



# PUBLIC INFORMATION MEETING

City of New Haven's

Combined Sewer Overflow Long Term Control Plan Update  
Public Information Meeting

Report Prepared by Jacobs Engineers on behalf of the  
Greater New Haven Water Pollution Control Authority

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Director Of Engineering

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Manager of Design

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Project Engineer III

NOVEMBER 9, 2023



# Meeting Agenda

- **Introduction and Background**
  - About the Authority
  - History of New Haven Sewers
  - What are Combined Sewer Overflows (CSO's)?
- **The Long-Term Control Plan (LTCP)**
  - Strategy
  - Green Infrastructure, Resiliency
- **Overview of the 2022 Long-Term Control Plan Update**
- **Recommended Plan:**
  - Intermediate Term Improvements
  - Long Term Improvements
- **Current & Upcoming Projects**
- **Benefits to the Environment and Residents**
- **CSO LTCP Update Project Schedule**
- **Questions and Answers**



# Why are we here today!!

- **Historical timeline**

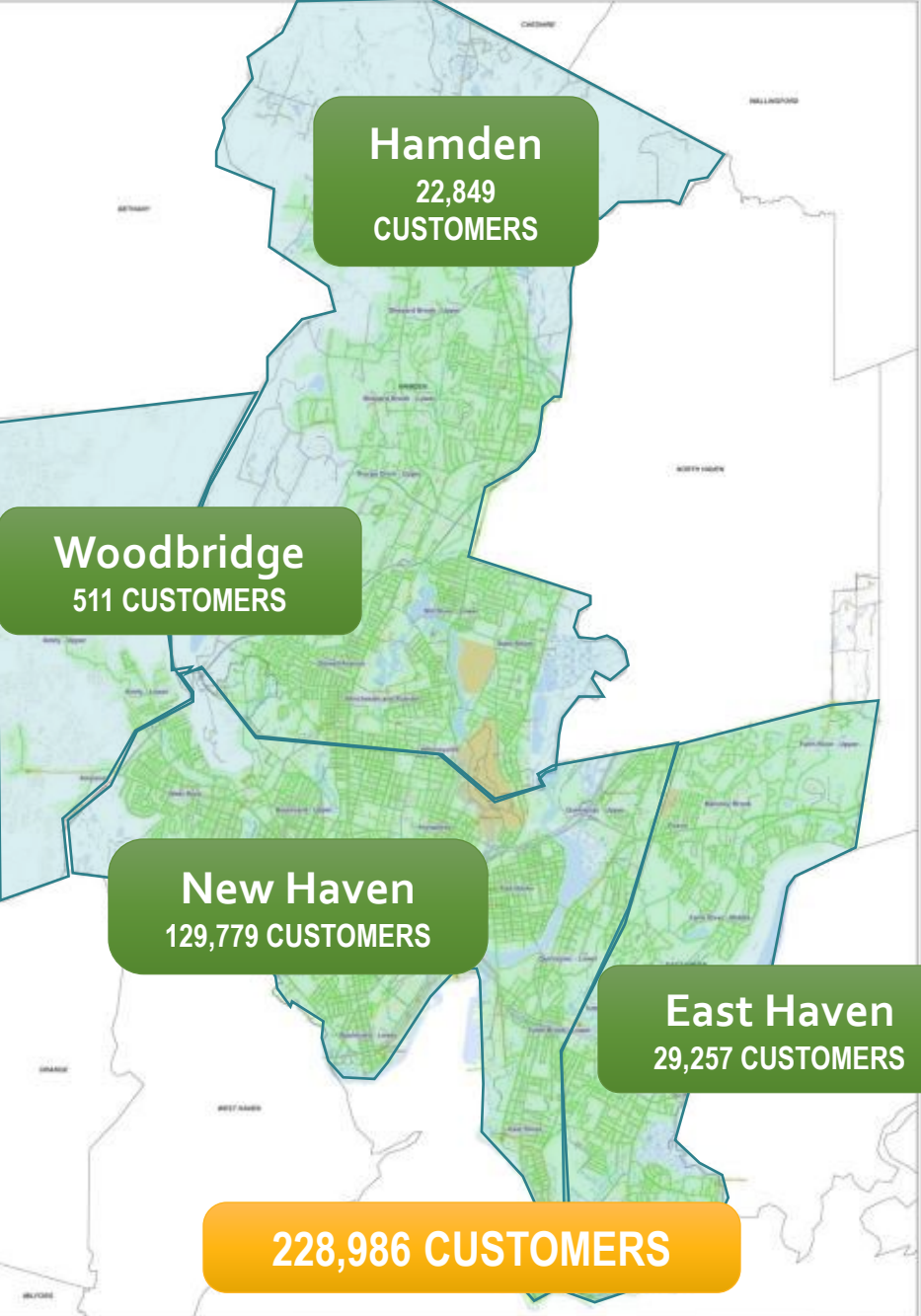
- **1981 – CSO Facility Plan Recommended Total Sewer Separation**
- **1994 – EPA Publishes CSO Control Policy**
- **1995 – City re-evaluates this approach to control cost and expedite work**
- **1997 – City retains CH2MHill to prepare the Long Term Control Plan**
- **2003 – City of New Haven Long Term Control Plan to Eliminate CSO's (Collaboration – City officials, Public, DEEP)**
- **2005 – Regionalization (GNHWPCA Created)**
- **2010 – Authority and DEEP agree on Consent Order (cost and timeline)**
- **2012 – First update to the LTCP Approved (Env Justice Meeting - June 2012)**
- **2018 – Second update to the LTCP (Public Meeting Feb 2017)**
- **2023 – Third update to the LTCP (Today's Public Meeting)**



# Greater New Haven Water Pollution Control Authority

[WWW.GNHWPCA.COM](http://WWW.GNHWPCA.COM)

- Four Member Communities
  - Hamden
  - East Haven
  - Woodbridge
  - New Haven
- Over 500 Miles of Collections Systems
- 30 Pump Stations
- East Shore Treatment Plant
  - 29 MGD – Average
  - 40 MGD – Secondary Design Flow
  - 100 MGD – Wet Weather Primary



**228,986 CUSTOMERS**



We are not a manufacturing facility!



Rather, we clean whatever you put down  
the pipes of your home!

# Challenging work!

CUSTOMER SERVICE

OPERATIONS

FINANCE AND ADMINISTRATION

INDUSTRIAL PRETREATMENT & SAFETY

**TEAM OF 60+ INDIVIDUALS DEDICATED TO BETTERING THE ENVIRONMENT**

ENGINEERING

COLLECTION SYSTEMS

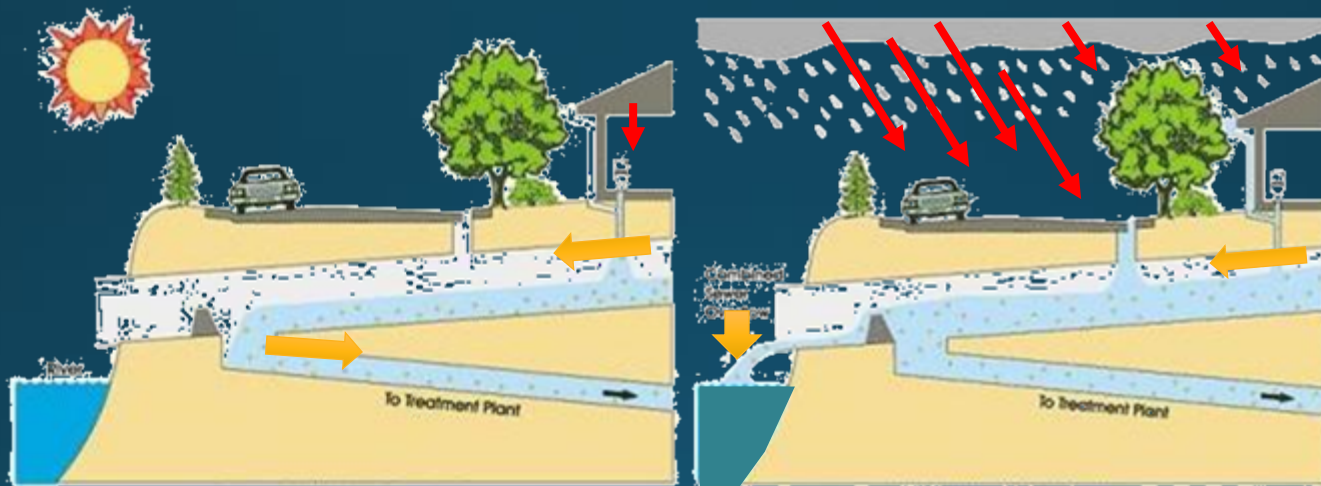
CONTRACTORS  
SYNAGRO - MAINTENANCE  
SUPPORT TEAM OF ONCALL  
CONTRACTORS





# What Is A Combined Sewer?

## Combined Sewer Overflow Diagram

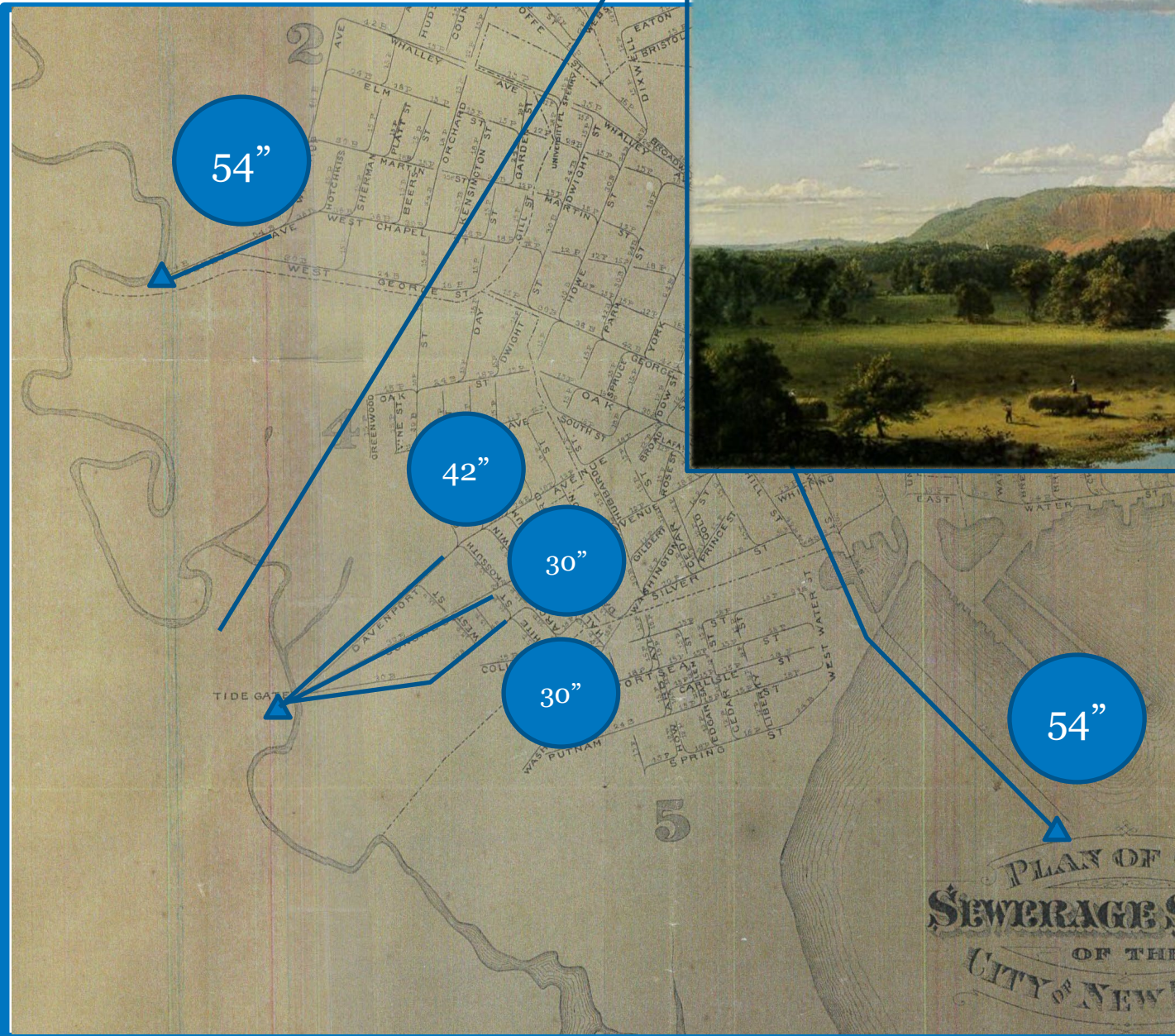


**Dry Weather:** Weir Wall Directs Flow To Treatment Plant

**Wet Weather:** Some Flow Passes Over Weir Wall



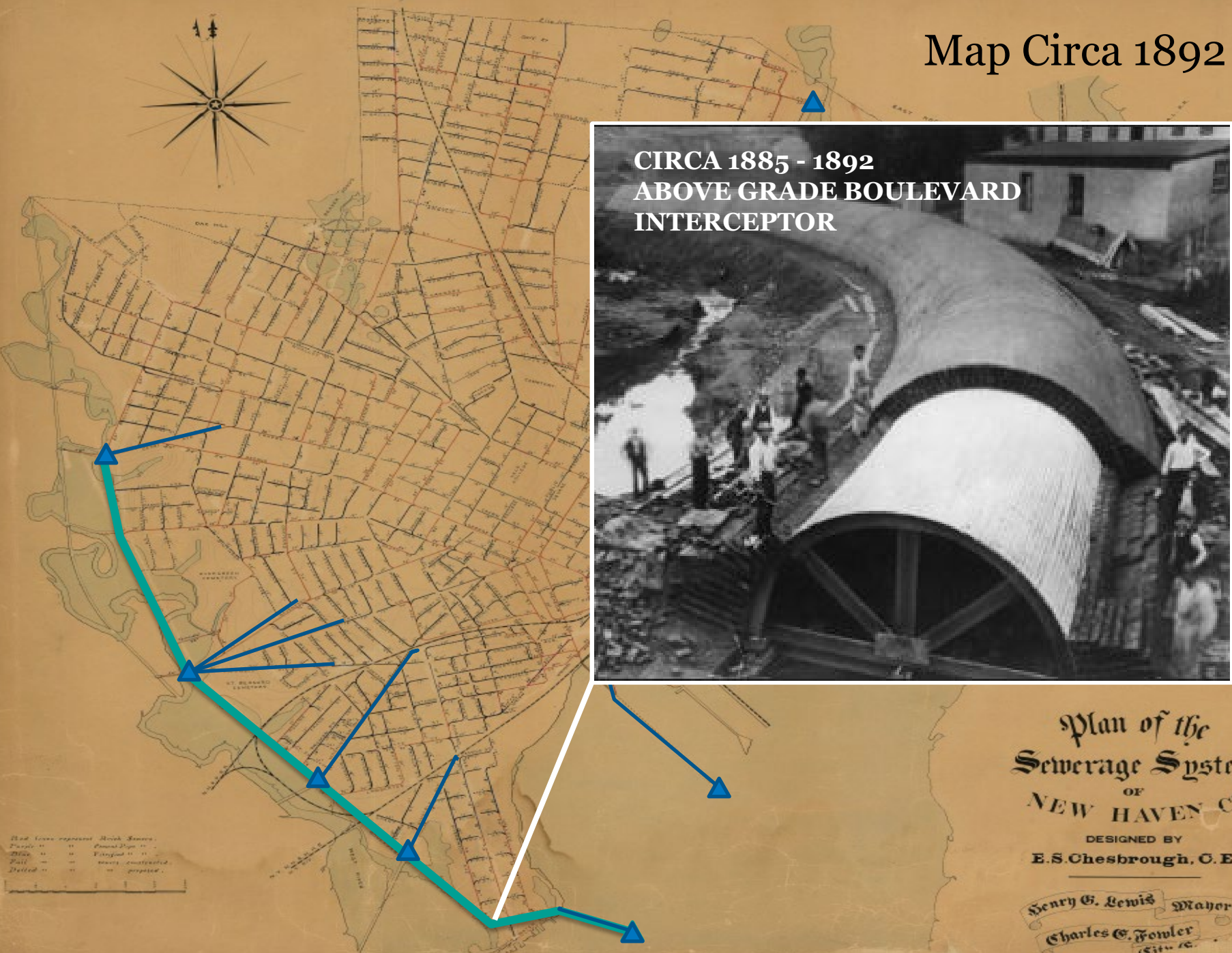
# Map Circa 1872



**Salt Grass Harvesting  
West Rock, New Haven 1849  
Fredric Edwin Church Oil on  
Canvas**



# Map Circa 1892



CIRCA 1885 - 1892  
ABOVE GRADE BOULEVARD  
INTERCEPTOR



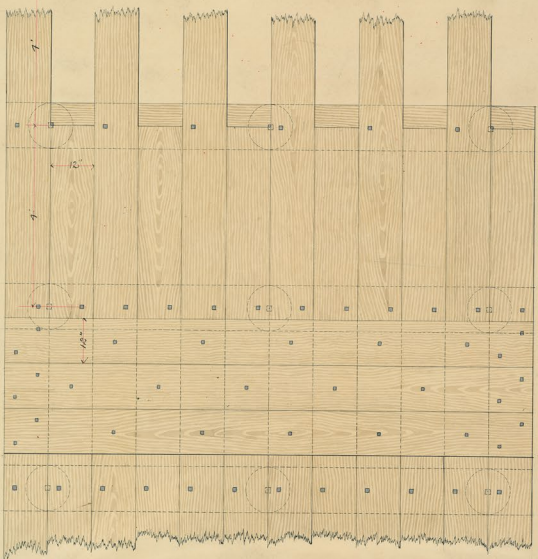
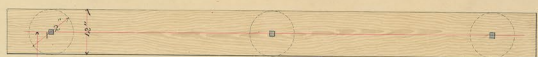
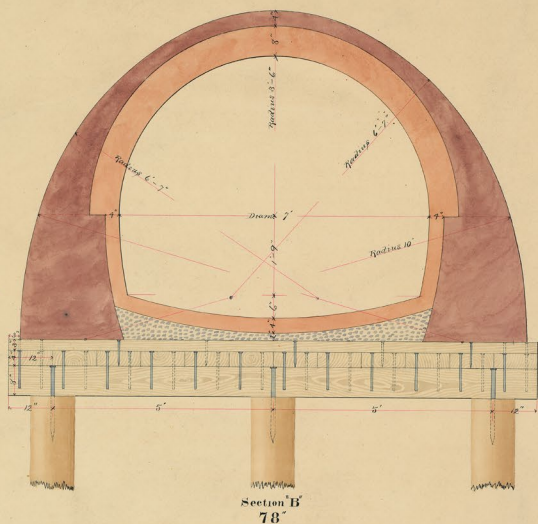
Plan of the  
Sewerage System  
OF  
NEW HAVEN CT.

DESIGNED BY  
E.S. Chesbrough, C.E.

Henry G. Lewis Mayor  
Charles G. Fowler  
City Eng.



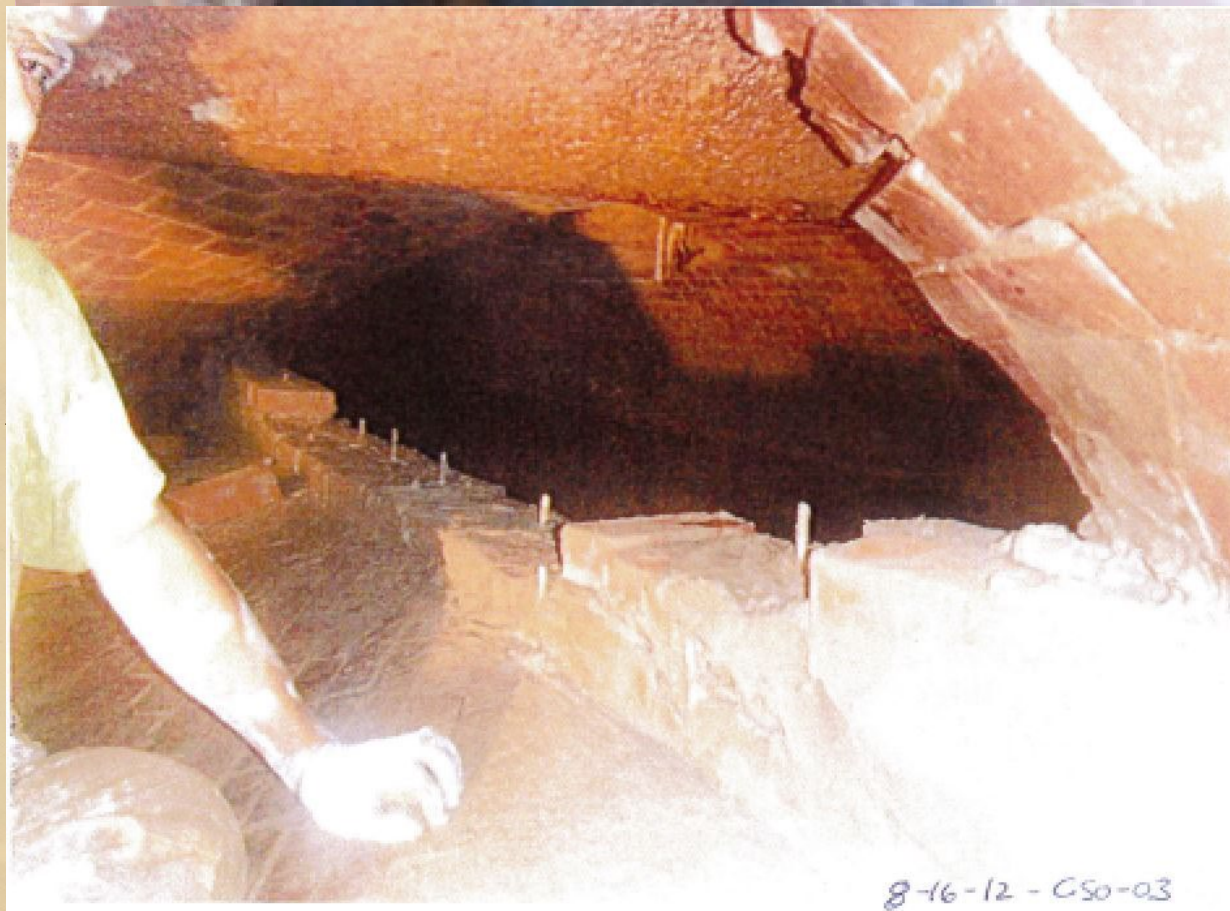
# Design Functionality



Plan B

NEW HAVEN SEWERAGE

Outlet Sewer, Sec. 7B



8-16-12 - CSO-03







# GNHWPCA Collection and Treatment (2022)



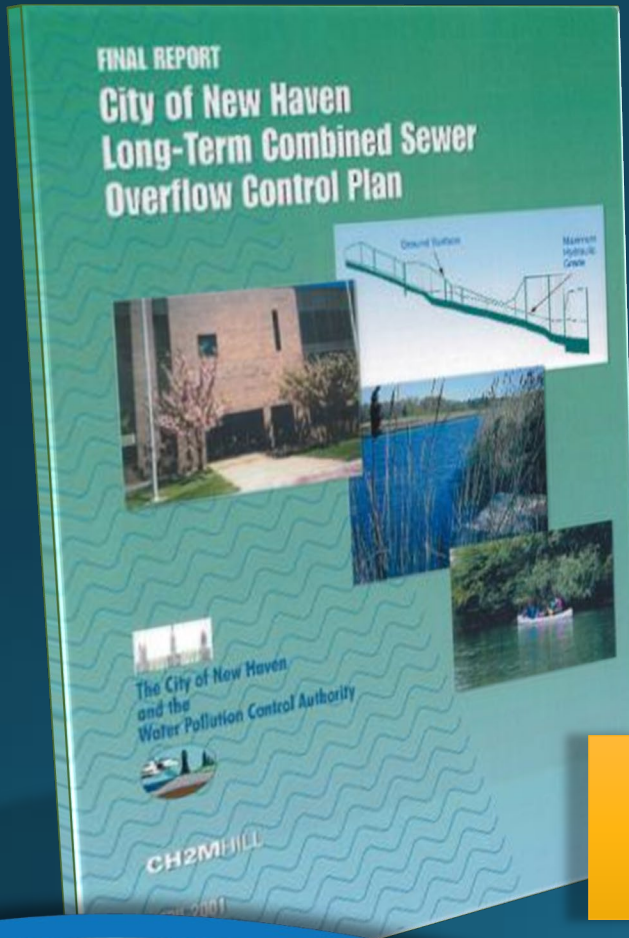
GNHWPCA Sewer System

1 inch = 800 feet



4/19/2022

# CONNECTICUT DEEP APPROVED CITY OF NEW HAVEN'S LONG TERM CONTROL PLAN (LTCP)



- ORIGINAL LTCP APPROVED IN 2003
- LAST UPDATED IN 2018
- UPDATE EVERY 5 YEARS

## Goal:

The ultimate objective is to provide measures necessary to achieve zero discharge from all CSO outfalls during the 2-year, 6-hour storm by 2036

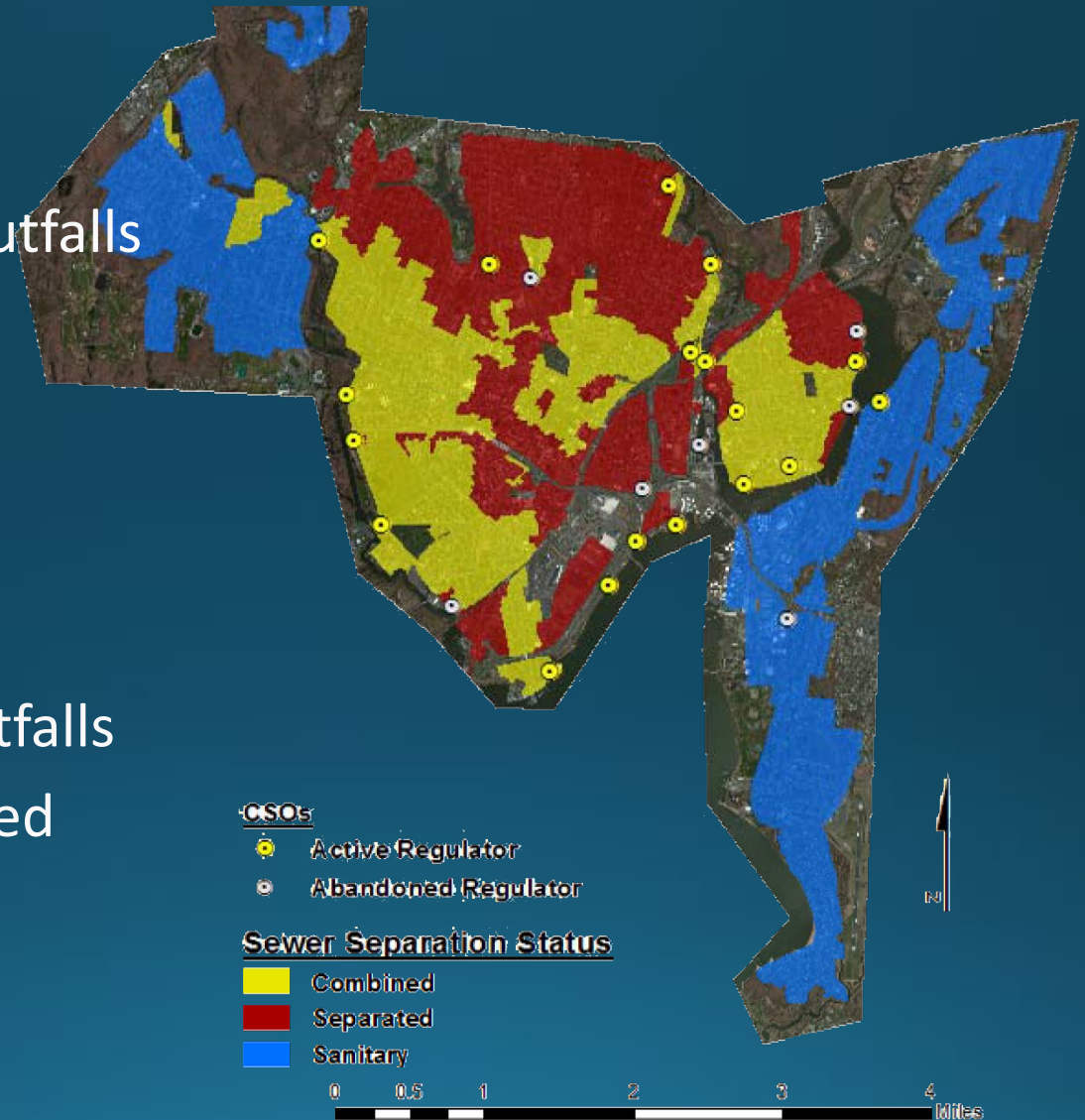


# Where are the New Haven CSO's?

- CURRENTLY - 11 CSO Outfalls
  - 3 New Haven Harbor
  - 4 West River
  - 2 Mill River
  - 2 Quinnipiac River

## PROGRESS

- 2003 LTCP –26 CSO Outfalls
- 15 CSO have been closed



# What is the LTCP CSO Strategy?

- Maximize conveyance and storage in the collection and delivery system
  - Maximize/Optimize pump station capacity
  - Reduce CSOs by modifying existing regulator structures
- Increase capacity of the East Shore WPAF to maximize treatment of wet weather flows.
- Implement Green Infrastructure requirements and redevelopment opportunities
- Improve Resiliency



# Resiliency





# Green Infrastructure



Infiltrating Parking Lot



New Haven's First Bioswale  
Trumbull St near Whitney Av

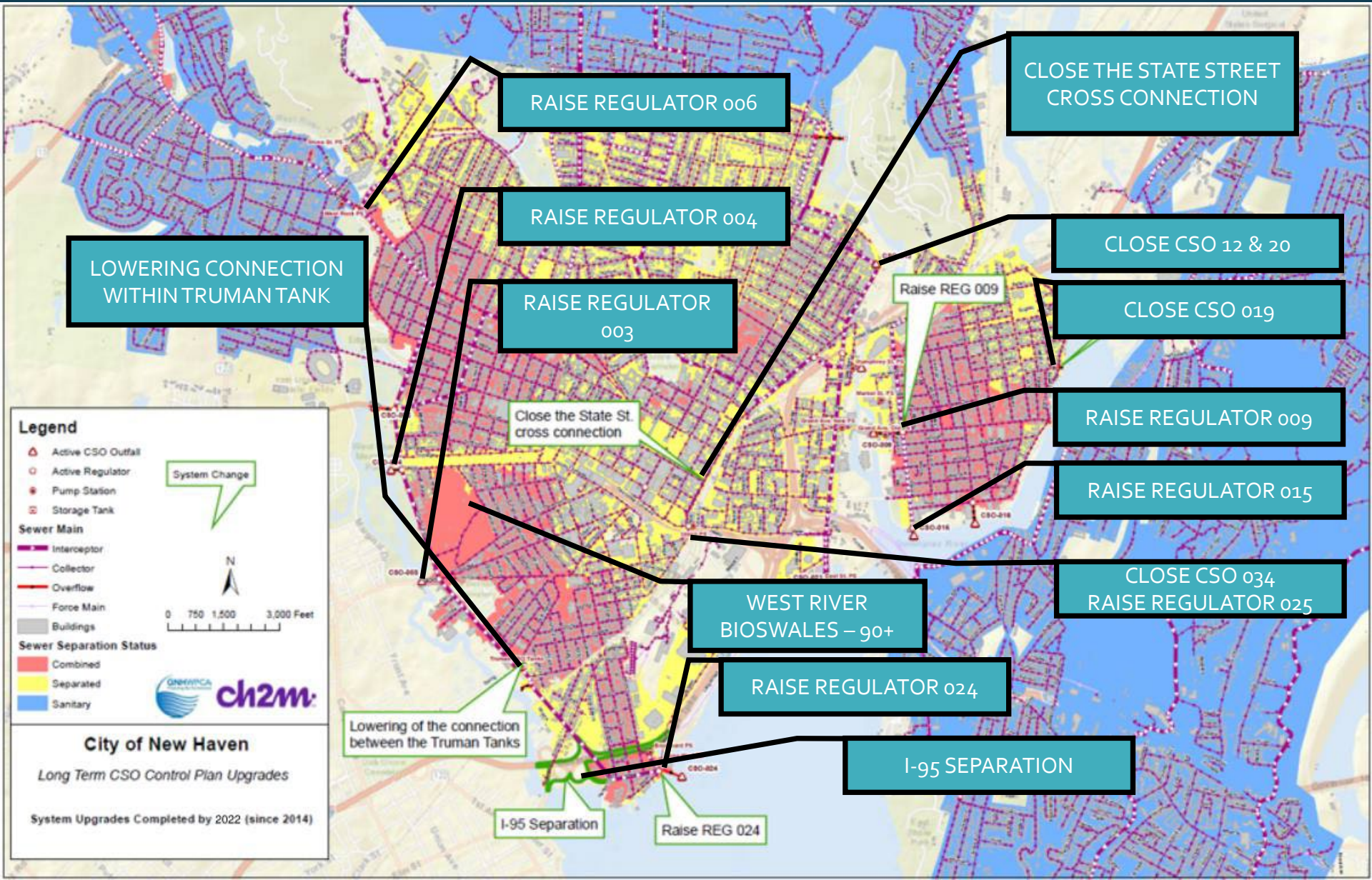
# 2018 LTCP UPDATE FOCUS

- ❖ **LOW COST SHORT TERM IMPROVEMENTS TO REDUCE CSOs**
  - Based on data from our **CSO Flow Monitoring Program and hydraulic model**
- ❖ **MAXIMIZING THE USE OF STORAGE AND CONVEYANCE IN THE COLLECTION SYSTEM**
  - Since 2014 we have **cleaned over 20 miles of large diameter sewers** resulting in the removal of over 3,000 cubic yards of debris
- ❖ **IMPROVEMENTS TO OUR THREE MAJOR PUMP STATIONS**
  - Upgrades to increase pumping capacity, **provide flood protection**, and improve reliability
- ❖ **CSO REDUCTION UTILIZING GREEN INFRASTRUCTURE**
  - Since 2008, GNHWPCA has required more than 120 developers in combined sewer areas to **construct over 5.7 million gallons of CSO storage** at no cost to our rate payers

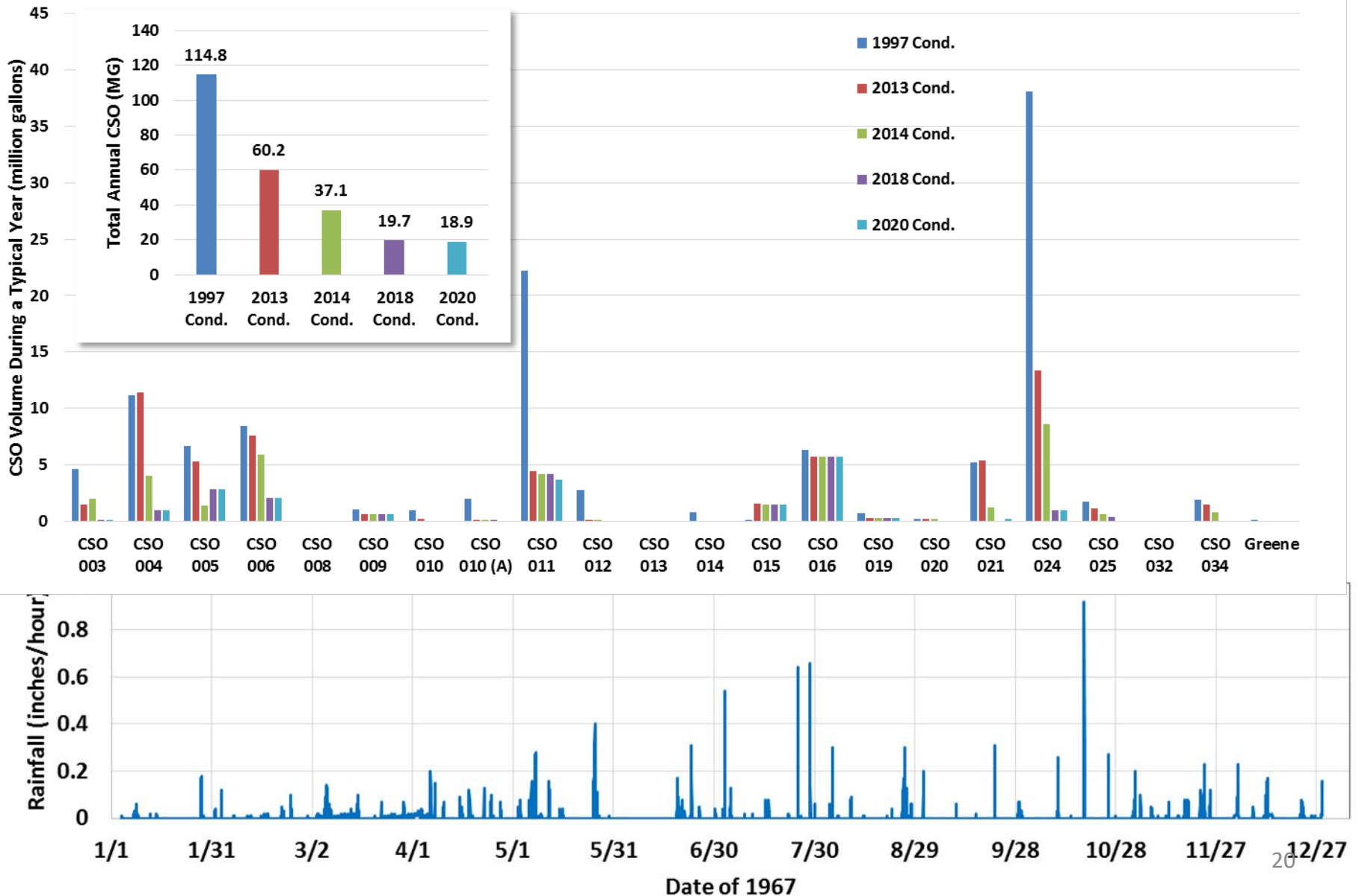




# Short Term Control Plan Completed Projects



# 2020 Proposed Conditions Model Results: CSO Volume during Typical Year – 1967







## CSO LTCP Improvements

**By 2022, CSO  
volume has  
effectively been  
reduced by  
nearly 70%**

# 2022 LTCP UPDATE – FOCUS

## East Shore WPAF

### Flows, Treatment & Resiliency



#### Phase II ESWPAF Improvements

- Wet weather disinfection system + odor control
- Segregates flows over 60 mgd
  - Maintains steady flows for nitrogen removal
  - Provides responsive separate disinfection



#### Phase III ESWPAF Improvements

- Preliminary treatment upgrade
- 4<sup>th</sup> primary clarifier
  - Biological treatment capacity upgrade
  - Hydraulic improvements
  - Raise chlorine contact tank baffle walls
  - Installation of 3rd gravity thickener



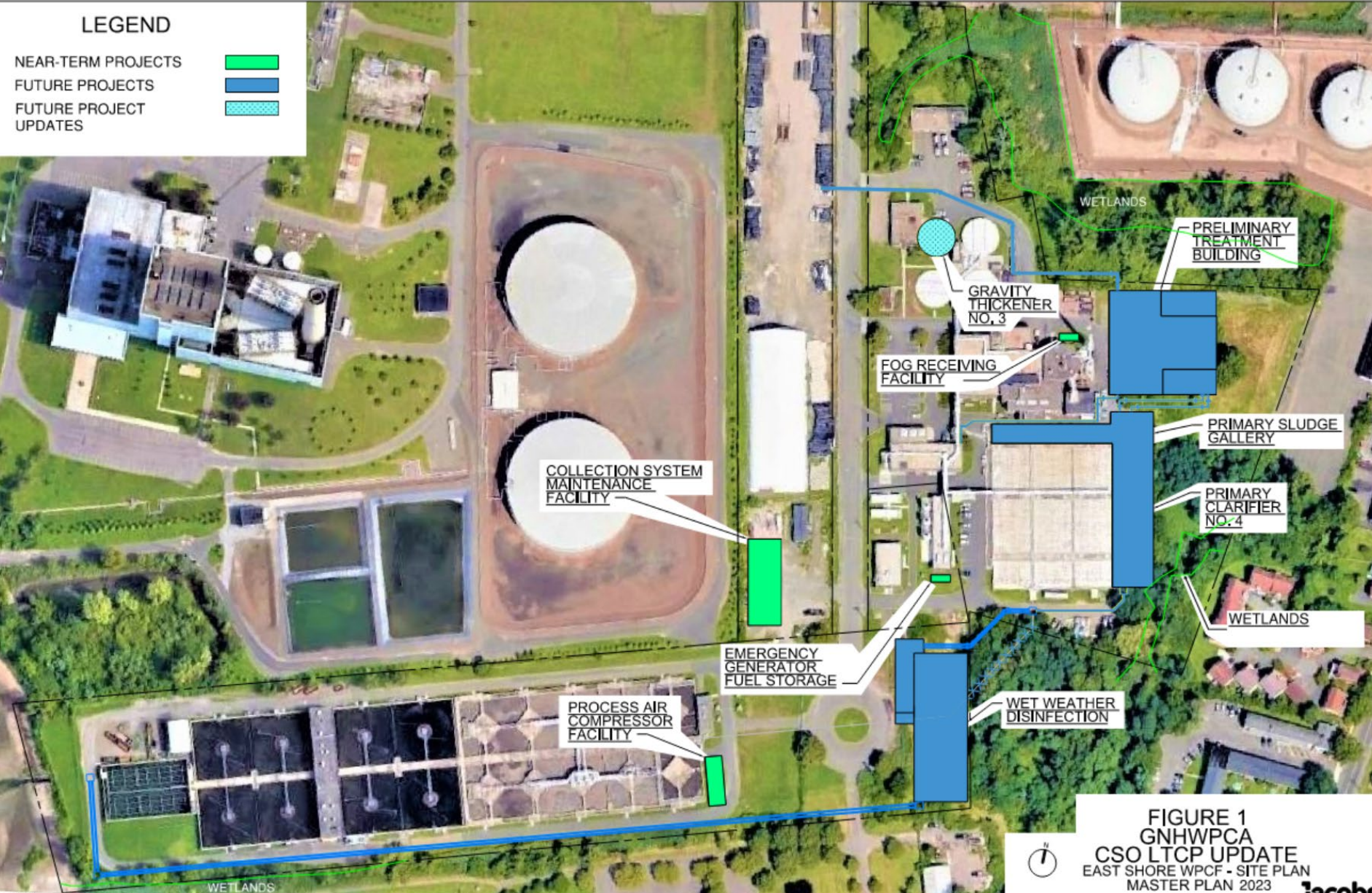
Each future LTCP update will evaluate the effectiveness of the components of the plan in terms of CSO reduction and consider alternatives to incorporate lessons learned and new technologies that may become available in order to eliminate CSOs for the 2-year 6-hour storm



# ESWPAF Facility Master Plan

## LEGEND

- NEAR-TERM PROJECTS
- FUTURE PROJECTS
- FUTURE PROJECT UPDATES

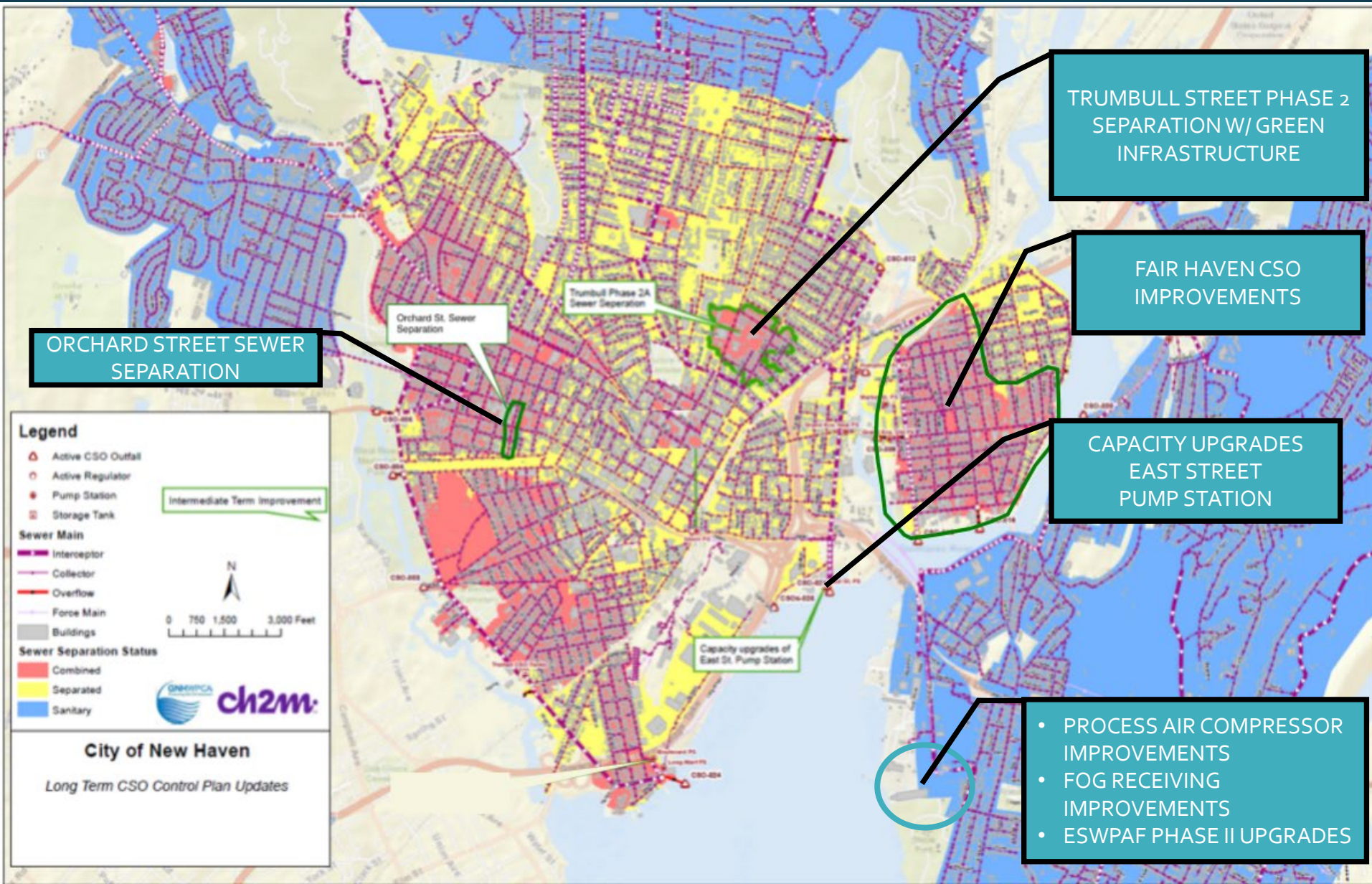


**FIGURE 1**  
**GNHWPCA**  
**CSO LTCP UPDATE**  
 EAST SHORE WPCF - SITE PLAN  
 MASTER PLAN 2023

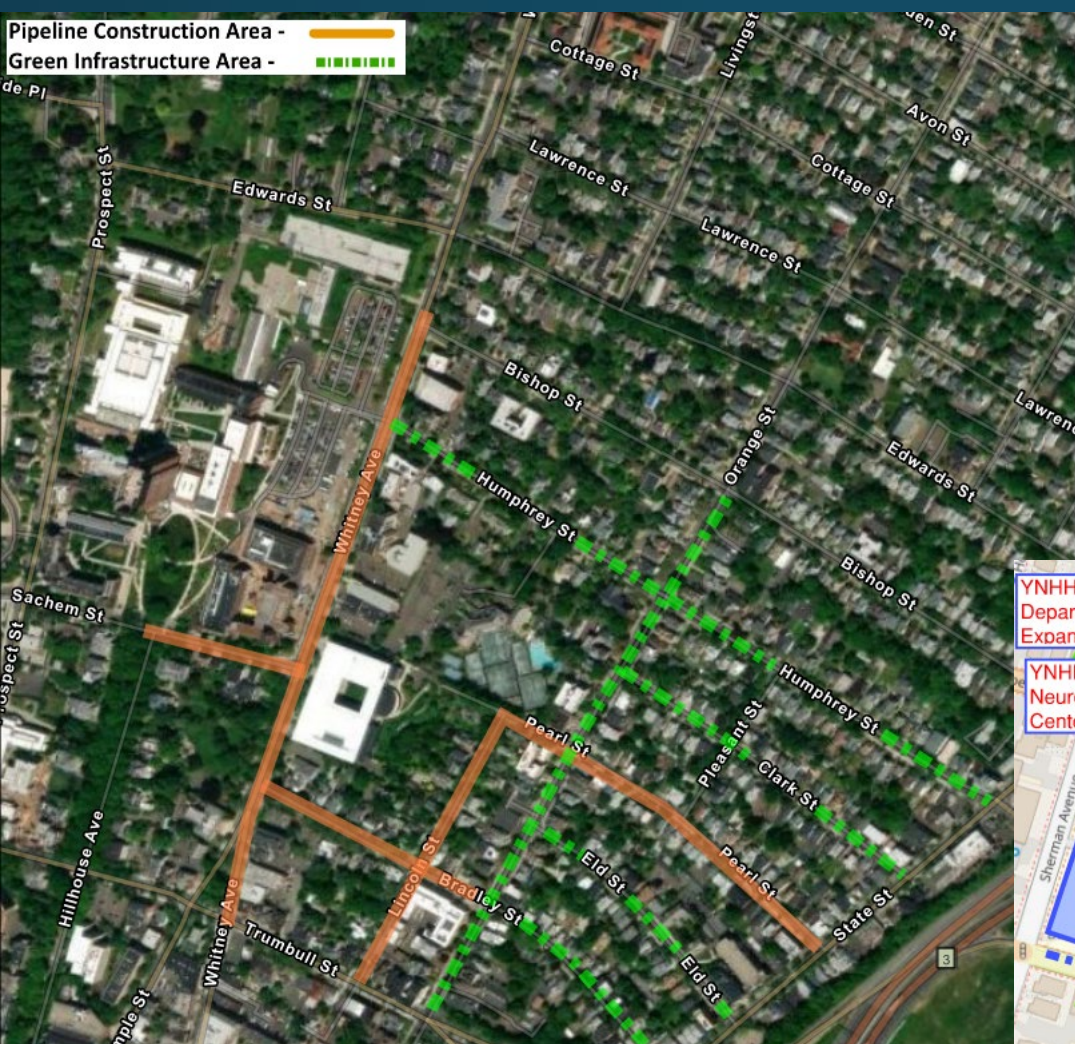




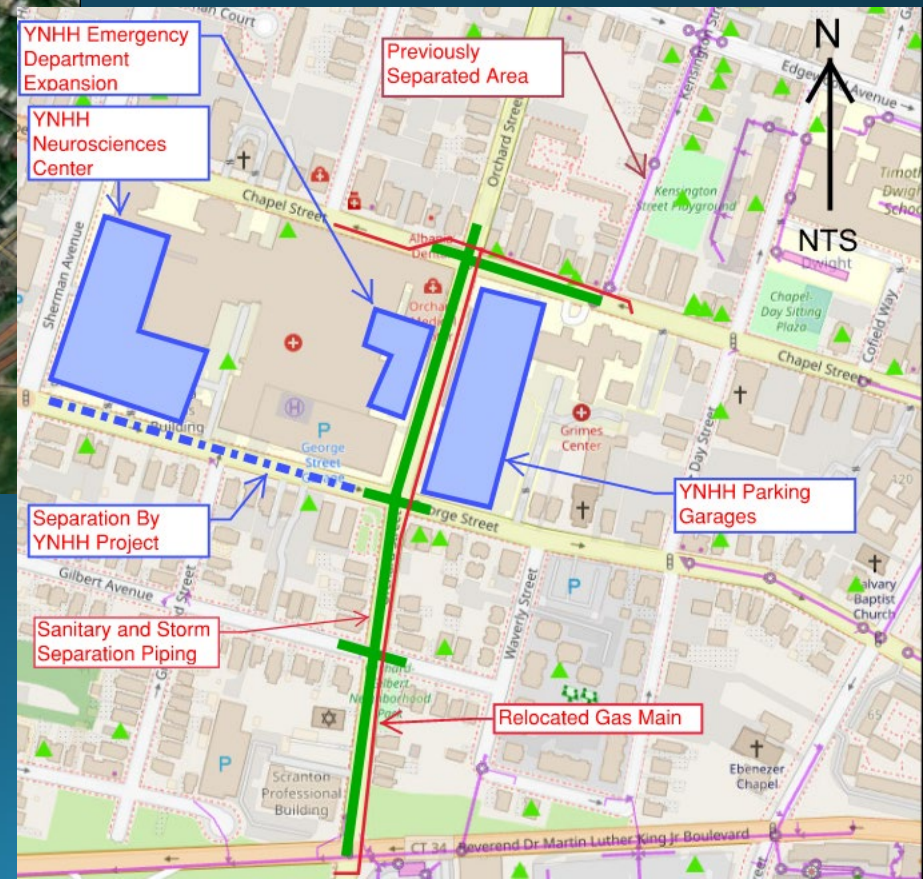
# Intermediate Term Control Plan Components Underway







# Orchard Street Sewer Separation

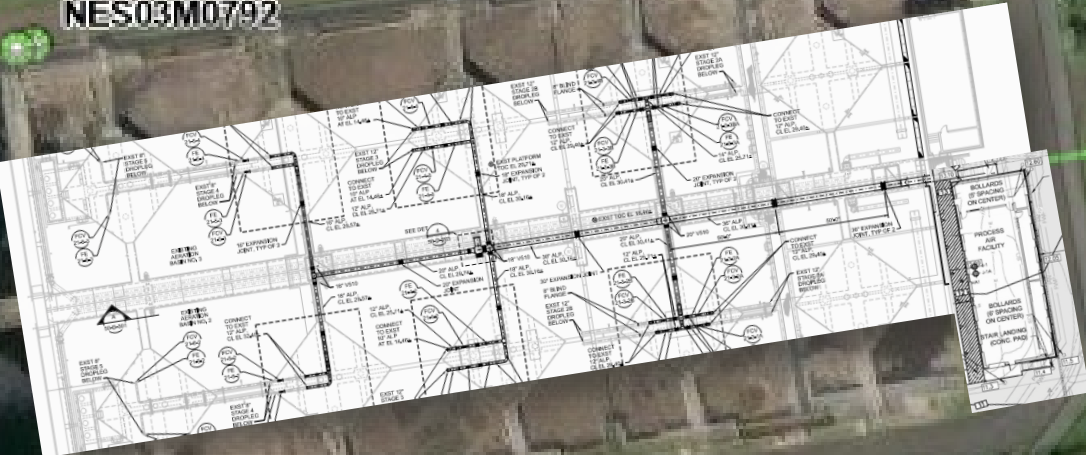


# Yale Campus/Trumbull Street Phase 2 Sewer Separation

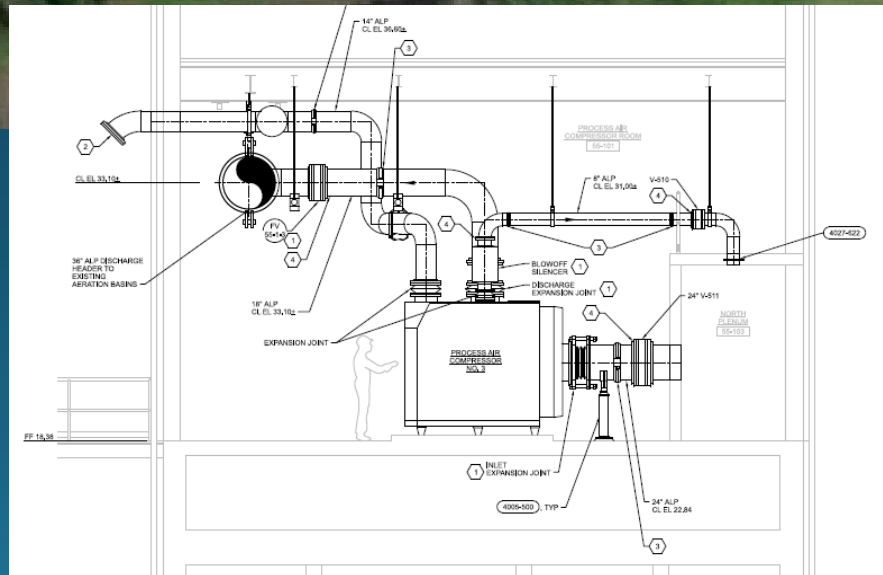
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NES03M0794

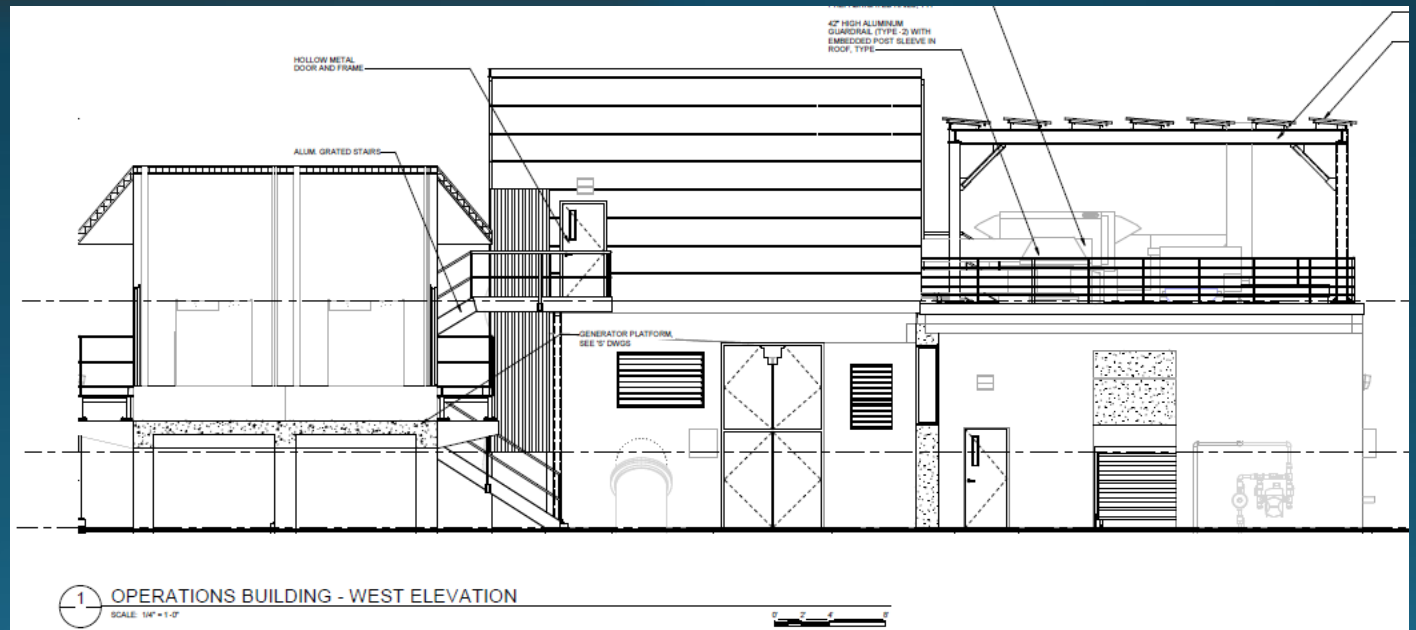
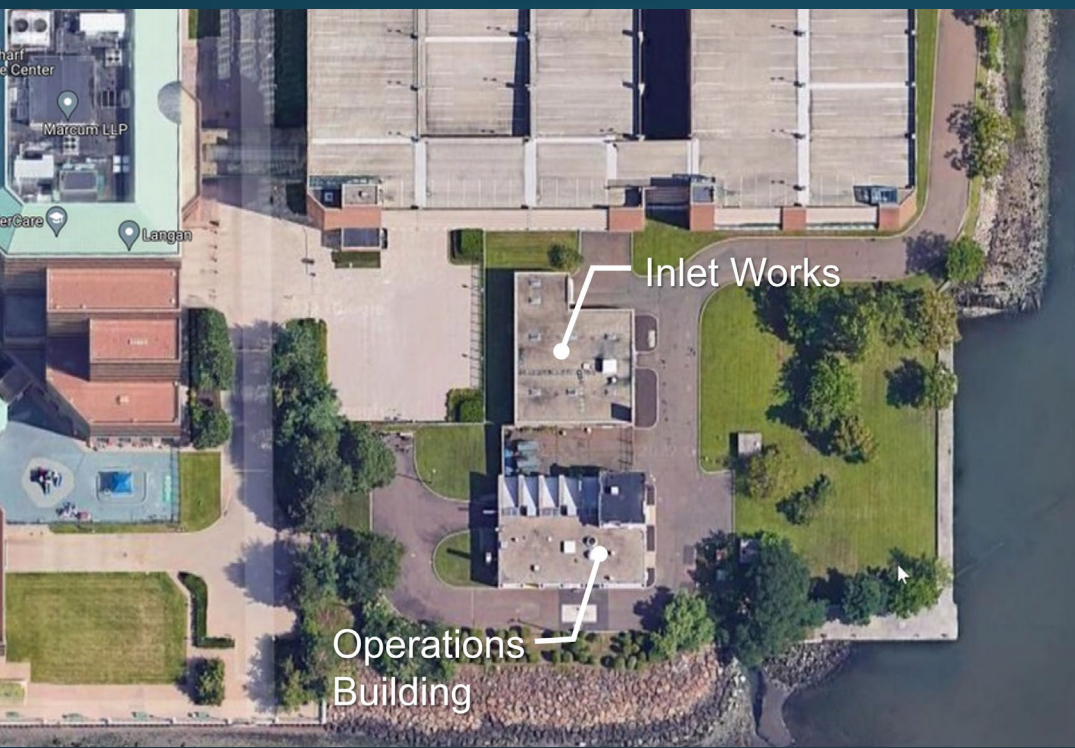


Process Air Compressor  
Improvements  
for Low Level Nitrogen  
Reduction at ESWPAF

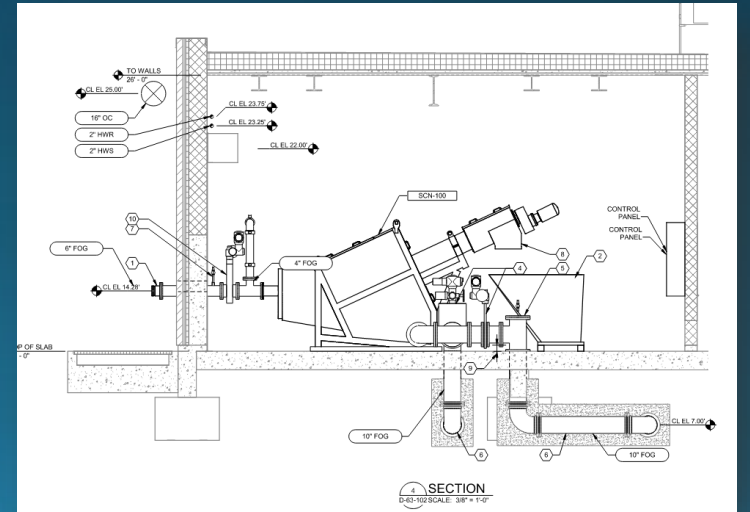
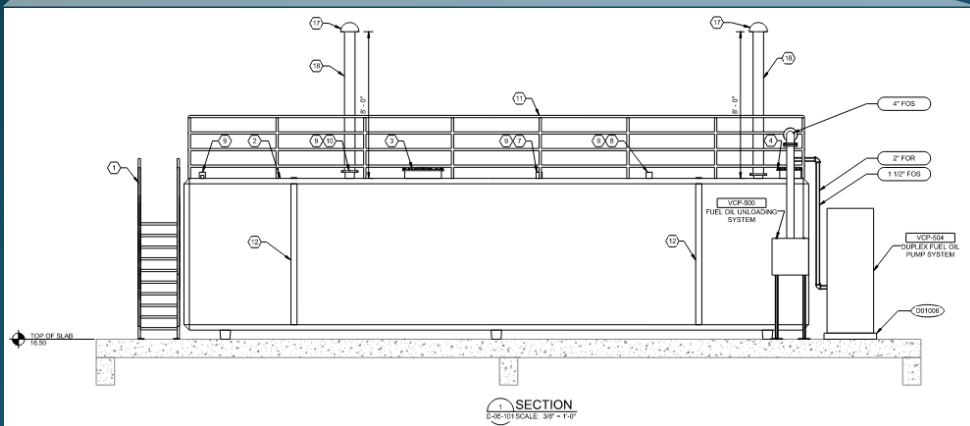
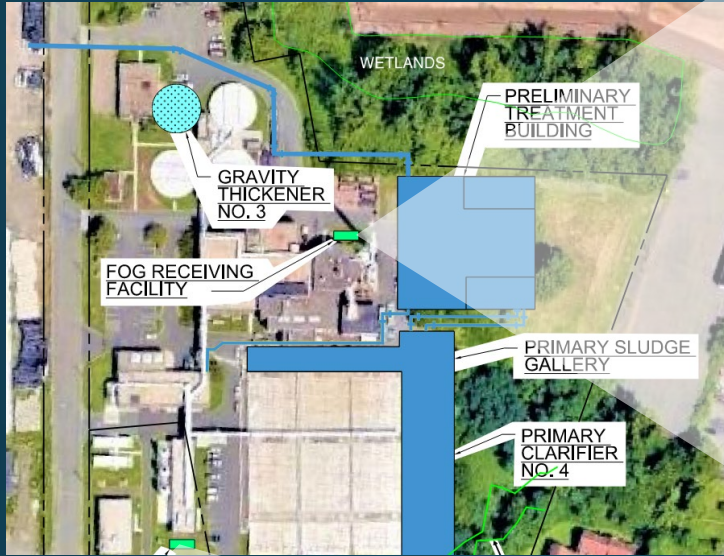




# Capacity Upgrades of East Street Pump Station



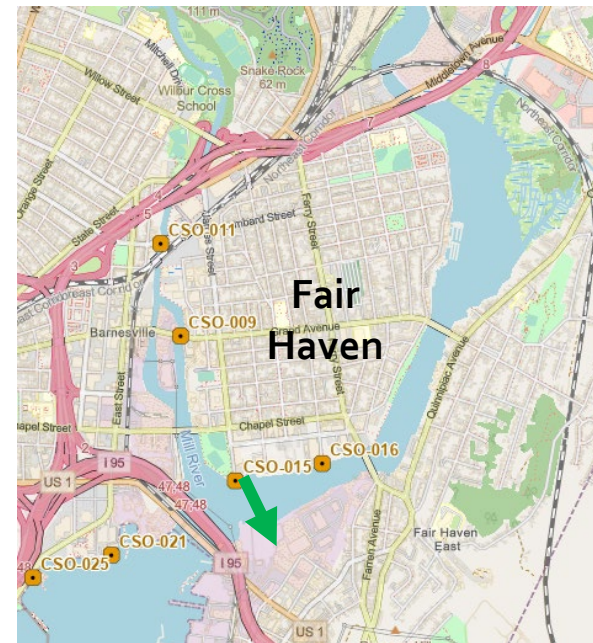
# FOG Receiving Improvements





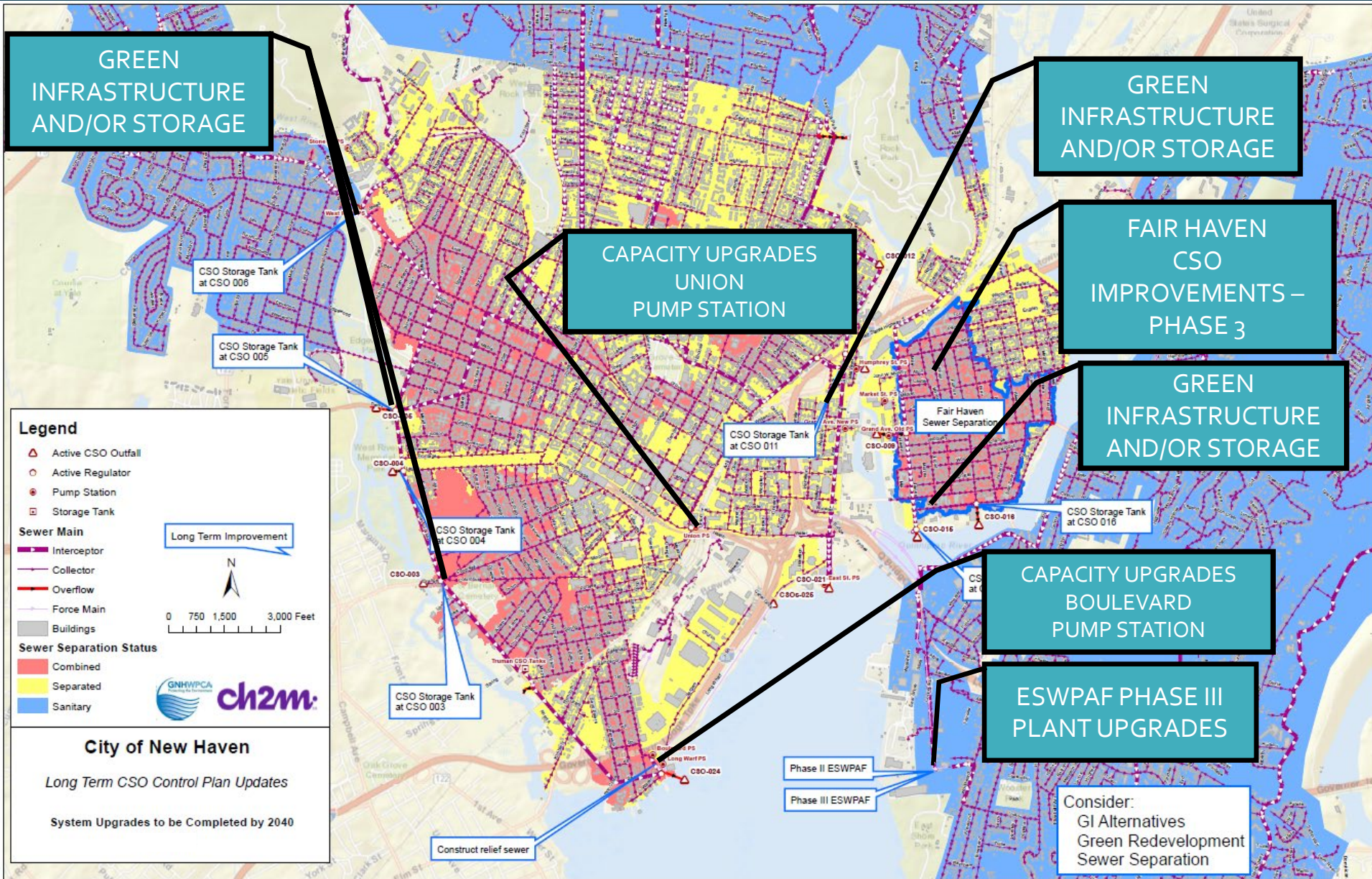
# Upcoming Intermediate Term Projects

- Fair Haven CSO Improvements
  - Improve CSO Regulators to Reduce Frequency
  - Model to Implement Green Infrastructure to Capture Storm Flows
- Wet Weather Flow Conveyance from West Side of Harbor
  - Development of Alternatives for Resiliency and Conveyance Improvements from west side of New Haven Harbor to the East Shore Treatment Facility





# Long Term Control Plan Components



GREEN  
INFRASTRUCTURE  
AND/OR STORAGE

GREEN  
INFRASTRUCTURE  
AND/OR STORAGE

CAPACITY UPGRADES  
UNION  
PUMP STATION

FAIR HAVEN  
CSO  
IMPROVEMENTS –  
PHASE 3

GREEN  
INFRASTRUCTURE  
AND/OR STORAGE

CAPACITY UPGRADES  
BOULEVARD  
PUMP STATION

ESWPAF PHASE III  
PLANT UPGRADES

Consider:  
GI Alternatives  
Green Redevelopment  
Sewer Separation

**Legend**

- △ Active CSO Outfall
- Active Regulator
- Pump Station
- Storage Tank

**Sewer Main**

- Interceptor
- Collector
- Overflow
- Force Main

**Sewer Separation Status**

- Combined
- Separated
- Sanitary

Long Term Improvement

0 750 1,500 3,000 Feet

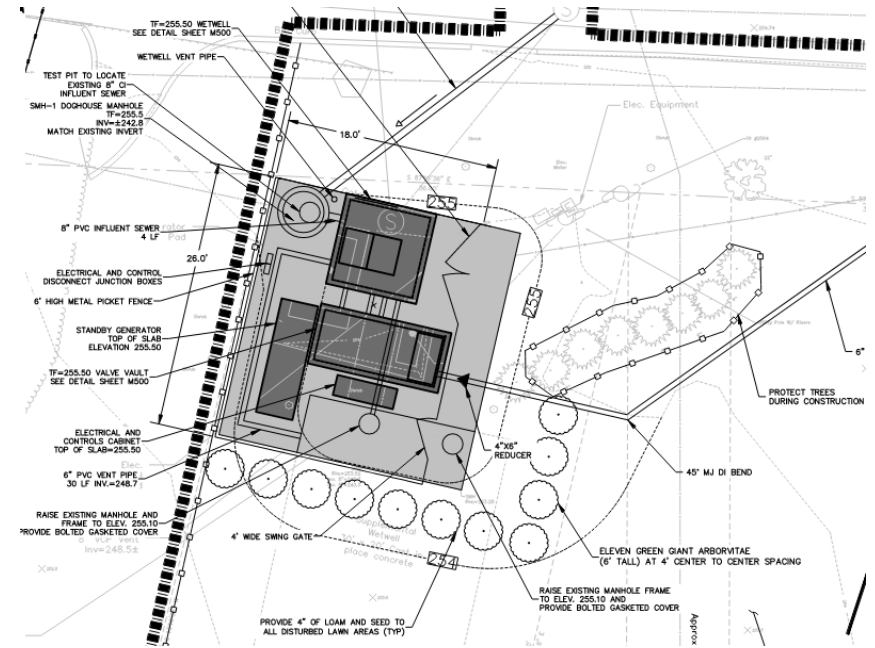
GNHWPCA  
ch2m

**City of New Haven**  
Long Term CSO Control Plan Updates  
System Upgrades to be Completed by 2040



# Other Project Mentions

- Woodbridge Pump Station Rehabilitation
- Collections System Maintenance Facility
- Whitney Museum Green Infrastructure Project
- Westville Whalley Sewer Study
- Infiltration and Inflow Improvements Woodbridge Areas 2 and 2A and East Haven Areas 15, 18 and 23
- 2024 Collection System Assessment and Rehab – Various Locations
- Riverside Interceptor Rehabilitation - Upper



Woodbridge PS Rehabilitation



Before



After





# Summary of Objectives

- Minimize CSOs (2-year, 6-hour level of service)
- Maximize System Storage
- Maximize flow conveyance to the ESWPAF
- Maximize wet-weather treatment capabilities at the ESWPAF (100 MGD current, 187 MGD target)



# QUESTIONS





# Please Stay Engaged with us!

- Additional Information and Periodic Updates:  
[www.gnhwpc.com](http://www.gnhwpc.com)
- GNHWPCA Board Meetings
- Community Activities
- Contact Us – Engineering Department  
Telephone: (203) 466-5280 ext 321  
email to: [Engineering@GNHWPCA.com](mailto:Engineering@GNHWPCA.com)
- 24 hour **Emergency** number: (203) 466-5260



# We Stay Engaged With Our Community





# GNHWPCA Performs a Broad Range of Functions

CUSTOMER SERVICE

OPERATIONS

FINANCE AND ADMINISTRATION

INDUSTRIAL PRETREATMENT & SAFETY

**TEAM OF 60+ INDIVIDUALS DEDICATED TO BETTERING THE ENVIRONMENT**

ENGINEERING

COLLECTION SYSTEMS

CONTRACTORS





# PROTECTING THE ENVIRONMENT

EAST SHORE  
WATER POLLUTION  
ABATEMENT FACILITY  
CITY OF NEW HAVEN

ADMINISTRATION BUILDING



GNHWPCA  
COLLECTIONS CREW



GNHWPCA  
OPERATIONS CREW



12/08/2016 11:06

12/08/2016 11:06



# PROTECTING THE ENVIRONMENT



# LTCP Work Completed

- **The City of New Haven and, since 2005, GNHWPCA have made improvements to the combined sewer system that have reduced CSO frequency, duration and volume**
  - **Sewer separation projects**
  - **Truman CSO Storage Tank**
  - **Phase I Wet Weather Capacity Improvements at the ESWPAF**
    - **Completed in 2017 at a cost of \$60 M**
  - **Regulator improvement projects**
    - **Ongoing implementation through short-term projects**



# Current Project Engagements

- FOG Receiving Improvements
  - Replacement of existing offloading station
  - Offers advanced screening of received materials
  - Odor control provisions
- Process Air Compressor Improvements for Low Level Nitrogen Reduction at ESWPAF
  - Replaces loud leaking air piping located at secondary treatment
  - Replaces aging blowers with high efficiency blowers located indoors, significantly reducing noise

# Current Project Engagements

- Yale Campus/Trumbull Street Phase 2 Sewer Separation
  - 6,050 linear feet of new 15” to 42” storm sewers – 120 acres
- Orchard Street Sewer Separation
  - 2,416 linear feet of new 10” to 54” storm sewers – 51 acres
- Capacity Upgrades of East Street Pump Station
  - Currently under design
  - Provides provisions to increase flow to the ESWPAF in the future for CSO reduction
  - Odor Control
  - Replacement of aging preliminary treatment and pumping equipment



# Clean Water Fund

The Clean Water Fund (CWF) provides a combination of grants and loans to municipalities which undertake wastewater infrastructure projects at the direction of the DEEP. Projects funded include:

- Sewage Treatment Plant Construction & Upgrades
- Combined Sewer Overflow Remediation
- Nutrient Removal Projects protecting Long Island Sound
- Collection System Improvements
- Non-point Source Pollution Control Projects affecting Long Island Sound
- Water Pollution Control
- River Restoration
- Drinking Water Treatment Plant upgrades and waterline installations are funded by the CWF but administered by the Department of Public Health (DPH)