



NYC CSO Long Term Control Plan

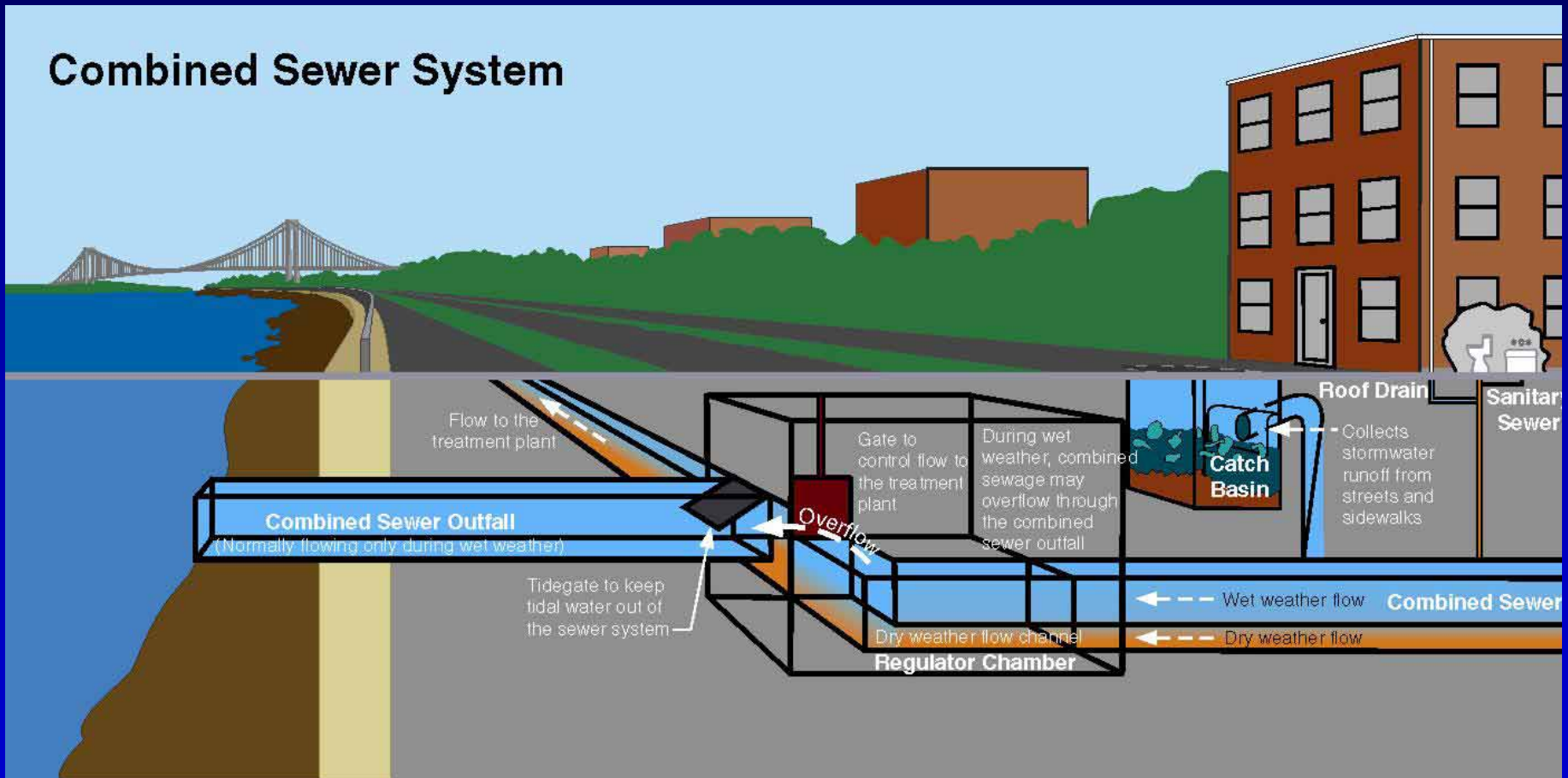
Harbor Estuary Program Citizen's Advisory Committee Meeting

October 11, 2006



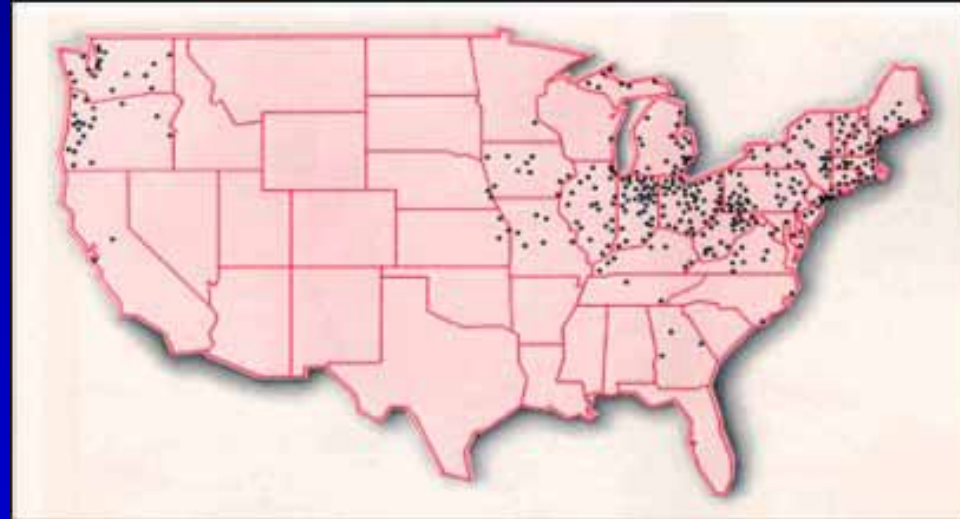
What is A CSO?

Combined Sewer System



CSOs: A National Perspective

- **746 CSO Communities**
- **32 States**
- **40 Million People**
- **9,300 CSO Discharges**
- **850 BG/yr**
- **\$50 Billion in CSO Needs**



Location of WPCPs & CSOs in NY Harbor

- 14 WPCPs
- 450 CSOs
- 4800 miles of combined sewers



EPA's CSO Policy

Nine Minimum Controls (NMC)

- Proper Operation And Maintenance
- Maximum Use Of Collection System For Storage
- Review Of Pretreatment Requirements
- Maximization Of Flow To The POTW For Treatment
- Prohibition Of CSOs During Dry Weather
- Control Of Solid And Floatables Material
- Pollution Prevention
- Public Notification
- Monitoring Of CSO Impacts And Efficacy Of Controls

Long-Term Control Plan Elements

- **Characterization, Monitoring and Modeling**
- **Public Participation and Agency Interaction**
- **Consideration of Sensitive Areas**
- **Evaluation of Alternatives**
- **Cost/Performance Considerations**
- **Operational Plan**
- **Maximizing Treatment at POTW**
- **Implementation Schedule**
- **Post-Construction Compliance Monitoring Program**

NYCDEP/NYSDEC CSO Consent Order

Elements of Renegotiated Consent Order

- **Addresses Non-Compliance with 1992 Consent Order and Clarifies Goals and Process**
 - ▶ **DEP will be in compliance with State Law and CSO Control Policy**
 - ▶ **Settles Past Violations**
 - ▶ **Adds \$1.5M of Environmental Benefits Projects**
 - **Specific projects yet to be determined by the Natural Heritage Trust**
- **Establishes New Milestones for Planning Process**
 - ▶ **Develop Waterbody/Watershed Facility Plans**
 - ▶ **Followed by Submissions of Long-Term Control Plans**
 - ▶ **Implementation of Facility Plans**
 - ▶ **Review and Revision of Water Quality Standards**
 - ▶ **Replace generic compliance schedules with project specific milestones**
- **Funding of Up to 4 Environmental Monitors**
- **Streamlined Process to Resolve Issues**

CSO Construction Schedule

- Hundreds of Milestones Are Included in the 2005 Consent Order for Planning, Design, Construction and Permitting Activities

WATERBODY	ITEM DESCRIPTION	NOTICE TO PROCEED	CONSTRUCTION COMPLETION
Alley Creek	- Outfall and Sewer System Improvements	Dec 2002	Dec 2006
	- CSO Retention Facility	Dec 2006	Dec 2009
Outer Harbor	- Regulator Improvements - Fixed Orifices	Feb 2006	Jul 2008
	- Regulator Improvements - Automation	Nov 2007	Jun 2010
	- Port Richmond Throttling Facility	Jun 2006	Dec 2008
	- In-Line Storage	Aug 2007	Aug 2010
Inner Harbor	- Regulator Improvements - Fixed Orifices	Feb 2003	Apr 2006
	- Regulator Improvements - Automation	Nov 2007	Jun 2010
	- In-Line Storage	Aug 2007	Aug 2010
Paerdegat Basin	- Influent Channel	Feb 1999	Feb 2002
	- Foundations and Substructures	Jun 2002	Dec 2006
	- Structures and Equipment	Sep 2005	Aug 2011
Flushing Bay	- CS4-1 Reroute and Construct Effluent Channel	Jun 1995	Jun 1996
	- CS4-2 Relocate Ballfields	Apr 1995	Aug 1995
	- CS4-3 Storage Tank	Jul 1997	Aug 2001
	- CS4-4 Mechanical Structures - Initiate Final Design	Mar 2002	Dec 2004
	- CS4-5 Tide Gates	Dec 2000	Apr 2002
	- CD-8 Manual Sluice Gates	Feb 2004	Jun 2005

CSO Construction Schedule

WATERBODY	ITEM DESCRIPTION	NOTICE TO PROCEED	CONSTRUCTION COMPLETION
Jamaica Tributaries	- Meadowmere & Warnerville DWO Abatement	Mar 2006	Mar 2009
	- Expansion of Wet Weather Capacity of Jamaica WPCP	Jun 2012	Jun 2015
	- Destratification Facility	Aug 2007	Dec 2008
	- Regulator Automation	Nov 2007	Jun 2010
Coney Island Creek	- Avenue V Pumping Station Upgrade	Nov 2005	Apr 2011
	- Avenue V Force Main	Jul 2007	Jun 2012
Newtown Creek	- Aeration Zone I	Dec 2005	Dec 2008
	- Aeration Zone II	Jun 2011	Jun 2014
	- Relief Sewer / Regulator Modification	Jun 2010	Jun 2014
	- Throttling Facility	Jun 2009	Dec 2012
	- CSO Storage Facility	Dec 2015	Dec 2022
Westchester Creek	- Phase I (Influent Sewers)	Jun 2011	Jun 2015
	- CSO Storage Facility	Dec 2015	Dec 2022
Bronx River	- Floatables Control	Jun 2009	Jun 2012
Hutchinson River	- Phase I of the Storage Facility	Jun 2011	Jun 2015
	- Future Phases	Dec 2016	Dec 2023
Jamaica Bay	- Spring Creek AWPCP Upgrade	Mar 2003	Apr 2007
	- 26th Ward Drainage Area Sewer Cleaning and Evaluation	Jun 2008	Jun 2010
	- Hendrix Creek Dredging	Jun 2008	Jun 2010
	- 26th Ward Wet Weather Expansion	Jun 2011	Dec 2015

Original vs. Revised Orders

1992 CSO Consent Order

- **Construct 8 Tanks (Track 1)**
 - ▶ Flushing Creek
 - ▶ Paerdegat Basin
 - ▶ Alley Creek
 - ▶ Newtown Creek
 - ▶ Hutchinson River
 - ▶ Westchester Creek
 - ▶ Bronx River
 - ▶ Fresh Creek
- **Test & Implement Floatables Controls (Track 2)**
 - ▶ Pilot test floatables controls
 - ▶ Perform Catch basin inventory
 - ▶ Construct Corona Avenue Vortex Facility
 - ▶ Implement interim booming/skimming

2004 CSO Consent Order

- **Construct 6 Tanks**
 - ▶ Flushing Creek
 - ▶ Paerdegat Basin
 - ▶ Alley Creek
 - ▶ Newtown Creek
 - ▶ Hutchinson River
 - ▶ Westchester Creek
- **Floatables Controls**
 - ▶ Bronx River
 - ▶ Gowanus Canal
- **Wet Weather Capacity Upgrades**
 - ▶ +50 MGD 26th Ward WPCP (Fresh Creek)
 - ▶ +50 MGD Jamaica WPCP (Bergen Basin/Thurston Basin)
 - ▶ +10 MGD Gowanus Pump Station
- **Sewer System Improvements**
 - ▶ Regulators, tide gates, throttling facilities
 - ▶ Build-out of separate sewers

Memorandum of Understanding

- **DEP and DEC Have Entered into an MOU in Connection with the Consent Order that Covers the Following Efforts:**
 - ▶ **Review Site-specific Regulatory Options**
 - ▶ **Seek Revision of Waterbody Classifications and WQ Standards If Appropriate consistent with 2000 amendment to the CWA and 2001 guidance**
- **DEP Work Effort**
 - ▶ **Preparing, Revising and Implementing Facility Plans for CSO Abatement**
 - ▶ **Use Watershed Based Approach to Determine Any Causes of Non-Attainment of WQ Standards**
 - ▶ **Plans May Provide Technical Framework for Use Attainability Analyses (UAAs)**
 - ▶ **Produce UAA Reports as Needed**
 - ▶ **Petition DEC for WQ Standards Review and Revision as Appropriate**

Memorandum of Understanding (Cont.)

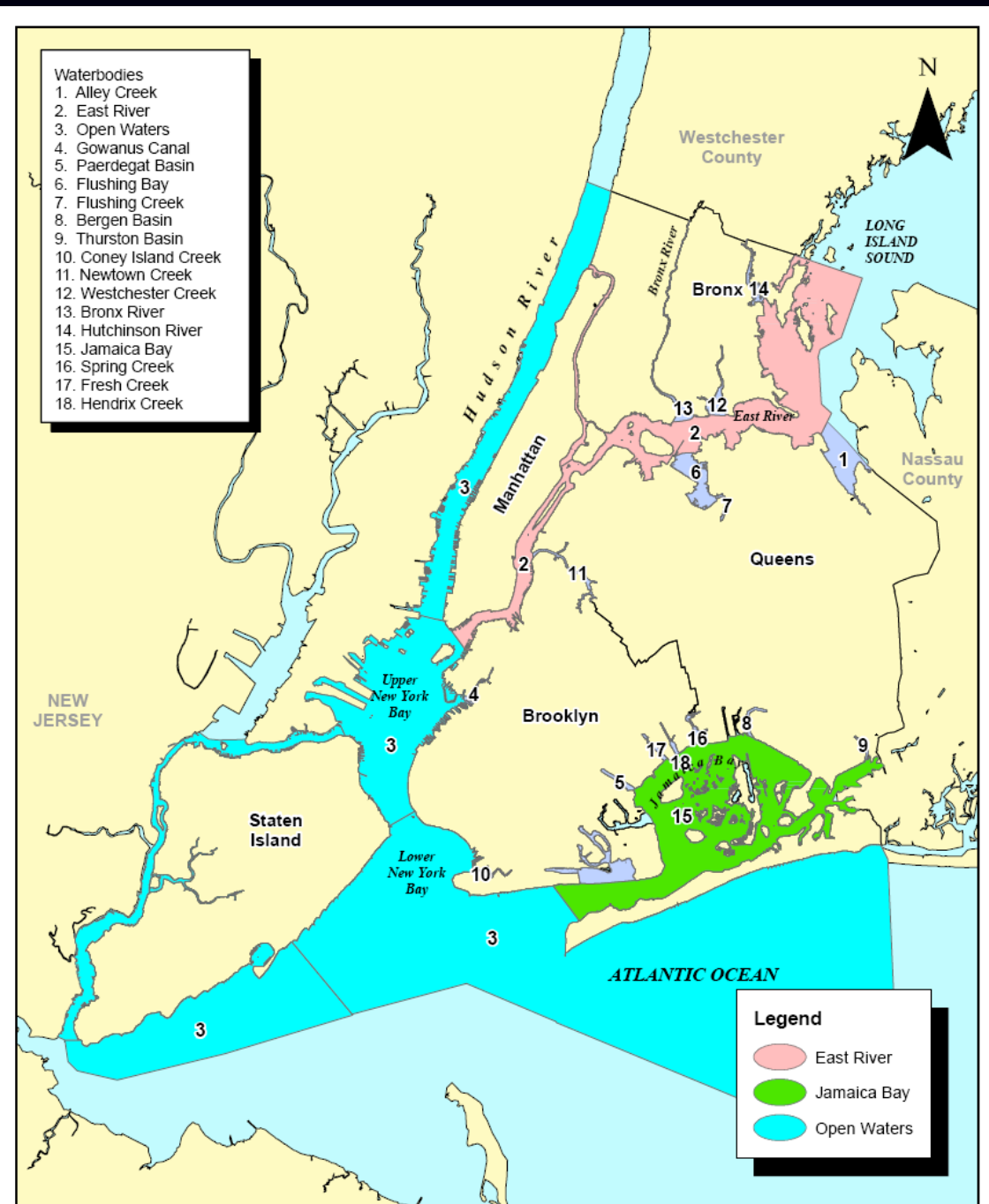
- **DEC Work Effort**
 - ▶ **Will Work with DEP in Development of the Waterbody Plans and UAA Reports**
 - ▶ **If Regulatory Review and Revision Process Is Not Complete by the End of Construction of Approved Facilities, DEP May Apply for a Variance When DEC Seeks to Revise the SPDES Permit**
- **DEP Funding for DEC Activities**
 - ▶ **\$1 Million for Procurement of Independent Consultant Services to Support the Review and Analysis of Facility Plans and UAA Reports**

Summary

- **Draft 2003 SPDES Permits Meet All of the Nine Minimum Control Requirements of the EPA CSO Control Policy**
- **The 2004 CSO Consent Order Requires Development of a CSO LTCP in Compliance with the 2000 Amendment to the CWA**
- **The Work the City is Committing to Far Exceeds that Required under the 1992 Consent Order**
 - ▶ **More money being spent**
 - ▶ **CSO capture is greater**
 - **Untreated CSO will be much lower than that estimated under the 1992 Order**
 - ▶ **NYC is taking a holistic approach to CSO control that incorporates knowledge gained since the 1992 Order was signed including CSO abatement measures beyond retention tanks**

Scope of Open Waters Areas

Extent of Open Waters

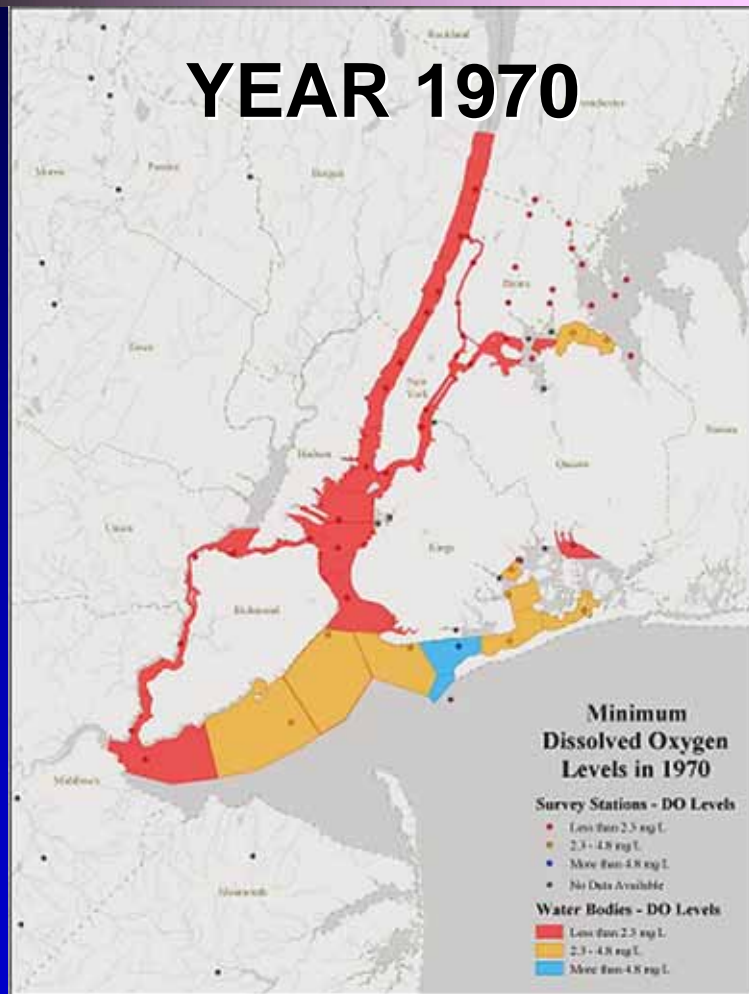


Uses Supported in Marine Waters (NYSDEC)

- Shellfishing
 - ▶ Class SA
- Public Bathing
 - ▶ Class SB
- Fish Consumption
 - Fish/Aquatic Life Protection
 - Recreation
 - Aesthetics
 - ▶ All Waters



Dissolved Oxygen Improvements



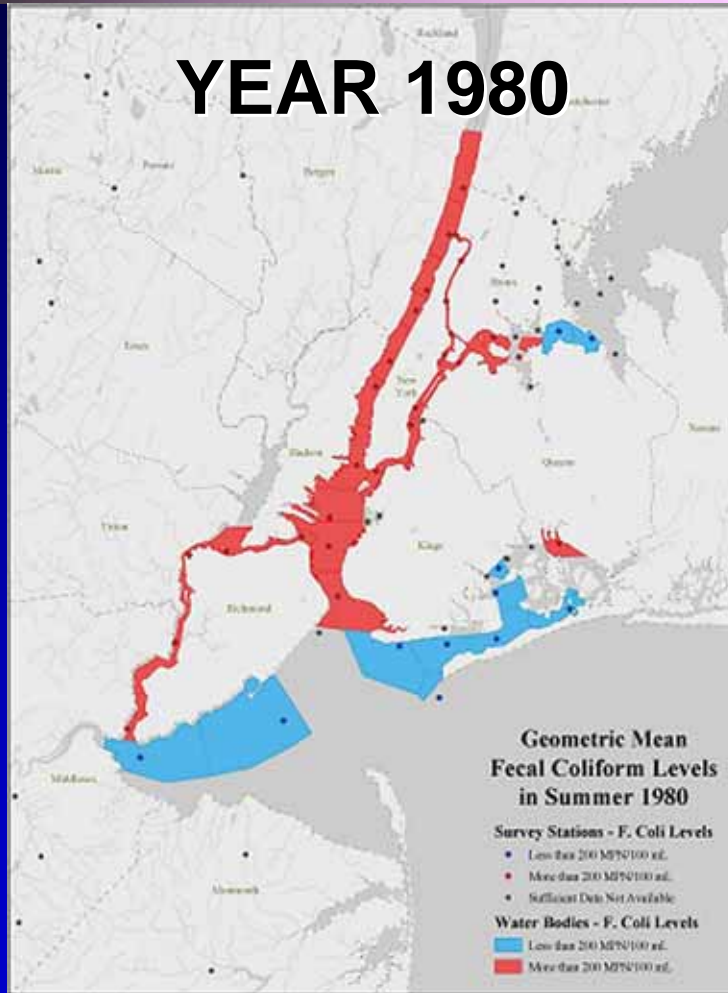
 Dissolved Oxygen < 2.3 mg/L

 2.3 mg/L < Dissolved Oxygen < 4.8 mg/L

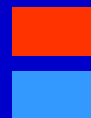
DRAFT:  Dissolved Oxygen > 4.8 mg/L

Coliform Bacteria Improvements

YEAR 1980



YEAR 2000



Fecal Coliform Geometric Mean > 200 MPN/100 ml

Fecal Coliform Geometric Mean < 200 MPN/100 ml

Bathing Uses in NYC Waters

- **Primary Contact Water Quality Is Attained in Open Waters with Current State Criteria**
- **New York City Supports Designated Bathing Beaches at Multiple Locations**
- **Access to the Water Is Limited on Much of the Shoreline**



Designated Bathing Beaches in New York Harbor



Coney Island Beach

Bathing May Not Be Appropriate for Some NYC Waters

Some Waters May Be Unsafe/Unsuitable for Bathing Beaches

- **Harlem River**
 - ▶ bulkheaded
- **Lower East River**
 - ▶ bulkheaded
 - ▶ high velocity currents
 - ▶ deep waters
 - ▶ frequent large vessel traffic
- **Kills**
 - ▶ heavy maritime traffic use



NYC's CSO Abatement Program

- **Constructed Spring Creek CSO Retention Tank in 1972 (18 MG)**
- **Nine Minimum Controls Implemented**
- **Reduced Sewer System Bypasses by 99%**
- **Increased Wet Weather Capture to 72%**
- **City-Wide Floatables Control Program**
 - ▶ **Inventory, cleaning & re-hooding of 130,000 catch basins**
 - ▶ **End-of-pipe floatables containment of 64% of the CSO area**
 - ▶ **4 tributary and 1 open water skimmer vessels**



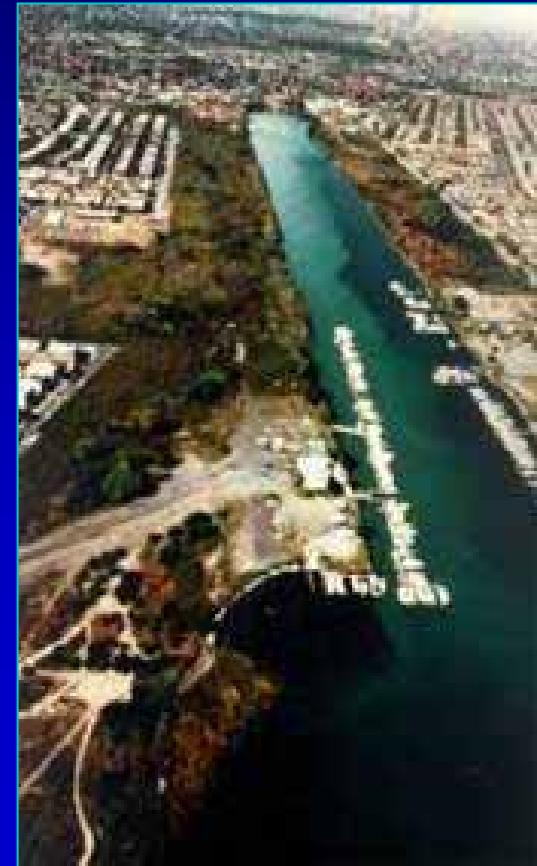
NYC's CSO Abatement Program (Cont.)

- **Ongoing CSO Facility Planning**
 - ▶ **Three CSO Retention Tanks Under Construction (98 MG total capacity - \$757M)**
 - ▶ **Three additional CSO retention tanks are being planned**
 - ▶ **Other controls – additional wet weather capture, in-line storage, SCADA and regulator automation, plant and pump station expansion, additional floatables control, in-stream aeration, dredging**



Priority CSO Impacts Are in Urban Tributaries

- **Key Characteristics**
 - ▶ Large highly developed/impervious watersheds
 - ▶ Minimal dilution in highly modified, confined waters
- **Impacts and Use Impairments Are Significant**
 - ▶ Aquatic life - hypoxia
 - ▶ Primary contact - high bacteria
 - ▶ Aesthetics – floatables/odor
 - ▶ Sedimentation
- **Fishable/Swimmable Uses Can Not Be Attained at All Times**
 - ▶ Need to determine the “appropriate” beneficial uses
- **Knee-of-the-Curve Approach Is Applicable To Determine Appropriate Level of Use**



Features of NYC's LTCP Project

- **Significant Resources Committed**
 - ▶ Comprehensive, coordinated effort
 - ▶ Multi-year planning
- **Waterbody / Watershed Assessments**
 - 15 urban tributaries
 - 3 open water areas
- **Open Waters CAC Includes representatives from numerous Stakeholder groups**



Features of NYC's LTCP Project (Cont.)

- **Applies EPA's Guidance To Coordinate CSO LTCP Planning with WQSRR Process**
- **Data Collection, Modeling and Engineering Evaluations in Each Area**
- **Project Goals**
 - **Identify current and desired water-based and shoreline uses**
 - **Identify appropriate attainable uses with public/community involvement**
 - **Reconcile water quality standards to highest reasonably attainable uses**
 - **Provide basis for potential UAA**
 - **Develop Long Term Control Plans**

NYC's Approach to CSO Planning

- **Apply Mathematical Models and Good Engineering for the Technical Approach to CSO Control**
- **Use the Knee-of-the-Curve Approach To Define Cost-Effective Solutions and Reasonably Attainable Water Uses**
- **Seek To Obtain Public / Regulator Input**
- **Use the LTCP Water Quality Review & Revision Process to Reconcile Attainable Water Quality with Uses / Goals and Engineering/Economic Realities**