Water Supply and Challenges in Suffolk County

SUFFOLK COUNTY WATER AUTHORITY
SCWA

Presented By:

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Topics We Will Cover Today

- A Little about SCWA
- Long Islands Sole Source Aquifer
- Source Water Protection
- The Critical Role Played by Lab Testing
- The Challenge of Emerging Contaminants

What SCWA is…

- The Suffolk County Water Authority is an **independent public-benefit corporation** operating under the Public Authorities Law of the State of New York.
- SCWA serves approximately **1.2 million** Suffolk County residents.
- Beginning operations in 1951, SCWA operates without taxing power on **a not-for-profit** basis.
- SCWA is one of the largest **groundwater suppliers** in the country.

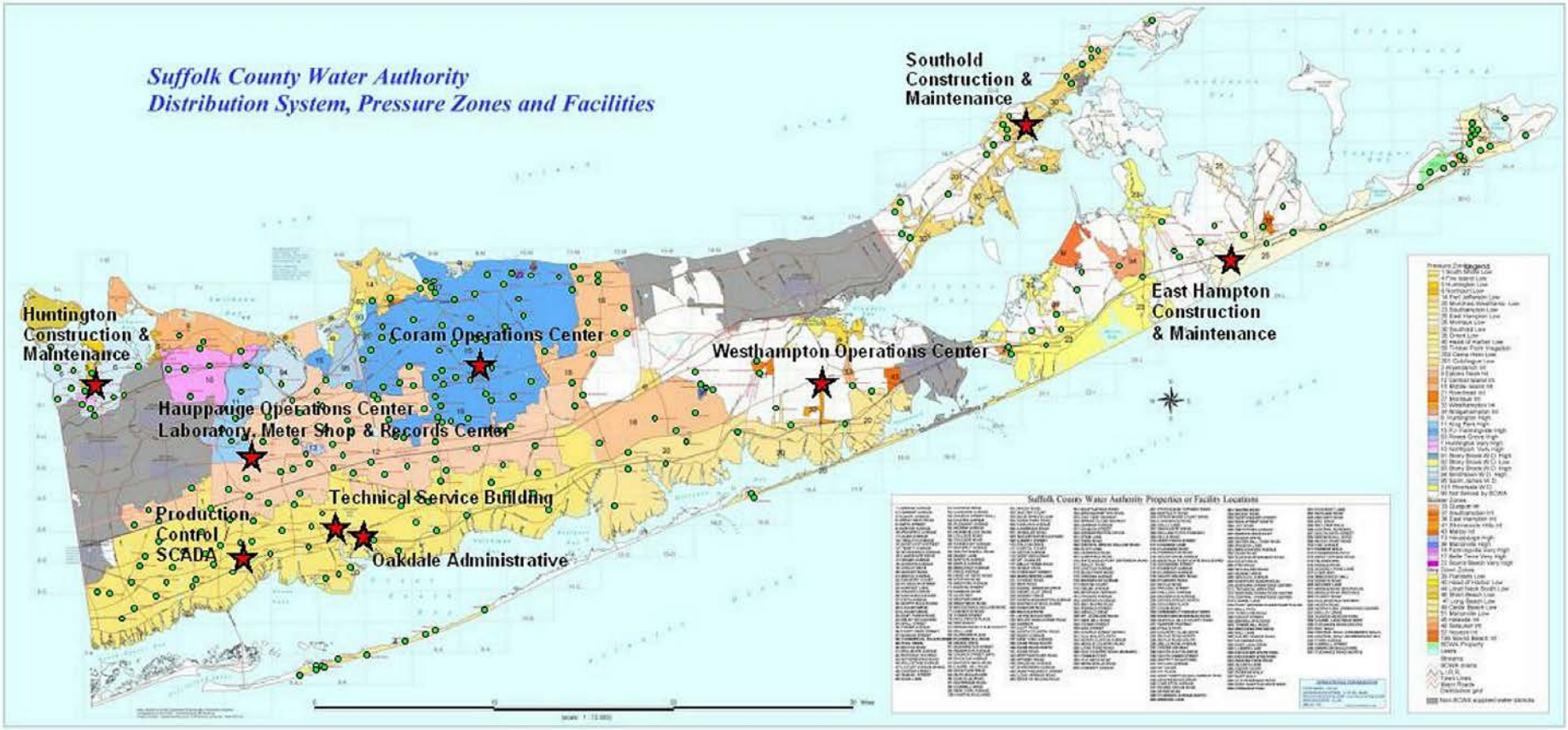
What SCWA is not…

- SCWA is not a branch of Suffolk County Government.
- SCWA does not create or enforce drinking water standards. This is the responsibility of the U.S. Environmental Protection Agency (EPA) and New York State Department of Health (DOH).

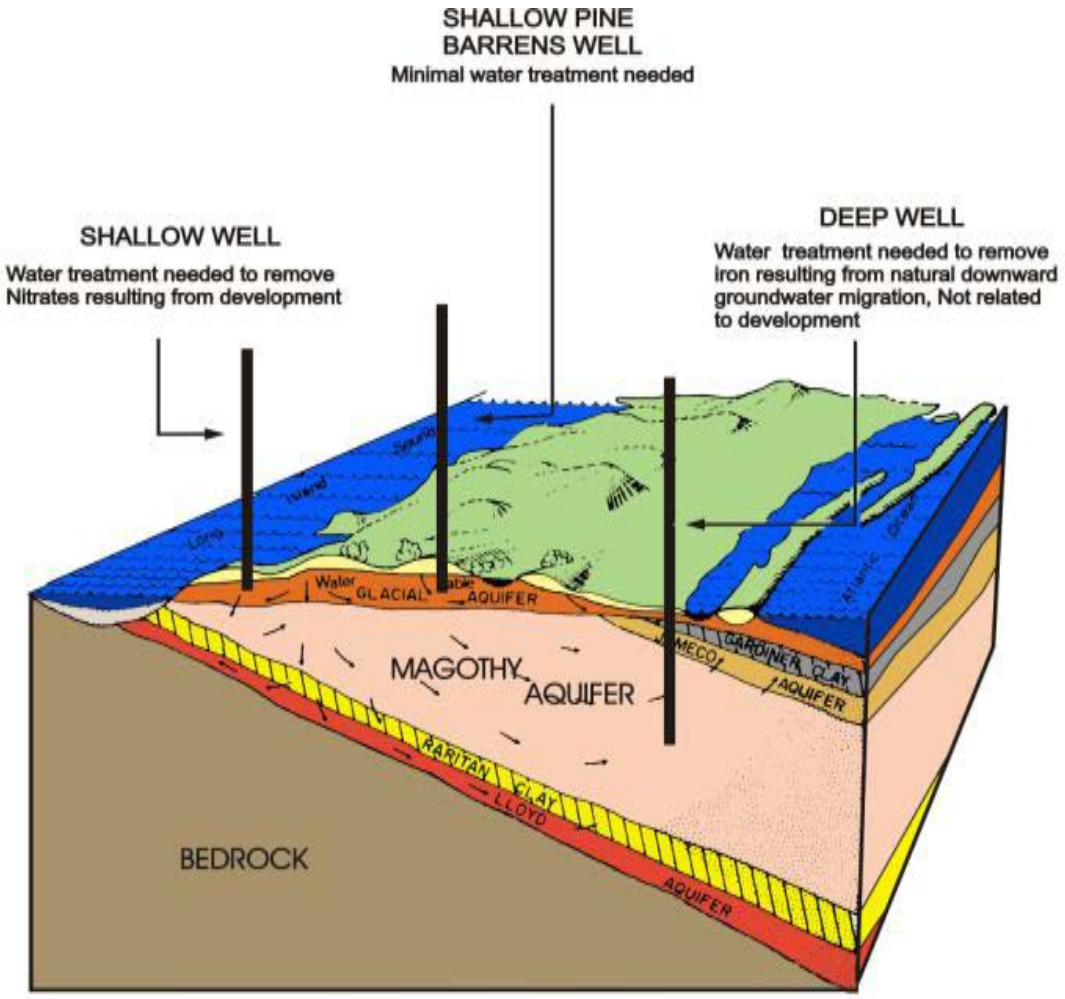
SCWA Statistics

- 586 Active Wells at 237 Well Fields
- 64 Storage Tanks w/68 Million Gallons (MG) of Storage.
- Over 6000 Miles of Water Main
- Approximately 38,000 Fire Hydrants
- Avg Daily Pumpage: 210 MG.
- Avg Peak Pumpage: 470 MG.
- Largest EPA Cert Groundwater Lab in US

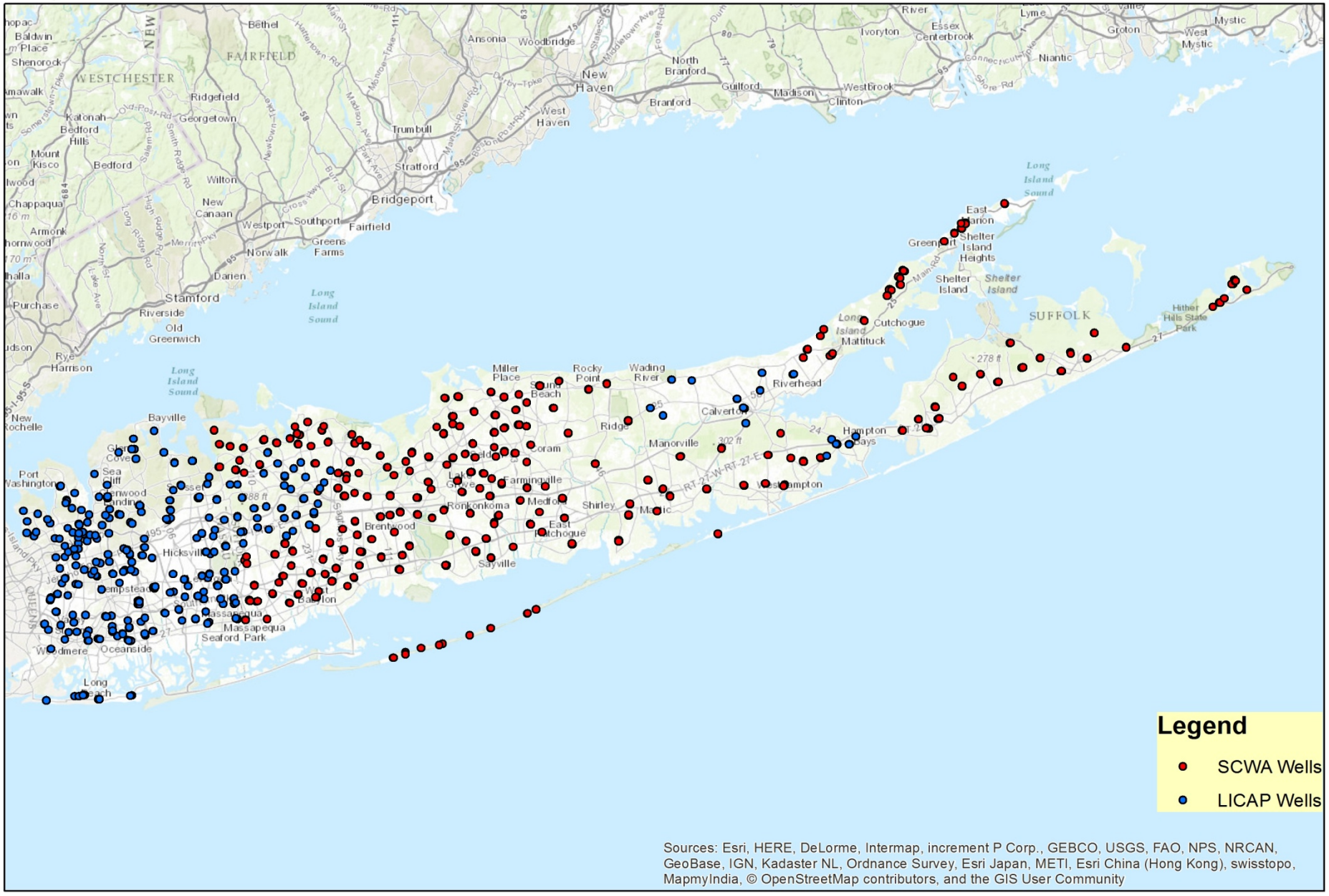
SCWA – Pressure Zones and Facilities



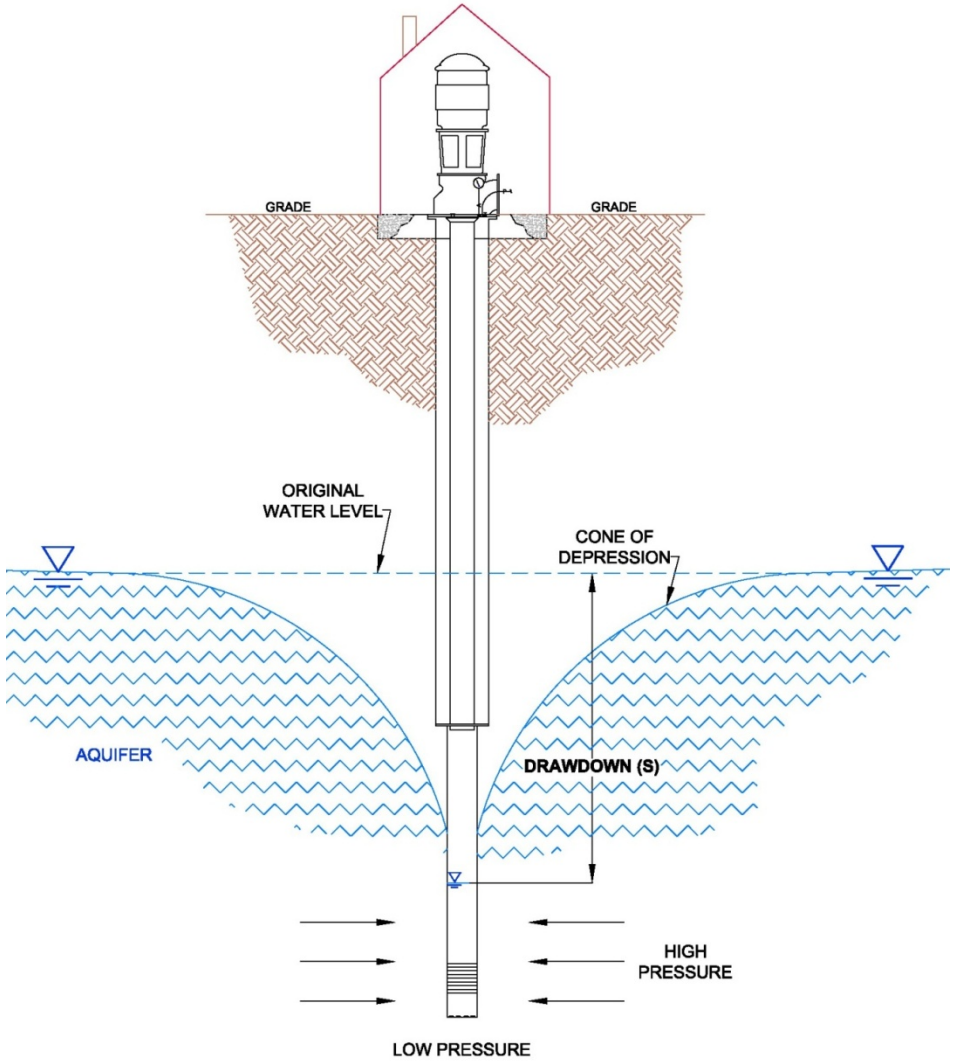
Long Islands Sole Source Aquifer



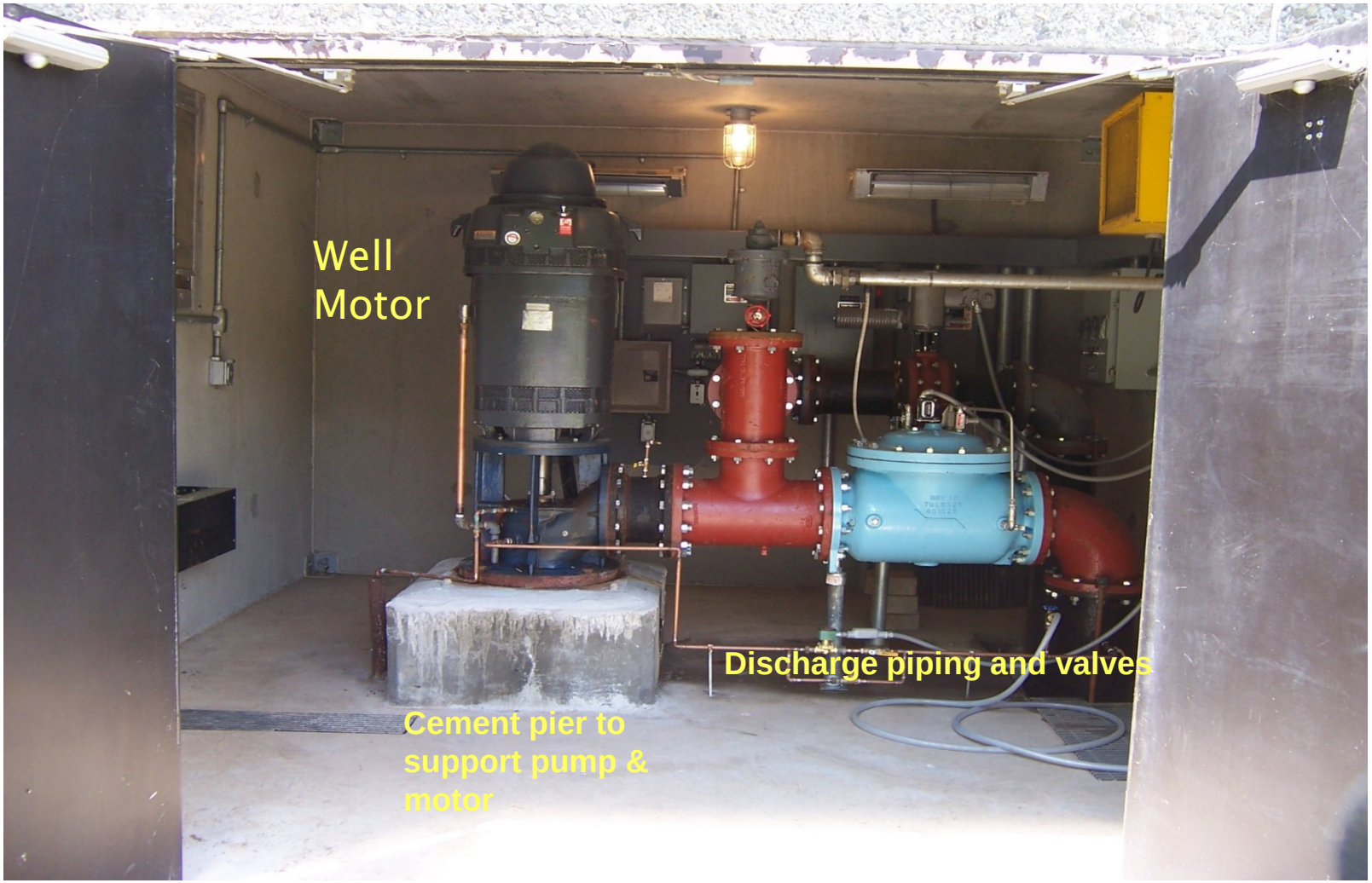
Public Supply Wells on Long Island



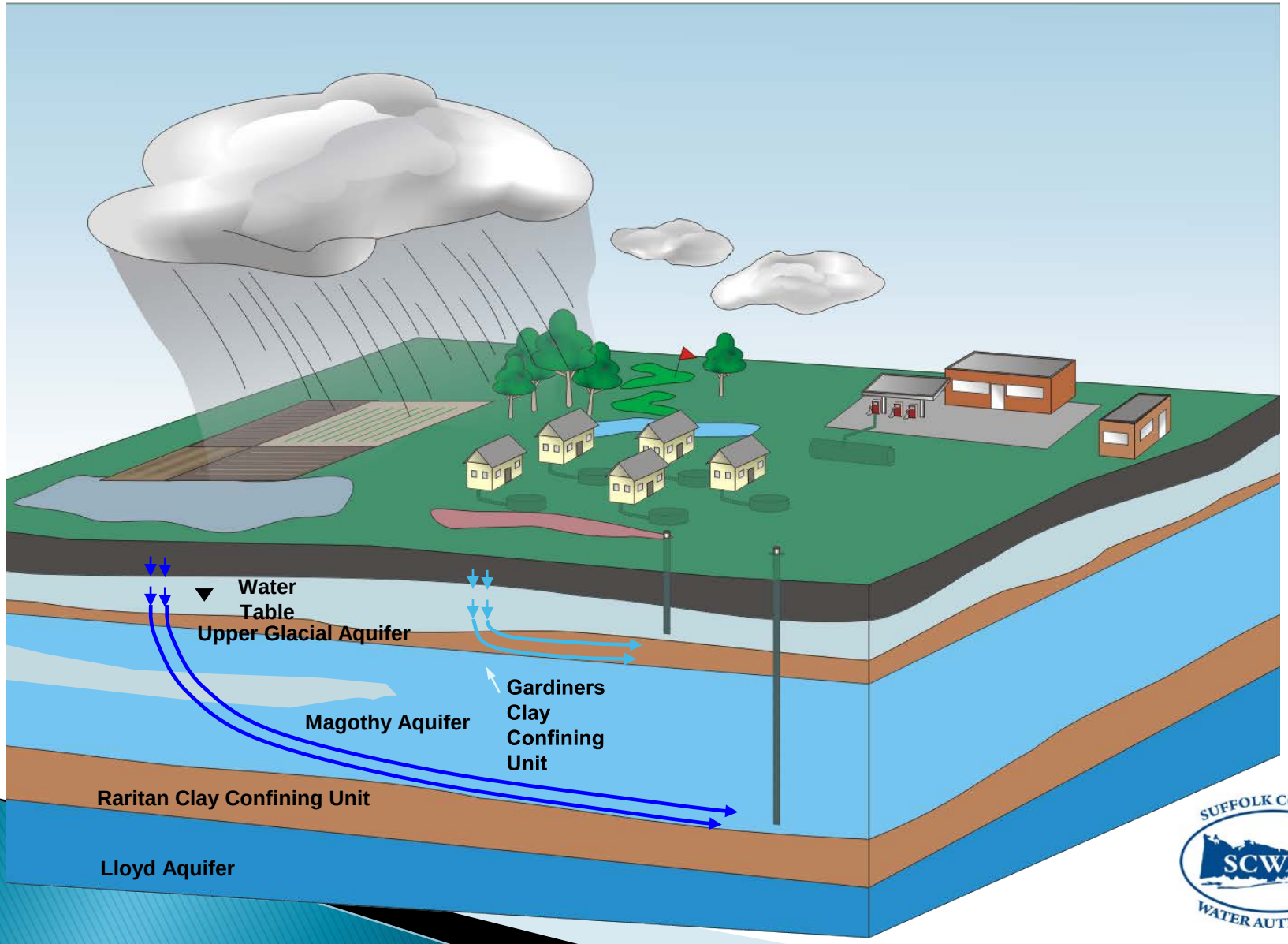
Typical Well in Operation



Actual SCWA Well



Source Water – Where Does Our Water Come From?



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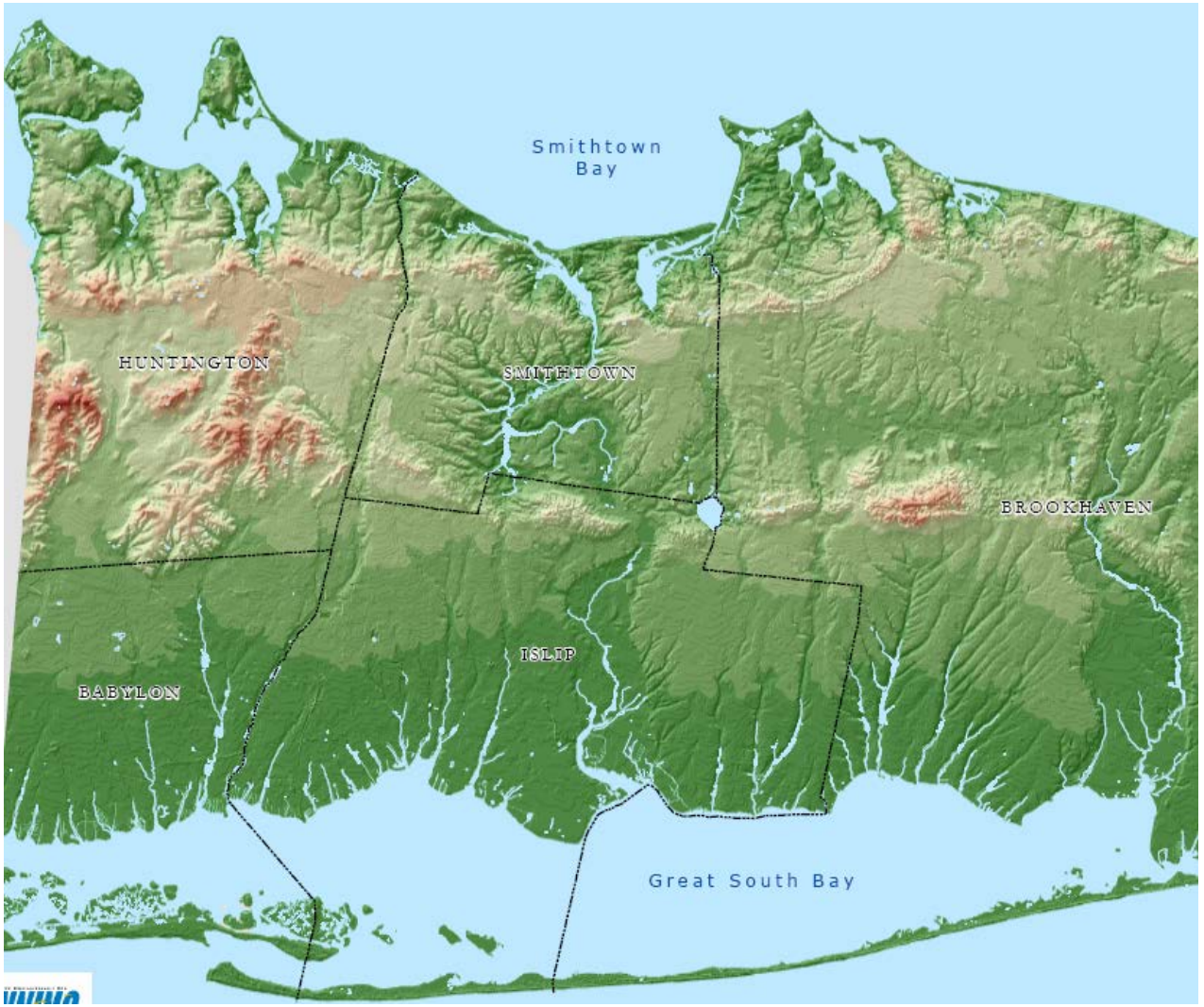
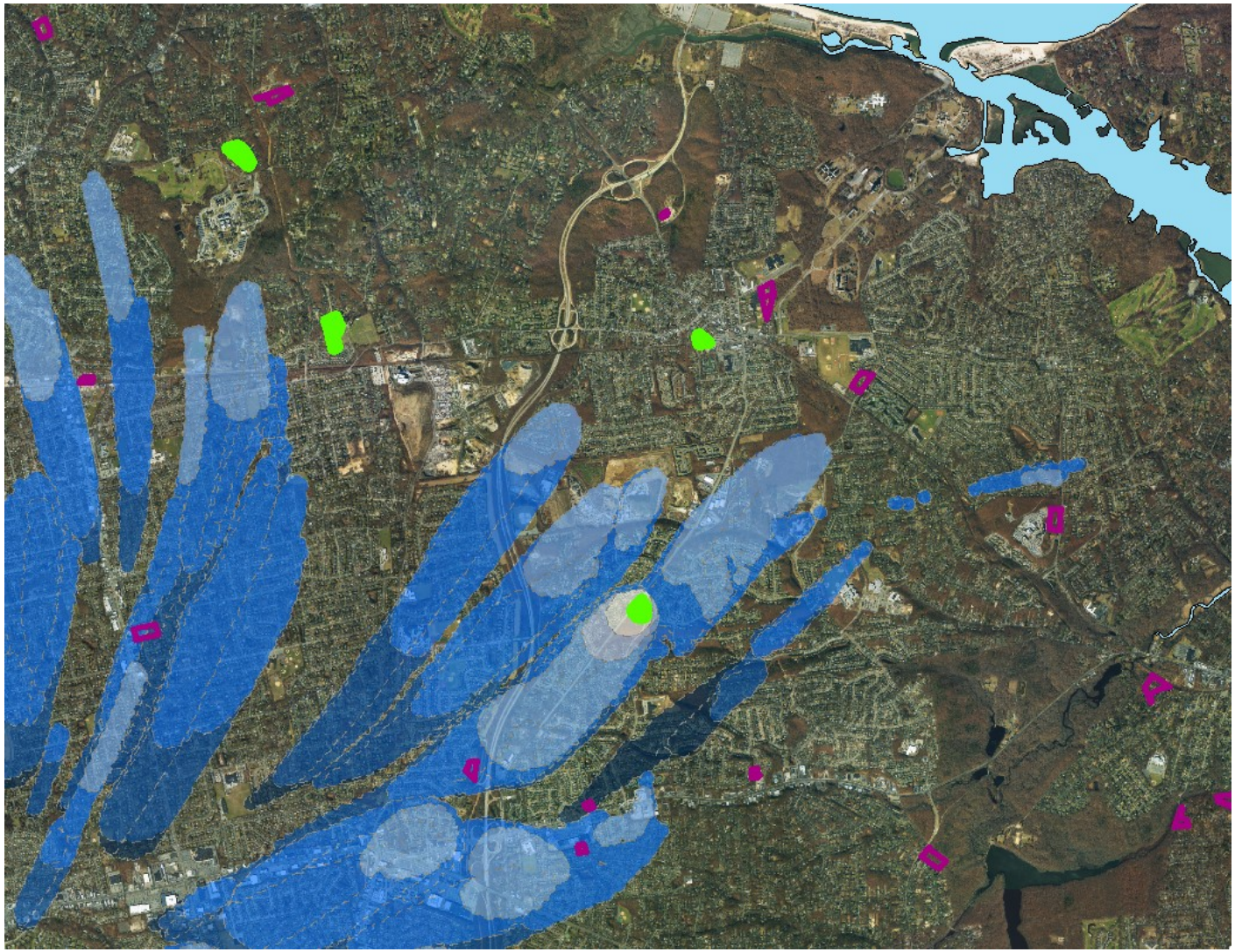
The Highs and Lows of Long Island

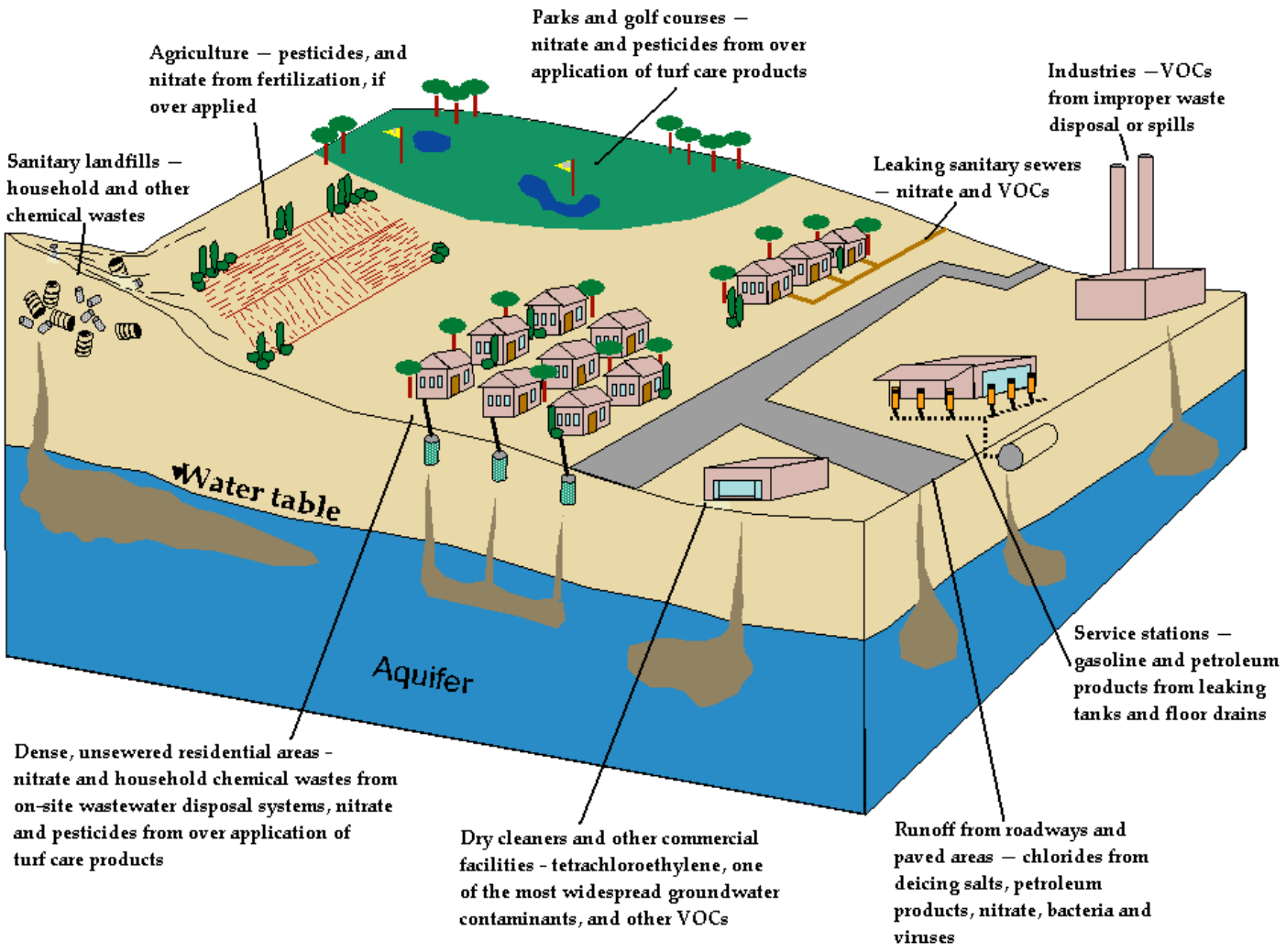


Kings Park Area Well Source Water



Islip Area Well Source Water

Land Use Impacts on Groundwater



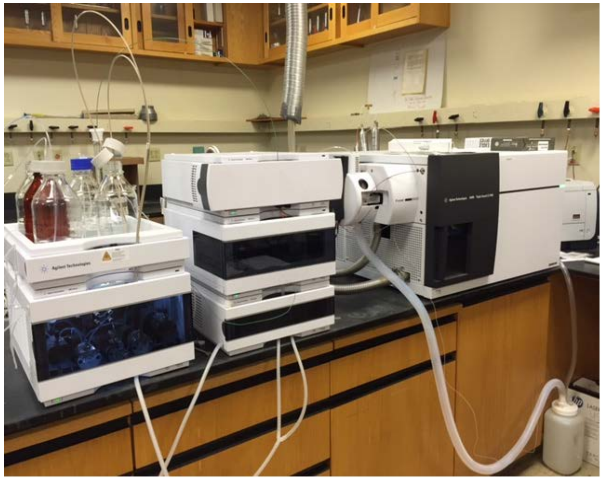
The Critical Role of Testing

Laboratory Testing Equipment

Metal Testing

Gas Chromatography

Ultra High Pressure Liquid Chromato graphy



Personal Care Products Testing

Volatile Organics Testing

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Levels of Detection

- SCWA's state-of-the-art laboratory instruments can detect compounds in the water down to parts-per-**million**, parts-per-**billion,** or in some cases even parts-per-**trillion**.

- For reference:
  - 1 Part-per-million = 1 second in 12 days
  - 1 Part-per-billion = 1 second in 32 years
  - 1 Part-per-trillion = 1 second in 32,000 years

The SCWA Laboratory

- SCWA's in-house standards for water quality are often **tougher than** state or federal regulations.
- Tested for **400** compounds (**251 more than** required by regulators)
- Analyzed **55,000** samples last year for 167,000 tests.
- Testing at a **higher frequency** than required by SCDHS.

Test samples are taken at the wellhead, at various stages of treatment and within the distribution system for bacteria and a wide range of inorganic and organic chemicals.

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Emerging Contaminants – The New Challenge

- Perflourinated Compounds – PFOA/PFOS
- 1,4 Dioxane

What are PFOS & PFOA?

- Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA) are fluorinated organic chemicals used in treatments to protect carpets, clothing, furniture fabrics, paper packaging for food and non-stick cookware. They are also found in firefighting foams.
- The NYS Drinking Water Standard for PFOA/PFOS is 10 ppt

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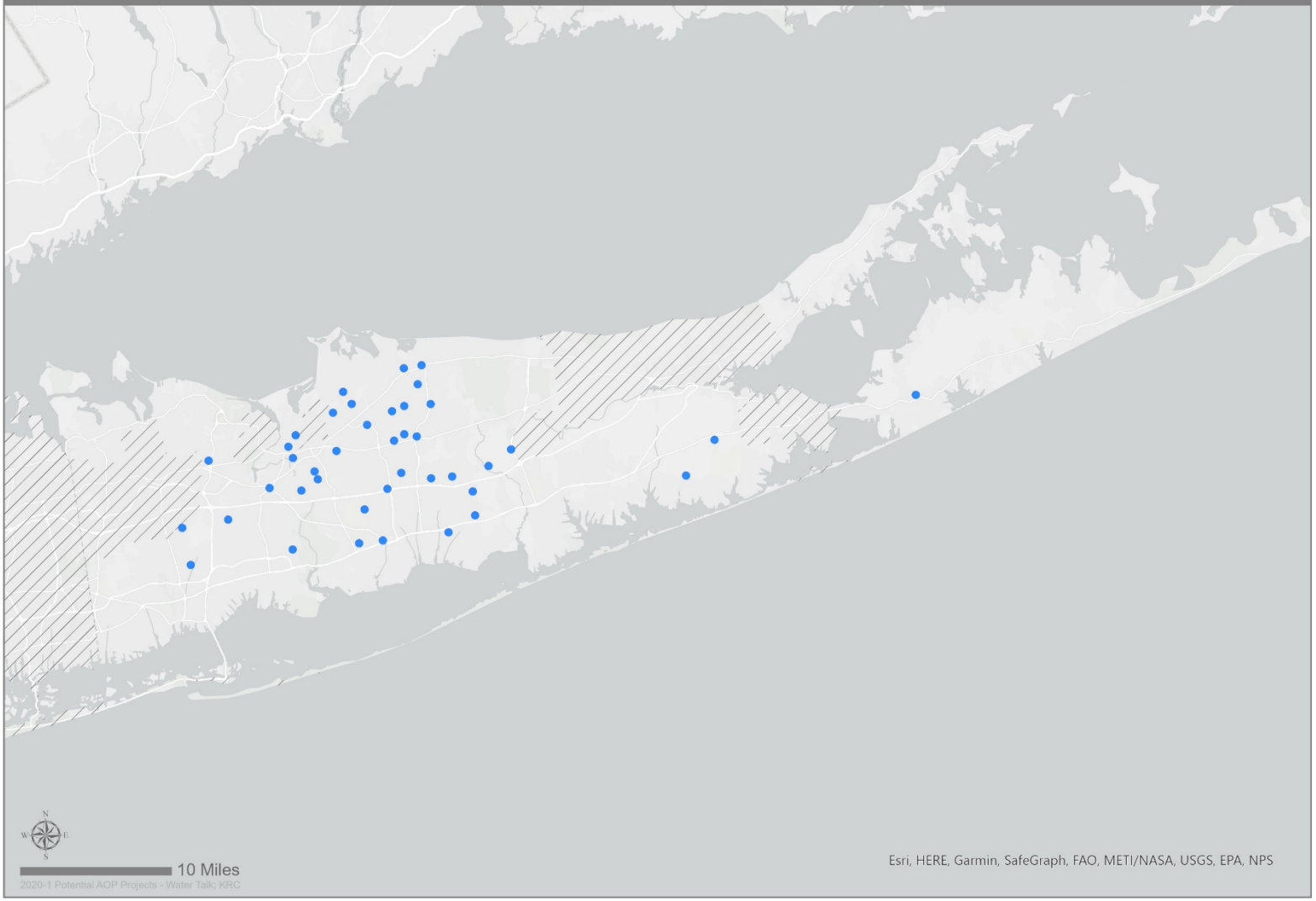
Wells Above 1/2 the Proposed MCL With No Treatment for PFOA/PFOS

April 12, 2021



SCWA Action on PFOS & PFOA

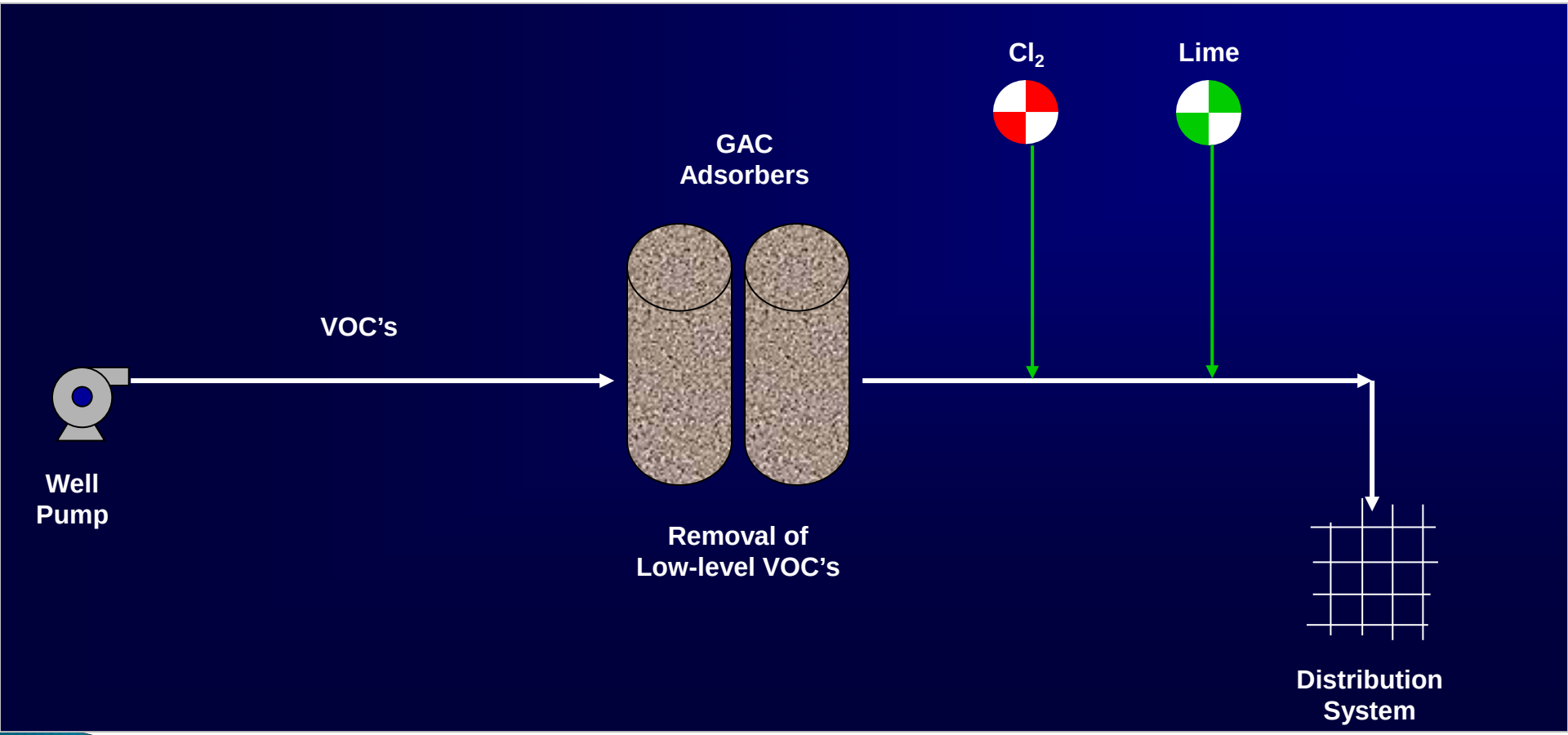
- SCWA began testing for PFOS & PFOA in 2013 at the direction of the Environmental Protection Agency (EPA).
- PFOS & PFOA are removed from water using Granular Activated Carbon (GAC) treatment.
- About 21 additional GAC systems will need to be installed to comply with the new regulations.

Granular Activated Carbon (GAC)

GAC Vessels

Carbon media

Typical GAC Process Flow Diagram



What is 1,4-dioxane?

- 1,4-dioxane is a synthetic chemical historically used as a stabilizer for industrial solvents, predominantly 1,1,1-trichloroethane, which was banned in the 1990s.
- It is also used in inks and adhesives and is present in trace amounts in consumer products such as detergents, shampoos and cosmetics as a by-product of the manufacturing process.
- 1,4-dioxane can not be removed from water using traditional treatment methods such as Granular Activated Carbon (GAC) or air-stripping.
- The NYS Drinking Water Standard for 1,4 Dioxane is 1 ppb

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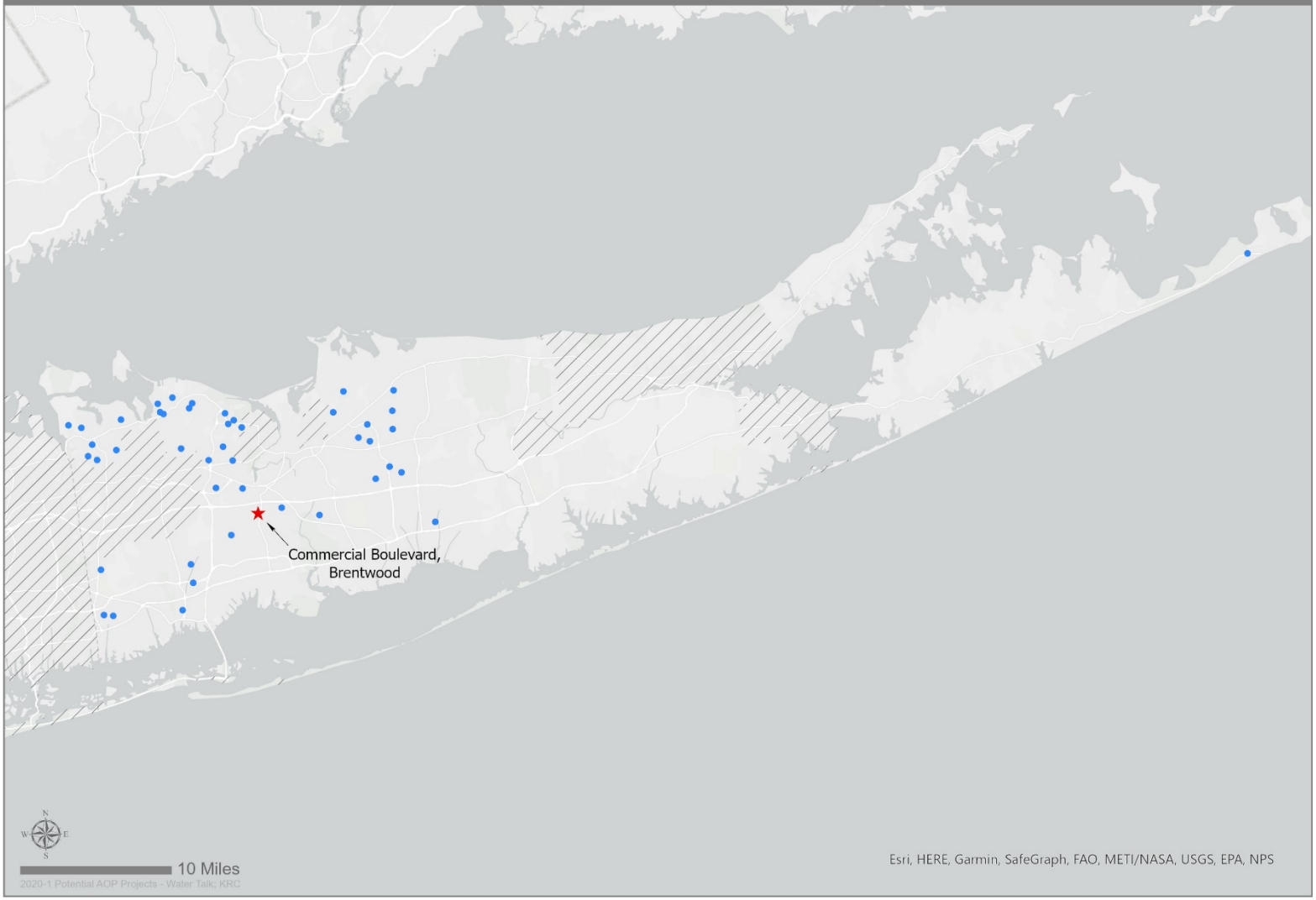
Wells Above 1/2 the Proposed MCL With No Treatment for 1,4 Dioxane

April 12, 2021

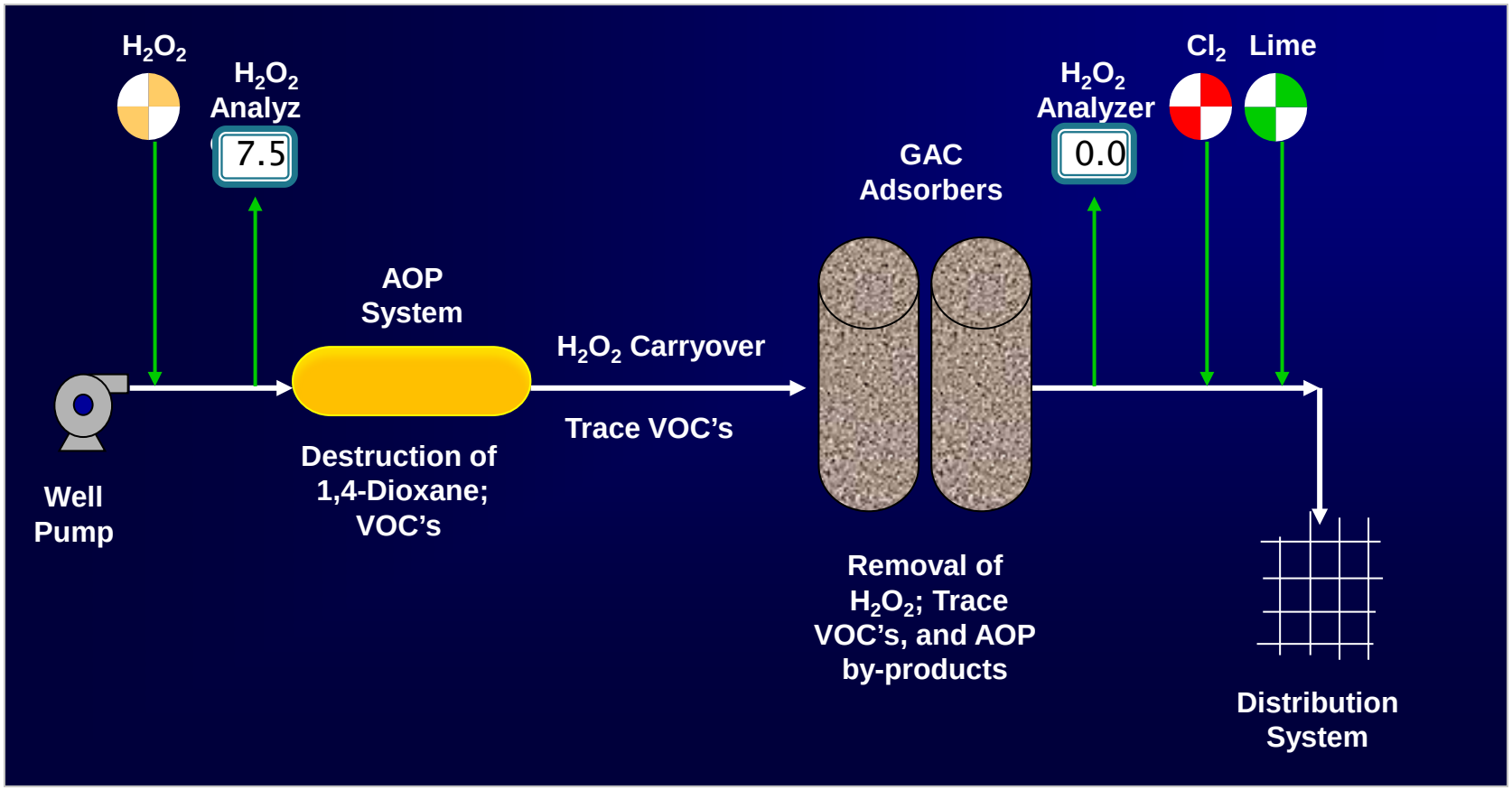


SCWA Action on 1,4-dioxane

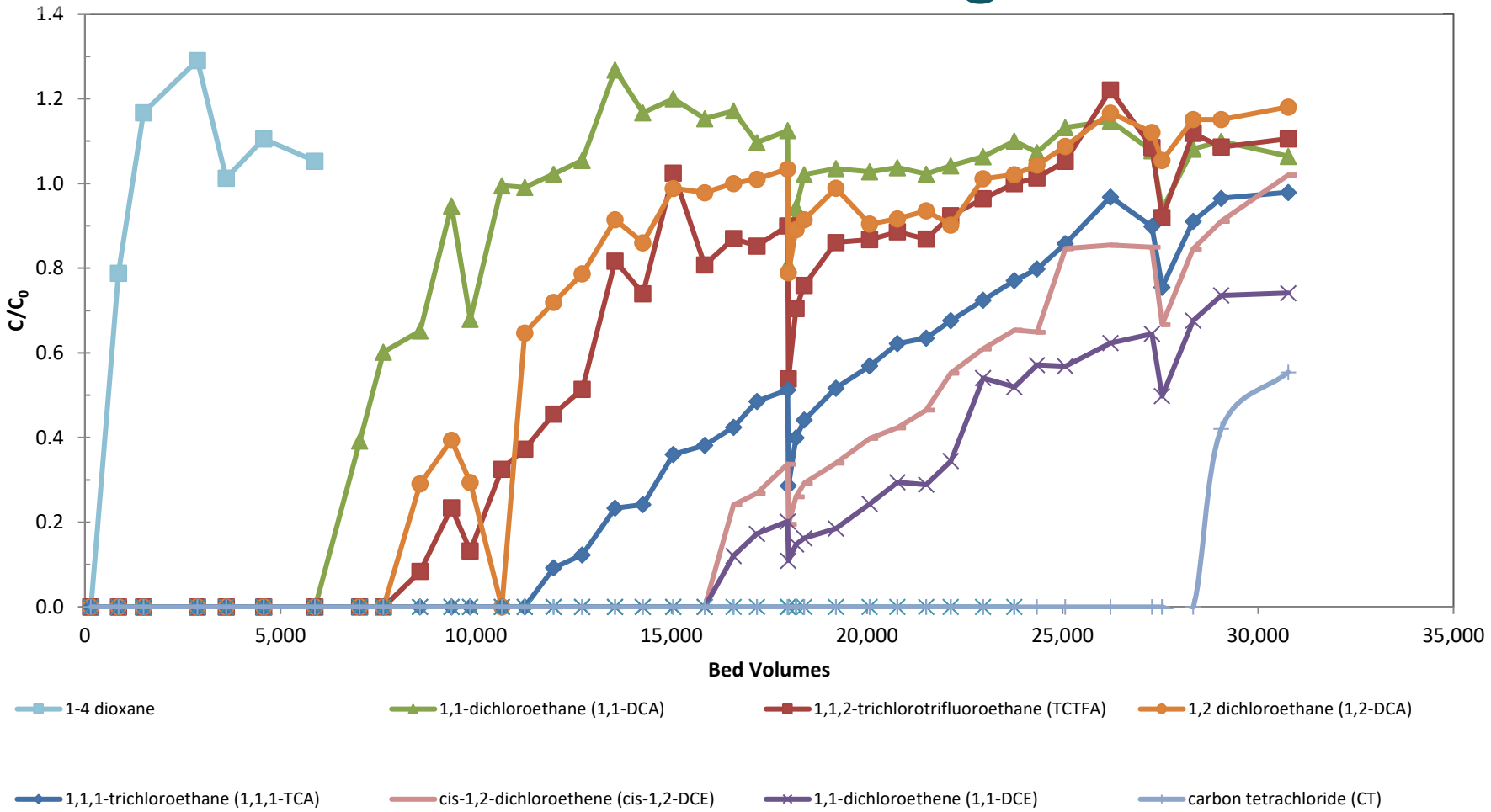
- SCWA began voluntarily testing for 1,4-dioxane in 2003.
- In 2016, SCWA engineers designed and piloted the first full-scale pilot 1,4-dioxane treatment system in NYS history. The Authority's Advanced Oxidation Process (AOP) treatment system is currently in operation in Central Islip.
- Results show AOP destroys 1,4-dioxane molecules to virtually non-detect levels.

Advanced Oxidation Process (AOP) Treatment

AOP Process Flow Diagram



Why AOP?
Contaminant Breakthrough in GAC



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Questions?