

# Territorial Climate and Infrastructure Workshop



2022 IGIA Senior Plenary Meeting  
March 27 - March 30, 2022

Presented By: Don Gregoire

# Who We Are ?

## WAPA'S Mission

By 2023, WAPA will be the leading utility service provider in the Caribbean by placing our customers first, engaging and educating our employees, and protecting our pristine environment. We will utilize technology and implement infrastructure improvements to safely provide a diversified mix of energy resources and high-quality water.

- The **Virgin Islands Water and Power Authority** employs approximately 524 employee's, we are an autonomous agency of the Virgin Islands Government which produces and distributes electricity and drinking water to residential and commercial customers in the territory.
- Today, WAPA produces electrical power at plants on St. Thomas and St. Croix and distributes electrical service through smart grids to customers on St. Thomas, St. Croix, St. John, Hassel Island, and Water Island.
- The Authority is under long-term agreements with Seven Seas Water Corporation to produce drinking water through modern seawater reverse osmosis facilities on St. Thomas and St. Croix.
- Potable water is distributed to almost 13,000 customers through water lines and standpipes.
- The day-to-day operations of the Virgin Islands Water and Power Authority are managed by Executive Director / Chief Executive Officer **Andrew Smith**.
- WAPA's policies are established by a nine-member governing board. The board consists of both public and private sector members.
- The governor appoints three members of his cabinet to the board and the **other** six members are nominated by the governor and confirmed by the Legislature for three-year terms.

# THE EARTH STRIPPED OF ITS WATER

72% of Earth is covered in water,

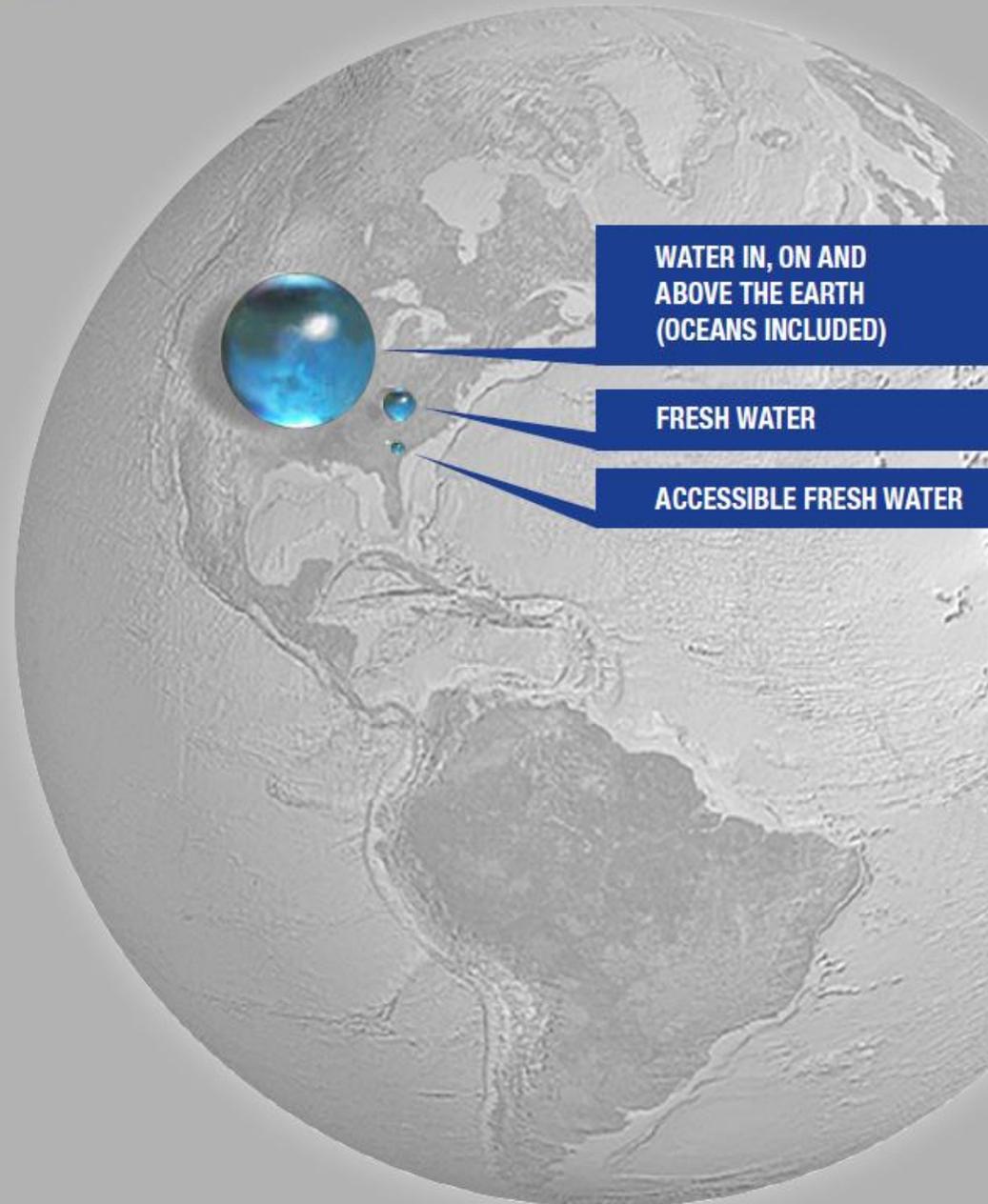
97% of that is salty ocean water and not suitable for drinking.

70% of freshwater is locked in ice caps

1% of the world's freshwater is readily accessible

6 countries (Brazil, Russia, Canada, Indonesia, China and Colombia) have 50 percent of the world's freshwater reserves

33% of the world's population lives in "water-stressed" countries, defined as a country's ratio of water consumption to water availability. Countries labeled as moderate to high stress consume use 20% more water than their available supply.



## Active Potable Water Accounts

### St. Croix

Residential Accounts 6,368  
Commercial Accounts 748  
Government Accounts 169  
Water Haulers 25  
Other 15

### St. Thomas/St. John

Residential Accounts 5,542  
Commercial Customers 874  
Government 193  
Water Haulers 38  
Other 18



# St. Croix Potable Water Distribution System

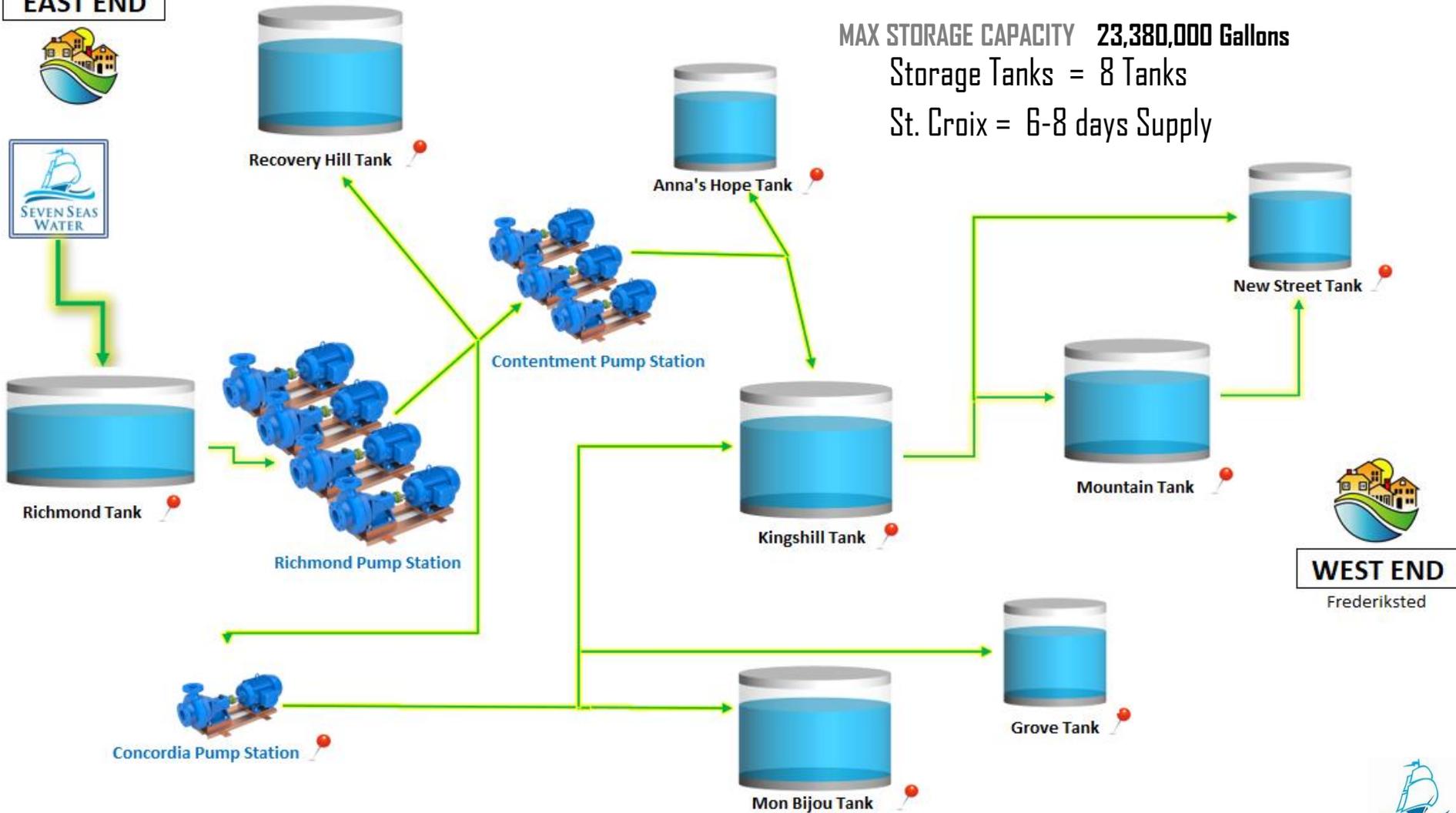
Christiansted  
**EAST END**



MAX STORAGE CAPACITY 23,380,000 Gallons  
Storage Tanks = 8 Tanks  
St. Croix = 6-8 days Supply



St. Croix Reverse Osmosis Plant



\*St. Croix Seven Seas Max Capacity 3,700,000 MG Per/Day



# St. Thomas & St. John Potable Water Distribution System

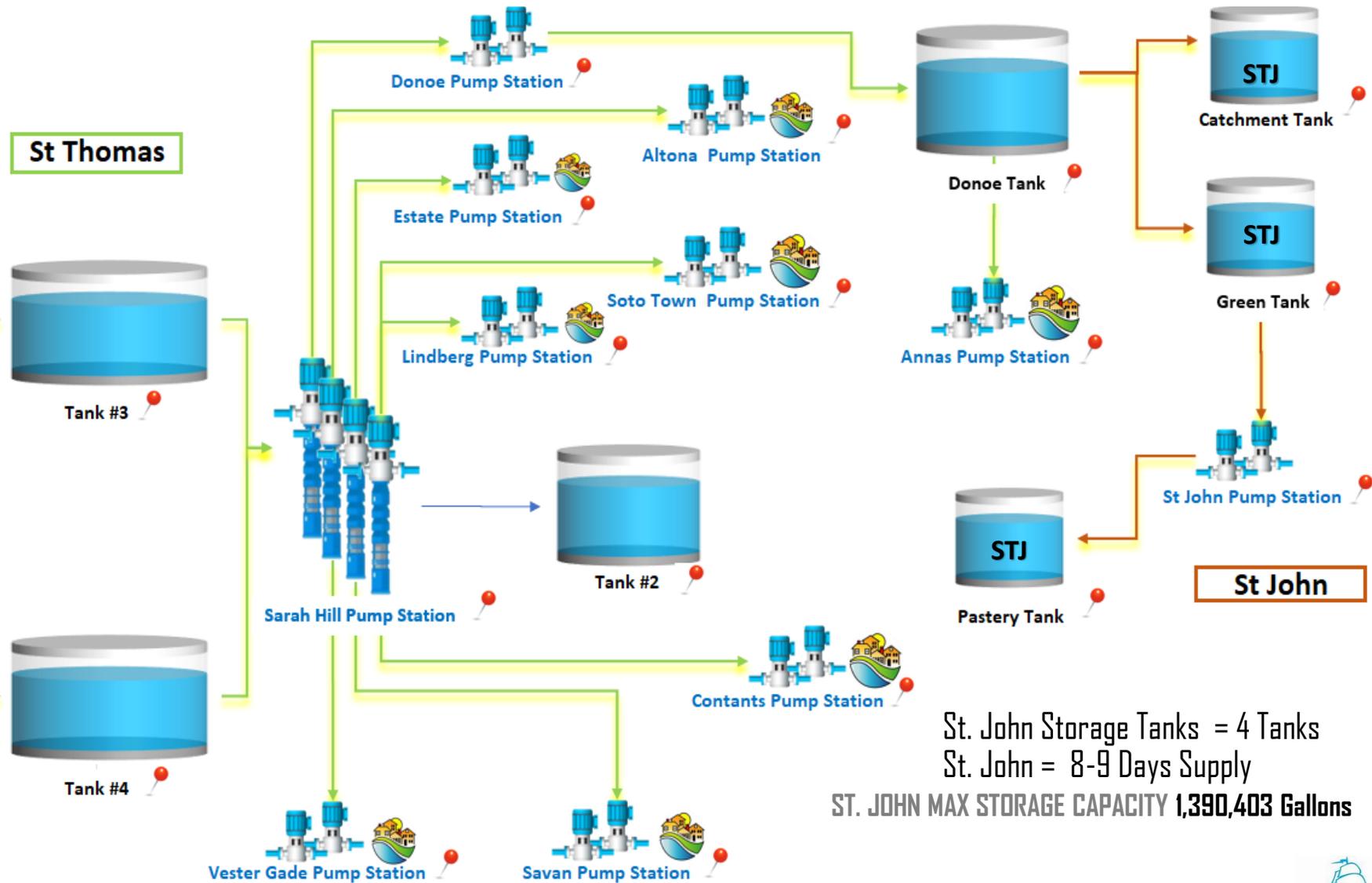


St. Thomas Reverse Osmosis Plant



St. Thomas Storage Tanks = 5 Tanks  
 St. Thomas = 16-17 days Supply

ST. THOMAS MAX STORAGE CAPACITY 35,994,000 Gallons



St. John Storage Tanks = 4 Tanks  
 St. John = 8-9 Days Supply

ST. JOHN MAX STORAGE CAPACITY 1,390,403 Gallons

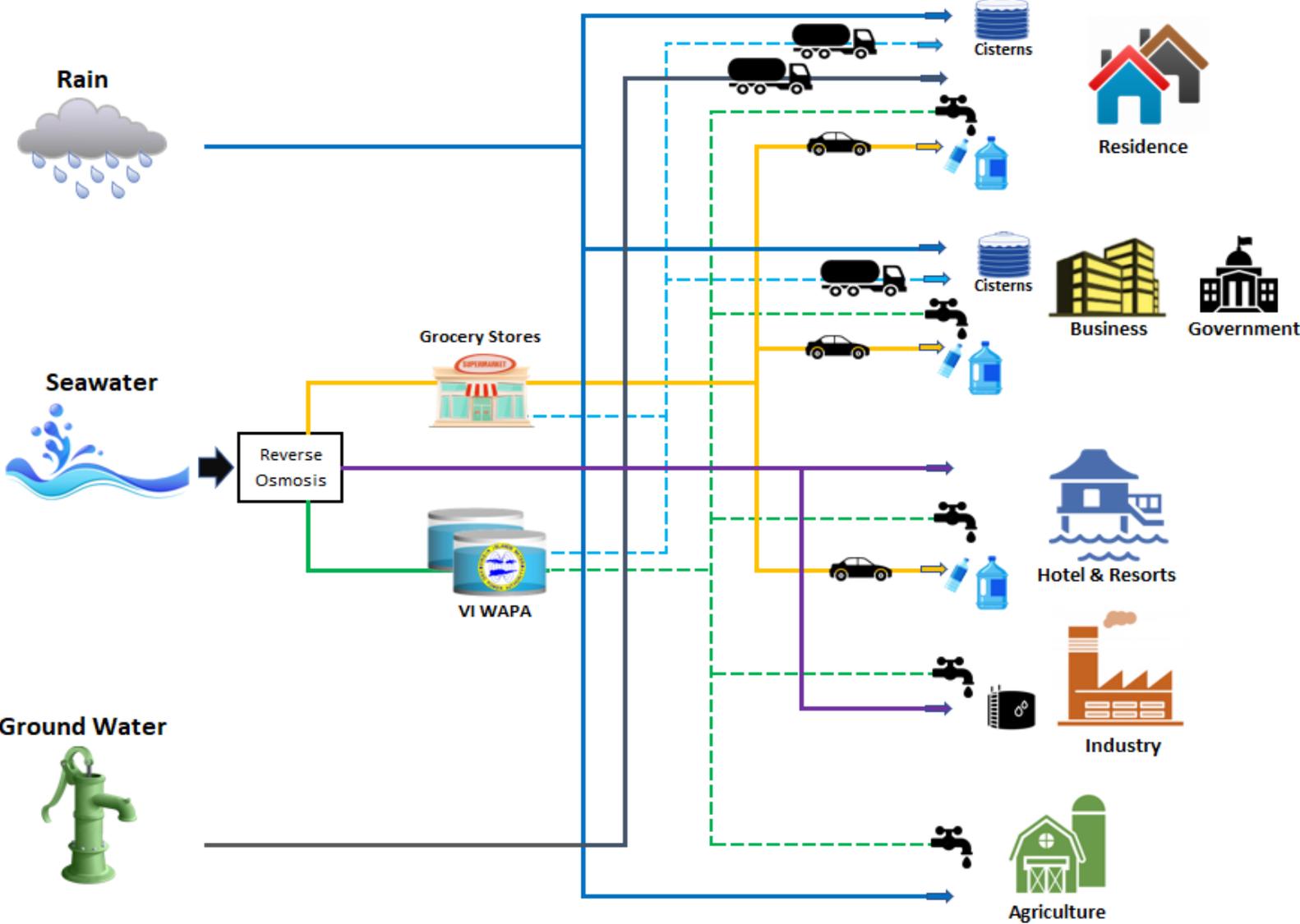
\*St. Thomas Seven Seas Max Capacity 3,300,000 MG Per/Day



# Virgin Islands Water Sources

PRODUCTION → STORAGE → DELIVERY → STORAGE → CONSUMPTION

	Rainwater
	Customer Pickup
	Truck Delivery
	Pipeline Delivery
	Local Desalination



# V.I. WAPA Waterline Expansion Projects

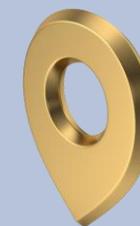
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- **St. Croix** - East End Water System Expansion \$40,600,000
- **St. Thomas** - Bordeaux Submarine Waterline Expansion \$20,000,000
- **St. John** - Submarine Waterline - \$8,500,000  
Waterline to Myrah Keating - \$5,268,000





# East End Water System Expansion



Location: 17.7246° N, 64.8348° W  
Population: Approx. 50,601  
Total Residential Units: Approx. 25,470

*St. Croix*



# East End Water System Expansion (STX)

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## Current State

- **Many residents rely on roof catchments and cisterns.** In St. Croix, a large share of households lacked access to potable water; only 47% of households are connected to the municipal potable water network.
- **Increased cost of the Consumer.** Although the Virgin Islands receives an average of 40 – 46 inches of rainfall per year, the months of January through March average less than 2 inches per month, oftentimes requiring water deliveries to meet household water needs resulting in additional costs for households, with a severe impact to low- and moderate-income household budgets.
- **Limited access to water resource.** During power outages caused by hurricanes or other power interruptions, residents do not have the ability to withdraw water from the cistern due to the lack of electricity to power their house pumps.

## Future State

- Provides a permanent potable water source eliminating additional expense and burden to private home owners & businesses that pay premium rates to deliver water.
- The project service area is within a predominately low- and moderate-income area.
- Eliminates the possibility of having water supplies contaminated, by providing access to safe and sanitary water even during extended power outages and structural damage caused by inclement weather, such as storms and hurricanes or operational emergencies resulting in feeder outages.
- Residents will not need to rely on roof catchment systems as the primary source of water, as the underground waterline will not require electricity or rainfall.

# East End Water System Expansion



## TIME ESTIMATES:

Item	Activity Description	Time (Months)
1	Design and Engineering	6
2	Prepare RFP & Purchase Orders	3
3	RFP out for Bids	4
4	Bid Evaluation	2
5	Governing Board Approval / Contract Preparation	2
6	Contract Signed & Notice to Proceed Issued	2
7	Purchase Materials and Equipment	4
8	Execution of Contract	30
Total Months		53

## PROJECT DETAILS / COST ESTIMATES:

OVERLAPPED WITH OTHER ENTITY: N/A



Location: St. Croix



Timeline: 53 Months



Design/Engineer Cost: \$600,000



Construction Cost: \$40,000,000



Funding being Requested By: Unfunded



Additional Funds or Other Sources of Funding: N/A





# Bordeaux Waterline Expansion



Location: 18.3381° N, 64.8941° W  
Population: Approx. 51,634  
Total Residential Units: Approx. 28,142

## *St. Thomas*



# Bordeaux Submarine Waterline Expansion (STT)

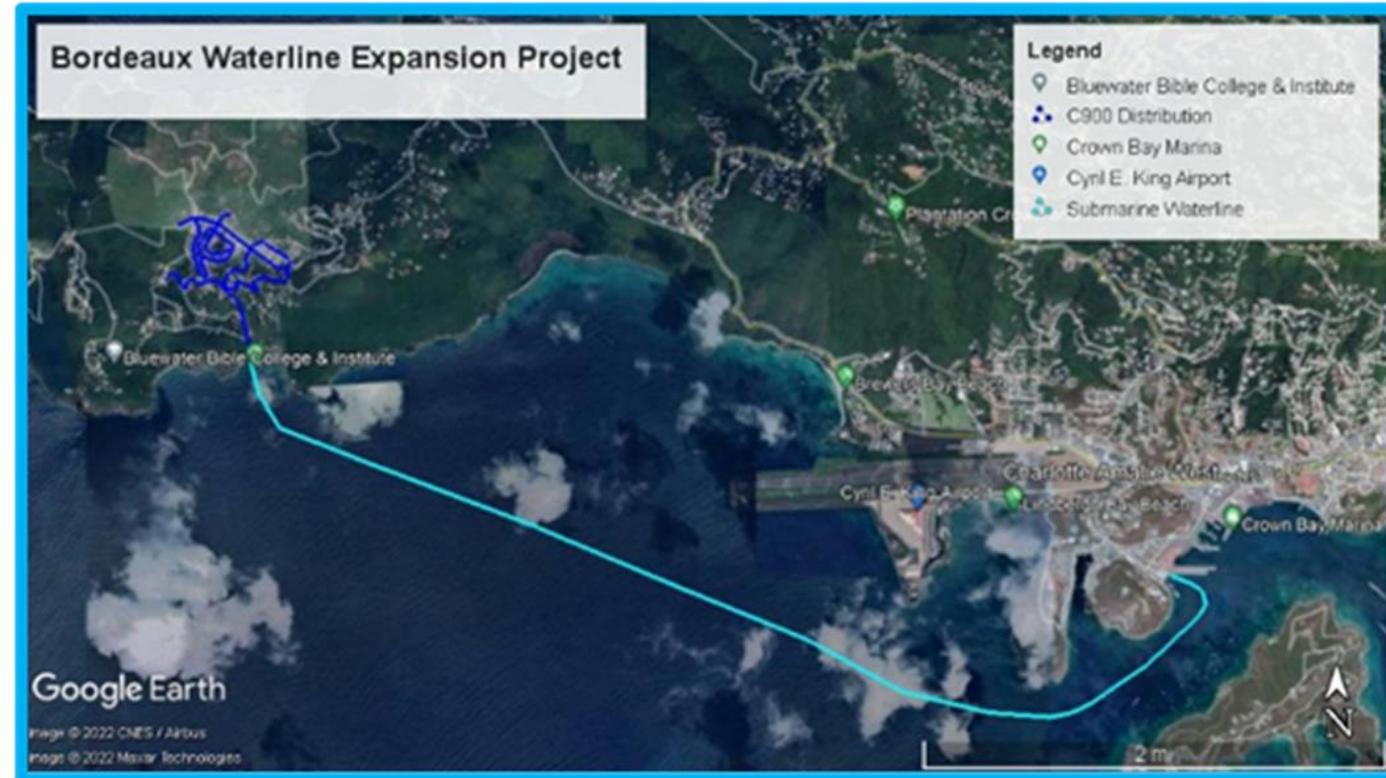
**Project Description:** The Bordeaux Waterline Expansion Project consists of approximately 45,000 feet of waterline installation from Crown Bay to the Bordeaux community. New Submarine Waterline from Crown Bay to Backfall Bay to provide potable water at an elevation of 730ft Above Sea level.

- 210 existing low to moderate income homeowner's
- Potable water supply to an additional 110 land parcels
- Provide water 35+ farmers for agricultural purposes
- Potable water to new developments in Fortuna under HFA.

**Project Scope/Details** - entails the installation of following critical key components:

- ✓ 27,000 feet of 6" submarine waterline from Crown Bay to Backfall Bay at a depth of 96 ft to 150 ft.
- ✓ 18,000 feet of waterline distribution system.
- ✓ Booster pump station from submarine waterline to the Bordeaux waterline distribution system.
- ✓ Construct a million-gallon storage tank.
- ✓ Construct standpipe for water haulers.

**Project Benefits:** The Bordeaux Waterline Expansion project will provide potable water to the western end of St. Thomas. Currently, the western end of St. Thomas does not have access to potable water. The Bordeaux residents and farmers currently are only able to source water from rainwater collected using the roof and cistern in the homes.



# Bordeaux Submarine Waterline Expansion

## TIME ESTIMATES:

Item	Activity Description	Time (Months)
1	Design & Engineering / Environmental Study	6
2	Prepare RFP & Purchase Orders	1
3	RFP out for Bids	1
4	Bid Evaluation	1
5	Governing Board Approval / Contract Preparation	1
6	Contract Signed & Notice to Proceed Issued	1
7	Purchase Materials and Equipment	3
8	Execution of Contract	24
<b>Total Months</b>		<b>38</b>

## PROJECT DETAILS / COST ESTIMATES:

OVERLAPPED WITH OTHER ENTITY: N/A



Location: St. Thomas



Timeline: 38 Months



Design/Engineer Cost: \$500,000



Construction Cost: \$19,500,000



Funding being Requested By: Unfunded



Additional Funds or Other Sources of Funding: N/A



*St. Thomas*



**Submarine Waterline &  
Waterline to Myrah Keating-  
Smith Health Clinic**

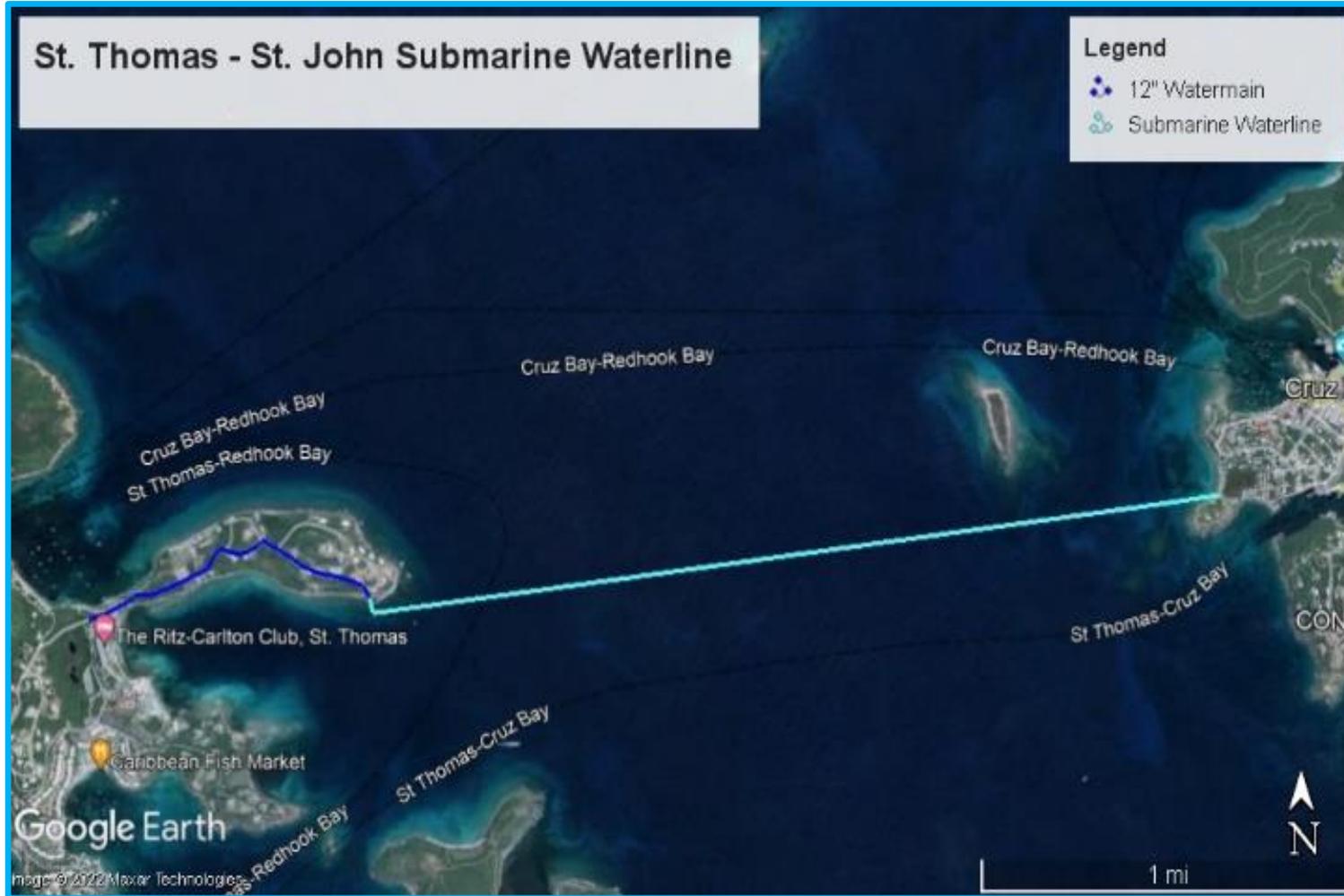


Location: 18.3368° N, 64.7281° W  
Population: Approx. 4,170  
Total Residential Units: Approx. 3,645

*St. John*



# St. John Submarine Waterline



**Project Scope/Details** - entails the installation of following critical key components:

- ✓ 5,600 feet of waterline to Cabrita Point
- ✓ 11,000 feet of Submarine line to St. John

**Project Objectives:** The St. John Submarine Waterline Project will provide the St. John Water Distribution an alternate source of receiving water from St. Thomas. Currently, St. John receives its water from St. Thomas via a submarine waterline that runs between the two islands. This submarine waterline is the sole source of potable water to St. John. The new submarine line will be upgrade to a larger flow capacity from an existing 6" to 8" to provide redundancy and support future growth for the island of St. John

*St. John*

# Cruz Bay Submerged 8” Waterline



## TIME ESTIMATES:

Item	Activity Description	Time (Months)
1	Design & Engineering / Environmental Study	6
2	Prepare RFP & Purchase Orders	1
3	RFP out for Bids	1
4	Bid Evaluation	1
5	Governing Board Approval / Contract Preparation	1
6	Contract Signed & Notice to Proceed Issued	1
7	Purchase Materials and Equipment	3
8	Execution of Contract	24
<b>Total Months</b>		<b>38</b>

## PROJECT DETAILS / COST ESTIMATES:



Location: St. John



Timeline: 38 Months



Design/Engineer Cost: \$500,000



Construction Cost: \$8,000,000



Funding being Requested By: Unfunded



Additional Funds or Other Sources of Funding: N/A



OVERLAPPED WITH OTHER ENTITY: N/A



# Waterline to Myrah Keating-Smith Health Clinic



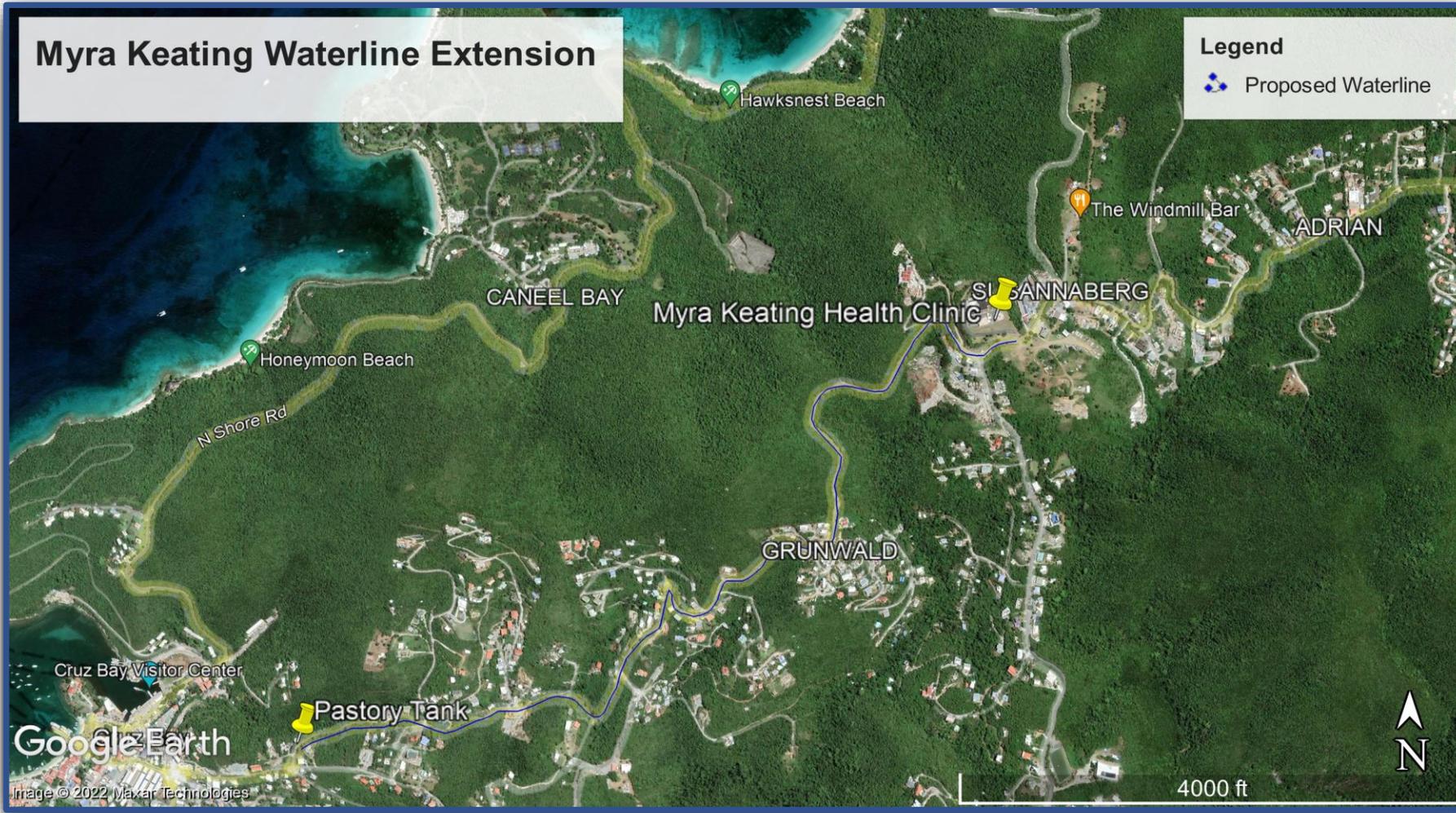
*St. John*

**Project Description:** The Myrah Keating Waterline Extension Project consists of approximately 8,700 feet of 8-inch C900 PVC waterline installation from the Pastory Tank 140 ft above sea level to the Myrah Keating-Smith Health Clinic at approximately 700ft above sea level.

**Project Objectives:** To provide potable water to the Myrah Keating Health Clinic and several customers along the route.

**Project Benefits:** Provide the health clinic with potable water and fire protection. This clinic is the islands sole source for medical treatment and having direct access to potable water is crucial.

# Waterline to Myrah Keating-Smith Health Clinic



**Project Scope/Details** - entails the installation of following critical key components:

- ✓ 8,700 feet of waterline distribution system.
- ✓ Install a Booster Pump Station
- ✓ Construct 200,000 Gallon Storage Tank.

# Waterline to Myrah Keating-Smith Health Clinic



## TIME ESTIMATES:

Item	Activity Description	Time (Months)
1	Design and Engineering	6
2	Prepare RFP & Purchase Orders	1
3	RFP out for Bids	1
4	Bid Evaluation	1
5	Governing Board Approval / Contract Preparation	1
6	Contract Signed & Notice to Proceed Issued	1
7	Purchase Materials and Equipment	3
8	Execution of Contract	24
<b>Total Months</b>		<b>38</b>

## PROJECT DETAILS / COST ESTIMATES:



Location: St. John



Timeline: 38 Months



Design/Engineer Cost: \$268,000



Construction Cost: \$5,000,000



Funding being Requested By: Unfunded



Additional Funds or Other Sources of Funding: N/A

OVERLAPPED WITH OTHER ENTITY: N/A



*St. John*



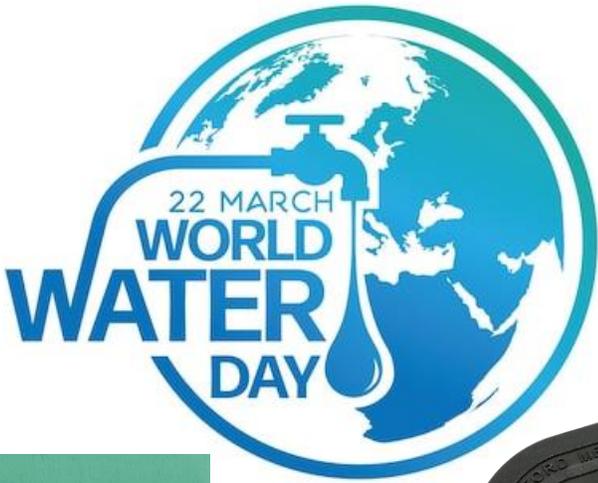
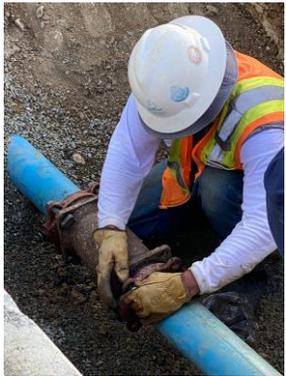
# Key Factors

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- ✓ World events driving the escalation cost in materials, cost of fuel and raw material prices
- ✓ Complex island topography and rocky terrain
- ✓ Reliance on importing materials into the territory
- ✓ Influx of multiple projects being simultaneously executed and managed
- ✓ Utility Coordination meetings with all stake all holders to discuss existing infrastructure and future development
- ✓ Covid-19 delays
- ✓ Supply chain and long lead times to purchase materials delaying projects
- ✓ Hurricane season six months out of the year





# Questions

