SEVEN SEAS WATER GROUP

Water-as-a-Service®

Frequently Asked Questions:

STWA Brackish Water RO Plant - Baffin Bay Impact

We recognize that Baffin Bay is a vital resource, cherished not only for its natural beauty and biodiversity, but also for its cultural heritage, economic significance, and role in recreation and livelihood. It matters deeply to the community, and it matters to us.

Protecting the health of Baffin Bay's ecosystem is not just a goal, it's a core commitment. We are engaging with marine scientists, environmental agencies, and local leaders to ensure that all aspects of the project are evaluated with transparency and ecological care.

As part of the South Texas Water Authority's (STWA) Brackish Water Reverse Osmosis (BWRO) Plant, no discharge of desalination concentrate will occur without thorough scientific evaluation and regulatory approval. Every step will be grounded in rigorous environmental review, ensuring any action taken is safe, sustainable, and based on sound science.

Importantly, if the STWA proceeds with the plant expansion, the minimum two-year construction window will be used to conduct detailed environmental studies. This allows ample time to identify the best, most environmentally responsible path forward and to engage with stakeholders to address concerns and incorporate community input.

The benefits of this project are significant: it will enhance water security for the region, reduce dependence on overdrawn freshwater sources, and provide a drought-resistant, long-term water supply solution. With careful planning, it can be a win for both the community and the environment.

Seven Seas Water Group (www.sevenseaswater.com) has more than 25 years of experience developing and operating Water-as-a-Service® facilities. In every location, we uphold strict environmental standards, follow all legal and regulatory requirements, and take pride in being a responsible and engaged member of the communities we serve.

We are committed to ensuring this project contributes positively to South Texas, not just through reliable water infrastructure, but through thoughtful stewardship of its natural treasures like Baffin Bay.

Reverse Osmosis Desalination

1. What is reverse osmosis desalination?

Reverse Osmosis Desalination is the process of removing salt and minerals from water in order to make it suitable for human consumption. Salty water is forced through special filters (membranes) at high pressure (200-800 psi). These membranes block salt and minerals, letting only fresh water through. Only a portion of the starting, salty water is converted to fresh drinking water; the leftover water (concentrate), now a higher salt content, is sent to disposal.

In reverse osmosis desalination, the recovery rate refers to that portion of the starting, salty water that gets turned into fresh, drinkable water.

2. What is concentrate?

In desalination, concentrate is the effluent waste stream, or byproduct, from the desalination process—the extra salty water that is disposed of after fresh water is separated.

3. How is saltiness measured in water?

Saltiness in water—also called salinity—is measured by checking how much dissolved salts and minerals are in the water. Total Dissolved Solids (TDS) is a measure of how salty water is. It's measured in milligrams per liter (mg/L) or parts per million (ppm), which mean the same thing. To keep drinking water safe, the Texas Commission on Environmental Quality (TCEQ) limits how much dissolved salt and minerals are permitted—up to 1,000 ppm.

4. What is brackish water?

Brackish water has a salt content between fresh and seawater. It has more dissolved salts and minerals than fresh water, but not as much as seawater. That means its TDS (Total Dissolved Solids) level is too high to drink without treatment, but not as salty as ocean water. Brackish water is often found in places where rivers meet the sea, or in deep brackish aquifers.

5. What is the difference between seawater and brackish desalination?

There are big differences between seawater and brackish groundwater. Seawater is much saltier, with a TDS of about 35,000 ppm – while brackish groundwater has a TDS of only 1,000 to 15,000 ppm. Because it is less salty, brackish water is usually less costly to treat (less chemicals) and is easier to reintegrate into the environment. The brackish groundwater used in the South Texas Water Authority (STWA) project has an estimated TDS of around 3,000 ppm, or less than 10% of the TDS commonly found in seawater. We will know the exact TDS level of the STWA groundwater once the test well is completed and the results from independent laboratory results have been obtained.

Seawater Desalination: Typical recovery rate: About 45%

- Example: If you start with 10 million gallons of seawater:
- You get 4.5 million gallons of fresh water
- And 5.5 million gallons of concentrate

Brackish Groundwater Desalination: Typical recovery rate: About 75%

- Example: If you start with 10 million gallons of brackish groundwater:
- You get 7.5 million gallons of fresh water
- And 2.5 million gallons of concentrate

The fresh water produced from seawater and brackish groundwater is generally similar in quality. However, the leftover salty water (concentrate or discharge) differs significantly, largely due to the amount of fresh water that can be recovered and the salt concentration in the original brackish or seawater source.

The STWA Seven Seas Water Group Project

1. Where will the concentrate water be disposed?

The disposal method for the concentrate water has not been determined or finalized for the current project or any future expansions. Multiple options are currently being reviewed, explored, and studied. The selected method will be the one deemed most environmentally friendly and economical, ensuring both the protection of the local environment and continued affordability of water rates for customers. Disposal options may vary based on the size and scope of the project, including potential expansions. Once chosen, the method will undergo full permitting and comply with all applicable environmental regulations.

2. What size is the current project for South Texas Water Authority?

The project currently being developed for STWA is for a brackish groundwater desalination plant that will produce approximately 3 million gallons per day (MGD) of drinking water and 1 MGD of concentrate water.

3. What are the plans for plant expansion?

If a plant expansion is requested by STWA, additional hydraulic, environmental, and hydrogeologic studies will be commissioned and conducted before the exact size/design of such an expansion would be finalized.

4. What is the salinity of the concentrate that will be discharged from the proposed STWA brackish water desalination plant?

The leftover water (concentrate) is expected to have less than 12,000 ppm of TDS. For comparison, seawater has a TDS of about 35,000 ppm, and seawater desalination can leave behind concentrate water as salty as 60,000 ppm.

5. Are there previously published Press Releases for STWA's Seven Seas Water Group Project?

South Texas Water Authority & Seven Seas Water Group Announce the Signing of a 30-Year Water-as-a-Service® Agreement

Seven Seas Water to build BWRO plant in Texas

6. What aquifer will be used as the source water for the STWA BWRO Plant?

The aquifer being tested is a brackish portion of the upper part of the Evangeline Aquifer, which is part of the Gulf Coast Aquifer System and sits about 1,000 feet underground.

7. Will the STWA plant add nutrients to Baffin Bay and cause algae blooms?

No. The concentrate water from the STWA plant is projected to have low levels of nutrients like nitrogen, phosphorus, and iron—too low to detect. Since algae needs these nutrients to grow, adding this water to Baffin Bay is not expected to promote algae blooms.

We welcome continued public dialogue and encourage you to stay connected if you'd like more information or updates. Get in touch at: contactus@7seaswater.com.