



**MDC's Proposed Integrated Plan and CSO Long-Term Control Plan
Public Hearing
December 11, 2018**

Agenda

1. Meeting Purpose
2. Background on MDC and the Clean Water Project (CWP)
3. Explanation of Sewer System and Statement of Problem
4. Summary of Projects and Accomplishments to Date
5. Explain Integrated Planning
6. 2018 CSO Long-Term Control Plan (LTCP) Update
 - High Points of Recommended Technical Plan – Changes from Prior Plan
 - Baseline assumption = sewer system renewal
7. Financial Considerations

1. Meeting Purpose

Why are we here today?

- Present the MDC's Integrated Plan and CSO Long-Term Control Plan
- Proposed plan is better for MDC member towns, customers, and environment
- Provide overview of plan and reasons for change
- Solicit your comments and support

Benefit of Integrated Plan - Towns

- Prioritize existing infrastructure repair in all 8 Member Towns
- Address aging sewers in each town sooner, before they fail
- Reduces and stabilizes projected Ad Valorem increases for town budget planning



Benefit of Integrated Plan - Customers

- Less disruptive sewer separation approach
 - Smaller and less construction projects to avoid years on end of disruptions in the same area with crews from multiple contractors
- Planned sewer repairs will be more **cost-effective** than current approach of emergency repairs
- Overall, the **total amount paid** by rate payers for sewers will be **lower on average**, assuming CTDEEP grant/loan for all CSO projects, including sewer rehabilitation



Benefit of Integrated Plan - Environment

- Meets Clean Water Project Objectives:
 - ✓ CTDEEP Consent Order Compliance - CSOs
 - ✓ USEPA Consent Decree Compliance - SSOs
 - ✓ Reduce Nitrogen discharged to Connecticut River
- Interim CSO reduction benefits to North Branch of the Park River sooner with separation projects and New North Branch Interceptor replacement

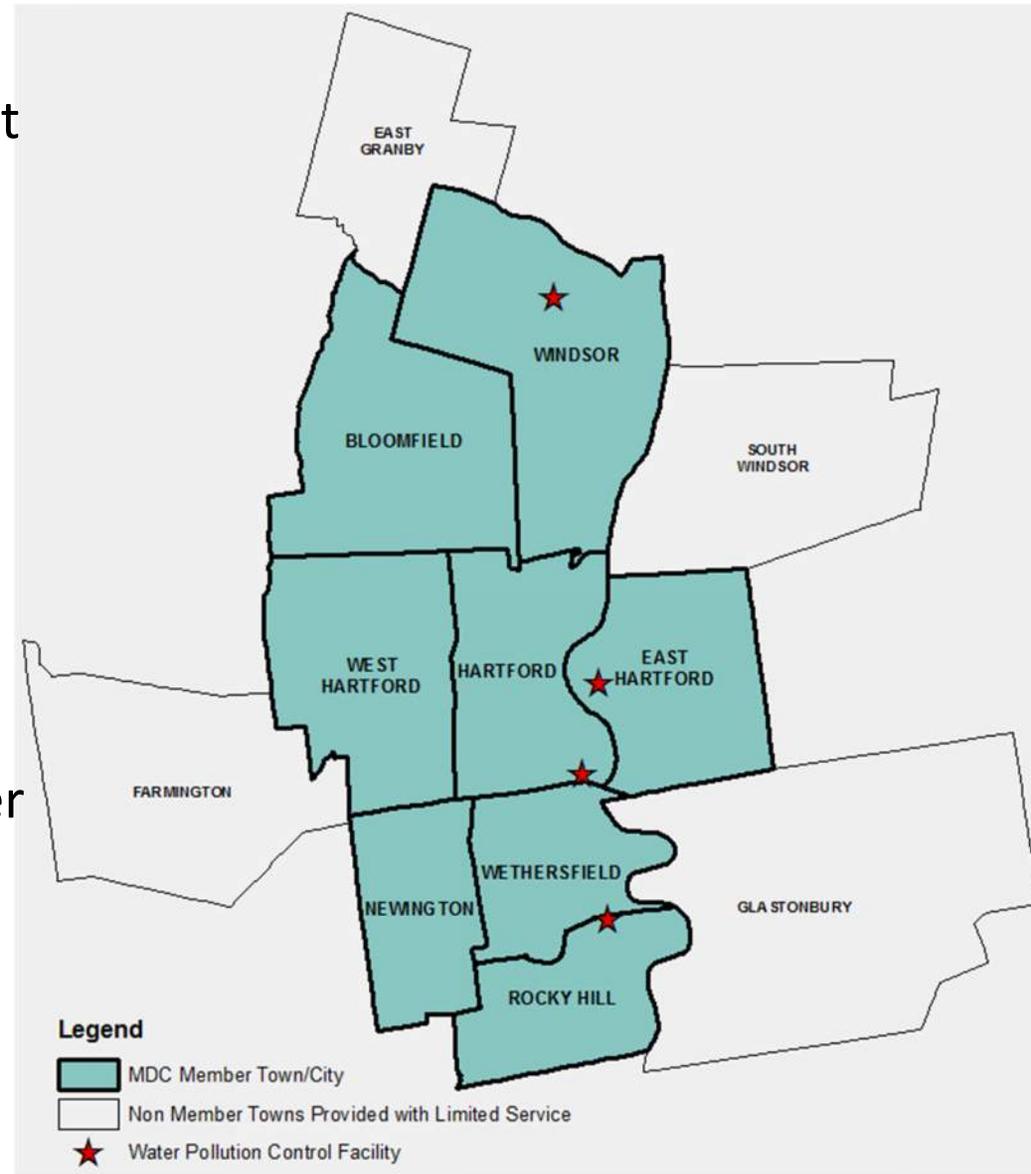


2. Background on Metropolitan District Commission (MDC) and the Clean Water Project (CWP)

The MDC is a nonprofit municipal corporation chartered by the Connecticut General Assembly in 1929

Our mission is to provide our customers with safe, pure drinking water, environmentally protective wastewater collection and treatment and other services that benefit the member towns

We provide water, sewer and household hazardous waste collection to its member towns and treated water to portions of non-member towns



The Clean Water Project (CWP)

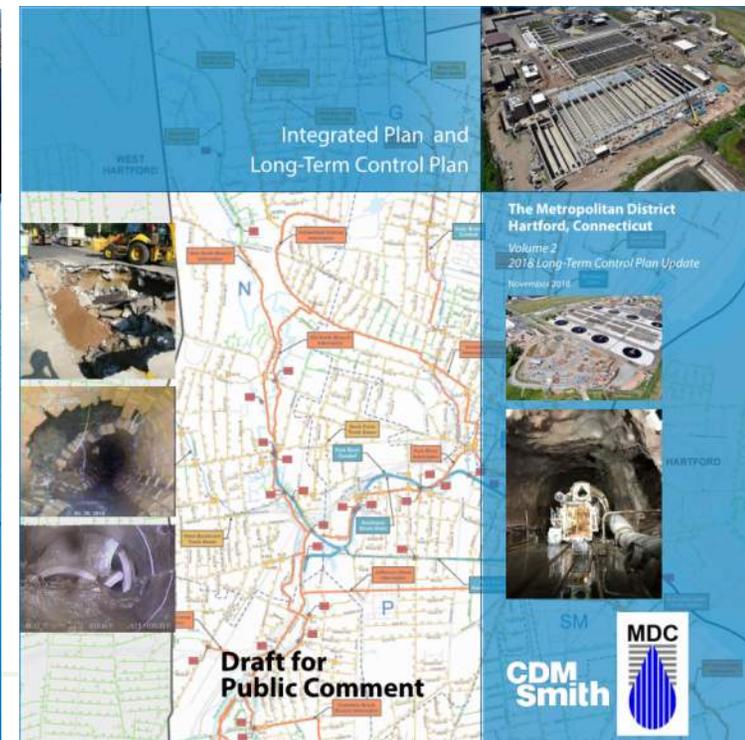
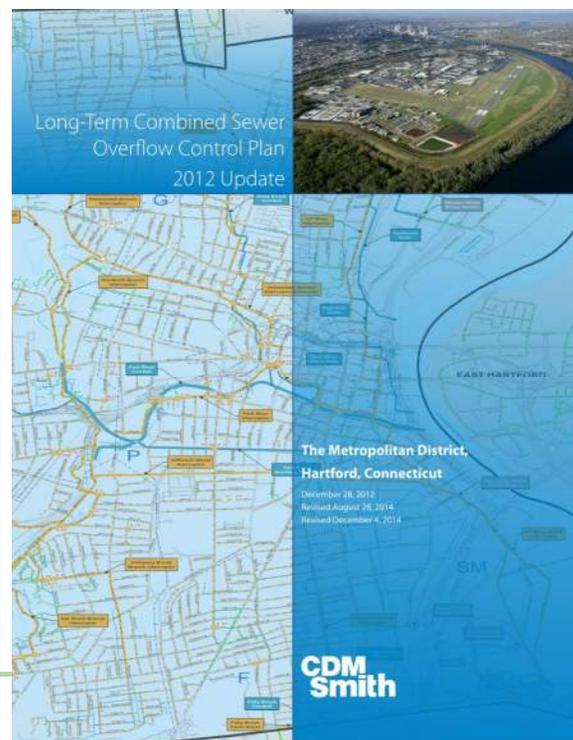
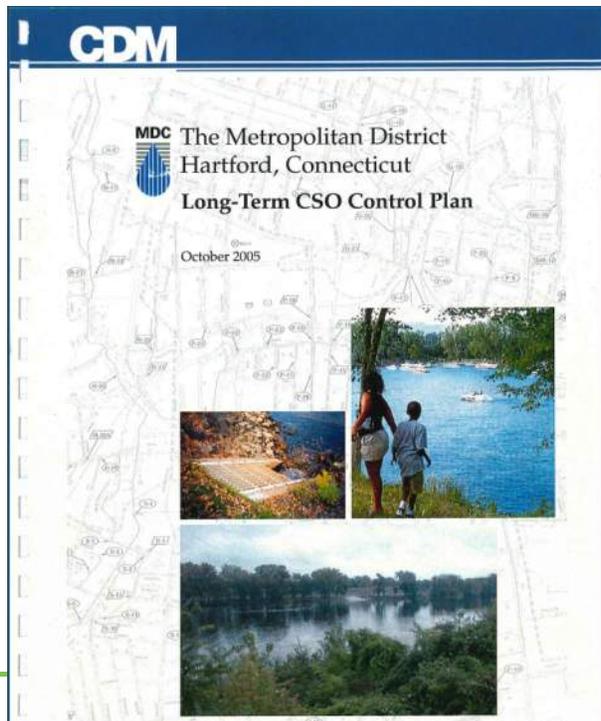


- The CWP is the MDC's Response to:
 1. **Consent Order** from CTDEEP for Combined Sewer Overflows (CSOs)
 - Projects outlined in a Long-Term CSO Control Plan (LTCP) report
 2. **Consent Decree** from USEPA for Sanitary Sewer Overflows (SSOs)
 - Projects outlined in a SSO Master Plan (separate from this LTCP Update)

- Project Goals:
 1. Reduce the CSOs to streams/rivers
 2. Eliminate CSO outfalls to Wethersfield Cove and North Branch Park River
 3. Reduce Nitrogen discharged to CT River
 4. Address SSOs outside of Hartford

Clean Water Project (CWP) requires CSO Long-Term Control Plan (LTCP)

- 2005 LTCP approved by CT DEEP in 2007
- LTCP required to be updated every 5 years
- 2012 LTCP Update approved by CT DEEP in 2015
- Next LTCP Update due to CT DEEP December 2018



3. Explanation of Sewer System and Statement of Problem

- Provide common sewer system terms and definitions
- Overview of the MDC's sewer system
- Problems are not just in Hartford, but also member towns flow contributed to Hartford which exacerbates problem
- Explain where clean water into sewer system is coming from
 - Right-of-Way – catch basins, manholes and broken sewers
 - Property Owner – roof leader, foundation drain, sump pump, etc.
- Statement of problem – During rain events, the clean water entering into the sewer system exceeds the capacity of the pipes and treatment facility and overflows to rivers/streams

Sewer System – Common Terms

General

- **Wastewater (sewage)** – comes from toilet, sink, dishwasher, laundry, industrial and commercial byproduct, etc.
- **Wastewater Treatment Plant/Water Pollution Control Facility** – a facility to remove contaminants from wastewater
- **Stormwater** - comes from rain and/or snow melt
- **Inflow** – non-wastewater (typically stormwater) that enters the sanitary sewer directly, such as catch basins, brooks, roof leaders, sump pumps, foundation drains, etc.
- **Infiltration** – non-wastewater (typically groundwater) that seeps into the sanitary sewer from cracked pipes, manhole leaks, lateral leaks, etc.
- **Infiltration and Inflow** = “I/I” common acronym



Sewer System – Common Terms

Collection Systems

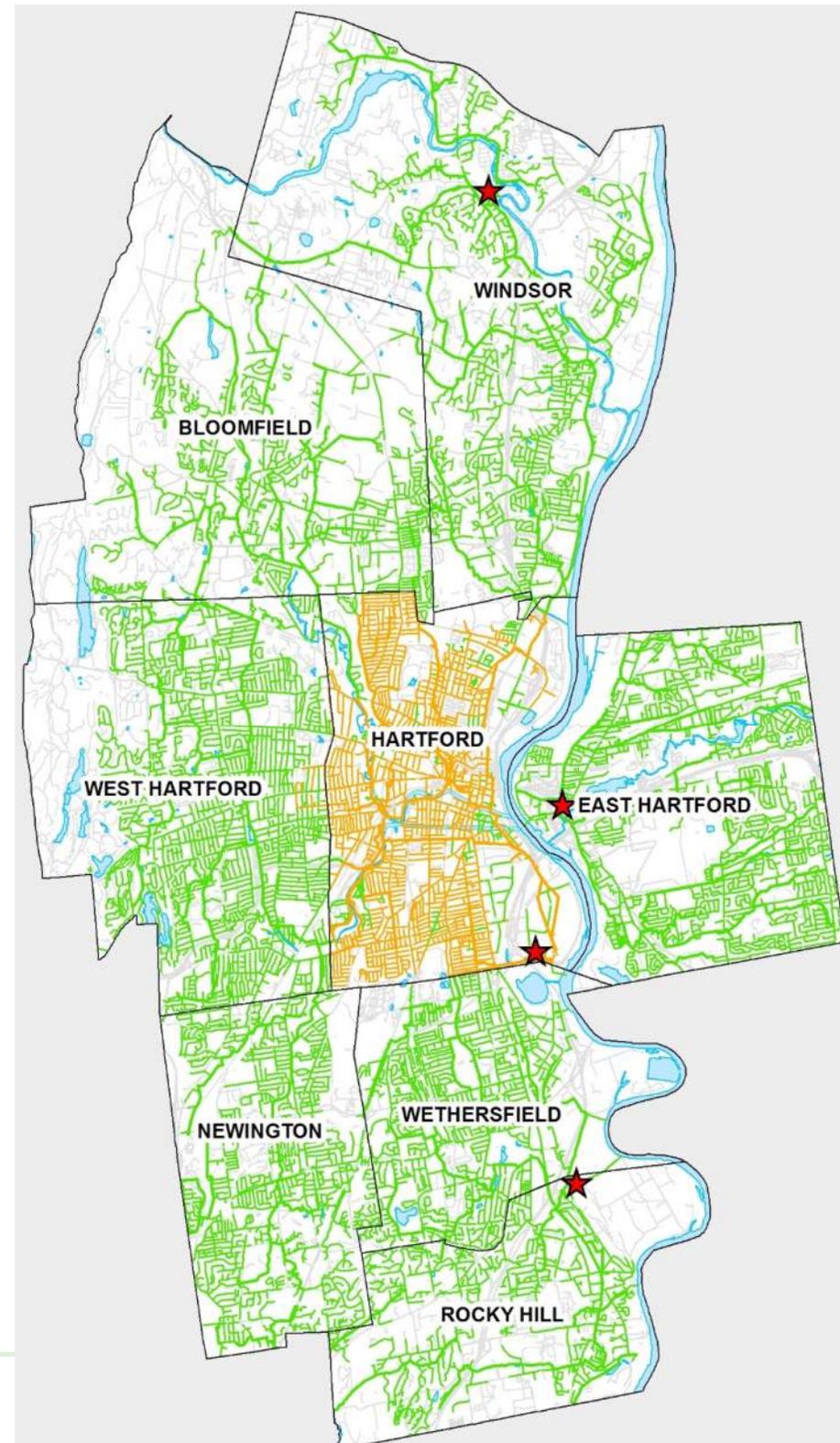
- **Combined sewer** – pipe designed to convey both wastewater and stormwater (drainage)
 - Common way sewers were built in cities 100 years ago
 - Catch basins (and some streams/brooks) are connected
 - Local pipes are typically 12” diameter and larger

- **Separate/sanitary sewer** – pipe designed to convey only wastewater
 - Common way sewers are built now
 - Local pipes are typically smaller diameter (8” and 10”)

- **Storm drain** – pipe designed to convey only stormwater
 - Pipes are usually 12” minimum

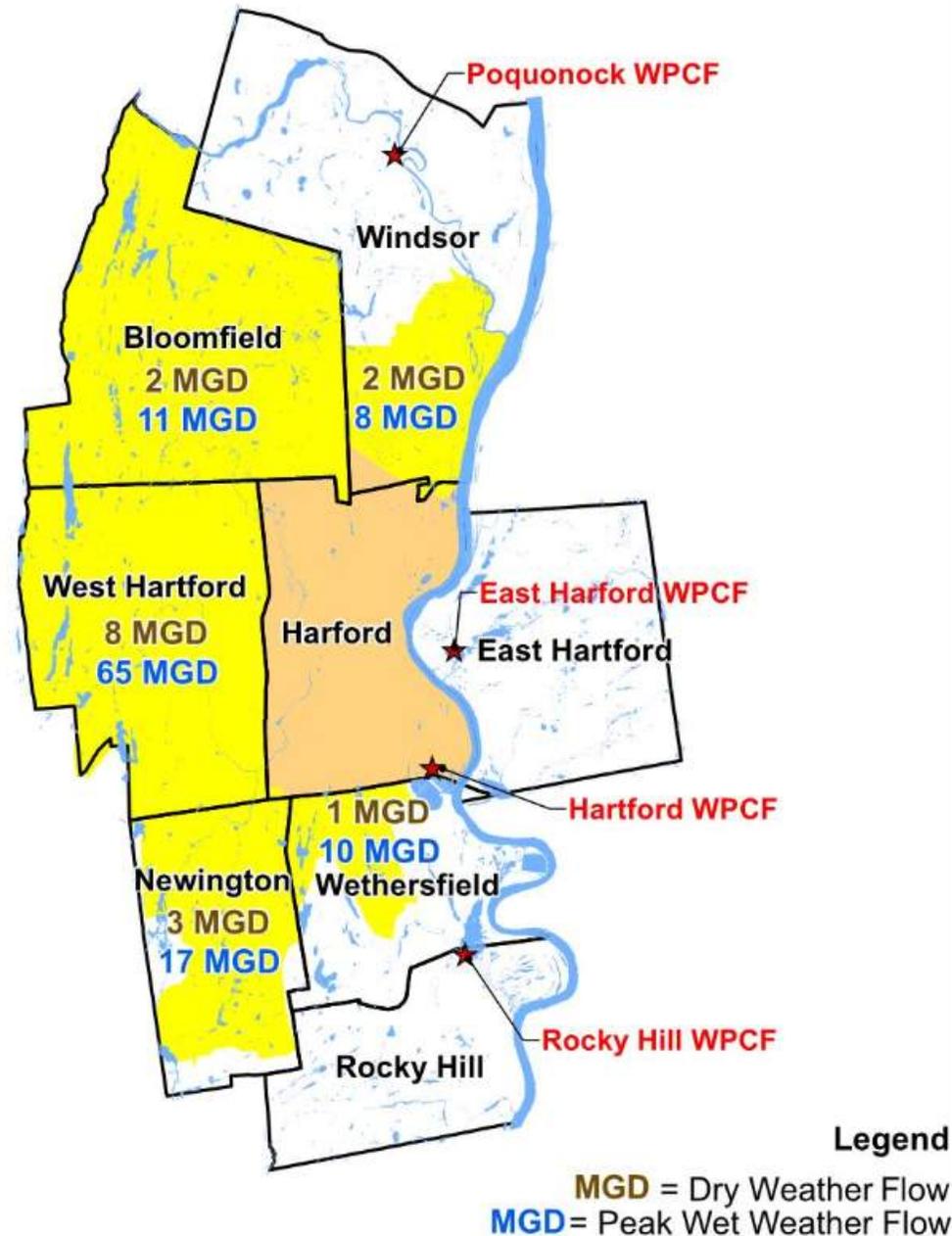
MDC's Sewer System

- 4 water pollution control facilities (WPCF)
- ~1,200 miles of sewers
- Of the 1,200 miles of sewer, 187 miles are combined
- Hartford and a small portion of West Hartford

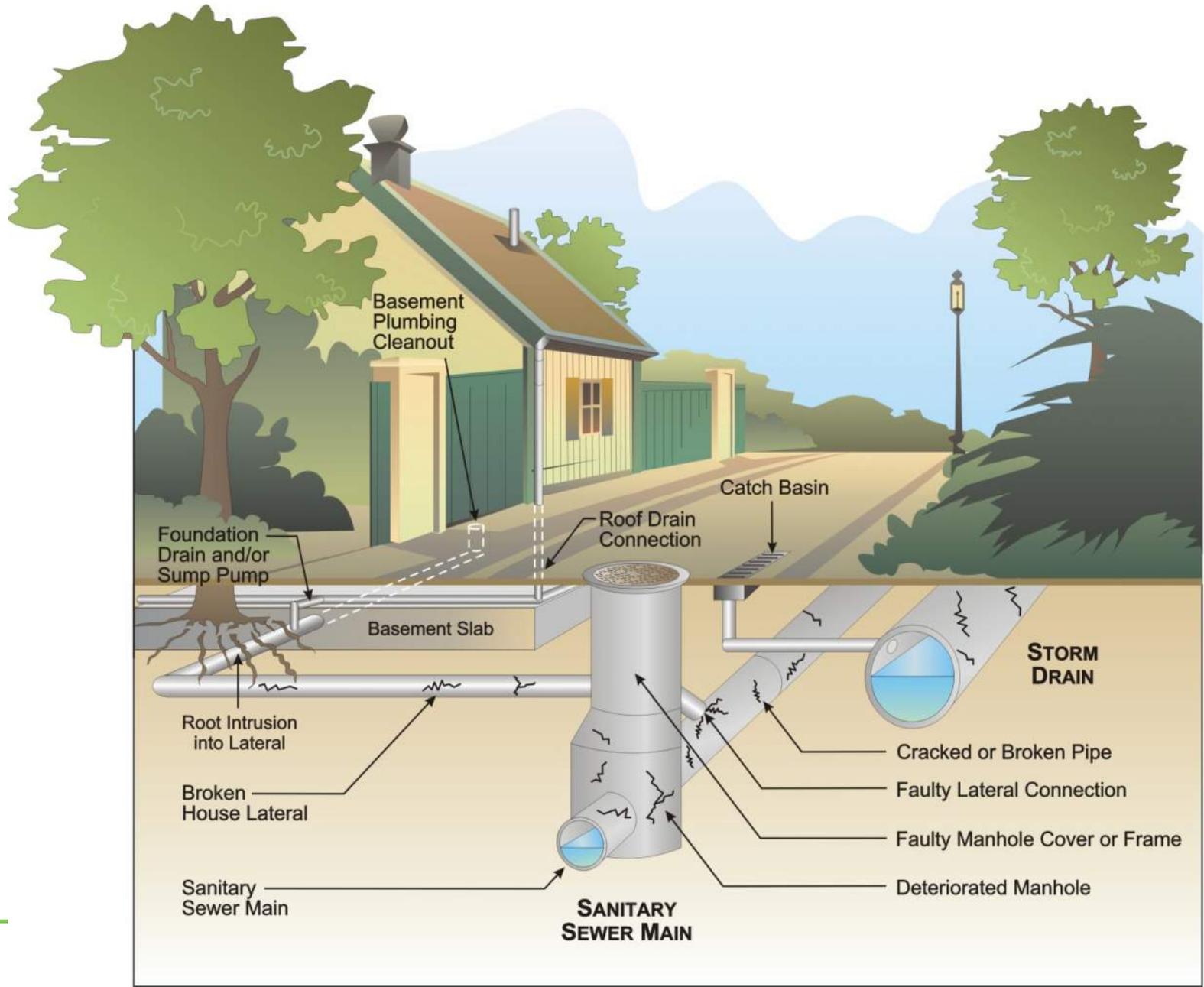


How are Separated Sewers different from Combined Sewers?

- **Dry day** – no difference (household sewage plus some I/I)
- **Wet day** – no flow from catch basins/brooks, BUT still additional flow from I/I sources
 - Peak flow from Bloomfield, West Hartford, Newington, Windsor & Wethersfield (excluding Hartford) of **135 MGD EXCEEDS** the current **130 MGD HWPCF capacity**



How Stormwater (Inflow) & Groundwater (Infiltration) Enters a Separated Sewer



Separated Sewer System I/I Sources

Public I/I Sources



Leaky Main



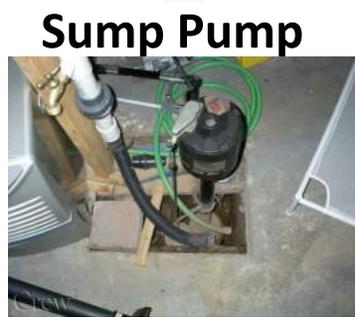
Leaky MH



Cover w/ Holes



Typically 8" to 10" Local Pipe



Sump Pump



Foundation Drain



Roof Leader



Leaky Lateral

Private I/I Sources

Combined Sewer System I/I Sources

Public I/I Sources



Leaky Main



Leaky MH



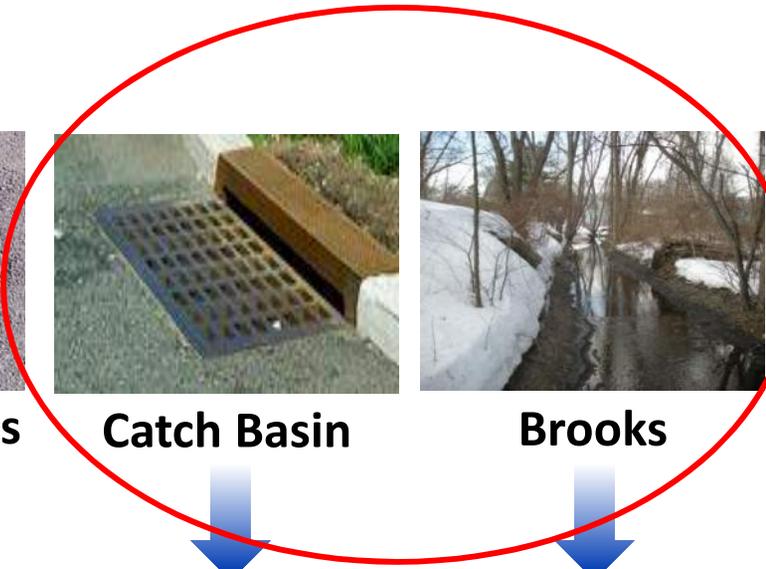
Cover w/ Holes



Catch Basin



Brooks



Typically 18" to 18" Local Pipe



Sump Pump



Foundation Drain



Roof Leader

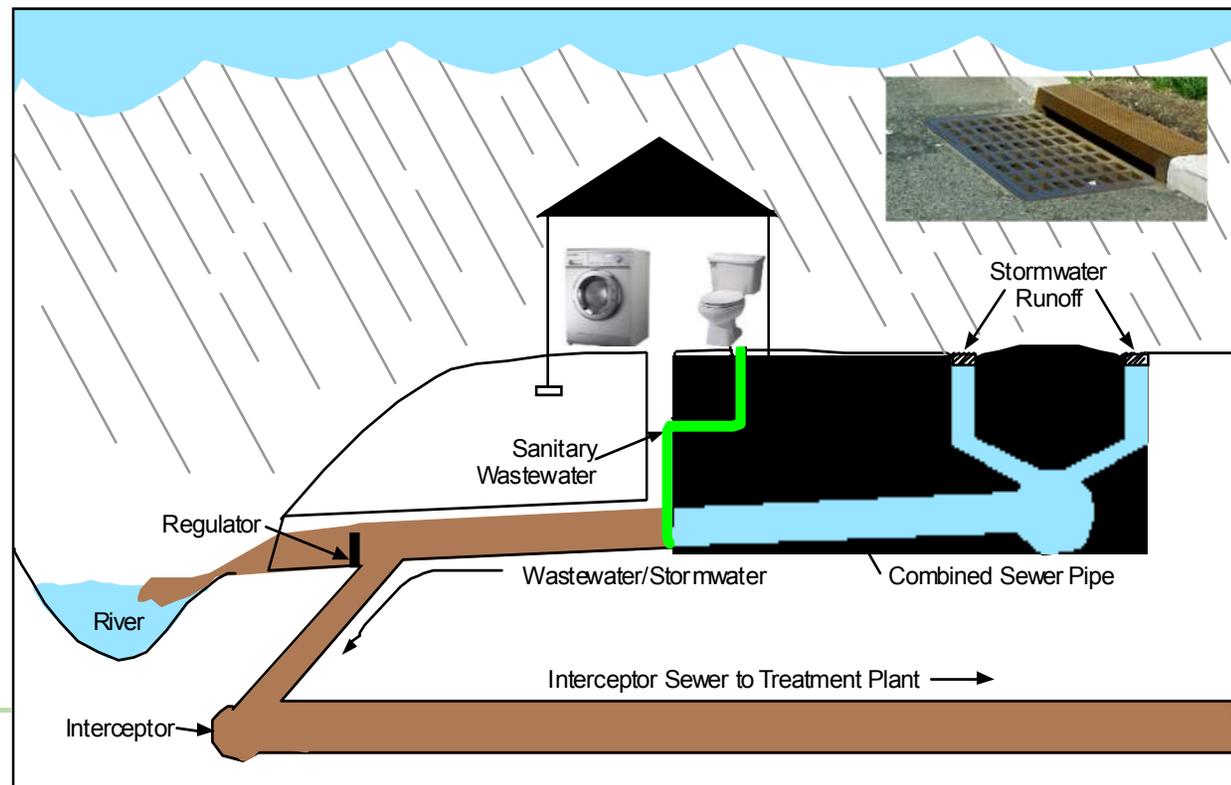
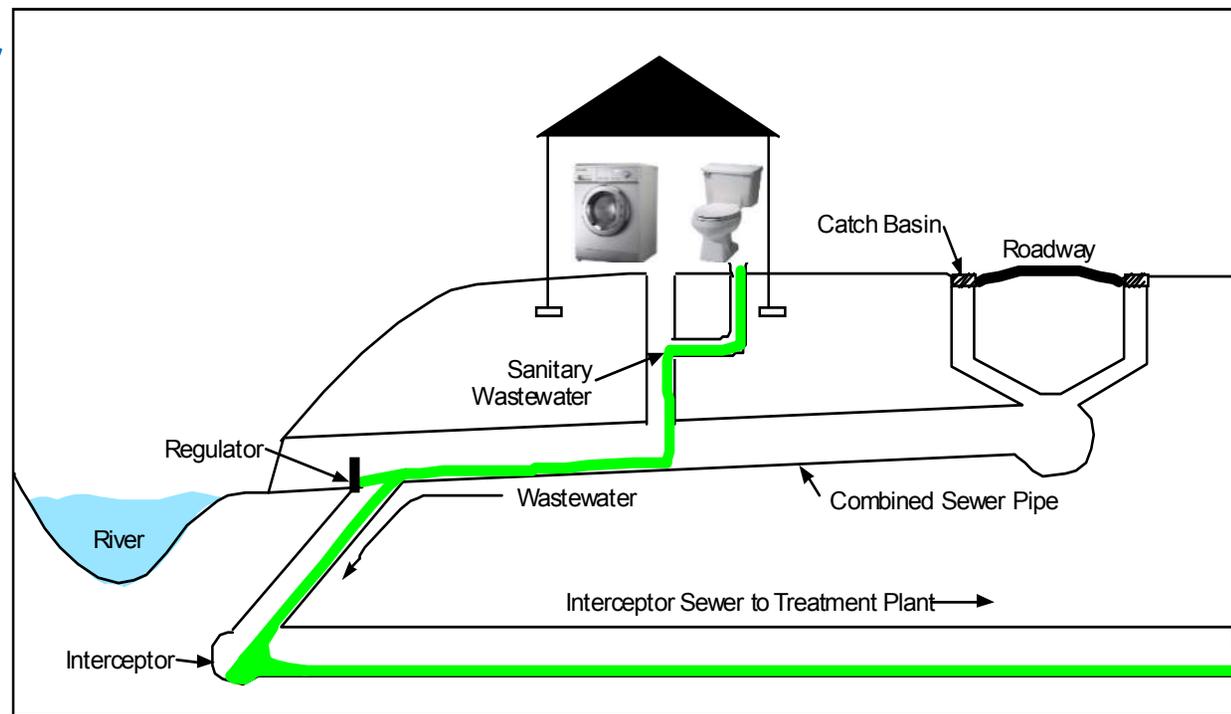


Leaky Lateral

Private I/I Sources

What is Problem w/ Combined Sewers?

- Dry day
 - No problems
 - Household sewage only (toilet, shower)
- Wet day
 - During rain events the combined sewer cannot convey all the flow & results in overflows (CSOs) into streams/ivers



4. Summary of Projects and Accomplishments

- Work completed to date

- Sewer rehabilitation
- Sewer separation
- HPWCF Upgrade
- SHCST (South Tunnel)
- Green Infrastructure



- Benefits to date

- Over **50 percent reduction in CSO discharges**
- Improvements to Long Island Sound



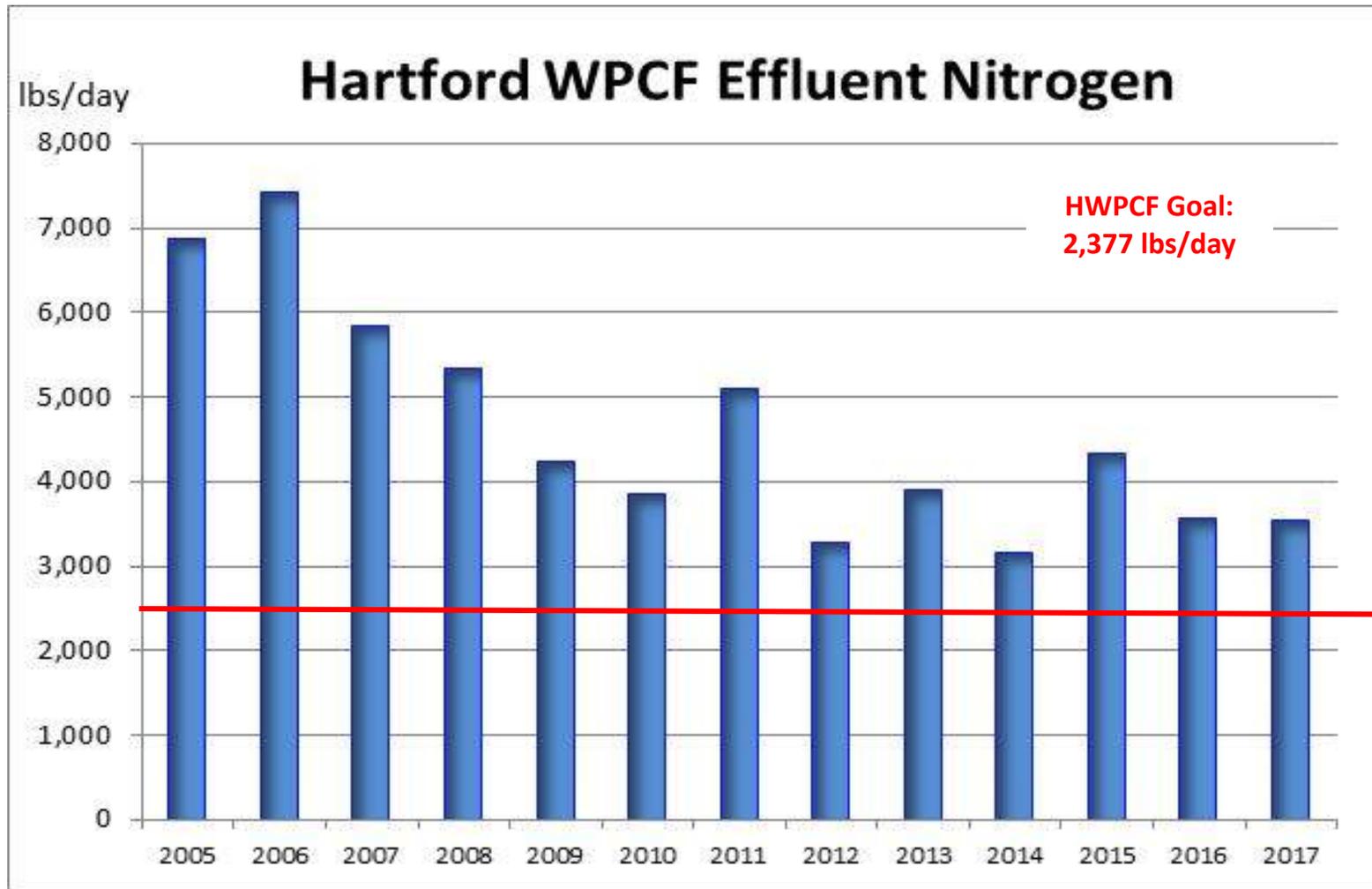
Prior 2014 LTCP Highlights

Ongoing/Completed:

- Continue sewer rehabilitation
 - 25 percent of sewer area tributary to Hartford has been rehabilitated
- Completed sewer separation (green areas)
- Complete HWPCF improvements (Southeast Hartford)
- 1/2024: SHCST online (eliminate CSOs to Cove and Newington/West Hartford SSOs)

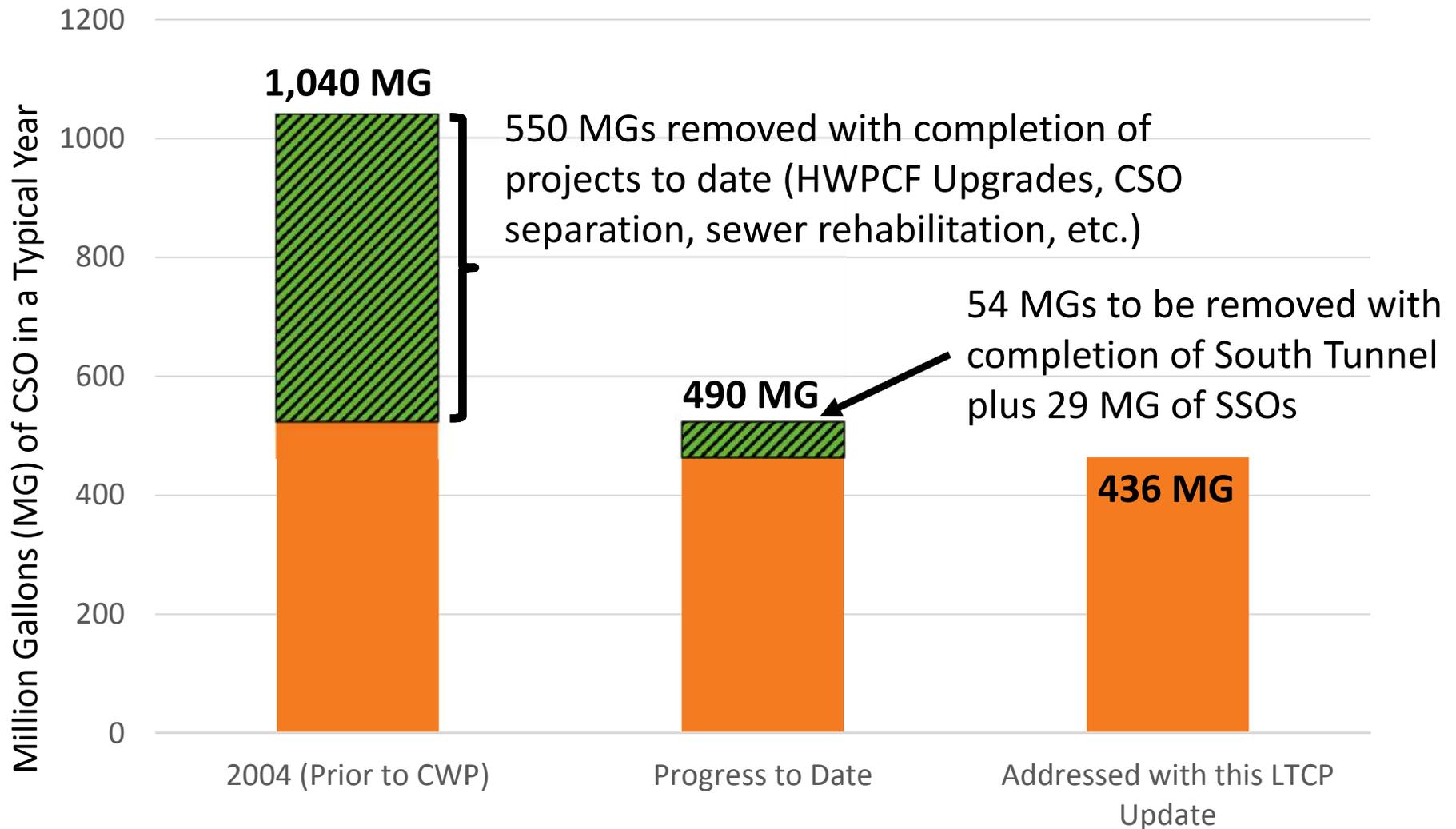


Nitrogen Removal Performance



The HWPCF has eliminated nearly 1,000,000 pounds of nitrogen per year from the Connecticut River since 2009

Clean Water Program Progress – Typical Year

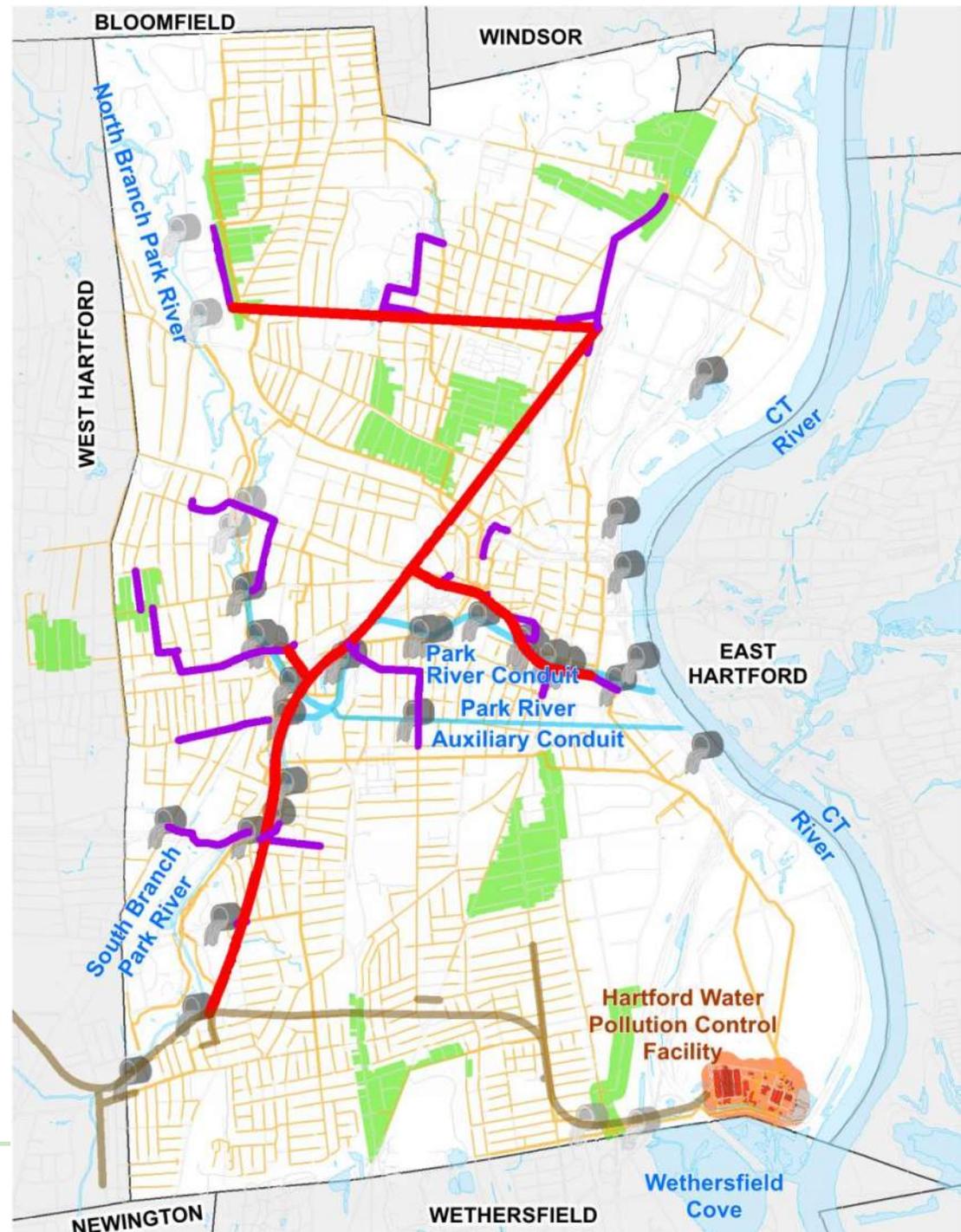


- Save the Sound just released report in fall 2018 that Long Island Sound water quality is improving - <http://www.ctenvironment.org/save-the-sound/>

Prior 2014 LTCP Highlights

Remaining:

- 2029: North tunnel online.
Primary reasons for tunnel:
 - 1) Eliminate CSOs to NBPR
 - 2) Capture remaining CSOs up to & including 1-year storm



5. Explain Integrated Planning

- Guidance from EPA from 2012 – allows for consideration of all sewer and stormwater infrastructure needs versus just addressing CSOs in a silo
- Followed Six Elements Provided by USEPA as Framework
- Three report volumes
 - Volume 1 – Sewer/Stormwater Needs assessment – State of system and Consent Decree requirements
 - Volume 2 – CSO LTCP – Plan to address CSOs to meet Consent Order
 - Volume 3 – Integrated Plan – Develops project ranking and implementation schedule while considering affordability

Next CSO LTCP Update/ Integrated Plan

- EPA guidance from 2012 allows for Integrated Planning:
 - CSO Consent Order – CT DEEP Approval
 - SSO Consent Decree – EPA Approval
 - **Sewer system investigation/repair (CMOM)**
 - Stormwater (i.e., MS4)
- Consider affordability analysis
 - 2 percent of median household income is considered high burden by EPA



National Pollutant Discharge Elimination System (NPDES)

Integrated Planning for Municipal Stormwater and Wastewater

On this page:

- Overview
- Resources
- Technical Assistance

Overview

EPA, states, and municipalities have achieved real progress in implementing the Clean Water Act (CWA) (PDF) (234 pp, 571 K, About PDF) and protecting public health and the environment. However, today there are many factors stressing the implementation of CWA programs. Stressors include population growth, aging infrastructure, increasingly complex water quality issues, limited resources, and other economic challenges. Currently, EPA, states, and municipalities often focus on each CWA requirement individually. This may not be the best way to address these stressors and may have the unintended consequence of constraining a municipality from addressing its most serious water quality issues first.

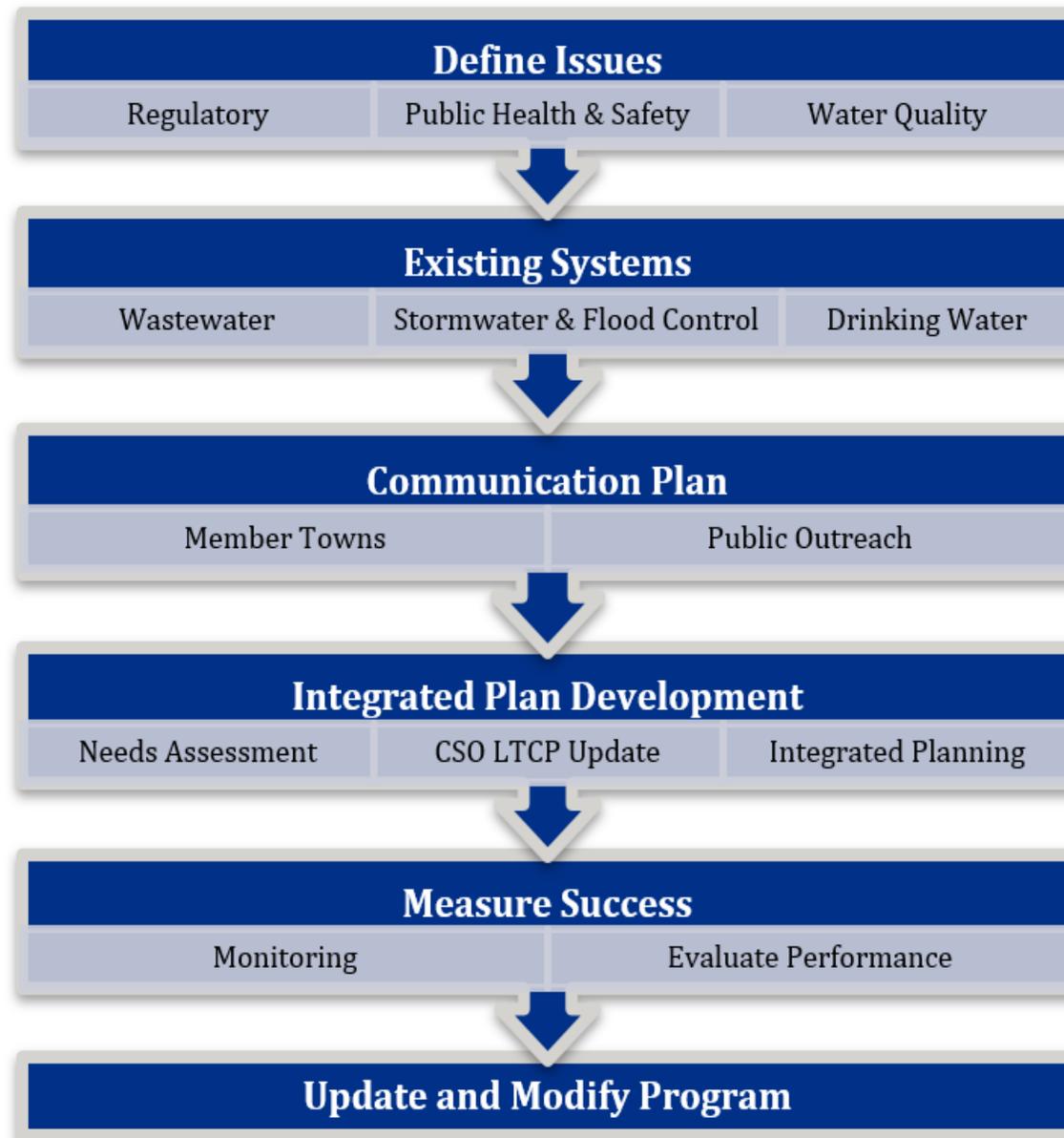
An integrated planning approach offers a voluntary opportunity for a municipality to propose to meet multiple CWA requirements by identifying efficiencies from separate wastewater and stormwater programs and sequencing investments so that the highest priority projects come first. This approach can also lead to more sustainable and comprehensive solutions, such as green infrastructure, that improve water quality and provide multiple benefits that enhance community vitality.

The integrated planning approach is not about changing existing regulatory or permitting standards or delaying necessary improvements. Rather, it is an option to help municipalities meet their CWA obligations while optimizing their infrastructure investments through the appropriate sequencing of work.

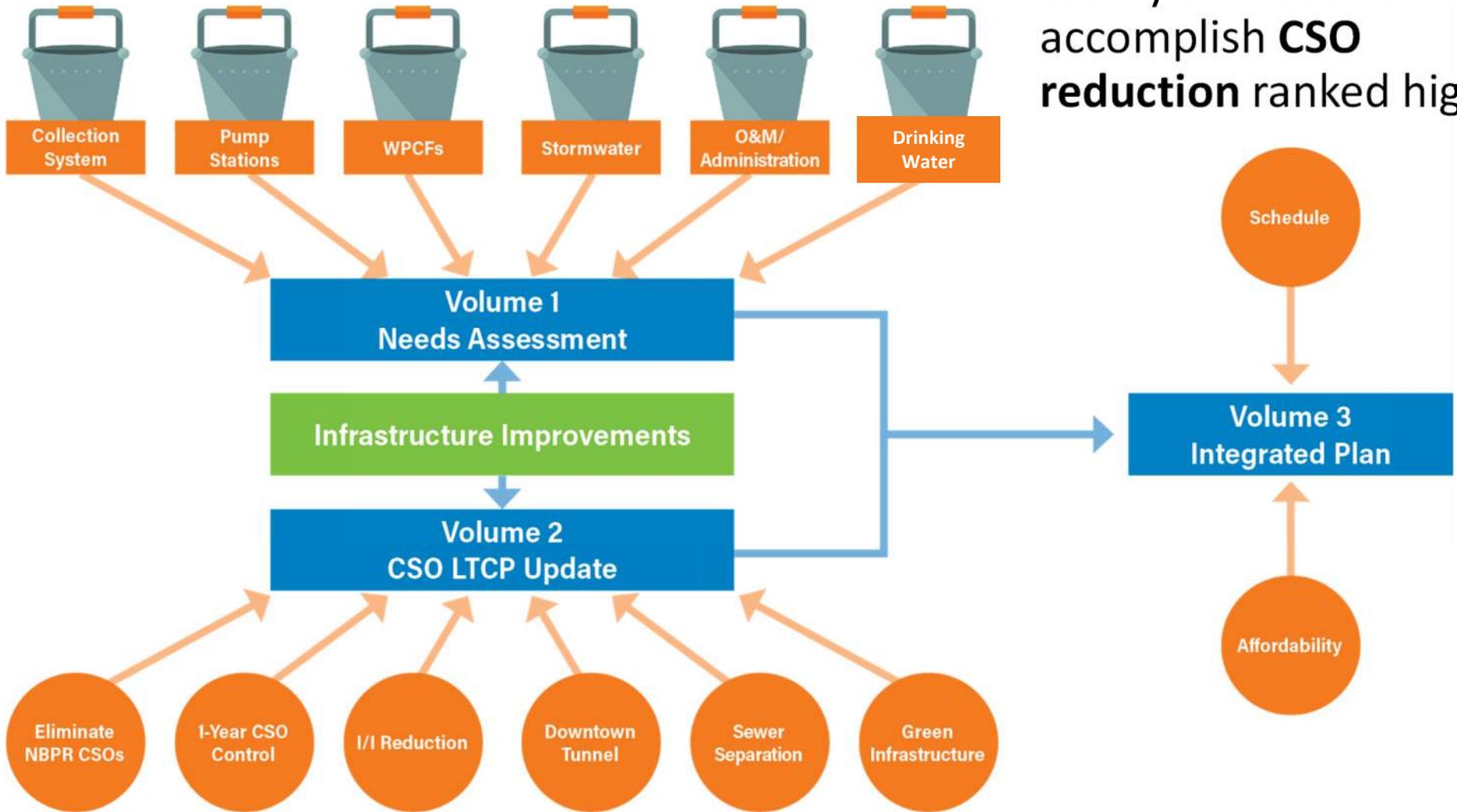
Resources

- Memorandum: Achieving Water Quality Through Integrated Municipal Stormwater and Wastewater Plans
- Integrated Municipal Stormwater and Wastewater Planning Approach Framework – Provides guidance for EPA, states, and local governments to develop and implement effective integrated plans under the CWA. This framework was finalized after extensive public input including a series of workshops across the country.
- Combined Sewer Overflows - Guidance for Financial Capability Assessment and Schedule Development (FCA Guidance) – Provides an aid for assessing financial capability as part of negotiating schedules for CWA requirements for municipalities and local authorities.
- Financial Capability Assessment Framework – Provides greater clarity on the flexibilities built into

EPA Integrated Planning Framework Elements



MDC Integrated Planning Approach



*Infrastructure improvements that satisfy a **“Need”** and accomplish **CSO reduction** ranked high

Sewer Renewal: Dual benefit of repairing infrastructure and further controlling wet weather response in some areas

Coordination with aging water main infrastructure improvements

6. 2018 CSO Long-Term Control Plan Update

Baseline Assumption

- Sewer system is failing and renewal must be prioritized
- The extent of this was not known during prior LTCP Update
- Sewer system renewal will reduce CSOs by more than 25% in typical year
- Must happen first or combined sewer flow may not reach tunnel

By Delaying Future Downtown Tunnel:

- Allows for possible reduction in size due to sewer system renewal
- Allows for operation/lessons learned on SHCST to occur before building Downtown Tunnel
- Allows for debt from first tunnel and HWPCF projects to be retired first
- Maintains affordability

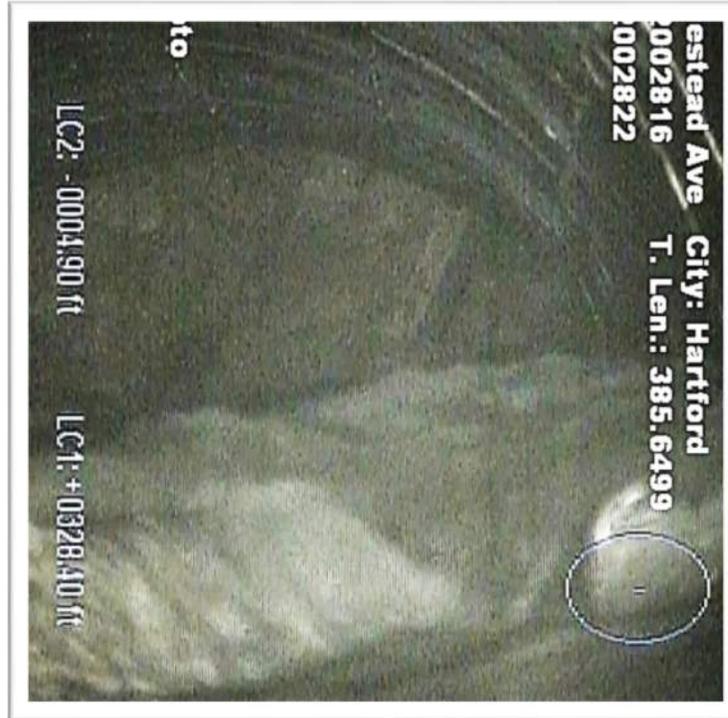
Separation/Satellite Storage in North Hartford vs Tunnel

- Assuming tunnel is delayed, separation in north Hartford allows for interim water quality improvements sooner
- Integrated approach to address CSOs, with sewer and water main renewal

Why Integrated Planning?



Asylum Avenue West Hartford
August 2018



Homestead Avenue Hartford
October 2017



Capen Street Hartford
September 2018



Blue Hills Avenue Hartford
June 2018



Bloomfield Avenue Windsor
January 2014

In 2017, MDC performed 17 emergency repairs at a cost of about \$3.5M total

Why Integrated Planning?



Windsor Avenue Windsor



Park Avenue Wethersfield



Main Street Newington



Old North Branch Interceptor Hartford

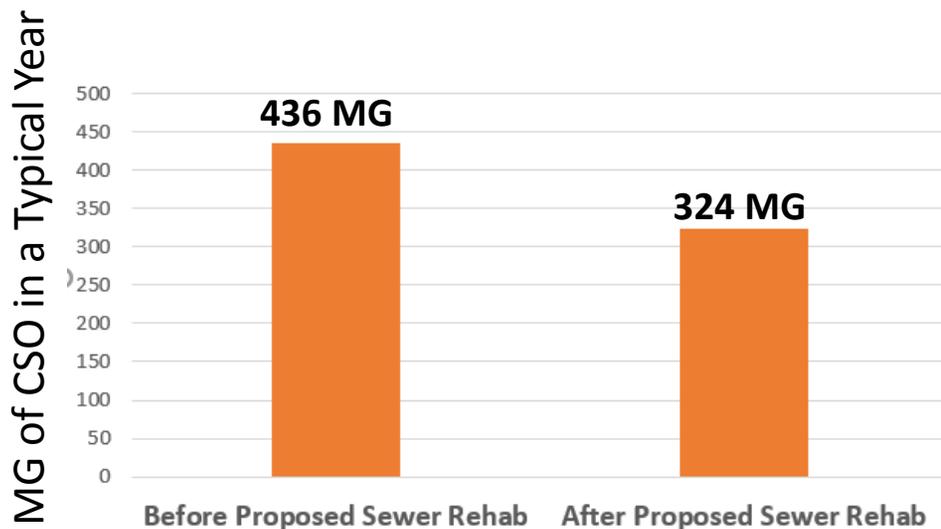


Waters Avenue Rocky Hill

**Inspection of sewers has identified \$450M in additional repairs needed
These repairs would have been funded by Ad Valorem**

Baseline Assumption Address Failing Infrastructure

- 10% I/I removal (sewer rehabilitation) and interceptor cleaning program at a cost of about \$400 million in HWPCF sewershed
- Sewer Rehabilitation: Dual benefit of repairing infrastructure and further controlling wet weather response in some areas
 - Addresses aging infrastructure concerns – “need”
 - Reduces CSOs in typical year by 25 percent within 25 years
 - Reduces CSOs in 1-year design storm by 17 percent within 25 years
- Coordination with water main infrastructure improvements
 - Cost savings from combined projects

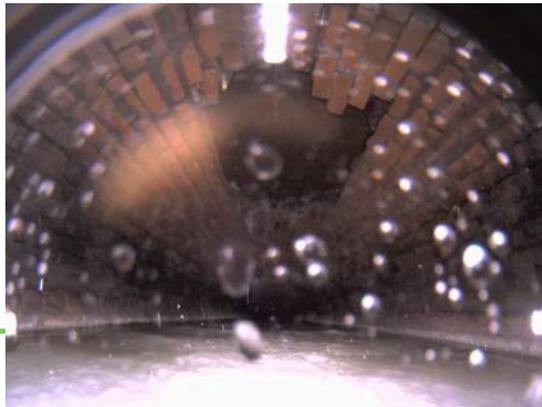


Sewer Collection System Renewal = I/I Reduction

Town	Miles	Sewer Rehabilitation (%)			Sewer Age (years)		
		Completed	Recommended	Total	Prior to CWP (2005)	If Infrastructure Ignored (2043)	After IP (2043)
Bloomfield	118	6%	35%	41%	34 yrs	70 yrs	50 yrs
East Hartford	168	3%	23%	26%	45 yrs	81 yrs	62 yrs
Hartford	217	5%	67%	72%	74 yrs	107 yrs	39 yrs
Newington	128	27%	14%	41%	38 yrs	64 yrs	54 yrs
Rocky Hill	90	7%	10%	17%	30 yrs	65 yrs	59 yrs
West Hartford	223	36%	43%	79%	53 yrs	69 yrs	38 yrs
Wethersfield	122	32%	22%	54%	45 yrs	63 yrs	47 yrs
Windsor	152	18%	12%	30%	36 yrs	62 yrs	53 yrs
Total	1,218	17%	33%	50%	50 yrs	75 yrs	49 yrs

Large Diameter Sewer Rehabilitation in Hartford

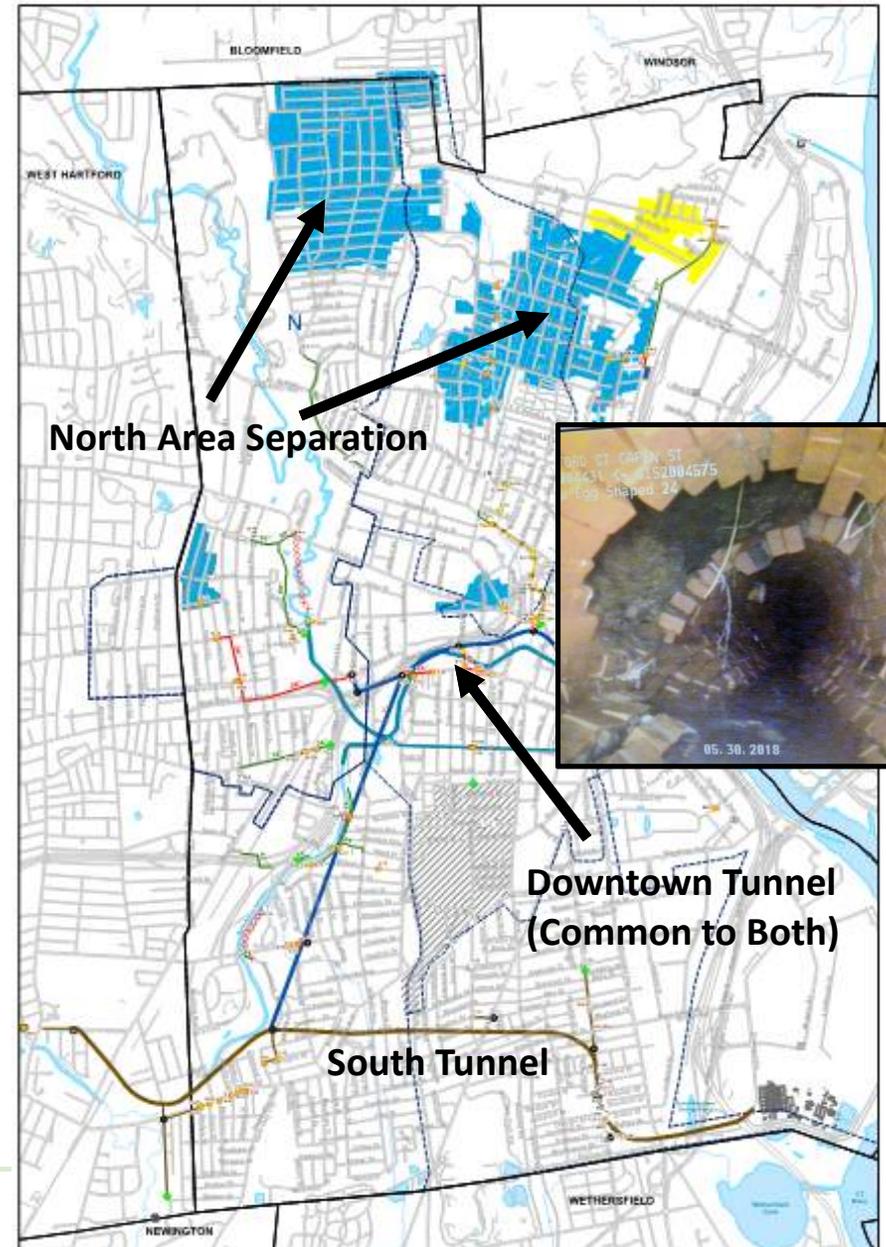
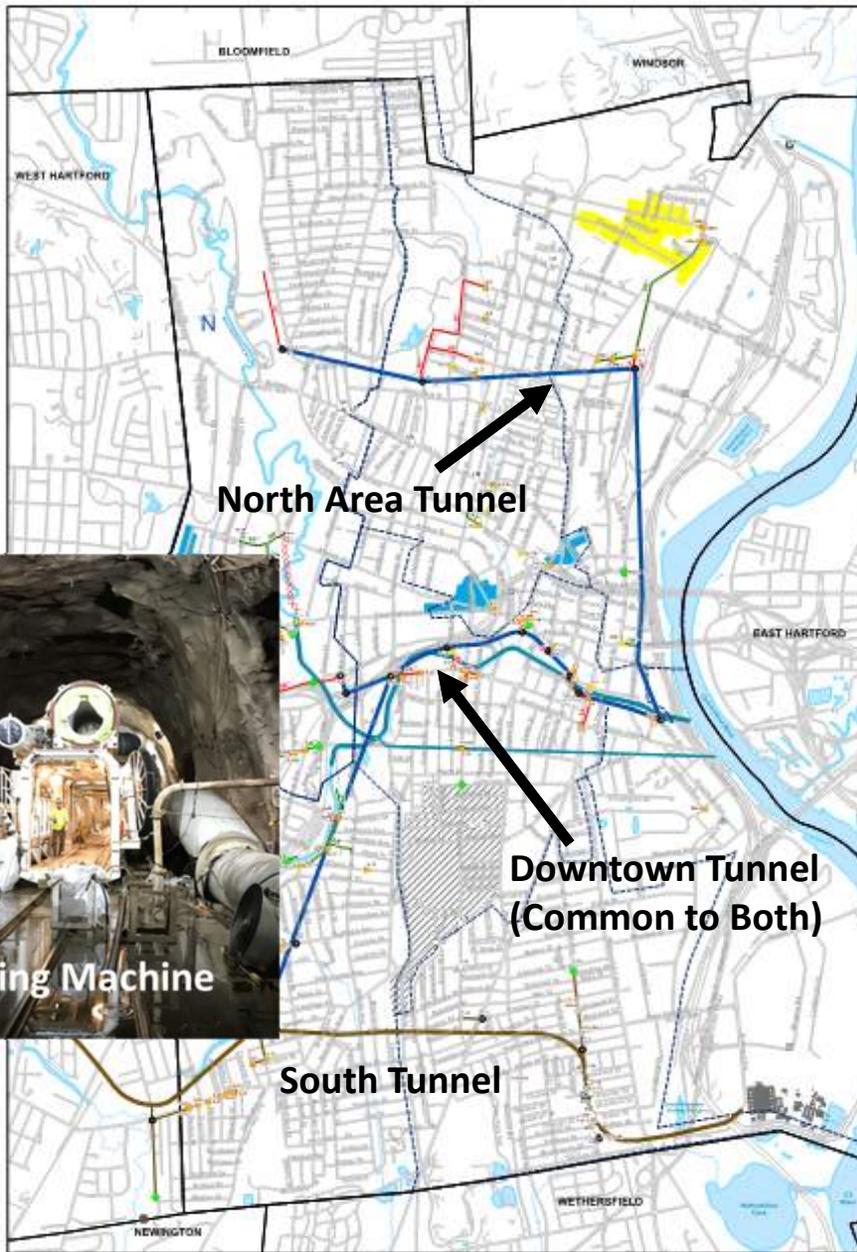
- Rehabilitation of over **200,000 feet** of large interceptors, **~100 years old** on average
- Will address **imminent structural defects** before failure
- Avoid costly emergency repairs like Homestead Ave. and Capen St.



Two Primary Options for Remainder of LTCP

Current Plan (Status Quo):
North Area Tunnel

Proposed Integrated Plan:
Separation in North/Address Aging Sewers



Boring Machine

Comparison of Northern Area CSO Alternatives

North Area Tunnel Plan (Status Quo)

- Less expensive (\$282M)
- Spending over 14 years
- Addresses CSOs only. **Limited renewal of existing assets.**
- **One large project**
- Can't be phased
- **Likely need to start tunnel now**
- More risk



Sewer Separation in North

- More expensive (\$350M)
- Spending over 40 years
- **Renew existing assets**
- **Multiple “smaller” projects**
- Can be phased, gain intermediate levels of control as plan progresses
- Sewer separation can be combined with other street work to limit disturbances – **INTEGRATED PLANNING**



Overcome Prior Sewer Separation Challenges

- Overcome **Technical** challenges:
 - Initially public right-of-way only
 - Prior separation effective in pervious areas and/or with high sewer pipe rehabilitation
- Overcome **Cost and Schedule** challenges:
 - Smaller and less separation contracts at one time
 - Do it over 40 years, not 15 per original plan
- Overcome **Political/Social** challenges:
 - Traffic management – less contracts
 - Public disruption – less contracts
 - Business disruption – residential areas

Area	Separation Effectiveness (% area contributing to drain vs. sewer)	Impervious Area	Existing Sewer Rehabilitation/ Replacement
Granby	90/10	~40%	55%
Franklin 5	90/10	~70%	100%
Upper Albany	85/15	~60%	89%
Farmington Ave	80/20	~60%	86%
Franklin 13	60/40 or more**	~70%	60%
Tower	60/40	~50%	22%

Green Infrastructure Considerations

- MDC continues to be active in community with Rain Barrel program
 - In coordination with Hartford, in 2018 alone MDC provided 87 rain barrels to 80 properties through a series of neighborhood pickup dates
- MDC will be constructing a green infrastructure demonstration project at MDC headquarters at 555 Main Street in 2019
- As part of the development of this LTCP Update the MDC met with the City on six occasions to discuss opportunities for green infrastructure
- Section 10 of Volume 2 (2018 LTCP Update) included the evaluation of several proposed sites for Green Infrastructure
- The MDC is open to contributing to planning and constructing Green Infrastructure that is cost-effective to the CWP if another entity accepts ownership and maintenance



7. Financial Considerations

- Calculated average sewer cost for residential customer
 - Clean Water Project Charge (CWPC) on water bill based on consumption
 - Property tax payment for MDC assessment (Ad Valorem)
- Prior sewer project spending over last decade is not sustainable
- Compare plans with the following variables
 - Sewer rehabilitation timeline (14 years, 25 years, 40 years)
 - Downtown tunnel construction timeline (by 2032, by 2043)
 - Alternatives for northern Hartford (separation/satellite storage, tunnel storage)
 - MDC customer payment (Ad Valorem, Clean Water Project Charge (CWPC))
 - Spending (\$112M/year, \$68M/year)
- CSO reduction benefits of recommended plan – steady progress that meets Consent Order CSO reduction requirements

MDC Customers Pay for Sewer in Two Primary Ways

- 1) Clean Water Project Charge (CWPC) on water bill allocated to customers based on metered water consumption
 - Payment of water bill for water related charges is separate

- 2) Property tax payments for MDC assessment (Ad Valorem)
 - Property owners pay directly through town tax bill
 - Renters pay indirectly through rental payments
 - Tax exempts charged sewer rate directly (Sewer User Charge)

To address EPA affordability process need to estimate the total combined cost per dwelling unit



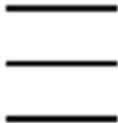
The Metropolitan District
 555 Main Street, P.O. Box 800
 Hartford, Connecticut 06142-0800
 Telephone: (860) 278-7850
www.themdc.org

Account Number 00000000	Invoice Number 0000000000000	Invoice Date 09/21/2018	Page 2 of 2
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Service Address: 1 MAIN ST, WEST HARTFORD CT

Customer Name: MRS. SMITH

Billing Period: 08/21/2018 - 09/20/2018 (31 Days)



METER READINGS

Meter Num/Size 00000000 /5/8"X3/4"
 Current Reading (09/20/2018) 351.03
 Previous Reading (08/20/2018) 339.17
 Water Use CCF 5.83

CURRENT CHARGES

Water Service:

2018 Water Used Charge @ \$ 3.140 X 5.83 CCF 18.30
(MDC Water rate is 0.0042 Cents per US-Gallon)

2018 Water Customer Svc Charge 14.98

Sub Total: **\$33.28**

Sewer Service:

2018 Sewer Customer Svc Charge 3.00

Sub Total: **\$3.00**

Federal / State Regulatory Compliance Fees:

2018 CWP Charge @ \$ 3.800 X 5.83 CCF 22.15

2018 DPH Drinking Water Fee 0.33

Sub Total: **\$22.48**



TOTAL CURRENT CHARGES **\$ 58.76**

Projected Dwelling Unit Sewer Costs for 2019

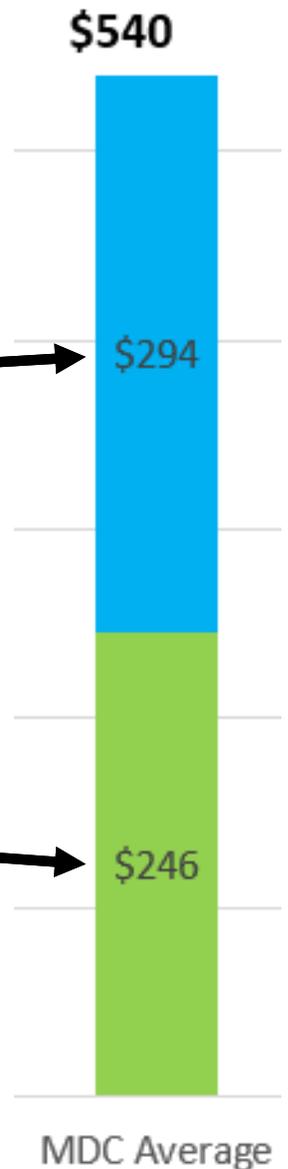
MDC Average

■ Clean Water Project Charge (CWPC)

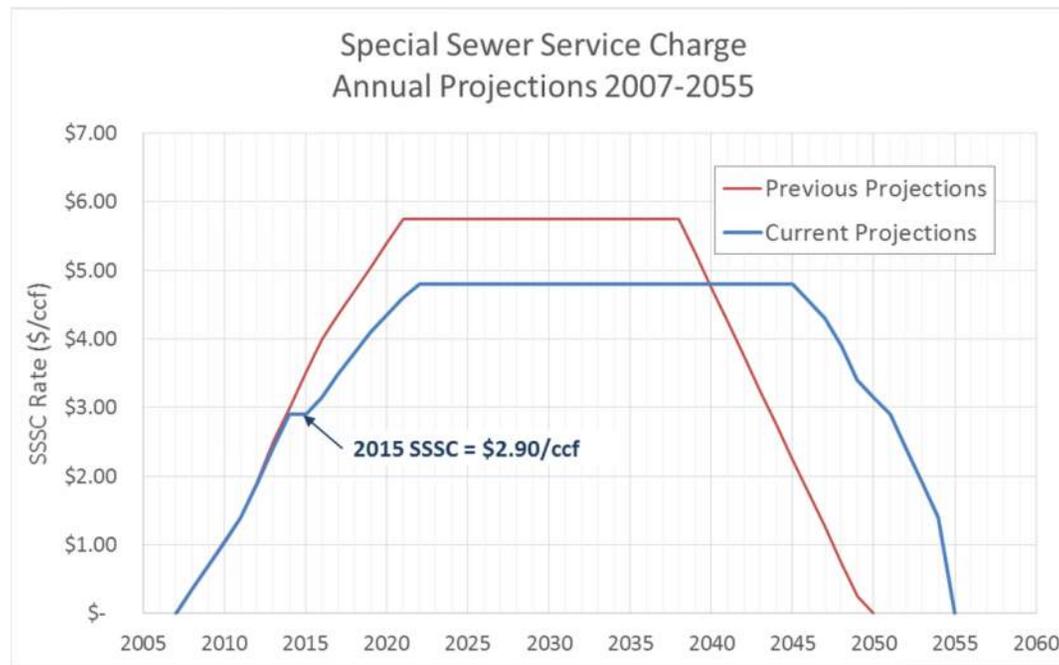
- 2019 CWPC rate = \$4.10 per hundred cubic feet (ccf)
- Average annual water consumption = 71.7 ccf
- Residential CWPC (on water bill) = **\$294**

■ Ad Valorem

- Estimated residential portion of Ad Valorem = \$37.96M
- Total residential dwelling units = 154,198
- Estimated residential Ad Valorem sewer cost = **\$246**



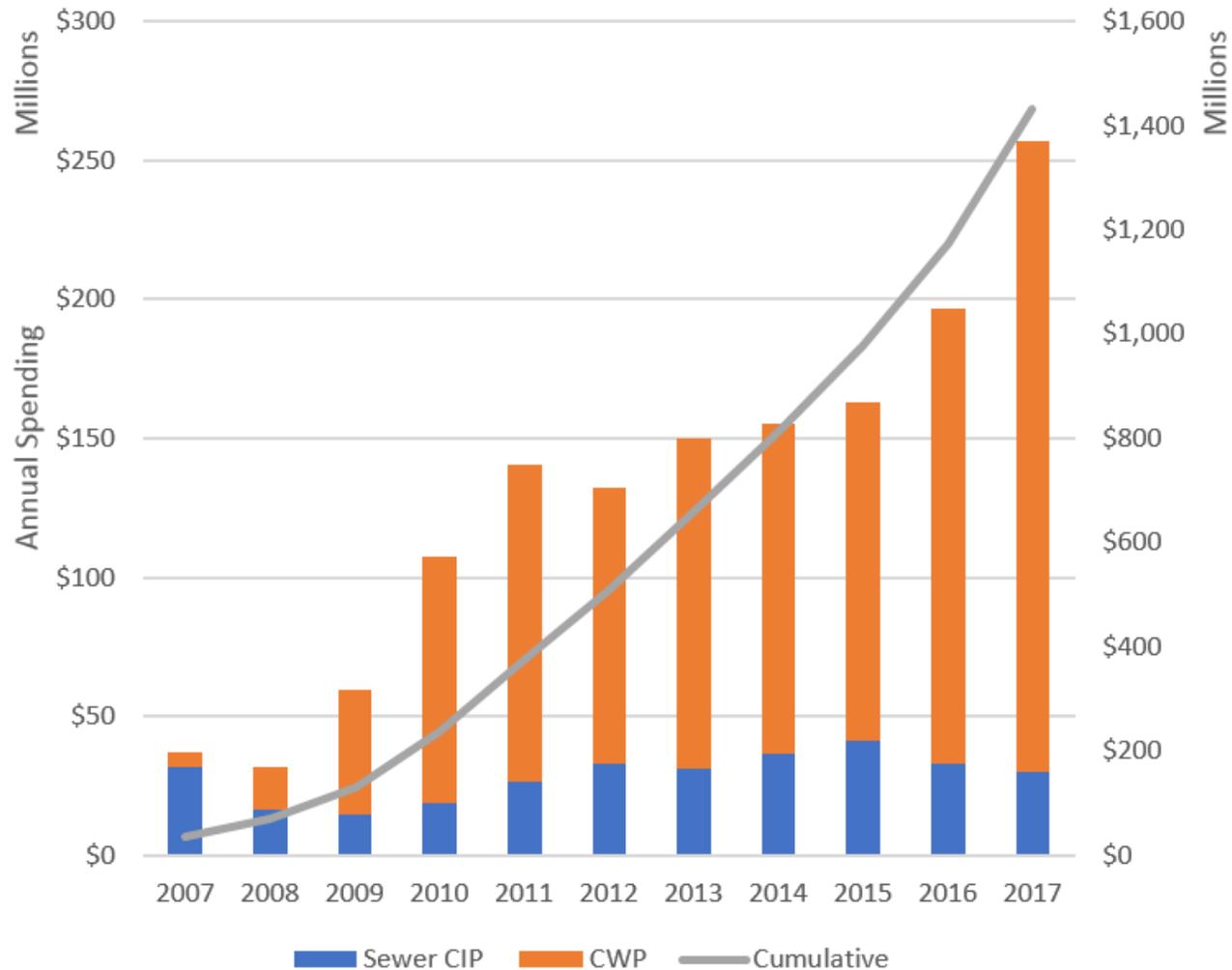
Financing the CWP – From 2015 Public Hearing



- Assumed average household uses 105 ccf of water per year
 - Current analysis of actual consumption closer to 70 ccf
- Assumed 2026 end date which was later extended to 2029
 - 2029 end date estimated CWPC peak of \$5.30/ccf needed
 - 2032 end date estimated CWPC peak of \$6.20/ccf needed
- Only half the picture as it does not consider Ad Valorem

Why Integrated Planning?

CIP Sewer and Clean Water Project Expenditures



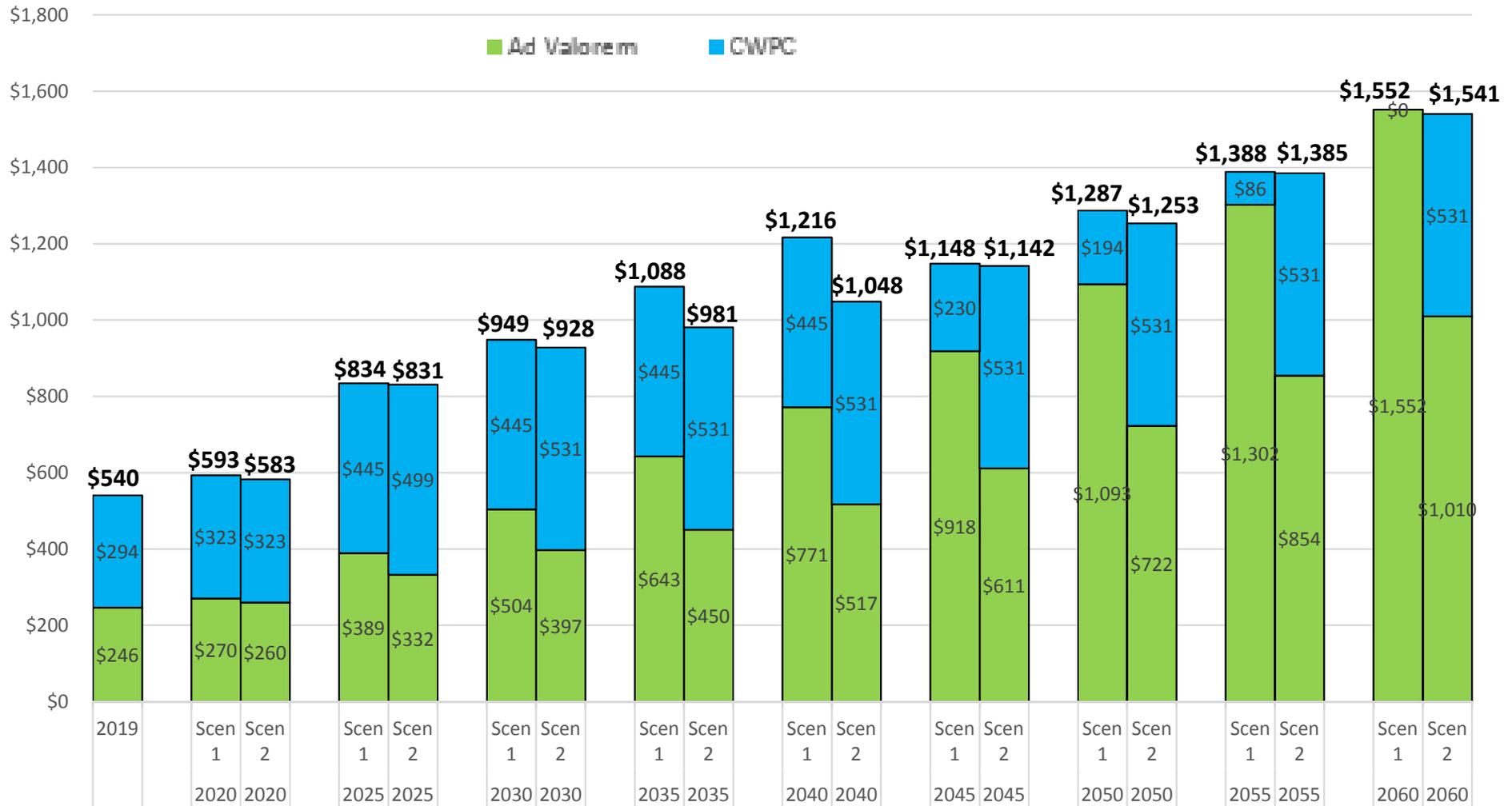
MDC spending rate over the last decade is not sustainable

Goal = Control annual spending by extending CWP project schedule with 40 year Integrated Plan

Status Quo (Scenario 1) vs. Proposed Plan (Scenario 2)

	Scenario 1	Scenario 2
<i>Clean Water Project/Integrated Plan</i>		
Downtown Tunnel	X	X
Northern Area Tunnel	X	
Northern Area Separation		X
Sewer Rehabilitation		X
DEEP Clean Water Fund	X	X
Schedule	Completed by 2032	Completed by 2058
Average Spent per Year 2018 \$	\$112/year	\$68/year
<i>Ad Valorem</i>		
Operating Budget	X	X
Existing Debt Service	X	X
Sewer Capital Spending (Inflated)	\$37M/year	\$15M/year
Combined CIP (Inflated)	\$8.1M/year	\$8.1M/year

Household Bills Scenario 1 vs. Scenario 2, MDC Average



- **Similar household bills, but different programs**

- Scenario 1 builds tunnel sooner and sewers continue to fail/repaired on Ad Valorem
- Scenario 2 delays tunnel, focuses on Integrated Plan projects that address sewer system while reducing CSOs, and moves burden from Ad Valorem to Clean Water Project Charge (CWPC)

Further Consideration of Scenarios 1 and 2

Scenario 1A

- Scenario 1 was prior plan, which assume sewer repairs continue to occur on an emergency basis over 40 years
 - The tunnel could be built by 2032, but the infrastructure to get the flow to the tunnel is failing
 - This is unacceptable to the MDC and should be unacceptable to the towns and public and results in environmental and safety concerns
- Therefore, Scenario 1A assumes both the tunnel and sewer rehabilitation is done concurrently by 2032

Scenario 2A

- Scenario 2 conservatively assumed the sewer rehabilitation would not receive CTDEEP CWF CSO grant/loan
- Therefore, Scenario 2A assumes these grant/loans are received as the projects include significant reduction in CSOs

Household Bills Scenario 1A vs. Scenario 2A

MDC Average



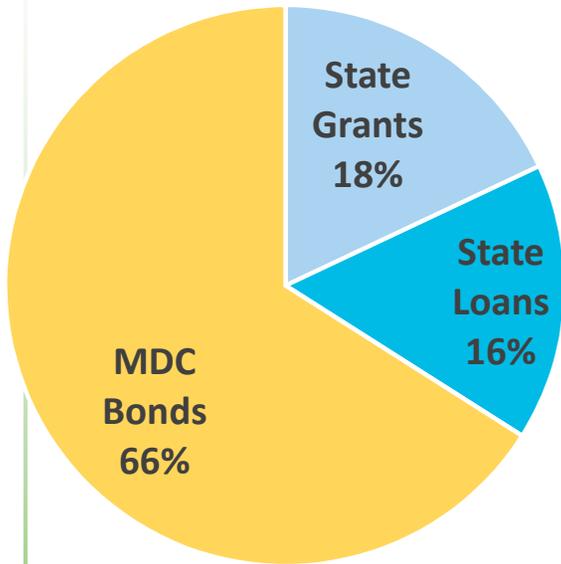
Scenario 1A – Build Tunnel and needed Sewer Renewal projects at same time, by 2032

Scenario 2A – Sewer Rehabilitation, which has significant CSO reduction benefit, is eligible for DEEP CWF 50% grant for CSO project

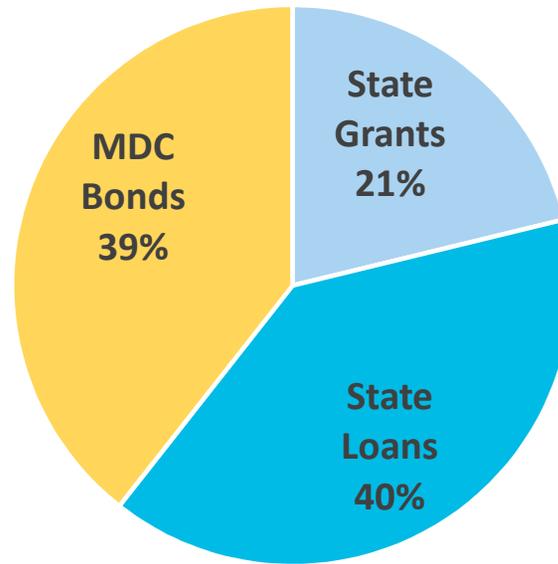
CWP and IP Funding Sources

MDC maximizes CTDEEP grants and loans to fund projects

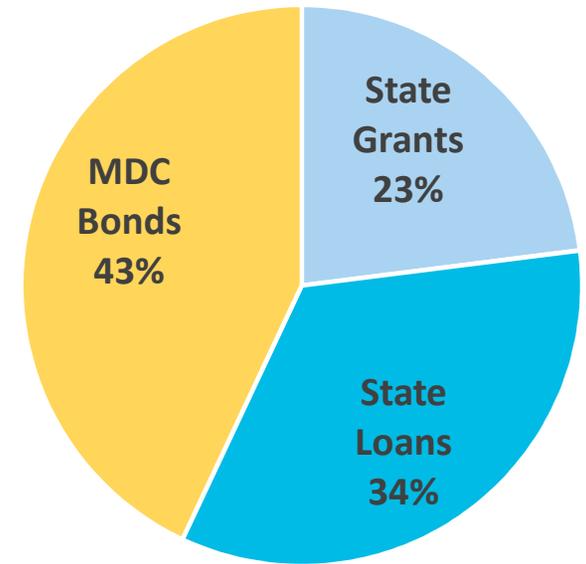
Original CWP Plan (2008)



Actual for CWP to Date (2018)



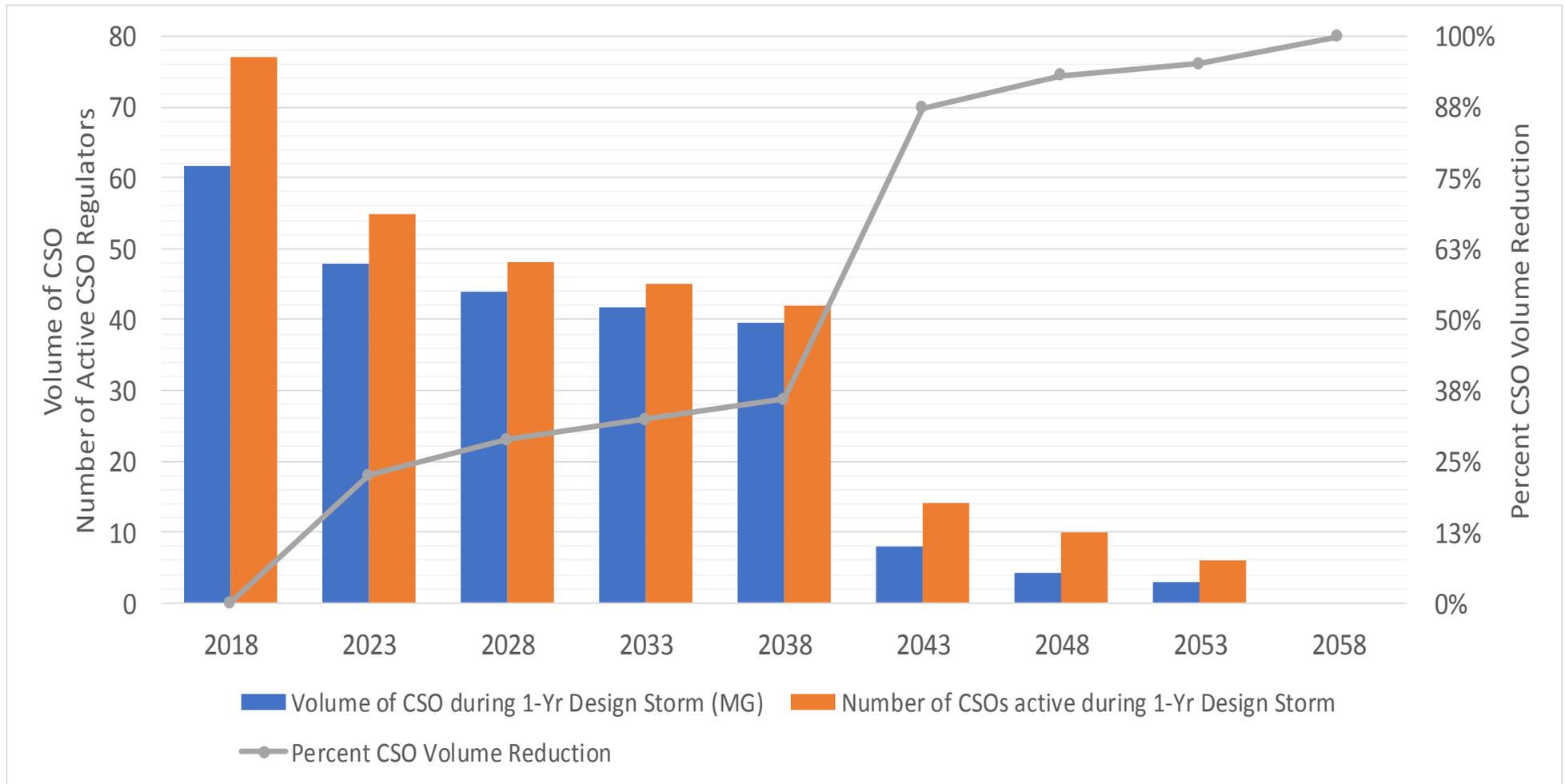
Forecast CWP plus IP Through End of Program*



*Assumes future SHCST project grants of 40% to 50% for Contract 3, 4 and 5.

*Assumes all future CSO LTCP projects, including sewer rehabilitation in HWPCF sewershed, are eligible for and receive 50% grant and 50% loan.

CSO Reduction with Recommended Plan



- Steady CSO reduction progress over proposed implementation schedule
- Downtown Tunnel has largest CSO reduction benefit

Outreach on Integrated Plan

- 17 workshops with CTDEEP to discuss Integrated Plan
- Presented 6 times to MDC Board members representing towns/public – Meetings open to public
- Presentations to Town Councils in fall 2017 and fall 2018 –open to and well represented by public
- Presented to several groups, such as senior centers, rotary club, and Bloomfield Conservation, Energy, and Environment Committee
- Presented to MDC Consumer Advocate
- Member Town DPW/Engineering Briefing
- Outreach also included newspaper advertisements, mailings, social media, bill insert, and press releases
- Reports available for public viewing since November 26th
 - Online - MDC website www.themdc.org
 - Hard copies - MDC headquarters/Town Halls
- Public Hearing today

Benefits of Updated Plan

- Prioritize failing infrastructure renewal
- Projects that address an infrastructure need and water quality benefit prioritized
- Slow down/control pace of spending
- Meets the objectives of DEEP Consent Order

- We are asking for your support
- Comments to be submitted by December 13th
 - Please email John Mirtle at districtclerk@themdc.com with any questions, comments or letters of support
- Reports submitted to CTDEEP by December 31st

Thank you!