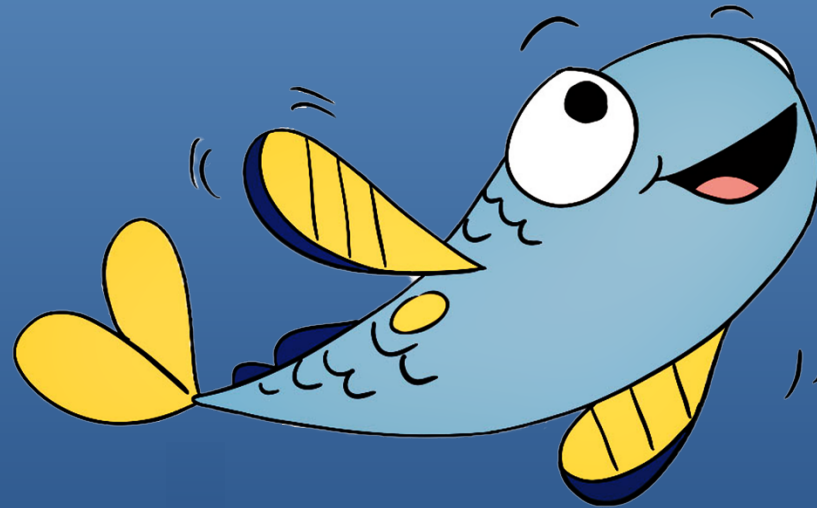


# *Think Blue – City of Portsmouth*



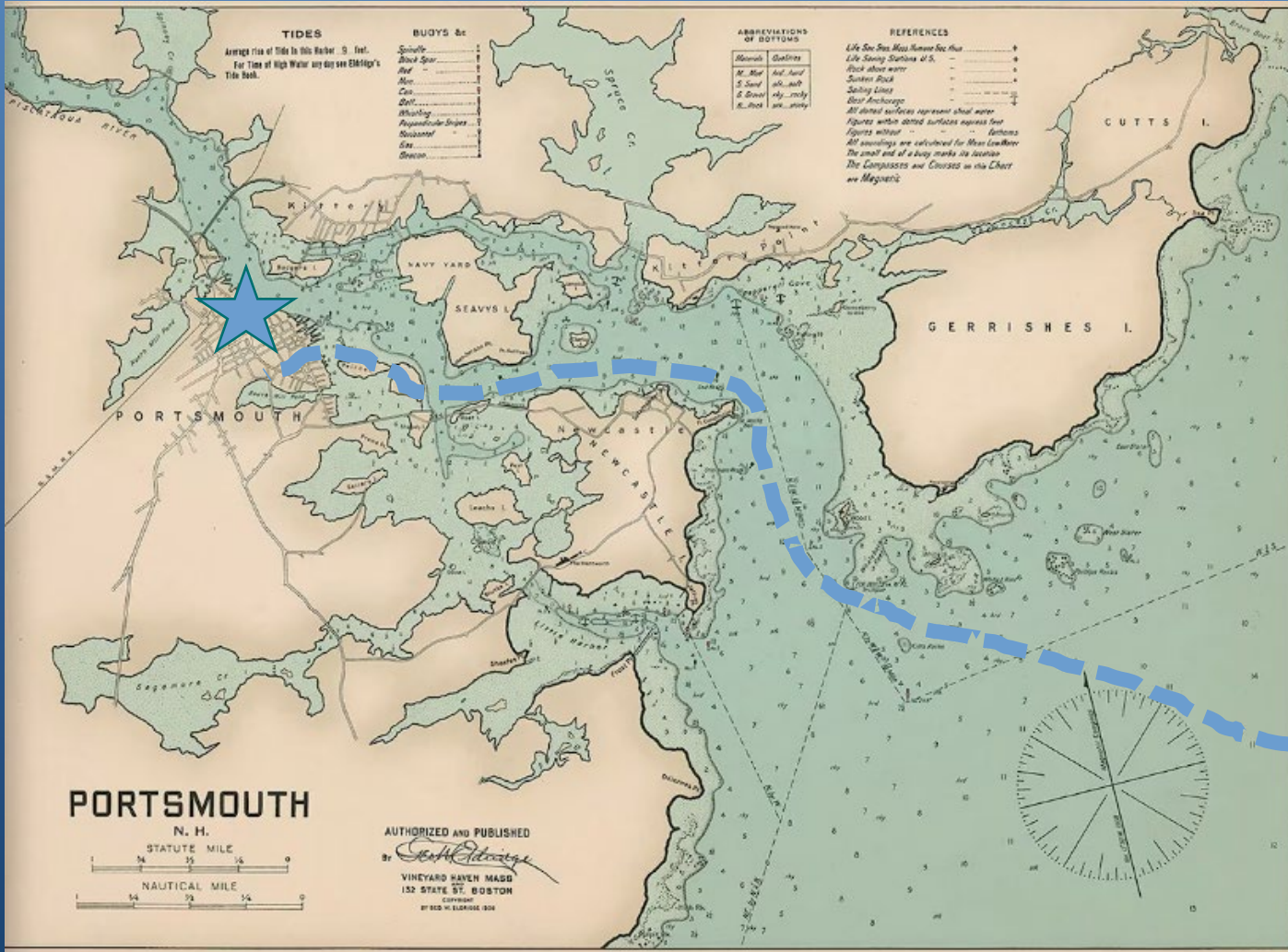
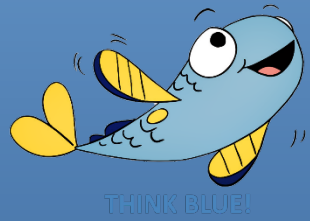
**Brian Goetz –  
Director of Water Resources /  
Deputy Director of Public Works**



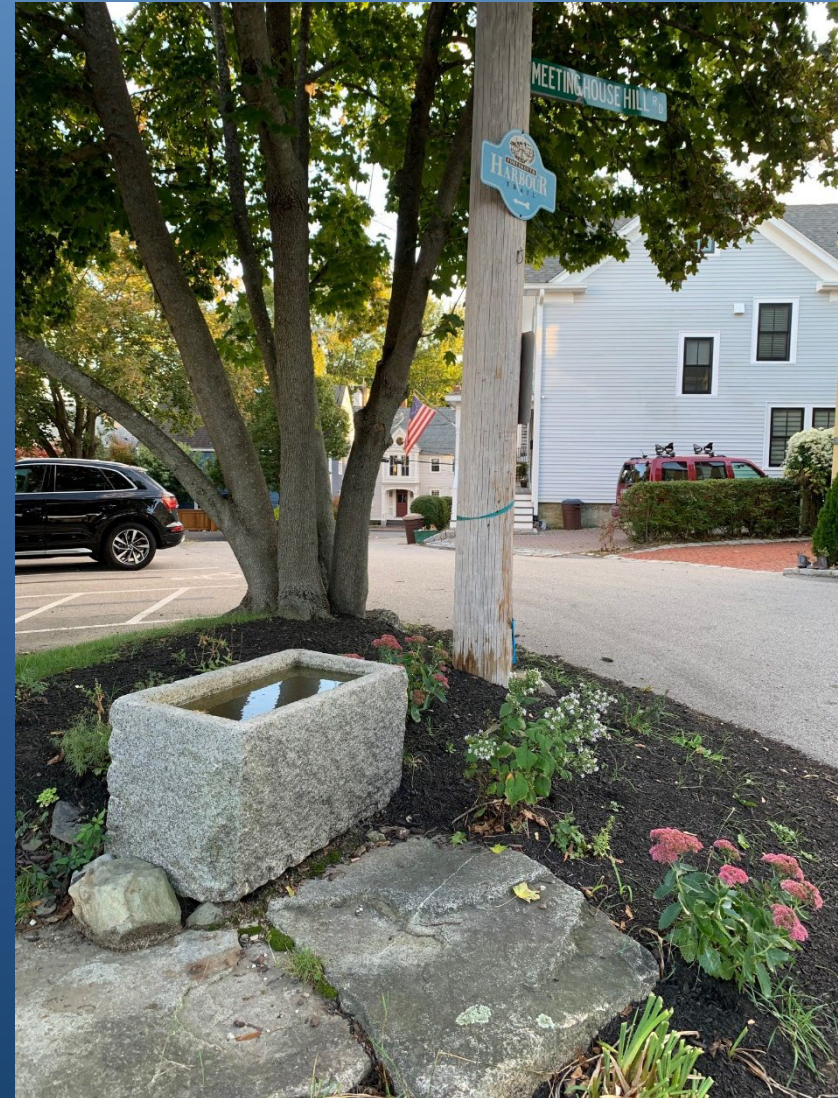
**THINK BLUE!**

**Blue!**

# 400 Years Ago...



# South Meeting House Wellsite



# Late 1700's - A lot of people and individual wells



# The Beginnings of Portsmouth's Water System

By the late 1700s, with dense development in the downtown area and the need for water to serve businesses, the Portsmouth Aqueduct Company was formed in 1797 by an act of the state legislature, the first large public water system in New Hampshire. Soon after, new pipes and additional sources of supply were constructed to supplement the

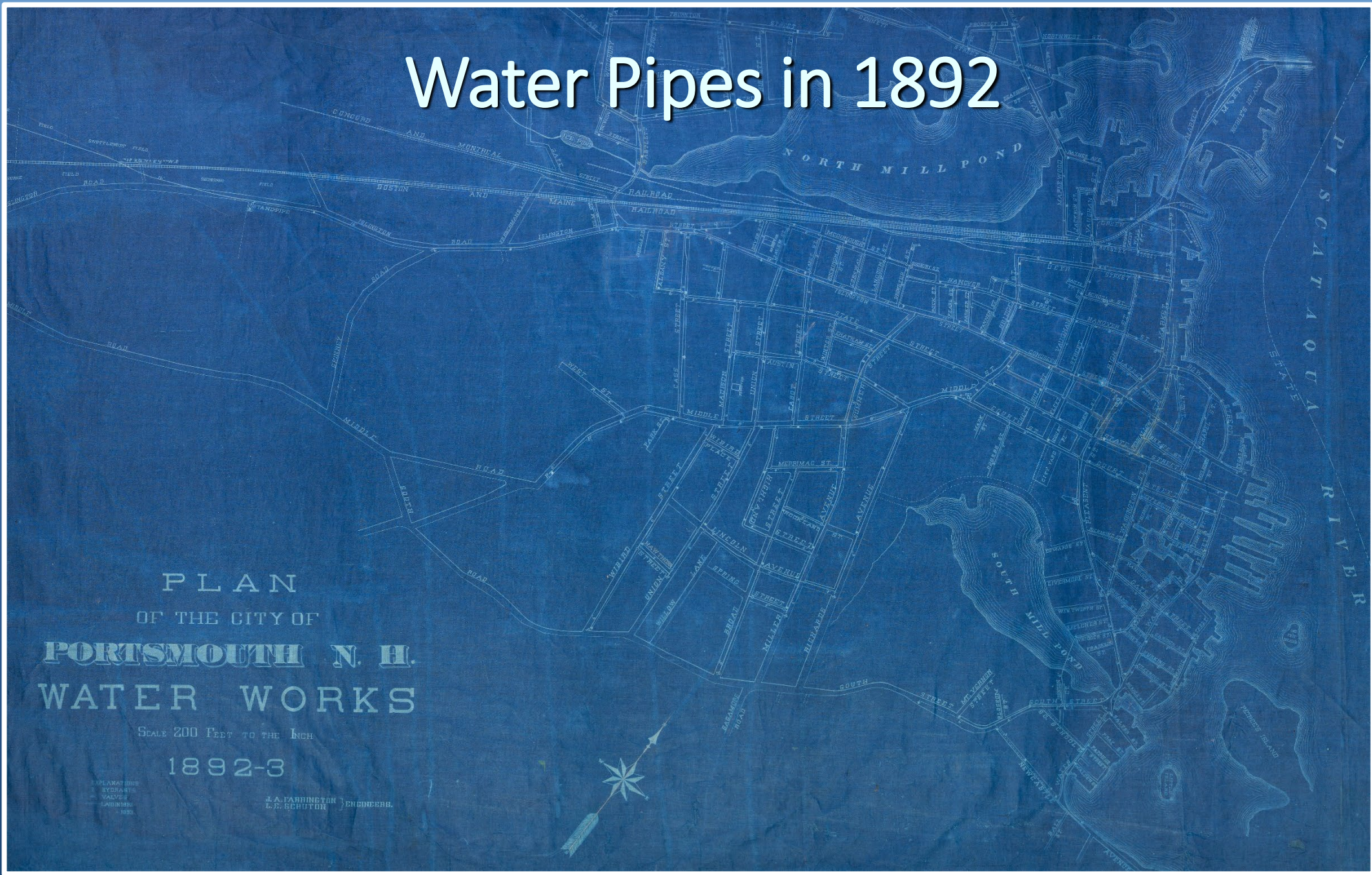




61 Boring elm water-pump pipes by hand, using an auger supported on a rest; Lugwardine, Herefordshire, about 1900



# Water Pipes in 1892



PLAN  
OF THE CITY OF  
**PORTSMOUTH N. H.**  
WATER WORKS

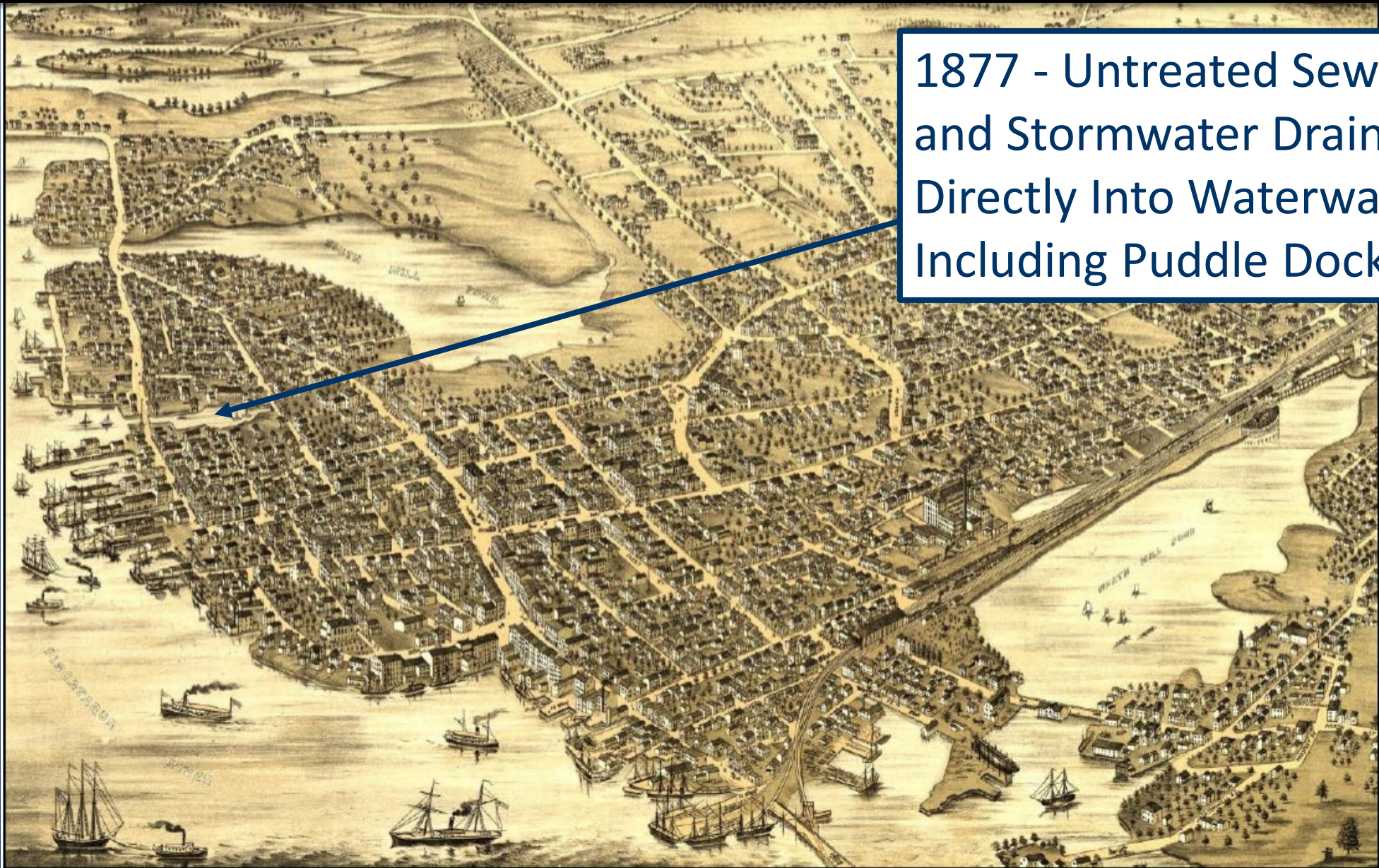
SCALE 200 FEET TO THE INCH

1892-3

WATER MAINS  
HYDRANTS  
VALVES  
CANNERS

J. A. LAMBINGTON ENGINEERS.  
C. F. SCHUTZ

"Bird's Eye View of Portsmouth, Rockingham Co., New Hampshire, 1877," by J. J. Stoner. The city hired a professional engineer in 1877 to help solve its sewage disposal problems, complicated by its low-lying areas and near-surface bedrock.



1877 - Untreated Sewage and Stormwater Drained Directly Into Waterways, Including Puddle Dock



# 1964 – Wastewater Treatment On Peirce Island

## Total Project Cost: \$1.15 Million



# 2021 – Wastewater Treatment Upgrade Total Project Cost: \$92 million



**PEIRCE ISLAND WWTF UPGRADE PROJECT**  
**Dedication Ceremony - July 13, 2021**



# Additional History and Artifacts at Strawberry Banke's *Water Has A Memory* Exhibit



# Adapting to Sea Level Rise and Storm Surges

A 400 Year Old City...

- Existing Infrastructure
- Built Many Years Ago
- Not easy to just replace



## SUSTAINABILITY INITIATIVES

Eco-Municipality

Committees ▾

City Initiatives ▾

City of Portsmouth > "Green" Sustainability Initiatives > CREAT Climate Resiliency Report

### Climate Resilience Evaluation and Awareness Tool Exercise Report



CITY OF PORTSMOUTH, NEW HAMPSHIRE

June 29, 2015

## CREAT CLIMATE RESILIENCY REPORT

The City of Portsmouth, New Hampshire provides **drinking water**, **wastewater**, and **stormwater** services to residents and local businesses. The utility provides drinking water to about 8,000 customers in the communities of Portsmouth, Greenland, Rye, Newcastle and Newington, and large commercial, industrial and recreational customers. A surface water reservoir and wells are the primary drinking water sources and the City operates an advanced water treatment plant. The City operates two wastewater treatment facilities, twenty wastewater pump stations and recently completed the construction phase of its long-term control plan for combined sewer overflows.

As an Eco-Municipality, Portsmouth makes continuous "green" improvements to support its sustainability goals.



Read the full CREAT Climate Resiliency Report

# Mechanic Street Pump Station

**Table 4. City of Portsmouth Baseline and Resilience Analysis Results for the Mechanic Street Pump Station/Coastal Storm Surge Assessment (2060 time period)**

<b>ANALYSIS</b>	<b>Utility Business Impacts</b>	<b>Utility Equipment Damage</b>	<b>Source/ Receiving Water Impacts</b>	<b>Environmental Impacts</b>	<b>Community/ Public Health Impacts</b>
Baseline – Central model projection	HIGH	VERY HIGH	HIGH	MEDIUM	HIGH

# Downtown Portsmouth Sewer System Infrastructure



# Mechanic Street Pump Station – Low Tide



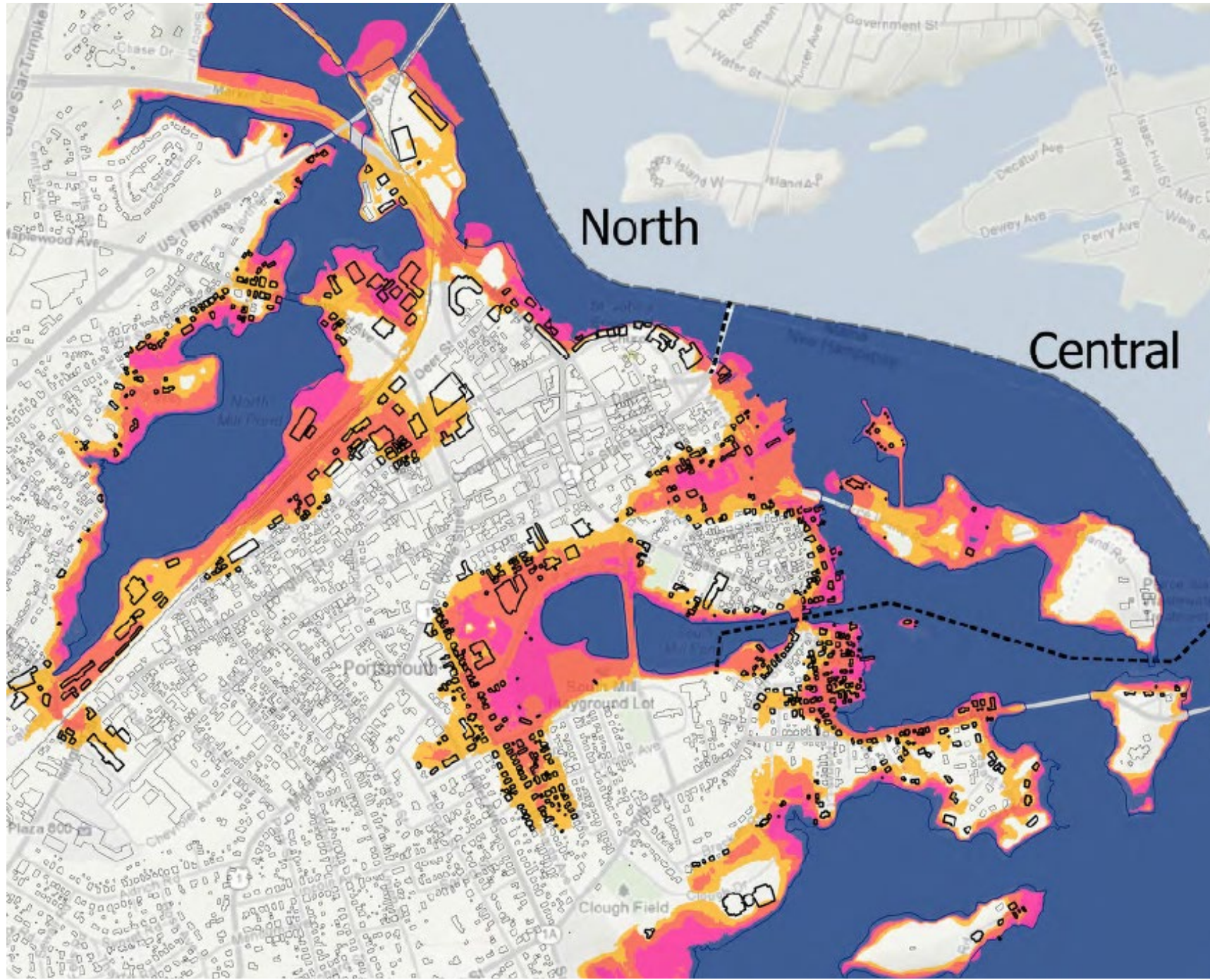


December 23, 2022



December 23, 2022





# 13.5' Flooded Building Layer

13.5' elevation correlates with a 100 year coastal flood elevation at MHHW given the 2050 high greenhouse gas emissions scenario, or about 2' of sea level rise and a 6.8' storm surge

# Downtown Portsmouth Sewer System Infrastructure

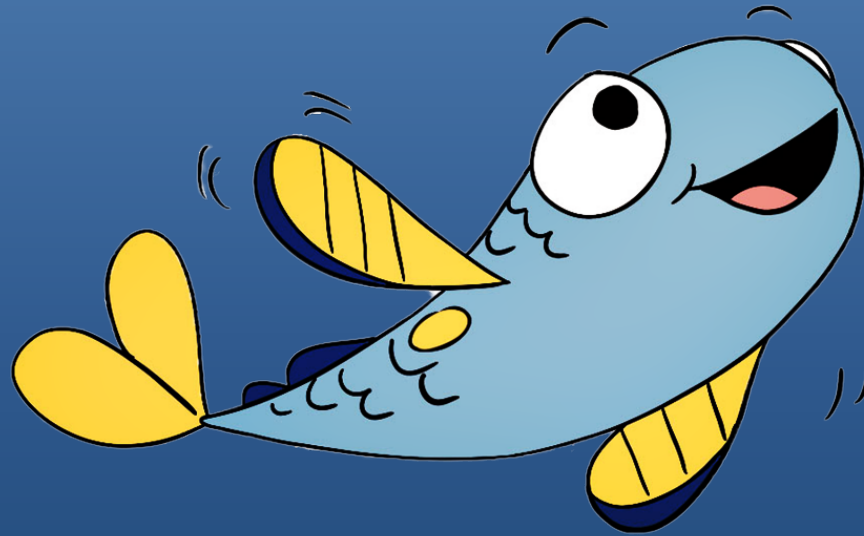


# Planning for Storm Surge and Sea Level Rise

- Hard to change the gradeline of the roads, sewers and stormdrains
  - Peirce Island Roadway will be raised in an upcoming project
- More pumping
- Raise seawalls
- Increase living shoreline
- Fortify mechanical infrastructure, raise where possible
- Utilize monitoring network for public information and early warnings during storm events

# *Think Blue!*

Water | Wastewater | Stormwater



THINK BLUE!

# Water Efficiency Efforts in Portsmouth



WaterSense  
Membership



Watersense Appreciation



Think Blue!  
Outreach



Water Sustainability Award



1,775  
Water Conservation  
Kits Distributed  
Free to Portsmouth  
Customers



Water Conservation Kits



Water Efficiency Rebates



Public Outreach Award

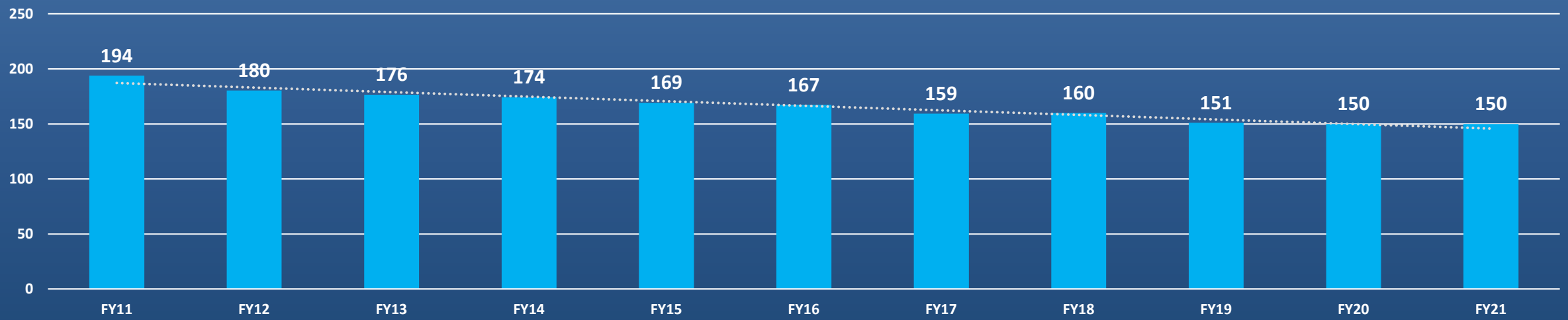


Public Involvement Award

# Water Efficiency Program:



**Trend - Average Residential Water Use Average (gallons per day)**





# Think Blue! Videos

## City's YouTube Page "Think Blue"

### @ThinkBluePortsmouthNH



Stormwater Outreach Video - Dog Walk Redemption

199 views Sep 23, 2021



Stormwater Outreach Video - Falling Leafs

207 views Nov 3, 2021



**THE IMPACT ON PORTSMOUTH**

King Tides and storm surges have brought the future to our backyard here on the Seacoast.

By 2050, the volume of sea level rise is hidden out of sight. With a mean Pacific Tuck and you're walking a few feet above the tide. The precipitation, in places, is less than 10 feet beneath the surface here on Public Dock. Add the height of a full moon tide, a storm surge on... by 2050 an inch 3 feet by 2050 and the water runs through the collar of Shapley House, East House and Shorehouse, taking New Seacoast babies, one of the most at risk sites in Portsmouth, taking the houses, their contents and archaeological treasures underground from further damage.

In 2007, the City of Portsmouth declared its commitment to become more sustainable by becoming an Eco-Municipality. This exhibit invites you to "Think Blue" and consider what 100 you do to become part of the solution.

# Think Blue! What can YOU do?

See how many of these suggestions from the City of Portsmouth DPW Water-Stormwater Division you can adopt!

- Reduce your toilet with a new, water-efficient one. Many people use Portsmouth, offer rebates.
- Install low-flow showerheads. Take showers instead of baths and keep them under 5 minutes.
- Turn off the water while brushing your teeth, shaving and while lathering your hands.
- Use mulch around plants to help retain water, **light** **temperature** and avoid evaporation.
- Use only full loads of laundry. Avoid pre-wash cycles for heavily soiled items. Many places for Portsmouth offer rebates.
- Check for leaks. Add faucet aerators from your kitchen to a compost pile that forms a nutrient-rich soil for your garden.
- Compost. Add organic matter from your kitchen to a compost pile that forms a nutrient-rich soil for your garden.
- Take only full loads of laundry. Avoid pre-wash cycles for heavily soiled items. Many places for Portsmouth offer rebates.
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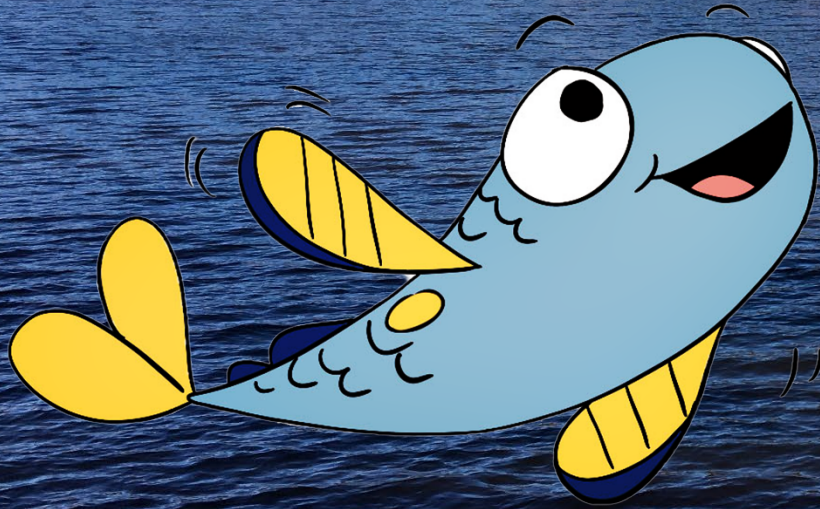


**STRAWBERRY BANKE**

**Water has a Memory**

PRESERVING STRAWBERRY BANKE AND PORTSMOUTH FROM SEA LEVEL RISE

# Thank You



THINK BLUE!

