downstream users including Gulf Coast Growth Ventures (GCGV) at 13.5 MGD, Steel Dynamics Inc. (SDI) at 5.0 MGD, OxyChem at 4.5 MGD, Ingleside Ethylene at 2.5 MGD, and municipal customers at 9.5 MGD. The expiration creates both a transition risk and an opportunity for restructuring how the industrial corridor receives its water supply.

Sources: SPMWD 2019 Official Statement; SPMWD FY2024 audited financials.

15. Demand Summary

The table below illustrates the range of forward demand when drought recovery, industrial growth, and ERCOT-coupled load are included alongside the current baseline.

Component	Low Estimate (MGD)	High Estimate (MGD)	Basis
Current baseline (treated + raw)	106	106	CC SEC Supp FY2025 + SPMWD FY2024
Drought recovery	+15	+25	AXE estimate (TX drought patterns)
GCGV Phase 2	+3	+4	Public reporting
Confidential industrial expansion	+5	+20	Stakeholder discussions
Other industrial pipeline	+5	+15	Committed + announced projects

ERCOT water coupling	+5	+30	AXE estimate (ERCOT LTLF basis)
Agricultural / rural	+2	+10	AXE estimate (drought-stressed)
Hydrogen / data center	+0	+15	Announced interest only
Total	141	225	Arithmetic sum

Even the conservative end of this range (141 MGD) exceeds the current system's reliable supply capacity. The difference between projected demand and currently operating supply is the space where new capacity, from any source, is needed.

Part IV: How AXE H2O Adds Capacity

16. Project Overview

AXE H2O proposes a 150 Million Gallons per Day (MGD) Seawater Reverse Osmosis (SWRO) facility in southern Nueces County, with two potential sites under evaluation: the Barney M. Davis (BMD) Power Plant area and privately held land nearby. The facility draws seawater from the Gulf of America via a deep-sea intake tunnel, processes it through Dissolved Air Flotation (DAF) pretreatment and high-pressure RO membranes, re-mineralizes the product to potable-compatible standards using calcite/limestone from Texas quarries and commercial CO₂, and delivers purified water at the plant fenceline. The facility is powered by a self-contained 90 Megawatt (MW) containerized gas microgrid.

The project is 100% privately funded. No municipal debt is required. No taxpayer capital is at risk. The city retains full authority over its water system. AXE delivers purified water at the plant fenceline under a Water Purchase Agreement (WPA) at \$6.50/kgal, Consumer Price Index (CPI)-escalating, over a 30-year term. The city decides how much to purchase, how to distribute it, and what rates to charge its customers.

16.1 Critical Minerals Recovery

AXE H2O's facility recovers valuable critical minerals from the brine concentrate stream, including lithium, magnesium, strontium, bromine, and salt. This capability, operated by Element3 as the Design-Build-Operate (DBO) partner for materials recovery, reduces the environmental footprint of brine discharge and supports domestic critical minerals supply chains.

16.2 Physical AI and Digital Twin

The facility incorporates Physical AI Development (PAID) and a real-time digital twin for operational optimization. This technology enables predictive maintenance, continuous performance monitoring, and full operational transparency. City leadership and Corpus Christi Water operators can access real-time plant performance, water quality, and delivery data at any time.

16.3 Clean, Quiet, High-Efficiency Power

The dedicated 90 MW natural gas microgrid uses proven, modular generators with a 30-year design life and 10-year major overhaul intervals. The system is clean, quiet, and reliable, an important consideration for the surrounding community. Because the microgrid operates independently of the ERCOT grid, the facility maintains 99.49% uptime regardless of grid conditions, ensuring uninterrupted water delivery to the city.

17. Additive to Every Existing Initiative

AXE H2O does not replace, or delay any current city water initiative. The supply gap documented in Part III is large enough for every viable project. AXE provides additive capacity that complements the existing portfolio:

Existing Initiative	How AXE Complements
Mary Rhodes Pipeline	MRP provides surface water during wet periods; AXE provides drought-proof baseload. Together they create a diversified portfolio.
Evangeline Groundwater	Groundwater serves near-term needs; AXE provides long-term capacity from a source that is independent of aquifer conditions and does not affect neighboring water users.

Harbor Island (NRA)	Harbor Island has blazed the FAST-41 regulatory trail. AXE follows the same pathway at a different site, adding independent capacity.
Inner Harbor (CCDP)	If revived, Inner Harbor provides 30–36 MGD; AXE provides 150 MGD. Different sources, different scales, additive total.
CCP (Aquatech)	CCP provides ~9 MGD near-term. AXE provides 150 MGD at scale. Both can proceed independently.
Industrial self-supply	AXE produces RO-quality water at scale, giving industrial users an alternative to building their own systems — preserving city rate base.

18. What AXE Provides That the Portfolio Needs

18.1 Scale

At 150 MGD, AXE H2O brings the scale the region needs. The difference between projected demand (141–225 MGD) and currently reliable supply is substantial. A single project at this scale, working alongside the city's existing initiatives, provides the capacity to support both residential and economic water needs across the Coastal Bend.

18.2 Speed

Twenty-four months from Final Investment Decision (FID) to first water. The containerized power microgrid and modular RO train architecture enable a compressed construction schedule. Phase 0 (6 MGD emergency containerized SWRO) can deliver water even faster while the full facility constructs.

18.3 Independence

The self-contained gas microgrid means AXE operates independently of Electric Reliability Council of Texas (ERCOT) grid conditions. During the February 2021 winter storm, water treatment across Texas was disrupted by power loss. AXE's microgrid eliminates that vulnerability. The seawater source is effectively unlimited and unaffected by drought.

18.4 Water Quality

AXE H2O delivers purified, remineralized water at the plant fenceline. The City of Corpus Christi is responsible for final potabilization, including addition of disinfectants (such as chloramine or chlorine), fluoridation if required, distribution to residents and businesses, and compliance with all Safe Drinking Water Act (SDWA) requirements. AXE's purified water is designed to arrive cleaner, softer, and with fewer contaminants to manage, making the city's treatment and distribution job easier and less expensive.

The following comparison uses the city's own 2024 Consumer Confidence Report (CCR) data against AXE H2O's design targets for remineralized purified water. Key parameters include Total Dissolved Solids (TDS), hardness measured in grains per gallon (gpg), and disinfection byproducts:

Parameter	Unit	CC Current (2024 CCR)	AXE H2O (Remineralized)	Improvement
Total Dissolved Solids	ppm	516	~250	52% reduction
Hardness	ppm (gpg)	226 (13.2 gpg)	103 (6 gpg)	54% reduction
Calcium	ppm	71.3	~40	44% reduction
Magnesium	ppm	11.7	<5	>57% reduction
Sodium	ppm	110	~50	55% reduction
Chloride	ppm	135	~60	56% reduction

Sulfate	ppm	87	<10	>89% reduction
Alkalinity	ppm	125	80–100	20–36% reduction
Bicarbonate	ppm	152	~100	34% reduction
Fluoride	ppm	0.35	<0.1	>71% reduction
TOC	ppm	4.17	<0.5	>88% reduction
Chloramines	ppm	3.41	0 (city adds)	City-controlled
TTHMs	ppb	40	Near zero	>95% reduction
HAA5	ppb	21	Near zero	>95% reduction
PFAS (3 compounds)	ppb	0.004–0.010	Non-detect	RO removes >95%

Sources: CC 2024 Consumer Confidence Report (PWS TX1780003, signed Drew Molly PE). AXE H2O design targets based on single-pass SWRO with limestone contactor re-mineralization (calcite + commercial CO2). Product water pH target: 7.5–8.2. Disinfectants are added by the city during potabilization, not by AXE.

PFAS Removal

Per- and polyfluoroalkyl substances (PFAS) are emerging contaminants of increasing regulatory concern. The EPA finalized National Primary Drinking Water Regulations for six PFAS compounds in April 2024, with maximum contaminant levels as low as 4 parts per trillion for PFOA and PFOS. Corpus Christi Water has completed its Unregulated Contaminant Monitoring Rule (UCMR5) testing ahead of the 2027 federal deadline. The 2024 CCR reports that three PFAS compounds were detected at very low levels: PFBA (perfluorobutanoic acid), PFHxA (perfluorohexanoic acid), and PFPeA (perfluoropentanoic acid), averaging 0.0038 to 0.0096 parts per billion. These three compounds are not among the EPA's regulated PFAS. PFOA and PFOS, the two regulated compounds, were not detected.

Reverse osmosis membranes reject over 95% of all PFAS compounds. AXE H2O's purified water arrives at the city's fenceline with PFAS at non-detect levels, giving the city an additional margin of safety as federal and state PFAS regulations continue to evolve.

Benefits for Residents

For Corpus Christi families, lower hardness water (6 gpg vs. the current 13.2 gpg) means less scale buildup on pipes, faucets, showerheads, and water heaters, extending appliance life and reducing household maintenance costs. Residents use less soap and detergent, laundry comes out softer, and water heaters operate more efficiently with less mineral fouling. The near-elimination of disinfection byproduct precursors (Total Organic Carbon [TOC] reduced by over 88%) means the city can achieve SDWA compliance with lower disinfectant doses, reducing chemical costs and improving taste for customers.

Benefits for Industry

For industrial cooling towers, the hardness reduction from 13.2 gpg to 6 gpg enables 8 to 12 concentration cycles versus 3 to 4 with current city supply, a 43% reduction in makeup water consumption. Lower TDS and chloride levels reduce corrosion in heat exchangers, boilers, and process piping. A refinery consuming 10 MGD would save approximately \$24 million per year compared to projected 2029 city rates.

Sources: CC 2024 CCR (PWS TX1780003); ASHRAE / Cooling Technology Institute (CTI) cooling tower water quality standards. Savings estimate is AXE H2O analysis.

18.5 Pricing

AXE H2O's \$6.50/kgal applies uniformly to all customers (municipal, industrial, and wholesale) with CPI escalation. This price includes all costs: capital recovery, operations, maintenance, power, chemicals, and insurance. No additional cost to the city beyond the WPA.

18.6 Regulatory Pathway

AXE H2O has two complementary permitting pathways available and will select the approach, or combination of approaches, that best fits the project's objectives and timeline.

Federal Pathway: FAST-41 and the Harbor Island Precedent

The Harbor Island Desalination Project (U.S. Army Corps of Engineers [USACE] Permit SWG-2025-00112) established a direct precedent for AXE H2O. Both projects share the same fundamental characteristics:

Characteristic	Harbor Island	AXE H2O
Project type	Seawater Reverse Osmosis (SWRO)	Seawater Reverse Osmosis (SWRO)
USACE district	Galveston District	Galveston District
Coastal zone	Texas Gulf Coast	Texas Gulf Coast
Intake source	Gulf of Mexico / open Gulf	Gulf of America, 3 mi offshore
Brine discharge	Offshore diffuser to Gulf	Offshore diffuser to Gulf via GLO ME890143
ESA-listed species	Kemp's Ridley, piping plover, whooping crane, manatee	Same species range
EFH species	Giant manta ray	Giant manta ray
Federal review framework	FAST-41, all 8 agencies concurrent	FAST-41 (same framework available)
NEPA document	Environmental Assessment (EA)	EA or EIS (USACE discretion)
Federal review timeline	~8 months (all reviews completed)	6 to 18 months (based on precedent)

The Harbor Island precedent demonstrates that a large-scale SWRO facility in this geography, with these species, in this USACE district, can complete all federal environmental reviews within approximately 8 months under FAST-41. The BUILDER Act provides additional statutory backstops: if USACE requires a full Environmental Impact Statement (EIS) rather than an EA, Section 112 imposes a 1-year deadline. The OBBBA provides a fee-for-speed option at 125% of anticipated NEPA preparation costs, further compressing the EIS timeline. The 2-year FAST-41 statute of limitations on legal challenges (42 U.S.C. 4370m-6(a)(1)(A)) reduces litigation risk compared to the standard 6-year window.

State Pathway: HB 2031 Green Zone

In 2018, the Texas Legislature passed House Bill 2031, directing the TWDB and TPWD to study and designate zones along the Texas Gulf Coast suitable for desalination brine discharge. The resulting study identified Green Zones where brine discharge poses the lowest environmental risk based on oceanographic conditions, marine habitat, and dilution characteristics. This work by the TWDB and TPWD provided the scientific foundation for a streamlined state-level permitting pathway for desalination discharge in designated areas.

AXE H2O's proposed brine outfall location falls within a designated Green Zone. Harbor Island, by contrast, is located within the Aransas Pass 13-nautical-mile buffer and is excluded from the Green Zone designation. This gives AXE H2O access to a state-level expedited discharge review under 30 TAC 318.22 that complements the federal FAST-41 pathway.

Water Rights Exemption

Under Texas Water Code (TWC) 18.003(b), seawater desalination is exempt from water rights permitting requirements. The statute provides that the use of marine seawater for desalination does not require a water right from the Texas Commission on Environmental Quality (TCEQ). This exemption eliminates a permitting step that can add 12 to 24 months to surface water or groundwater projects.

AXE H2O will evaluate both the federal FAST-41 pathway and the state HB 2031 Green Zone pathway, and may pursue both concurrently. The optimal approach will depend on project-specific factors including the USACE determination on EA versus EIS, state agency coordination timelines, and the overall schedule required to meet the region's water needs.

Sources: USACE SWG-2025-00112 (Harbor Island precedent); TWC 18.003(b); HB 2031 (2018); TWDB/TPWD Desalination Discharge Zone Study (2018); BUILDER Act of 2023 112; OBBBA 112; FAST-41 (42 U.S.C. 4370m et seq.).

18.7 Regional Vision: A Two-Plant Future

Looking beyond the immediate crisis, AXE H2O's site and infrastructure are designed to support a second co-located 150 MGD plant, bringing total regional capacity to 300 MGD. This expanded vision could serve not only Corpus Christi and the Coastal Bend but also San Antonio and Austin, both of which face growing water demand. The Interstate I-37 corridor offers a viable pipeline route with minimal easement challenges. A two-plant configuration shares permitting, engineering, and program management, reducing cost and accelerating delivery for everyone involved. This is a long-term opportunity, not an immediate ask, and would require multilateral engagement with San Antonio and Austin leadership.

19. Partnership with City Administration

AXE H2O is proposing to work within the city's water system framework as a supply partner. The relationship AXE envisions is a partnership with the City Manager's office, Corpus Christi Water, and the City Council:

Partnership Element	How It Works
City has first right of allocation	Corpus Christi Water selects its share of the 150 MGD first, from 50 to 150 MGD. Municipal and residential needs are prioritized above all other offtake.
Full operational transparency	The Physical AI digital twin provides city staff real-time visibility into plant performance, water quality, and delivery volumes — the same data AXE operators see.
No upfront reservation fee	Unlike other regional water proposals, AXE requires no nonrefundable payment from the city to reserve capacity.
City retains rate-setting authority	AXE delivers water at a fixed wholesale price. The city sets retail rates, manages distribution, and retains all customer relationships.
Demand intelligence sharing	AXE will share its industrial demand intelligence with the city's new long-term demand forecast consultant to support better regional planning.
Joint community engagement	AXE commits to working alongside city leadership on public communication, ensuring residents understand how the project serves their interests.

AXE H2O's commitment is to serve the City of Corpus Christi and its residents. AXE brings the capital, the technology, and the construction expertise, all privately funded, with no cost to taxpayers. The city's leadership sets the direction, and AXE delivers the water. Together, that partnership secures water for every family, every business, and every community in the Coastal Bend.

Part V: National Stakes

20. Energy Infrastructure

The Corpus Christi region hosts critical national energy infrastructure. The water supply crisis places this infrastructure at risk:

Asset	Scale	Water Relationship
Refining	~902,000 bbl/day (~5% of U.S. total)	Cooling systems require continuous water supply
LNG Exports	4.45 Bcf/day (up to 29% of U.S. total)	Process water integral to liquefaction
Crude Oil Exports	~60% of all U.S. crude exports	Port operations dependent on regional infrastructure
NAS Corpus Christi	41 tenant commands, ~400 aviators/yr	Served by a single 76-year-old water main

The FAST-41 designation of Harbor Island explicitly recognized the national significance of the regional water emergency. AXE H2O’s 150 MGD capacity addresses this exposure directly.

21. Relieving Financial Pressure on Ratepayers

Corpus Christi ratepayers have absorbed significant (over 70% in five years) as the city has invested in water infrastructure under emergency conditions. The utility’s Debt Service Coverage (DSC) ratio has declined from 1.46x in FY2021 to 1.39x in FY2025, with projections approaching the 1.10x minimum covenant by FY2029. Total utility debt stands at approximately \$1.47 billion. Moody’s Investors Service downgraded the utility’s credit rating in December 2025 (Aa2 to A1), and Fitch Ratings assigned a negative outlook in April 2026. On April 30, 2026, Nueces County declared a local state of disaster over the water emergency.

AXE H2O’s private funding model helps relieve this pressure. By delivering 150 Million Gallons per Day (MGD) with zero additional municipal debt, AXE helps protect ratepayers from further rate increases while expanding supply. The Water Purchase Agreement (WPA) is a contractual operating expense, not a capital obligation, preserving the city’s borrowing capacity for roads, schools, public safety, and other infrastructure the community needs.

Sources: CC FY2025 SEC Supplemental (Mar 2026); CC ACFR FY2024; CC 2025 Official Statement (\$296.87M bonds).

Conclusion

The Corpus Christi region is managing an extraordinary water supply challenge. City leadership, the Nueces River Authority (NRA), San Patricio Municipal Water District (SPMWD), and the industrial community are all actively pursuing solutions. The portfolio of supply initiatives reflects a determined effort to diversify the region's water sources.

AXE H2O brings scale, speed, and certainty: 150 Million Gallons per Day (MGD) delivered on a 24-month timeline, with zero municipal debt. The technology is proven globally. The regulatory pathway has been validated by the Harbor Island FAST-41 precedent.

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Appendix A: Water Budget Data

A.1 Inflow Ledger

USGS Station 08210000 (Nueces River near Three Rivers): Long-term mean annual inflow: 699.1 cubic feet per second (cfs), equivalent to approximately 506,443 acre-feet per year (1916–2024).

Drought-of-record mean (1950–1956): 375.7 cfs (~272,199 ac-ft/yr). Current drought mean (2022–2024): 155.7 cfs (~112,776 ac-ft/yr). 2024 single-year mean: 85 cfs (~62,000 ac-ft).

A.2 Precipitation Ledger

NOAA Station USW00012924 (CC International Airport): Long-term mean: 30.22 in/yr (1948–2024).

Drought-of-record mean (1950–1956): 21.07 in/yr (69.7% of normal). Current drought mean (2022–2024): 26.77 in/yr (88.6% of normal).

A.3 Demand Ledger

From the CC FY2025 SEC Supplemental and SPMWD FY2024 audited financials: total water revenue \$152.3 million; total system demand approximately 106 MGD (71 MGD treated plus 35 MGD raw). Top 10 industrial customers generate \$51.5 million in annual revenue, more than all 90,452 residential accounts (\$36.7 million). DSC compressed from 1.46x (FY2021) to 1.39x (FY2025); projected to approach 1.07x by FY2029 against a 1.10x minimum covenant. Outstanding utility debt approximately \$1.47 billion. Moody's downgraded December 2025 (Aa2 to A1). Fitch negative outlook April 2026.

Appendix B: Industrial Demand Inventory

Per the CC FY2025 SEC Supplemental and SPMWD FY2024 audited financials:

#	Customer	MG D	Revenue (\$M)	Supplier	Source
1	GCGV (ExxonMobil/SABIC)	13.5	\$15.1	SPMWD	SPMWD FY2024 audited (4,939K kgal)
2	CC Residential (90,452)	13.5	\$36.7	CC Direct	CC SEC Supp FY2025 (4,933 MG/yr)
3	CC Commercial (7,687)	10.7	\$26.0	CC Direct	CC SEC Supp FY2025 (3,912 MG/yr)
4	SPMWD Municipal (9 cities)	9.5	\$12.2	SPMWD	SPMWD FY2024 audited (3,454K kgal)
5	Valero Refining	9.0	\$16.1	CC Direct	CC SEC Supp FY2025
6	Lyondell (fmr Equistar)	5.6	\$10.0	CC Direct	CC SEC Supp FY2025
7	SDI (Steel Dynamics)	5.0	\$2.1	SPMWD	SPMWD FY2024 audited (1,825K kgal)
8	Flint Hills Resources	5.0	\$9.0	CC Direct	CC SEC FY2025 (W \$7.2M + E \$1.7M)
9	CITGO (combined)	4.8	\$8.6	CC Direct	CC SEC Supp FY2025 (E \$6.5M + W \$2.1M)
10	OxyChem	4.5	\$3.6	SPMWD	SPMWD FY2024 audited (1,644K kgal)
11	Celanese	3.5	\$1.5	CC Direct	CC SEC Supp FY2025
12	Ingleside Ethylene	2.5	\$2.2	SPMWD	SPMWD FY2024 audited (931K kgal)
13	Calpine	2.5	\$2.8	CC Direct	CC SEC Supp FY2025
14	CC Other/Govt (986 accts)	2.0	\$4.0	CC Direct	CC SEC FY2025 (724 MG/yr)
15	Epic / CB Y-Grade	2.0	\$2.4	CC Direct	CC SEC Supp FY2025
16	Ingleside Cogeneration	1.7	\$1.5	SPMWD	SPMWD FY2024 audited (627K kgal)
17	Chemours	1.4	\$1.2	SPMWD	SPMWD FY2024 audited (504K kgal)
18	Air Liquide	1.0	\$2.1	Both	CC SEC + SPMWD FY2024
19	Javelina	1.0	\$1.1	CC Direct	CC SEC Supp FY2025
20	Cheniere CC Liquefaction	0.2	\$0.18	SPMWD	SPMWD FY2024 (64K kgal); LNG = seawater

Water Grade	Total MGD	% of System	Key Customers
Treated potable	38	36%	Residential, commercial, SPMWD municipal
Treated industrial	33	31%	Valero, Lyondell, FHR, CITGO, OxyChem, GCGV
Untreated / raw	35	33%	SDI, Celanese, SPMWD raw, Alice, Beeville

Total System	106	100%	
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Sources: CC FY2025 SEC Supplemental Disclosure; SPMWD FY2024 audited financials; TCEQ Central Registry. Revenue at current posted rates.

Appendix C: Primary Source References

Hydrology and Climate

USGS NWIS Station 08210000, Nueces River near Three Rivers, TX. Daily streamflow 1916–2025.

NOAA NCEI Station USW00012924, Corpus Christi International Airport. Daily precipitation 1948–2026.

Municipal and Financial

City of Corpus Christi, FY2025 SEC Supplemental Disclosure (Mar 2026).

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City of Corpus Christi, Official Statement: \$296.87M Utility System Revenue and Refunding Bonds, Series 2025.

City of Corpus Christi, Consumer Confidence Report 2024 (PWS TX1780003).

San Patricio Municipal Water District, 2019 Official Statement.

San Patricio Municipal Water District, FY2024 Audited Financial Statements.

Nueces County Commissioners Court, Emergency Water Disaster Declaration (Apr 30, 2026). Pursuant to §418.108A, Texas Government Code.

Federal and State Regulatory

USACE Galveston District, Proffered Permit SWG-2025-00112 (Harbor Island).

FERC Docket CP26-82, Environmental Information Request 1, Accession 20260415-3049 (Apr 15, 2026).

FAST-41 Federal Permitting Council, Year One Report (Jan 2026).

TWC §18.003(b): Seawater desalination water rights exemption.

HB 2031 (2018): Desalination discharge zone designations.

BUILDER Act of 2023: NEPA document deadlines and judicial enforcement.

OBBBA §112: Expedited EIS fee provisions.

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EIA State Energy Data System Table CT3 — Texas electricity sales (1960–2023).

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Caterpillar Energy Solutions, TCG 2032 V16 specifications.

Energy Recovery, Inc., PX Pressure Exchanger specifications.

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