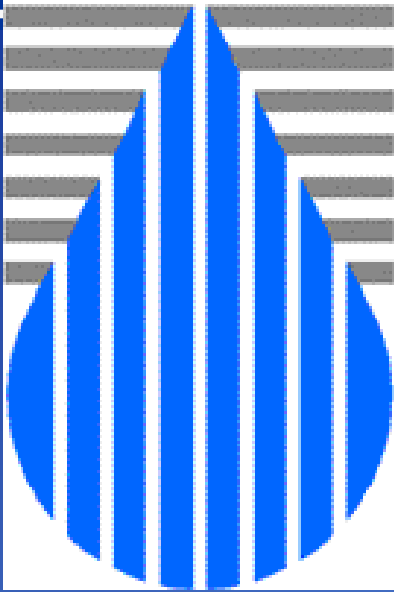


MDC



The Metropolitan District

The 21st Century Clean Water Program

Presentation to Hartford City Council

March 15, 2006

PROGRAM MISSION STATEMENT

“The Metropolitan District will reconstruct our 19th Century Sewer Collection and Treatment System to satisfy 21st Century State and Federal requirements. We commit the District to continuous water quality improvements to foster community uses. We will do so with the least possible fiscal impact to ratepayers and member communities.”

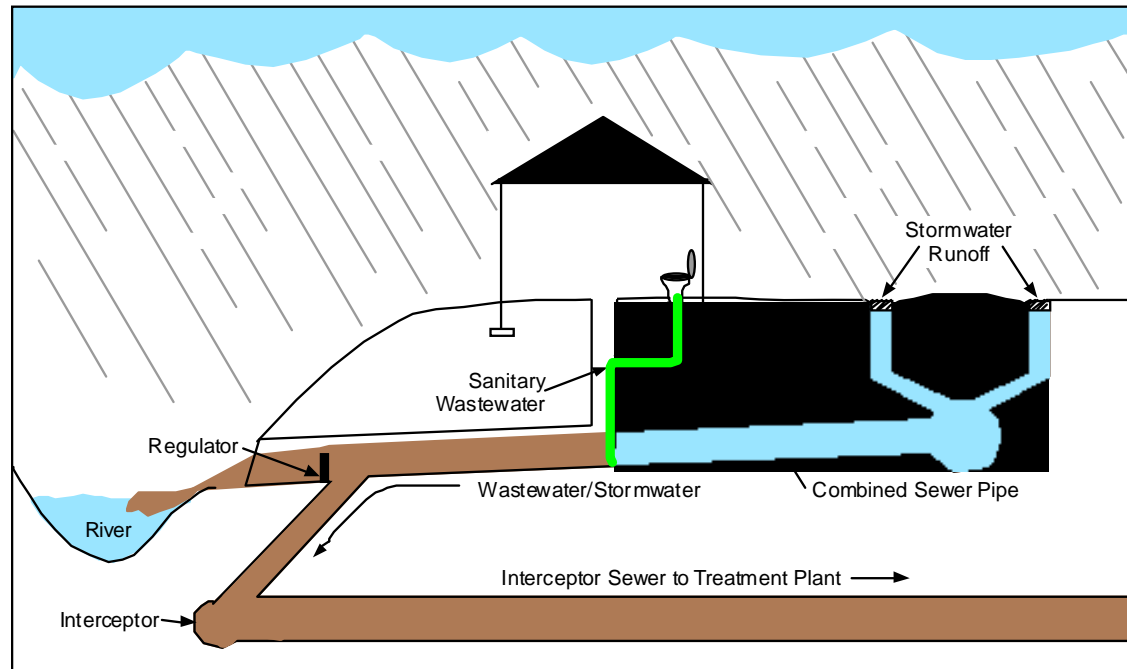
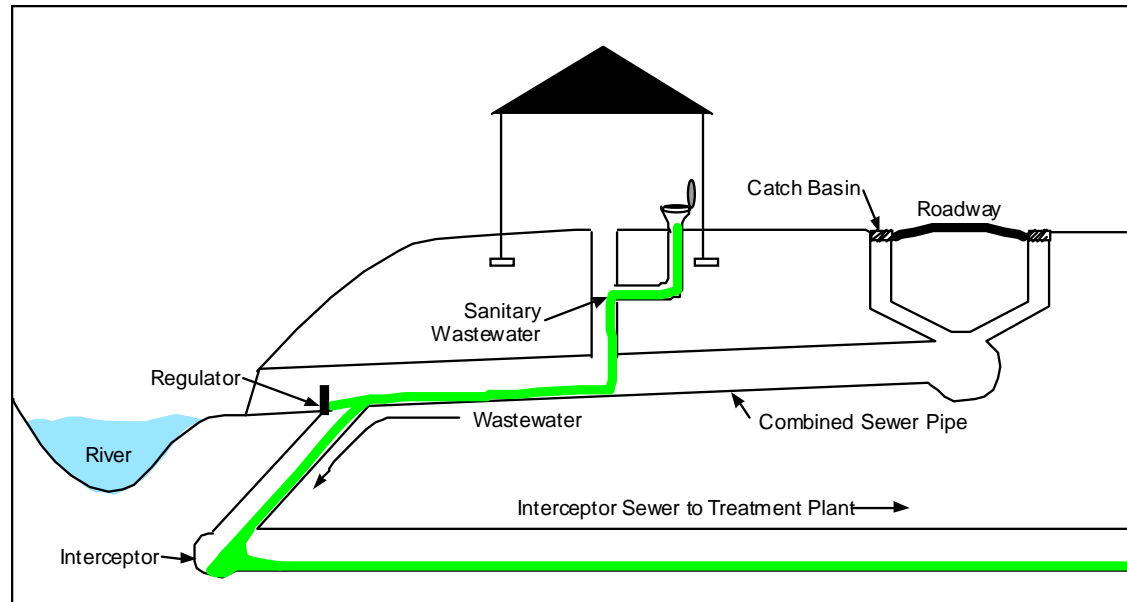
Clean Water Program Goals

- Significant Area Water Quality Improvements
- Satisfy the CT DEP CSO Compliance
- Eliminate SSO's To Address EPA/DOJ Consent Decree
- Correct CSO Flooding and Backups
- Coordinate Work with Area Projects/Needs
- Minimize Program Costs
- Obtain Grants to Minimize Rate Impacts

Program Challenges

- Meet CTDEP and EPA/DOJ Schedules
- “Do No Harm” To Citizens/Businesses
- Referendum Approval
- Get Systems in Place to Execute Projects
- Integrate with District Members’ Needs
- Beat the Budget!

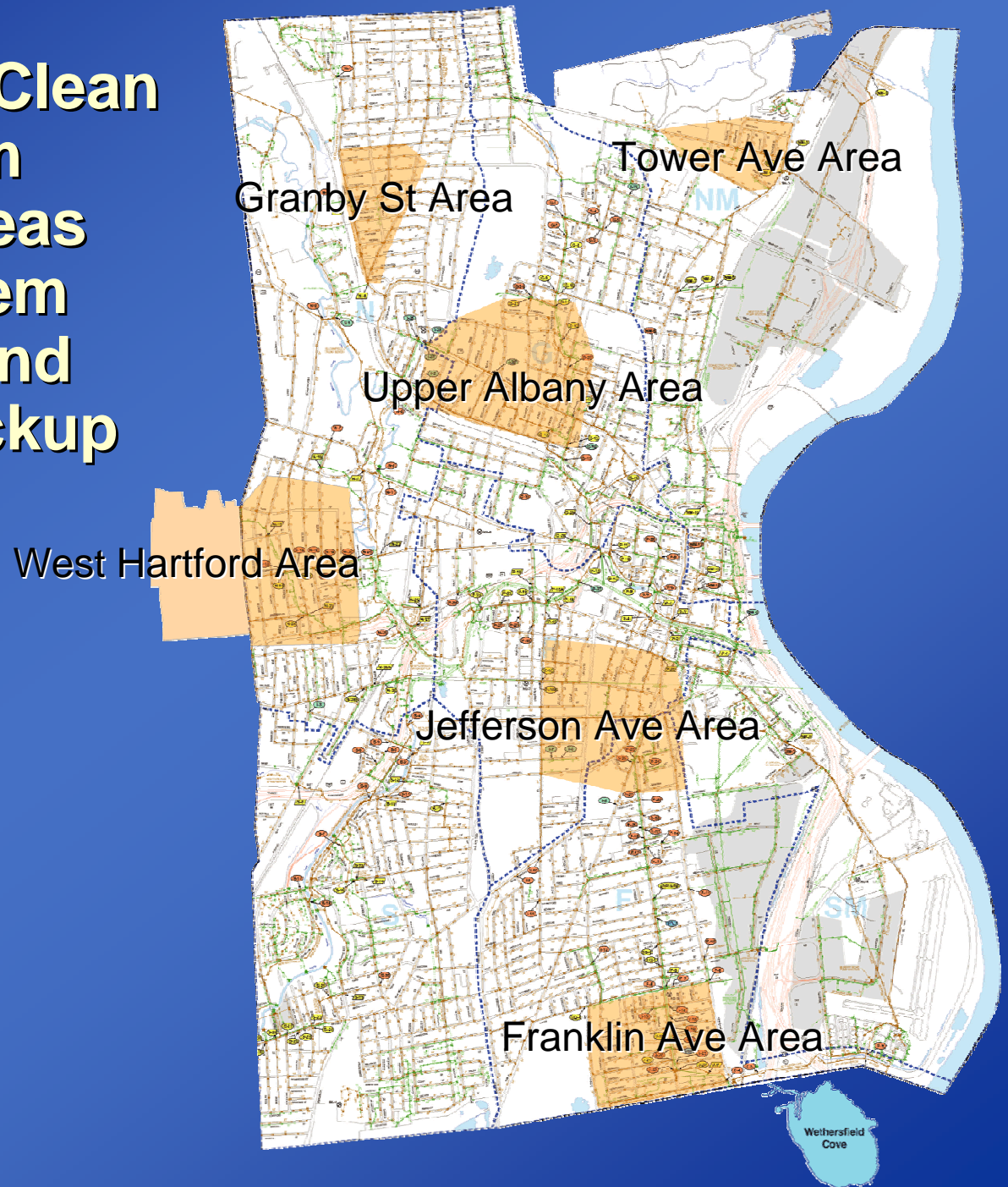
Combined sewers discharges occur from stormwater inflows to sewers during rain events.



District's
Combined
Sewer
System has
38 CSO
outfalls to
water bodies
throughout
Hartford...fifty
overflows per
year...One
Billion Gallons
Overflow



The District's Clean Water Program Addresses Areas Prone to System Surcharging and Basement Backup





What's an SSO?

- An unauthorized/unpermitted discharge of sewage into the environment



What causes an SSO?

- Too much clean water in the sewer system



How does too much clean water get in?

- Leaks in the pipes and manholes, illegal connections (sump pumps, catch basins, roof leaders, etc.), and river/streams.

Why is this a problem for the District?

- EPA/DOJ has issued the District a consent decree that will include significant fines for noncompliance.



SUMP PUMP

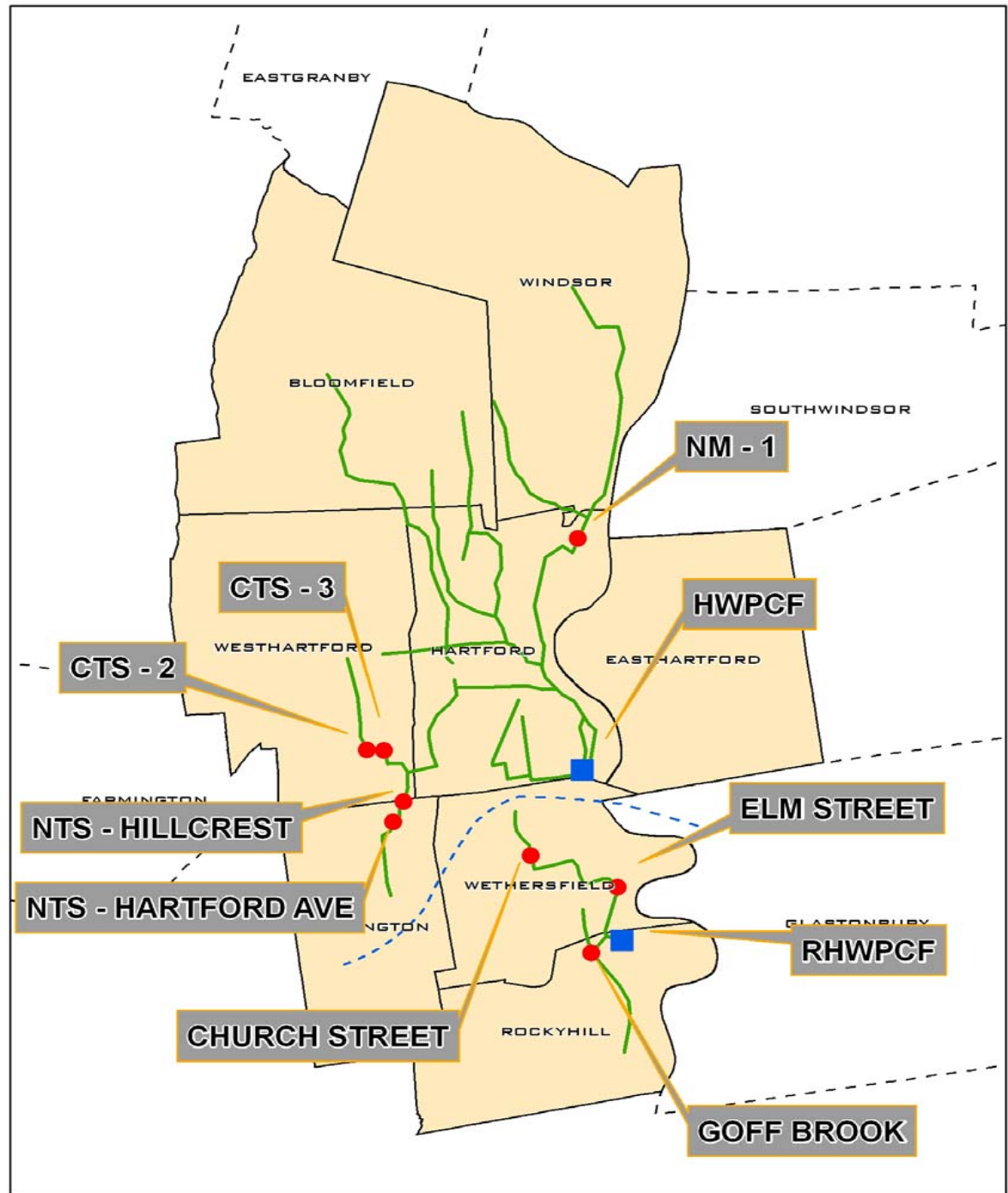


FOOTING DRAIN

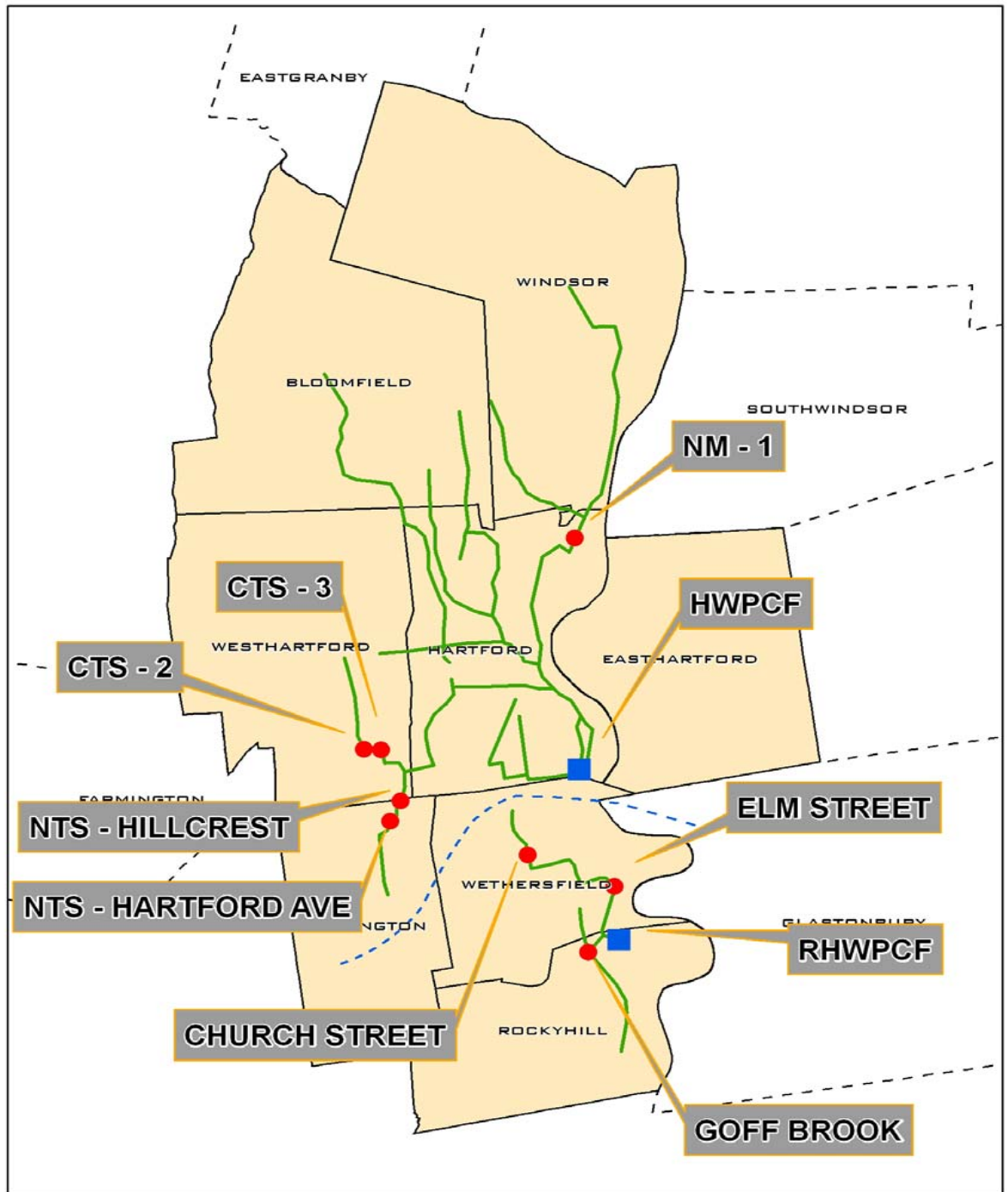


CB CONNECTION

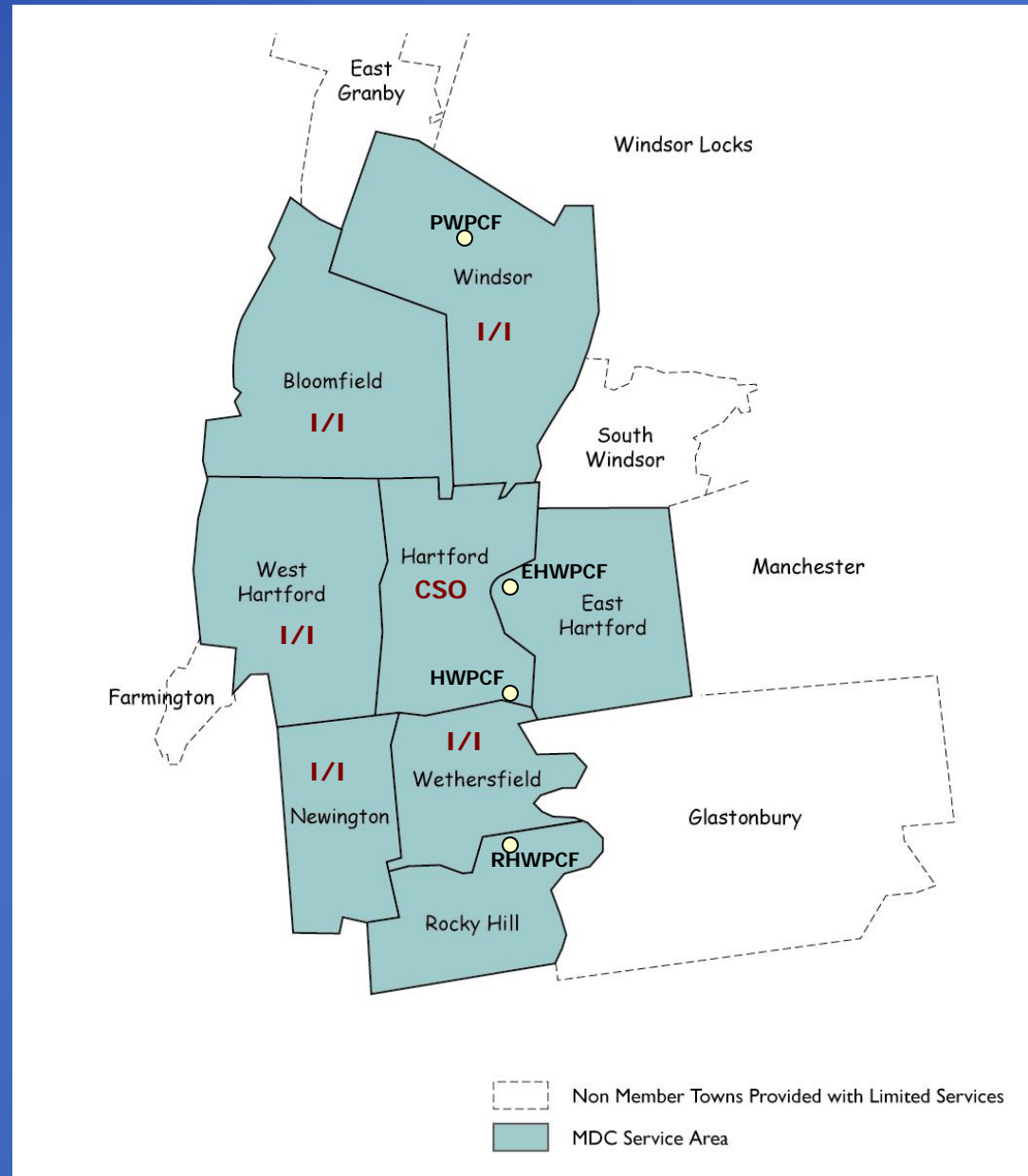
Sanitary sewer capacity problems exist throughout the district...leading to localized flooding and basement backups...and overflows.



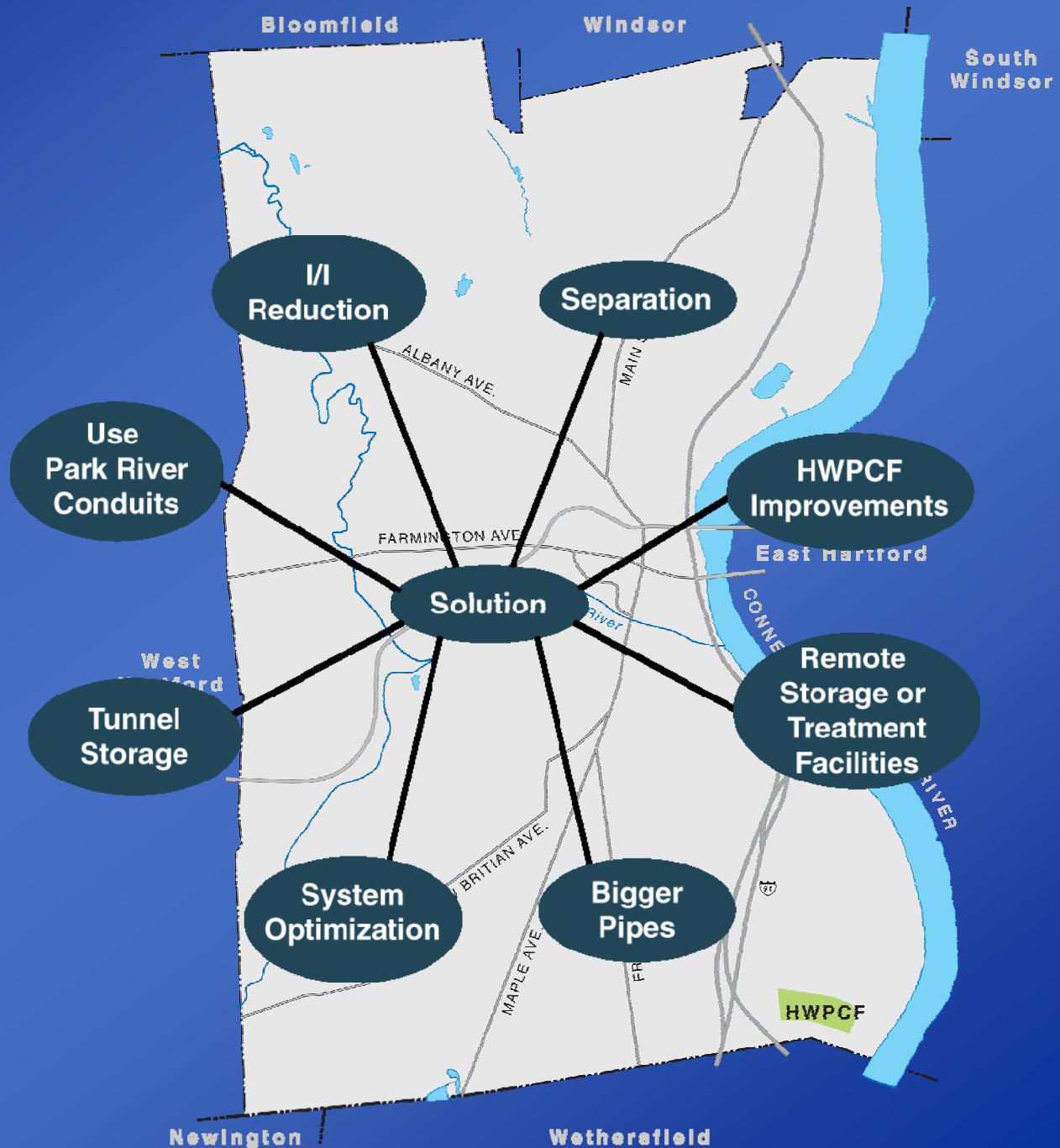
Eight Sanitary Sewer Overflows Must Be Eliminated from Streams In District Member Towns



The District's Sewage Flows To the Hartford WPCF Through Hartford's CSO System



The District's Clean Water Program Combines Many Abatement Options



LTCP Alt 3

1 = I/I Reduction, \$40M



LTCP Alt 3

1 = I/I Reduction, \$40M

2 = Sewer Separation, \$190M

LOCAL SEPARATION = AREAS

West Hartford
I/I Reduction

I/I Reduction
Bloomfield

I/I Reduction
Windsor

South Windsor

East Hartford

CONNECTICUT RIVER

HWPCF

Wethersfield Cove

Newington
I/I Reduction

Wethersfield
I/I Reduction



LTCP Alt 3

- 1 = I/I Reduction, \$40M
- 2 = Sewer Separation, \$190M
- 3 = HWPCF Improvements, \$105M

LOCAL SEPARATION = AREAS

West Hartford
I/I Reduction

I/I Reduction
Bloomfield

I/I Reduction
Windsor

South Windsor

East Hartford

CONNECTICUT RIVER

HWPCF

Plant Improvements

Newington
I/I Reduction

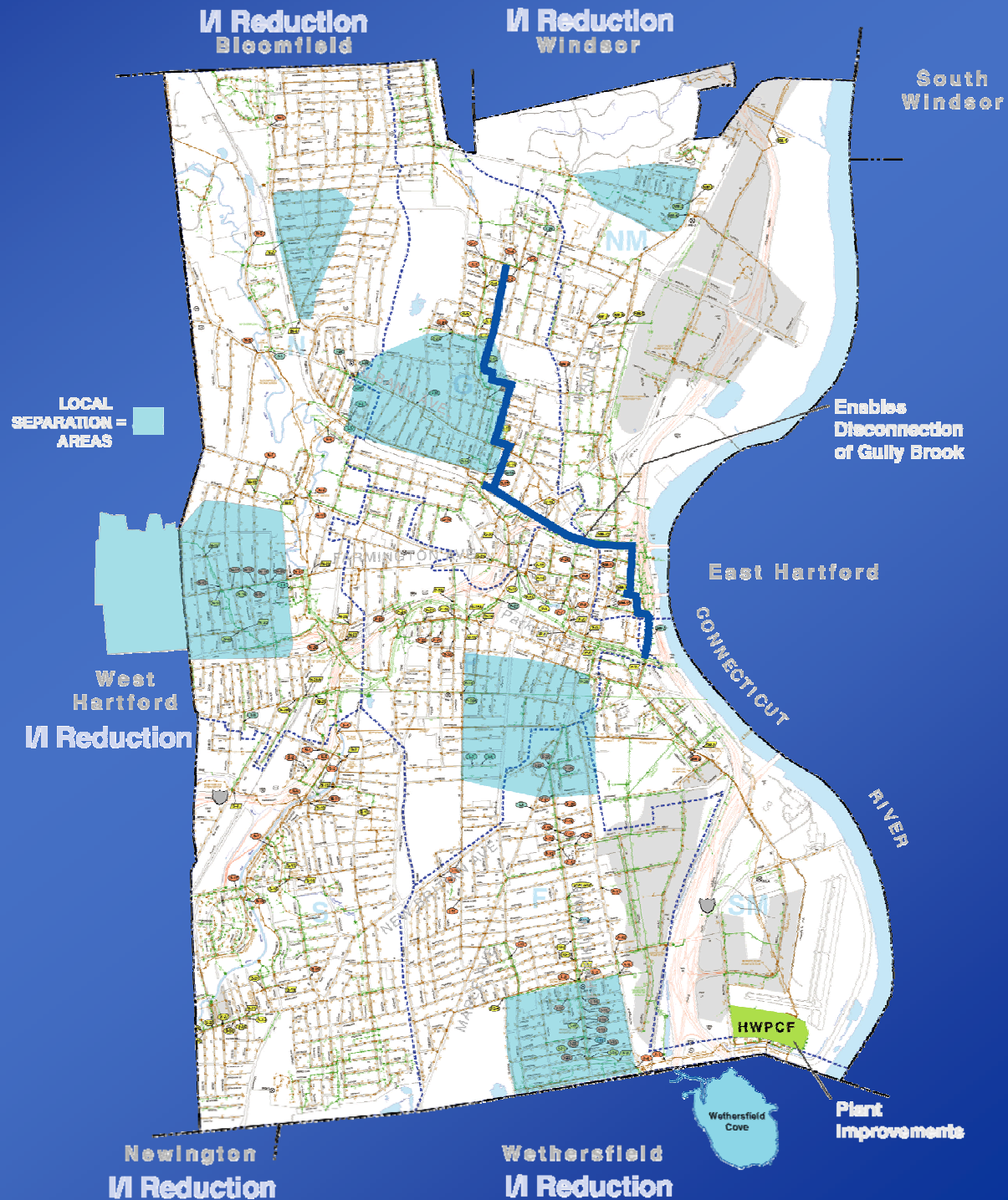
Wethersfield
I/I Reduction

Wethersfield Cove



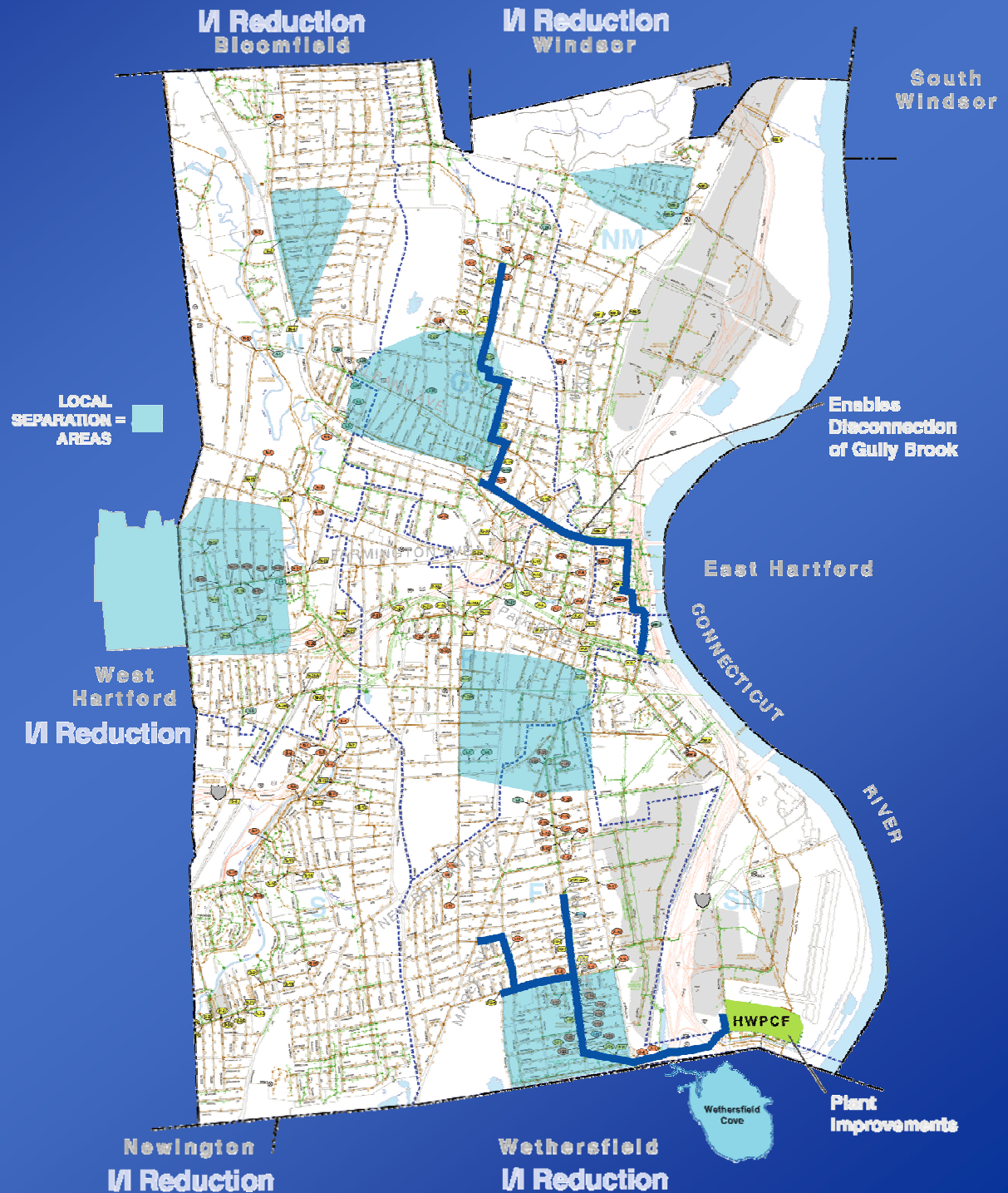
LTCP Alt 3

- 1 = I/I Reduction, \$40M
- 2 = Sewer Separation, \$190M
- 3 = HWPCF Improvements, \$105M
- 4 = Gully Brook Disconnection, \$15M



LTCP Alt 3

- 1 = I/I Reduction, \$40M
- 2 = Sewer Separation, \$190M
- 3 = HWPCF Improvements, \$105M
- 4 = Gully Brook Disconnection, \$15M
- 5 = Franklin Ave Consolidation, \$15M



LTCP Alt 3

- 1 = I/I Reduction, \$40M
- 2 = Sewer Separation, \$190M
- 3 = HWPCF Improvements, \$105M
- 4 = Gully Brook Disconnection, \$15M
- 5 = Franklin Ave Consolidation, \$15M
- 6 = CRRI extension, \$6M



LTCP Alt 3

1 = I/I Reduction, \$40M

2 = Sewer Separation, \$190M

3 = HWPCF Improvements, \$105M

4 = Gully Brook Disconnection, \$15M

5 = Franklin Ave Consolidation, \$15M

6 = CRRI extension, \$6M

7 = Granby St Storage Conduit, \$2M



LTCP Alt 3

1 = I/I Reduction, \$40M

2 = Sewer Separation, \$190M

3 = HWPCF

Improvements, \$105M

4 = Gully Brook

Disconnection, \$15M

5 = Franklin Ave

Consolidation, \$15M

6 = CRRI extension, \$6M

7 = Granby St Storage

Conduit, \$2M

8 = PRAC conversion, \$25M



LTCP Alt 3

1 = I/I Reduction, \$40M

2 = Sewer Separation, \$190M

3 = HWPCF

Improvements, \$105M

4 = Gully Brook

Disconnection, \$15M

5 = Franklin Ave

Consolidation, \$15M

6 = CRRI extension, \$6M

7 = Granby St Storage

Conduit, \$2M

8 = PRAC conversion, \$25M

9 = Tunnel, \$140M



LTCP Alt 3

- 1 = I/I Reduction, \$40M
- 2 = Sewer Separation, \$190M
- 3 = HWPCF Improvements, \$105M
- 4 = Gully Brook Disconnection, \$15M
- 5 = Franklin Ave Consolidation, \$15M
- 6 = CRRI extension, \$6M
- 7 = Granby St Storage Conduit, \$2M
- 8 = PRAC conversion, \$25M
- 9 = Tunnel, \$140M
- 10 = Consolidation conduits, \$72M

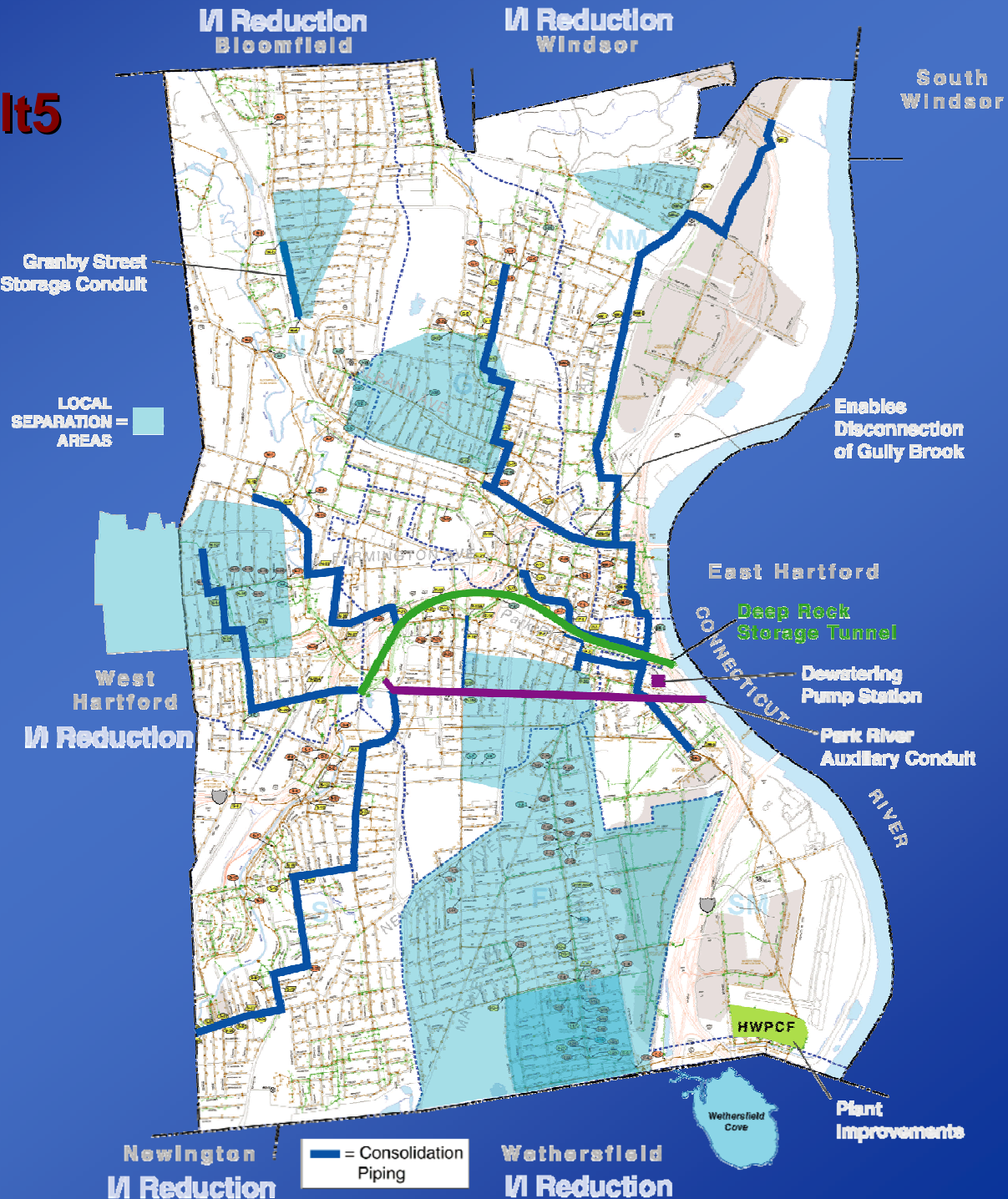
TOTAL = \$610M



LTCP Alt 3 + WC Alt5

- 1 = I/I Reduction, \$40M
- 2 = Sewer Separation, ~~\$190M~~ **\$294M**
- 3 = HWPCF Improvements, \$105M
- 4 = Gully Brook Disconnection, \$15M
- ~~5 = Franklin Ave Consolidation, \$15M~~
- 6 = CRR1 extension, \$6M
- 7 = Granby St Storage Conduit, \$2M
- 8 = PRAC conversion, \$25M
- 9 = Tunnel, ~~\$140M~~ **\$112M**
- 10 = Consolidation conduits, \$72M

TOTAL = \$671M



CSO Long Term Control Plan SSO Abatement Program Nitrogen Reduction Plant Imp

I/I Reduction, \$40M
Sewer Separation, \$294M
HWPCF Improvements, \$105M
Gully Brook Disconnection, \$15M
CRR1 extension, \$6M
Granby St Storage Conduit, \$2M
PRAC Conversion, \$25M
Tunnel, \$112M
Consolidation Conduits, \$72M
CSO TOTAL = \$671 Million

SSO Estimate = \$250+ Million
Nitrogen Reduction = \$125 Million



— = Consolidation Piping

CTDEP and USEPA Require CSO Discharge Abatement

- **District signed a Consent Order from Connecticut Department of Environmental Protection (CTDEP) in October 2002**
- **Consent Order implements Clean Water Act**
- **Control Plan for mitigating impacts of sewage discharges Is Required**
- **District submitted a Draft Control Plan to CTDEP in December 2004**
- **Likely Approval with 15 year Schedule**

EPA/DOJ MANDATING CONSENT DECREE REQUIREMENTS

- **Initial Information Requests in 2004**
- **Federal Order and Penalty Ordered in Early 2005**
- **Negotiated Consent Decree Terms**
 - **Elimination of All SSO's in 7 to 12 years**
 - **Penalty Fine, with State Share Addressing specific abatement requirements**
 - **Major Increase in Operations Requirements**
 - **Final Document signing in March 2006**

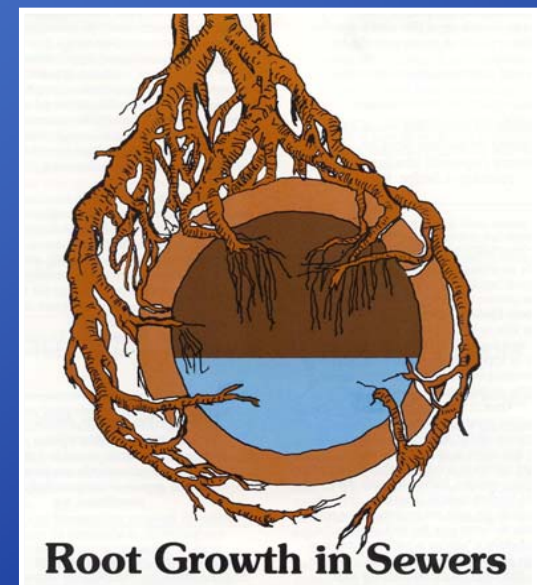
The District initiated an aggressive SSO elimination program in March 2005

- Flow monitoring of over 100 sites
- Review of previous studies & reports
- Building an infrastructure database from District records
- Any recommendations must be consistent with the District's Long Term CSO Control Plan
- Development of short and long term actions to address SSOs



Preliminary findings of Spring 2005 work

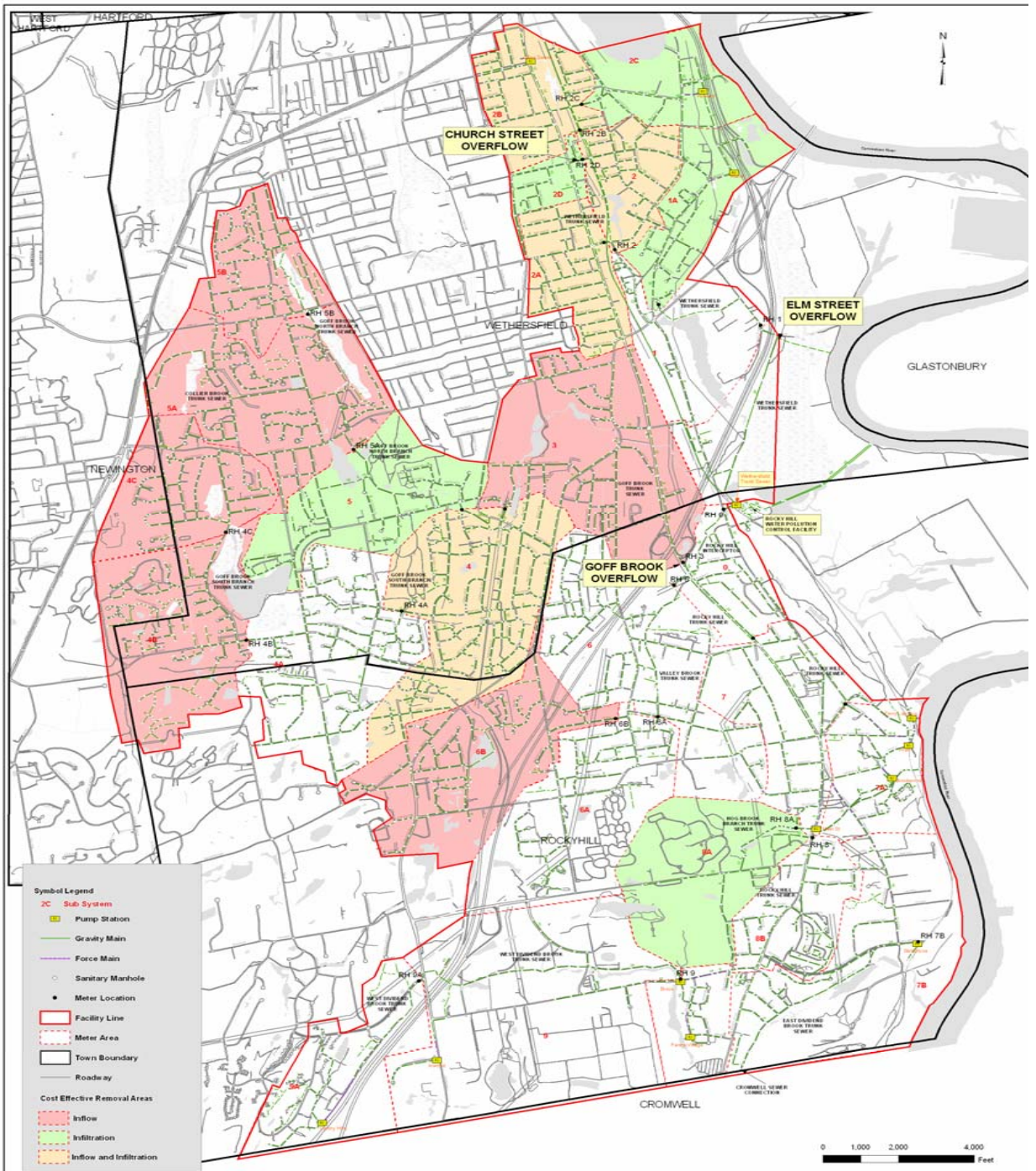
- West Hartford – infiltration and inflow are a major problem
- Newington – infiltration and inflow are a major problem
- Windsor – river inundation is a major problem, previous District rehabilitation has been effective
- Rocky Hill – inflow is a major problem
- Wethersfield – inflow is a major problem



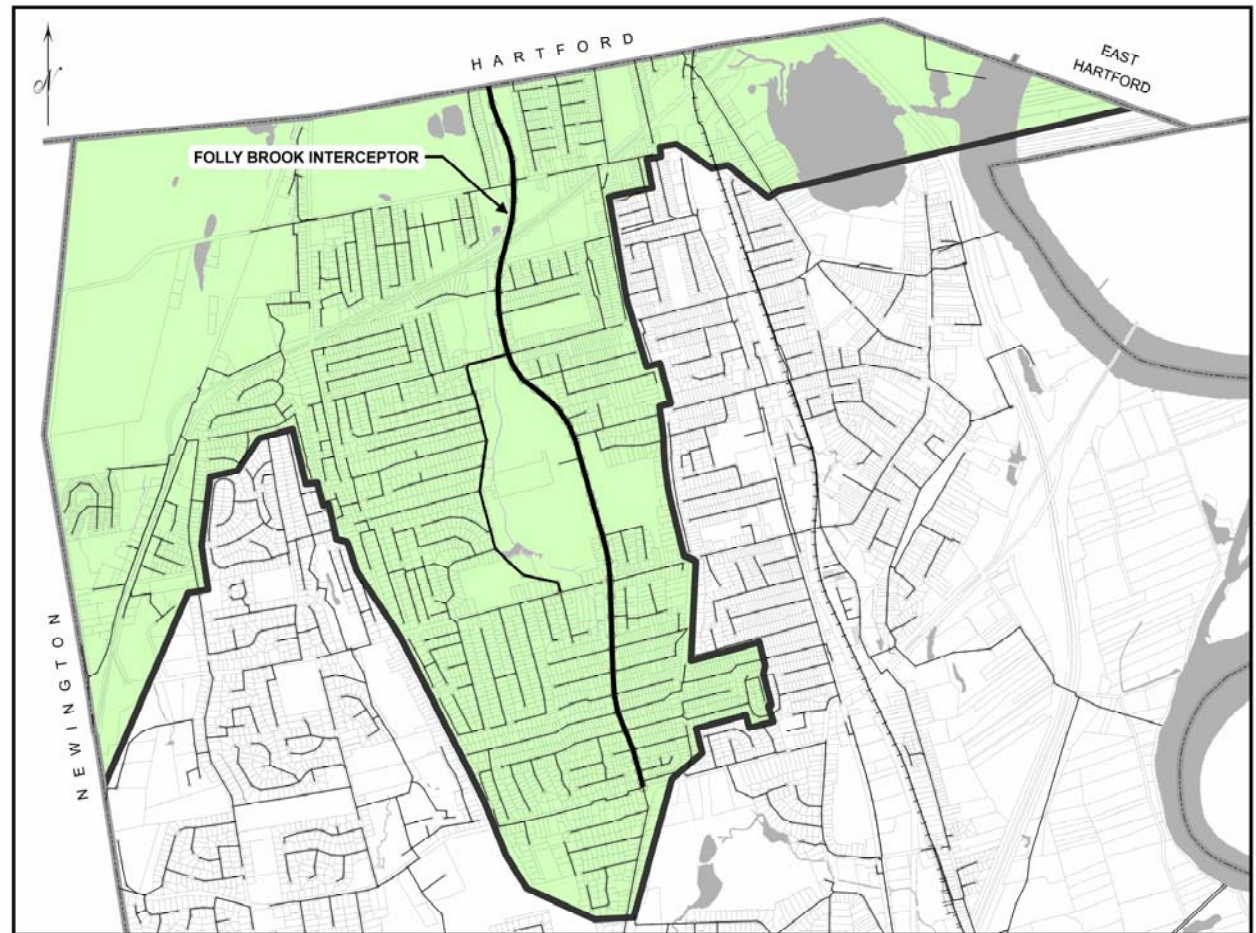
SSO Study Summary of Findings

Town	Infiltration		Inflow		RII		Wastewater		Total Flow	
	Avg.	Peak	Avg.	Peak	Avg.	Peak	Avg.	Peak	Avg.	Peak
West Hartford	9.62	14.27	3.36	45.65	0.76	10.33	4.43	8.37	18.17	57.49
Newington	3.33	4.49	1.13	15.30	0.36	4.82	2.35	8.39	7.13	23.90
Windsor	3.05	4.27	0.72	13.49	0.18	3.37	1.42	1.99	5.37	16.65
RH/ Wethfld	5.24	7.34	1.38	22.62	0.35	5.66	3.12	4.37	10.09	28.93

Rocky Hill/ Wethersfield Summary of Findings



**Wethersfield's
Folly Brook
Area Inflow Is
A Major
Contributor to
the District's
Wethersfield
Cove Problem**



Status of EPA SSO CD Negotiations

- **MDC and EPA Finalizing a Consent Decree**
- **Consent Decree complete in early March 2006.**
- **SSO Elimination schedule**
 - 7 years – Windsor, Rocky Hill, Wethersfield
 - 12 years – Newington, West Hartford
- **Coordinate SSO removals with CSO LTCP solutions**

SSO Program Continues

- Phase 2 – SSES/SSO Elimination started August 2005
 - Smoke testing conducted in Newington completed 9/23/05
- Above ground survey for Newington, West Hartford, Windsor, Wethersfield, and Rocky Hill completed
 - Interceptors in Windsor, Wethersfield, and Rocky Hill are in low lying areas inundated by high groundwater condition and the CT River
 - Numerous manholes found to be significant inflow source
 - **However, private inflow still a substantial source**

SSO Program Will Continue to 2007+

- **Remaining work to be done for Phase 2**
 - **Smoke testing in West Hartford**
 - **Dye testing to find public inflow sources**
 - **Finalize construction contracts for Windsor, Rocky Hill, and Wethersfield**
 - **Prepare remaining construction contracts for Newington and West Hartford**

Private Inflow Reduction is the Most Important Tactic To Reduce Program Costs

- Obtaining property owner and resident permission to implement sewer Re-plumbing
- Establish a MOU with Communities for Inhouse inspections
- Without Inflow Reduction, major CSO Facility Impacts

WEST HARTFORD & NEWINGTON FLOWS IMPACT THE CSO PLANS

West Hartford
 $Q_{10} = 41\text{mgd}$

WEST HARTFORD OVERFLOWS

Total Flow
(West Hartford & Newington)
 $Q_{10} = 58\text{mgd}$

NEWINGTON OVERFLOWS

Newington
 $Q_{10} = 17\text{mgd}$

EXISTING SYSTEM CAPACITY = 23 MGD

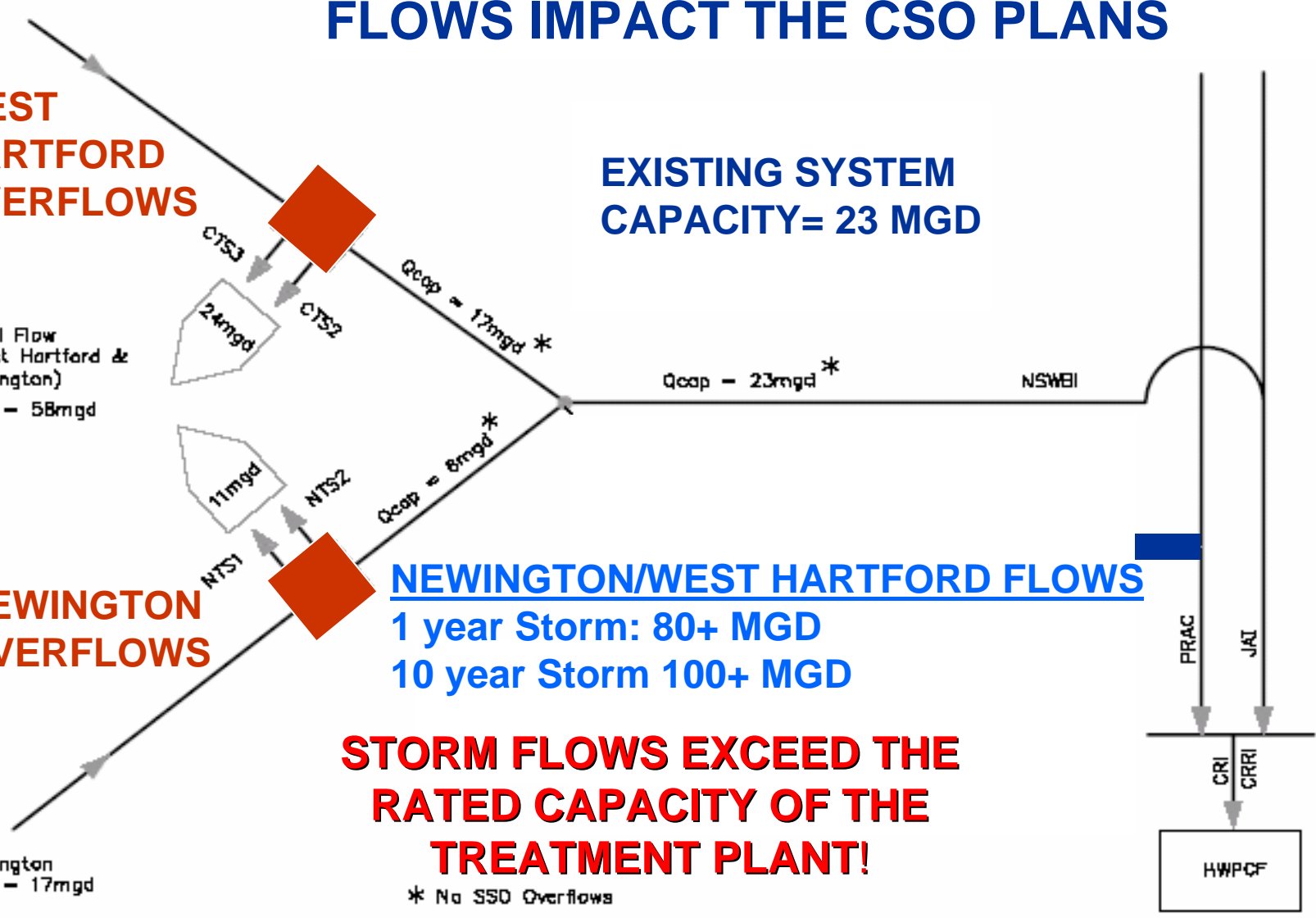
NEWINGTON/WEST HARTFORD FLOWS

1 year Storm: 80+ MGD

10 year Storm 100+ MGD

STORM FLOWS EXCEED THE RATED CAPACITY OF THE TREATMENT PLANT!

* No SSD Overflows



The Metropolitan District Capital Needs Are Significant

CSO Compliance	\$671 Million
SSO Compliance	250 Million?
<u>WPCF Nitrogen Upgrade</u>	<u>125 Million</u>
TOTAL	\$1.0+ Billion!

...in addition to the District's ongoing
repair and replacement program.

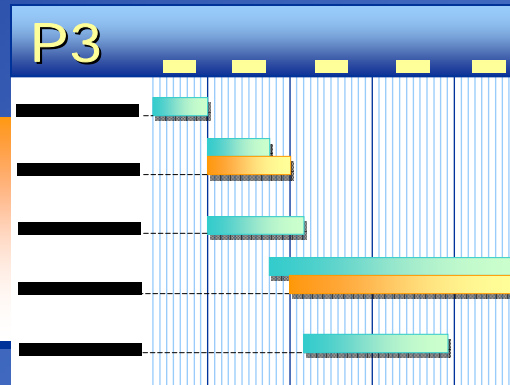
What Are MDC's Current Program Critical Success Factors?

- Developing and Maintaining Community Support
- Creating A Success-Driven, "Can-Do" Image
- Controlling the EPA and DOJ
- Showing "Austere" Financial Acumen
- Getting Referendum Approval
- Developing a Sense of Project "Legacy"
- Managing Organization Change

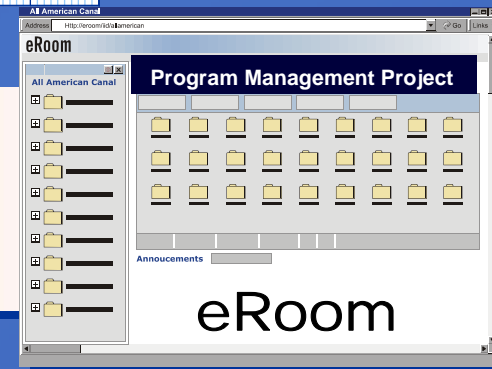
State Of the Art Program Management For the CSO/SSO Infrastructure Investment

- **Maintain owner control and supervision of the \$1+ Billion CSO/SSO Plus Nitrogen Projects**
- **Project Values From \$5 to \$150 million**
- **More than 400 Contracts—Consultants, Contractors, others**
- **Consent Order Deadlines of 7, 12 and 15 years**
- **Annual Project Investments Greater Than Total of 1992 Referendum**

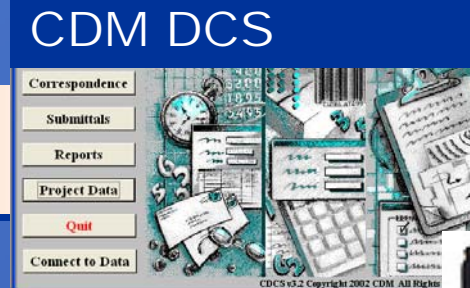
- Managing critical tasks
- Controlling the budget



- Communicating with all interested parties
- Documenting the project



- Supporting timely decisions

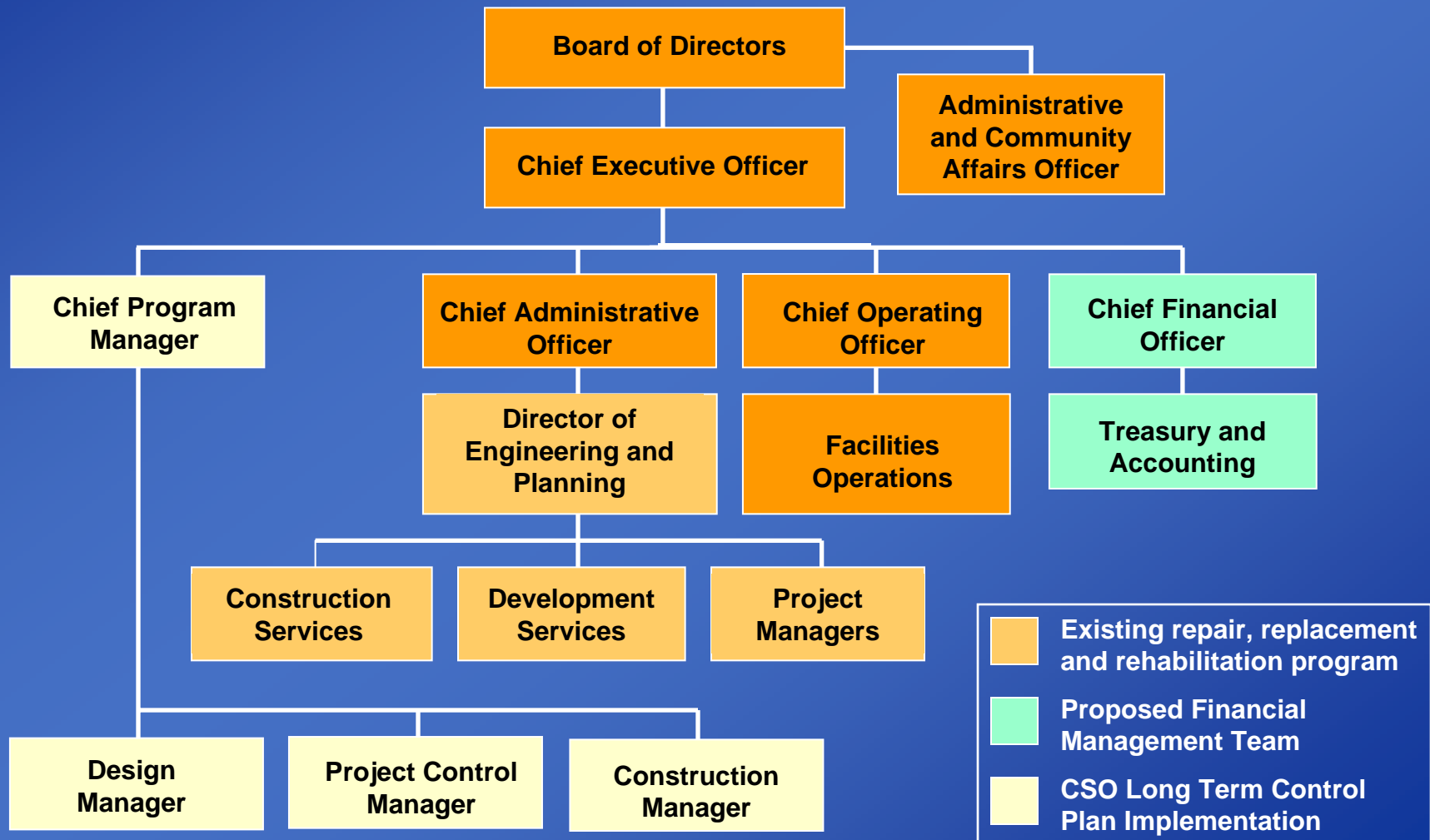


- Collecting and managing data



The Metropolitan District Clean Water Program

Program Management Organization



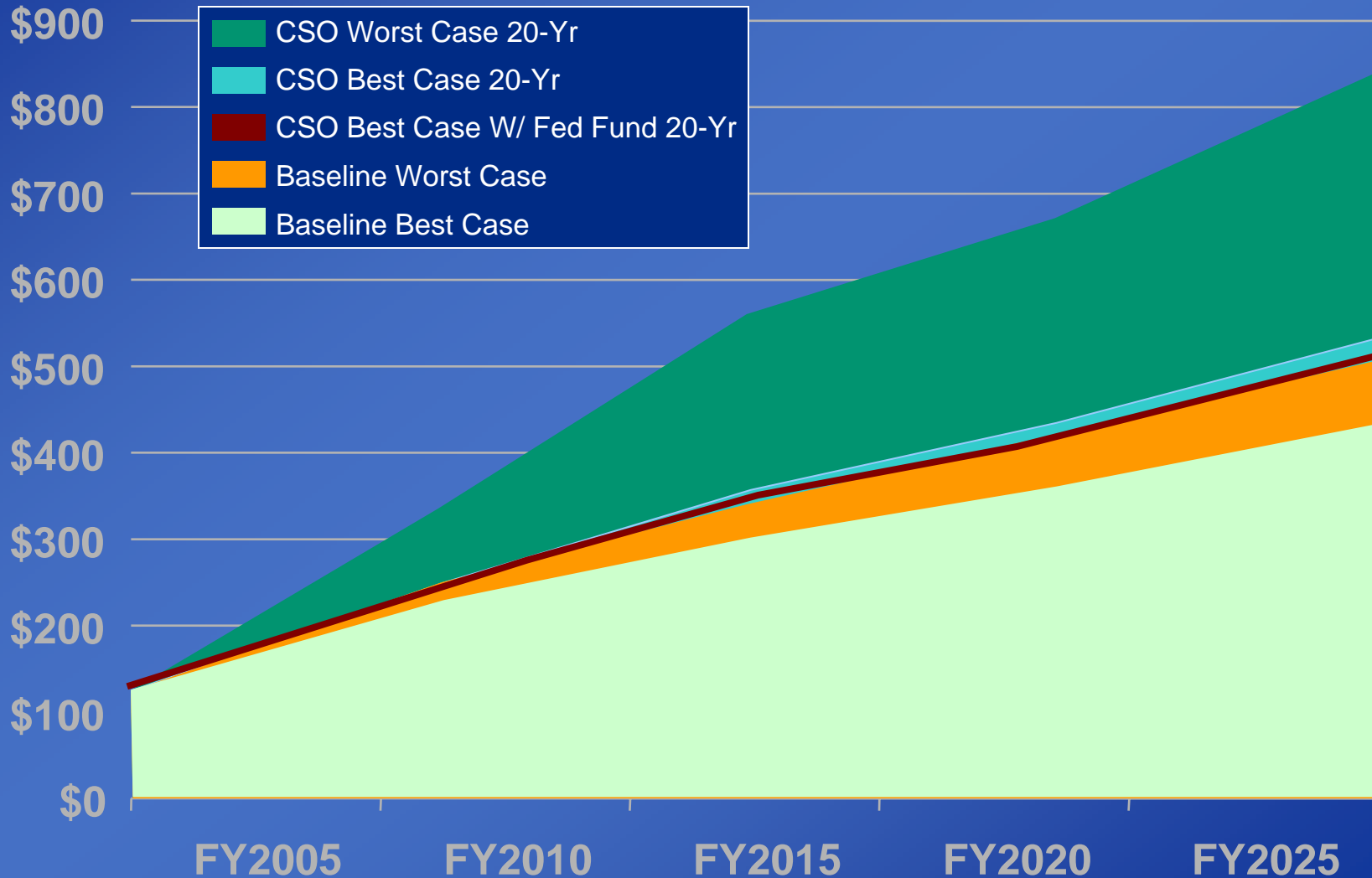
The District's Clean Water Program Organization Will Rely On Consultants

- **Utilize Professional Service Firms to Finalize Project Concept and Budgets**
- **Establish Lead Design and Program Management Consultant To Handle Initial Peak Loads**
- **Develop Local Consultant Support Team, including DBE/MBE/WBE**
- **Bring On Construction Oversight Services as Needed to Support Construction Activity**

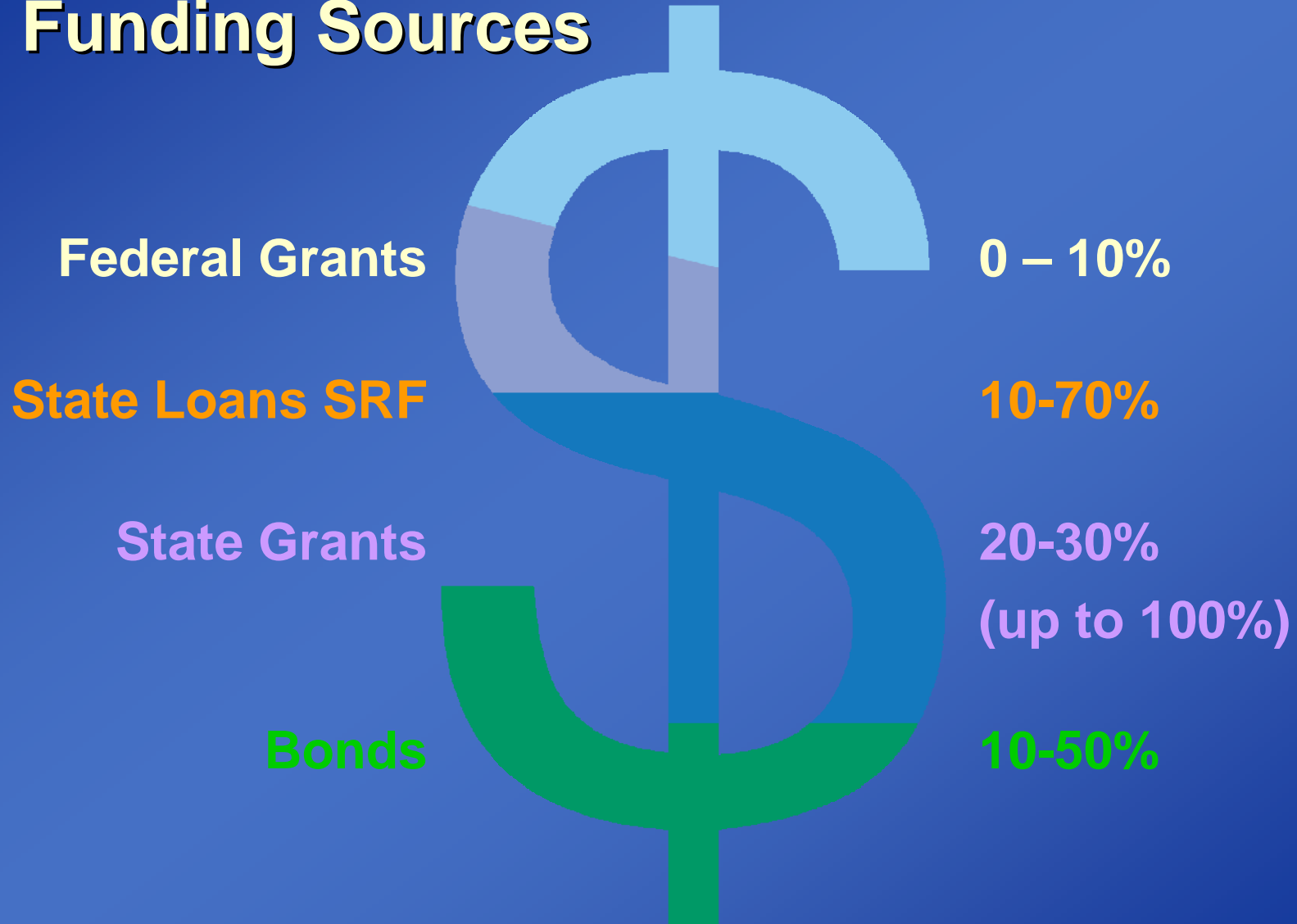
What Can The District Do To Control Costs?

- Standardized Design
- Prequalification of Engineers and Contractors
- Negotiate MOU's with District Communities
- Program Management Organization

District Average Annual Household Sewer Costs



The District Is Seeking State/Federal Funding Sources



Pre-Referendum Schedule

ACTIVITY

COMPLETION DATE

Obtain State DEP Approval	Winter, 2006
Develop "Communications" System	Winter, 2006
Confirm CSO/SSO Concepts	Mar, 2006
Formalize Project Cost Estimate	May, 2006
Address Public Concerns	Jun-Nov 2006
Submit Final Referendum	July 1, 2006
Finalize 2007 Final Design Doc's	Oct, 2006
Referendum Vote	Nov, 2006

The Metropolitan District Clean Water Program Schedule

2007—2018: SSO Abatement Programs

2007—2010: PRAC Reuse?

2007—2012: Wastewater Treatment Plant

2007—2022: Separation Projects

2010—2020: Relief, Consolidation Conduits

2015—2022: Storage Tunnel

General Referendum Campaign

- Develop Consistent Themes, Messages
- Focus Group Polling to Evaluate Message
- Encourage “Established Group” Advocacy
- Educate Local Activist Groups
- Develop “Local Editorial” Image
- Actively Inform Political Campaigns
- Educate...Educate...Educate

Integrate Community And Utility Projects

- 1. Request District Community CIP and General Planning Scopes and Dates**
- 2. Coordinate Utility CIP Programs**
- 3. Improve GIS System Capabilities**
- 4. Empower CAC To Identify Local Needs**
- 5. Compile District-wide CIP Report**

Develop Environmental Sensitivity Plan

- 1. Empower CAC To Identify Local Needs**
- 2. Select Project Opportunities For FY 06/07**
- 3. Estimate Project Design Impacts**
- 4. Estimate Project Cost Impacts, and Potential Revenue Sources**
- 5. Recommend Project Opportunities To District Board**

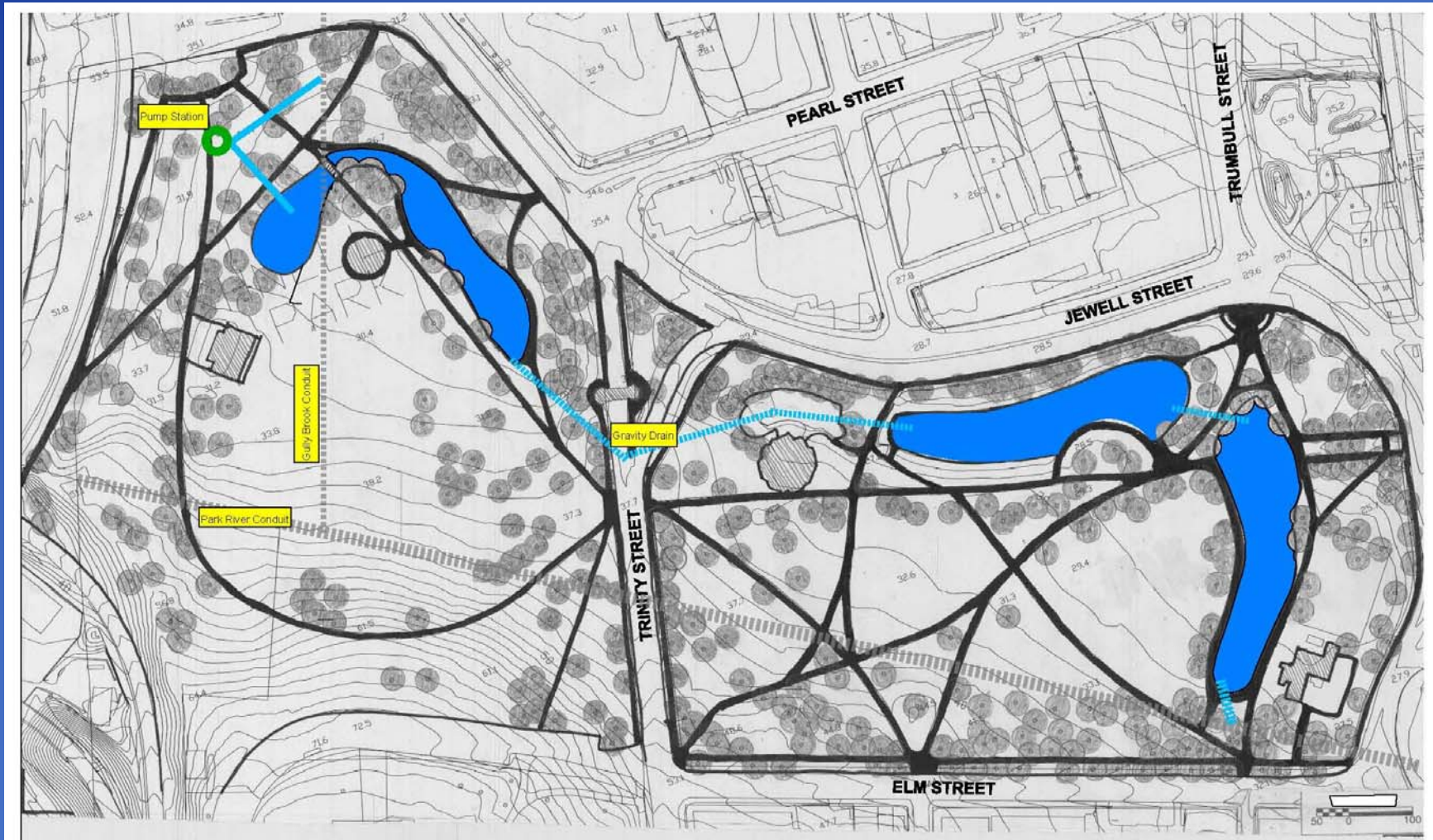
Develop Communication Systems

- Public Information Website
- Stakeholder Newsletters
- Press Releases, News Articles
- Public Service Announcements

Win-Win Benefits: Legacy Actions

- **Park Improvements—eg, Bushnell Park**
- **Roadway Improvements—City Coordination**
- **Potential Derelict Property Restoration?**
- **Integrate City Streetscape Enhancements**
- **Coordinate with Other Projects**

The District's Program Will Spawn Opportunities For Other Improvements.



CDM

**WATER FEATURE ENHANCEMENTS CONCEPT
BUSHNELL PARK**

DECEMBER 2005

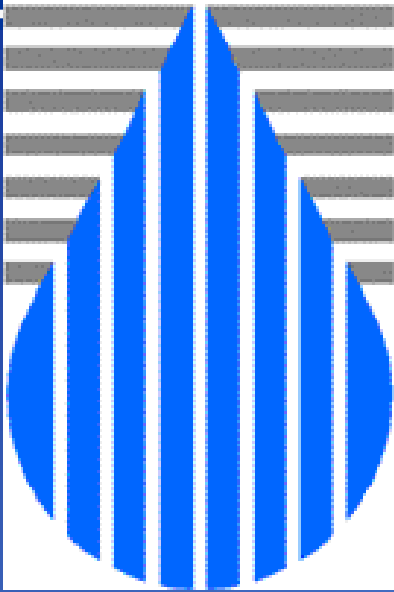
Stakeholder Involvement

- Develop District Community DPW Advisory Committee
- Restore Citizen Advisory Committee
- Establish Community Executive Committee
- Citizen Polling, “Concern” Assessments

Coordination With Hartford Is Essential To Program Success.

- **“Do No Harm” Approach**
- **Hartford’s Support for the Program Referendum**
- **District Effort To Minimize Impact to City’s Populous and Business Communities**
- **Effective Coordination With City Agencies**
- **Streamlining Approval Processes**
- **Establishing Design Standards**
- **Facilitating City-wide Revitalization Efforts**

MDC



QUESTIONS?

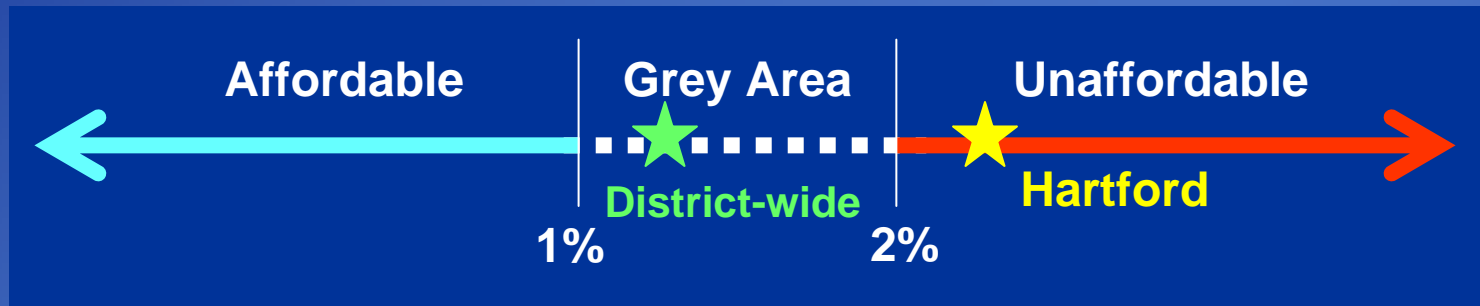
Communication Plan Goals

- Demonstrate District's "go to" capability to implement large sophisticated projects
- Publicly demonstrate basis for need, scope and cost of CSO LTCP
- Prove Program's District-wide values
- Effectively demonstrate project success
- Referendum Campaign Program

District Affordability Worst Case with CSO Program 20 – Year Plan

	FY2005	FY2010	FY2015	FY2020	FY2025
Estimated Household Sewer Cost	\$119	\$332	\$556	\$666	\$826
% of MHI (MDC Average)	0.23%	0.62%	0.99%	1.12%	1.30%
% of MHI (Hartford)	0.42%	1.11%	1.77%	2.01%	2.34%

EPA Household Affordability Criteria Worst Case Projection 20- Year Plan



Typical Household Sewer Cost

Median Household Income

District Affordability Best Case with CSO Program 20 – Year Plan

	FY2005	FY2010	FY2015	FY2020	FY2025
Estimated Household Sewer Cost	\$119	\$254	\$358	\$428	\$523
% of MHI (MDC Average)	0.23%	0.47%	0.64%	0.72%	0.81%
% of MHI (Hartford)	0.42%	0.85%	1.14%	1.29%	1.45%

EPA Household Affordability Criteria Best Case Projection 20 – Year Plan



Typical Household Sewer Cost
Median Household Income

District Affordability Best Case with CSO Program + Federal Funding 20 – Year Plan

	FY2005	FY2010	FY2015	FY2020	FY2025
Estimated Household Sewer Cost	\$119	\$249	\$347	\$412	\$500
% of MHI (MDC Average)	0.23%	0.46%	0.62%	0.70%	0.77%
% of MHI (Hartford)	0.42%	0.83%	1.10%	1.24%	1.39%

EPA Household Affordability Criteria Best Case Projection + Federal Funding 20 – Year Plan



Typical Household Sewer Cost
Median Household Income

SSO Requirements for 2006-2007

- Capacity, Management, Operation and Maintenance - CMOM compliance Report
- Long-Term Preventative Maintenance Program
- Hydraulic Model and Model Report of SSO Communities
- Sanitary Collection System Capacity Assessment
- Assessment of Voluntary I/I Removal Incentive Programs
- Additional Extraneous Flow Investigations
- SSES field activities: Smoke testing, Dye testing, Manhole Inspections (inflow/infiltration), Flow isolation Groundwater TV inspections Building inspections (locate private inflow sources), evaluate cost effective methods of sewer rehabilitation and new sewer facilities.