

# Status of Nutrient TMDLs Evaluations

NY/NJ Harbor Estuary Program  
Nutrient Workgroup

June 3, 2009

**HydroQual**

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E n v i r o n m e n t a l  
E n g i n e e r s & S c i e n t i s t s

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# Goals

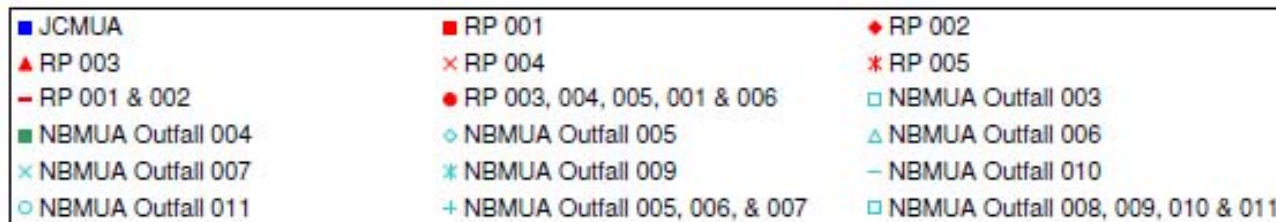
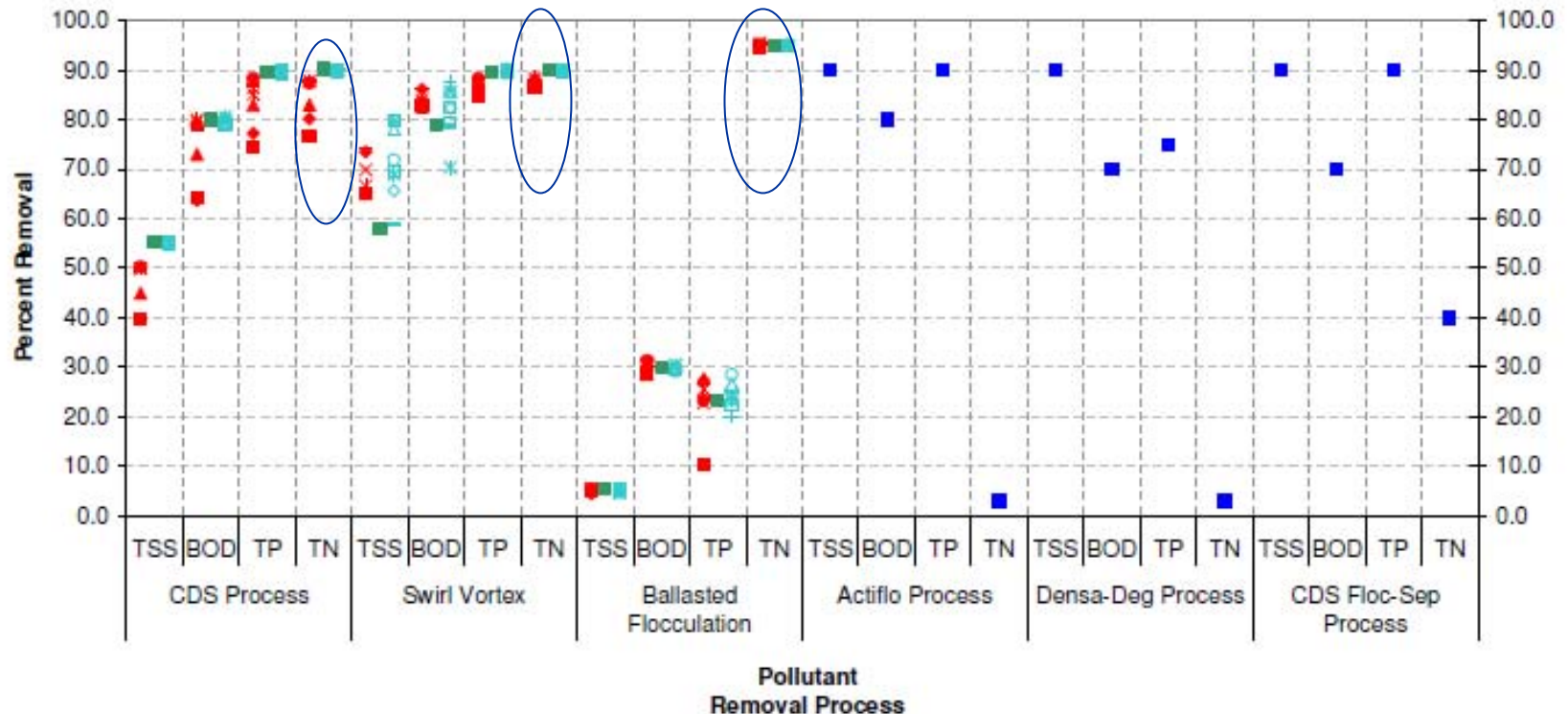
- Present results of completed sub-regional SWEM simulations and preliminary TMDL plans
- Highlight new developments since last NWG meeting
- Discuss next steps for nutrient TMDLS

# What's New . . . .

- Report distributed on sub-regional TMDL plans (473 page pdf)
- Quantification of MS4 program N & C reductions (5% & 10%) identified in addition to LOT reductions previously identified (20%, 15%)
- Quantification of LOT CSO N & C reductions: 75% and 60%

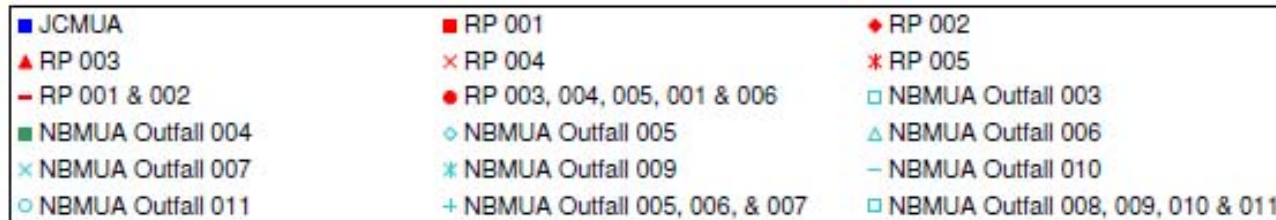
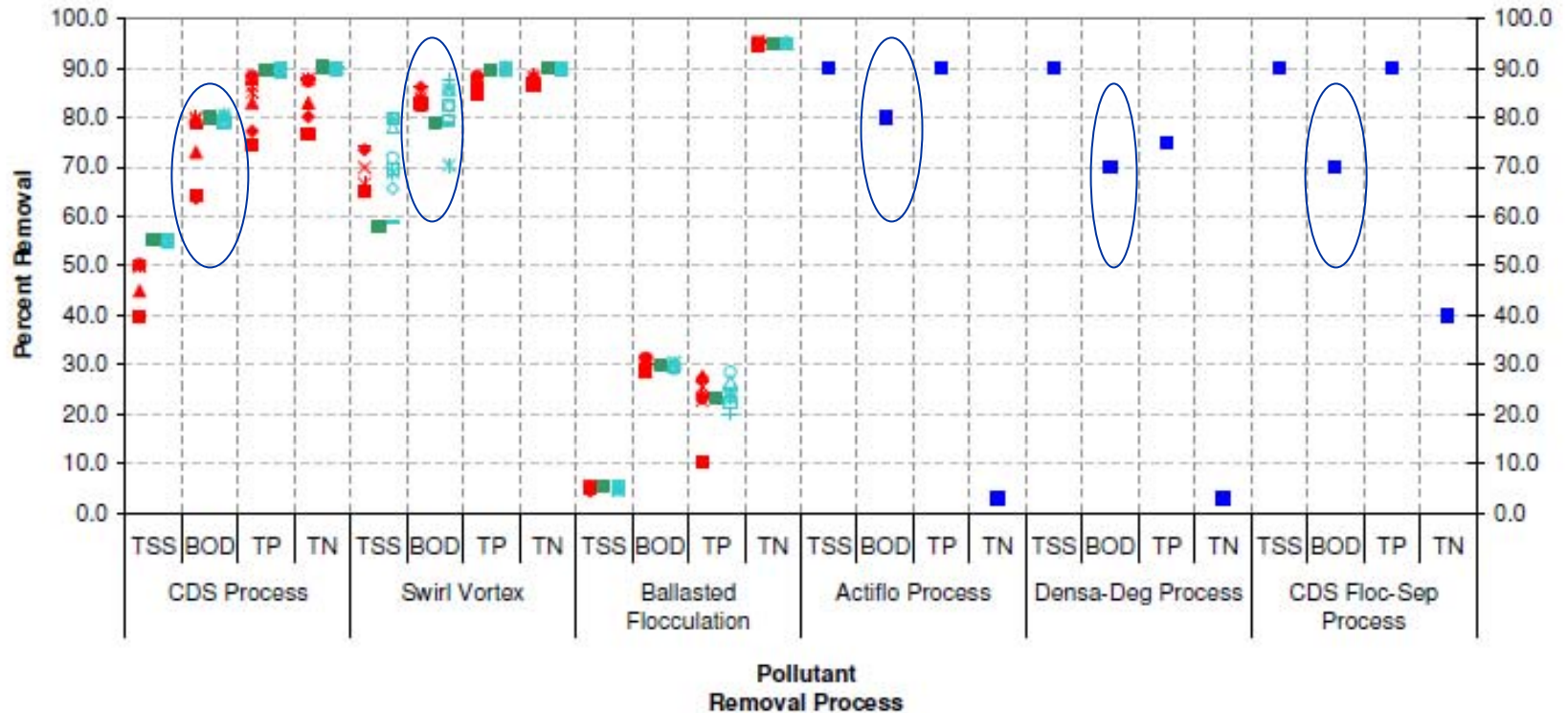
# CDS, Swirl Vortex, & Ballasted Flocculation all support at least 75% N removal from CSOs

Village of Ridgefield Park, Jersey City MUA, and North Bergen MUA  
CSO LTCP - Process Removal Efficiencies



# CDS, Swirl Vortex, Actiflo, Densa-Deg, & CDS Floc-Sep all support at least 60% C removal from CSOs

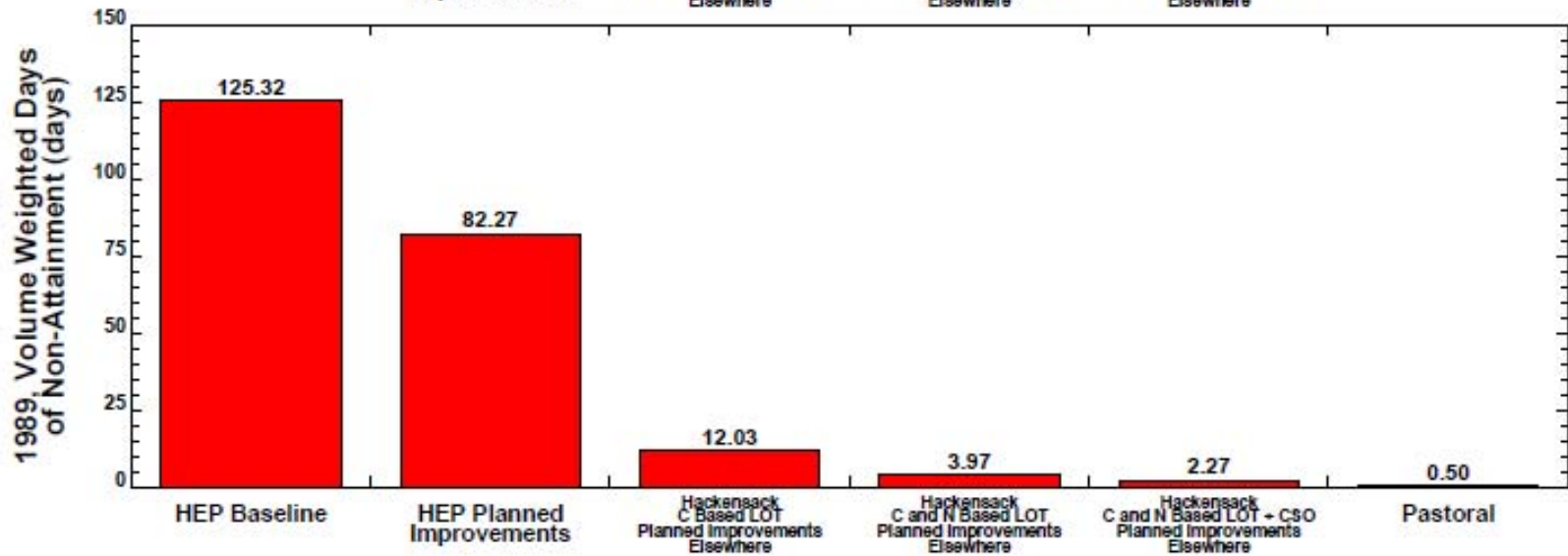
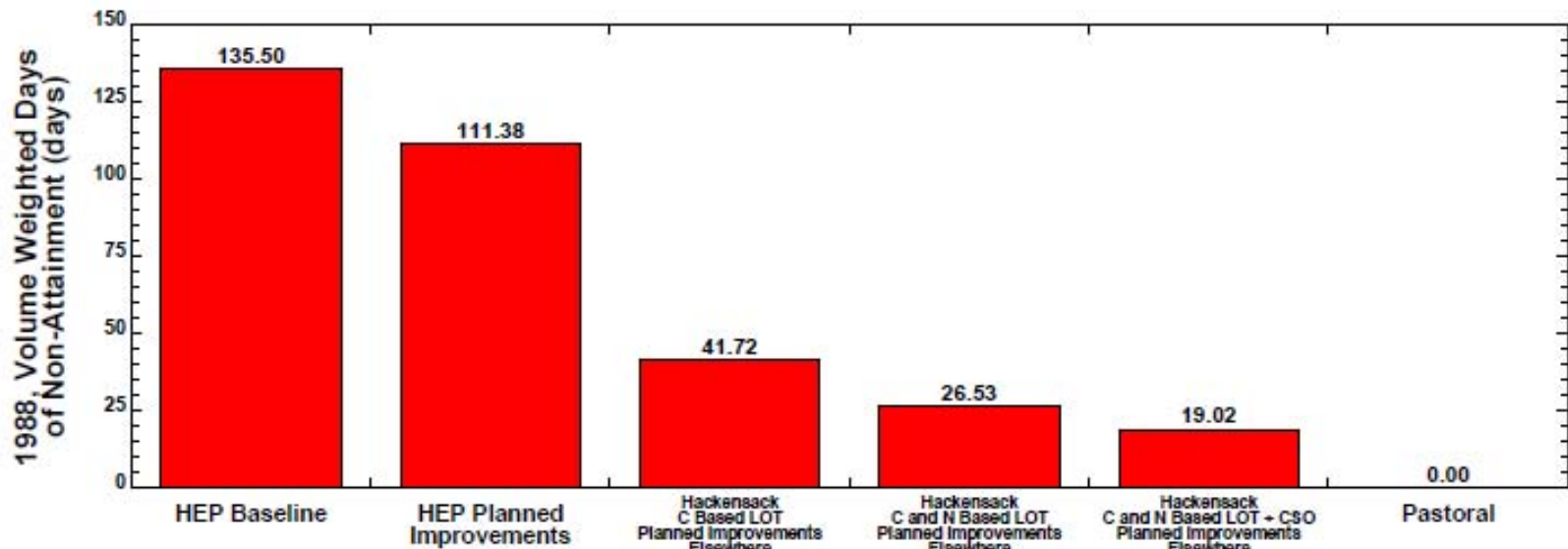
Village of Ridgefield Park, Jersey City MUA, and North Bergen MUA  
CSO LTCP - Process Removal Efficiencies



# Overview of Sub-Regional Preliminary TMDL Plans

- Hackensack River
- Passaic River and Newark Bay
- Raritan River and Bay
- Kills
- Hudson River and Upper New York Bay

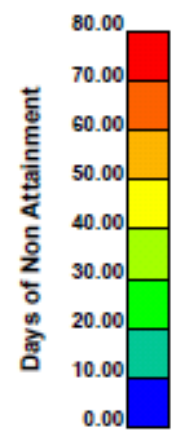
technical plans only – policy decisions still needed!



Hackensack River Total Volume Weighted Days of Non-Attainment of current standards

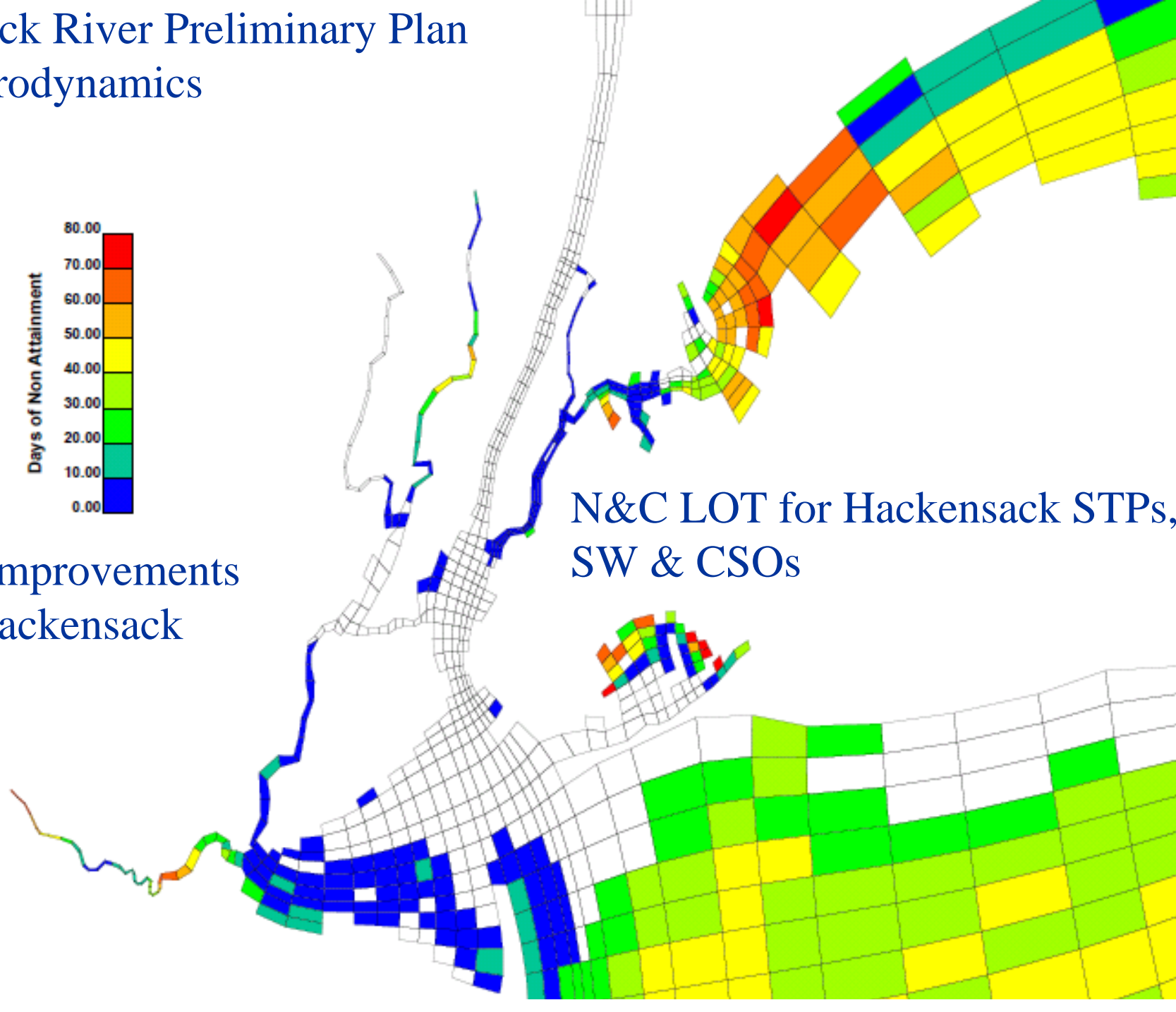
# Hackensack River Preliminary Plan

## 1988 hydrodynamics



Planned Improvements  
outside Hackensack

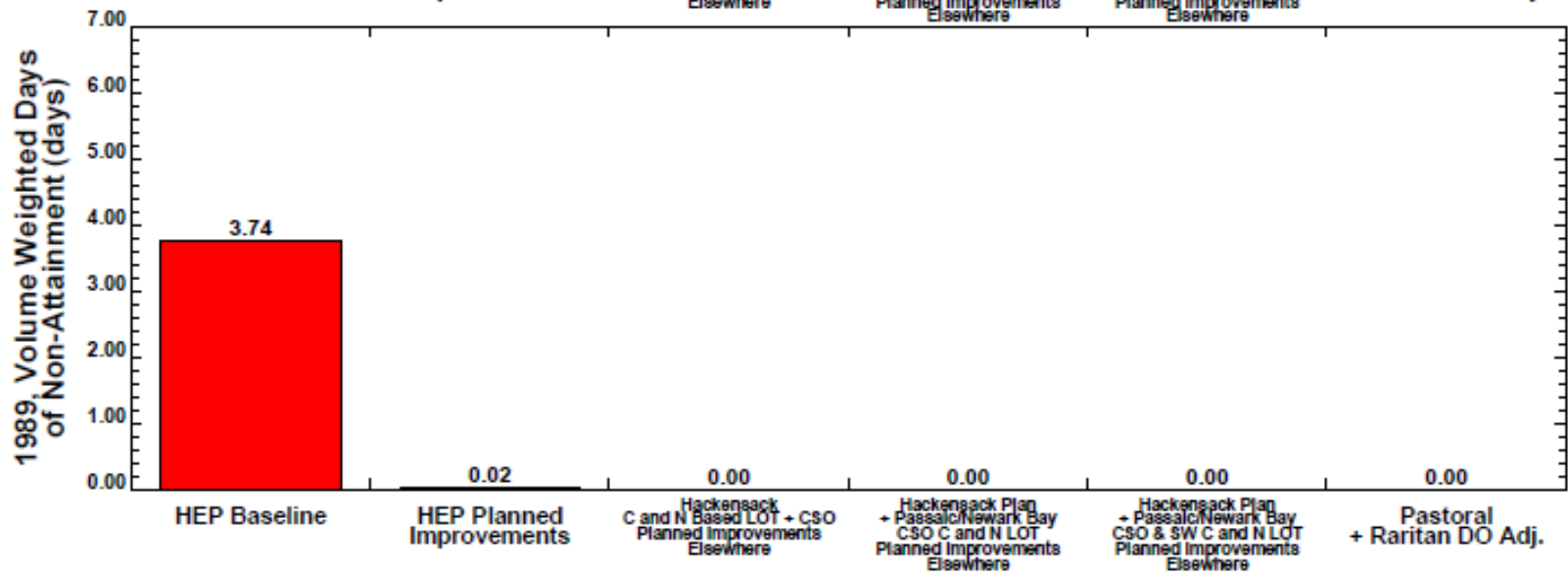
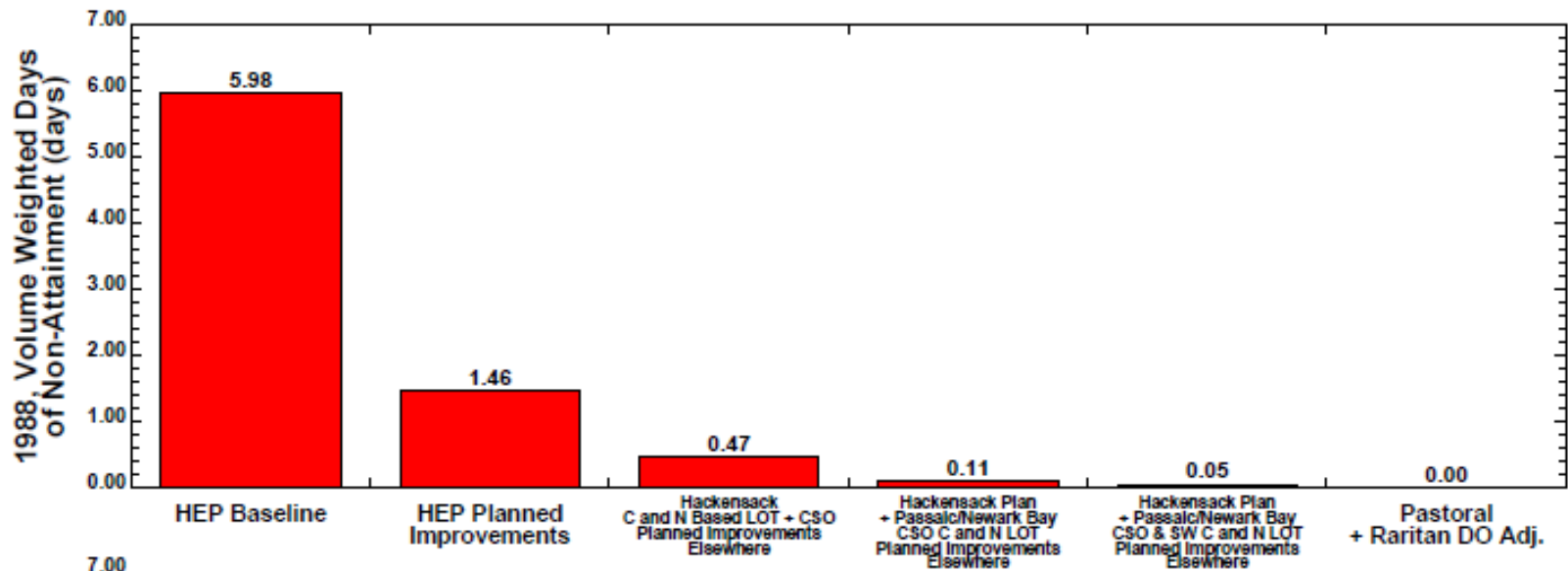
N&C LOT for Hackensack STPs,  
SW & CSOs



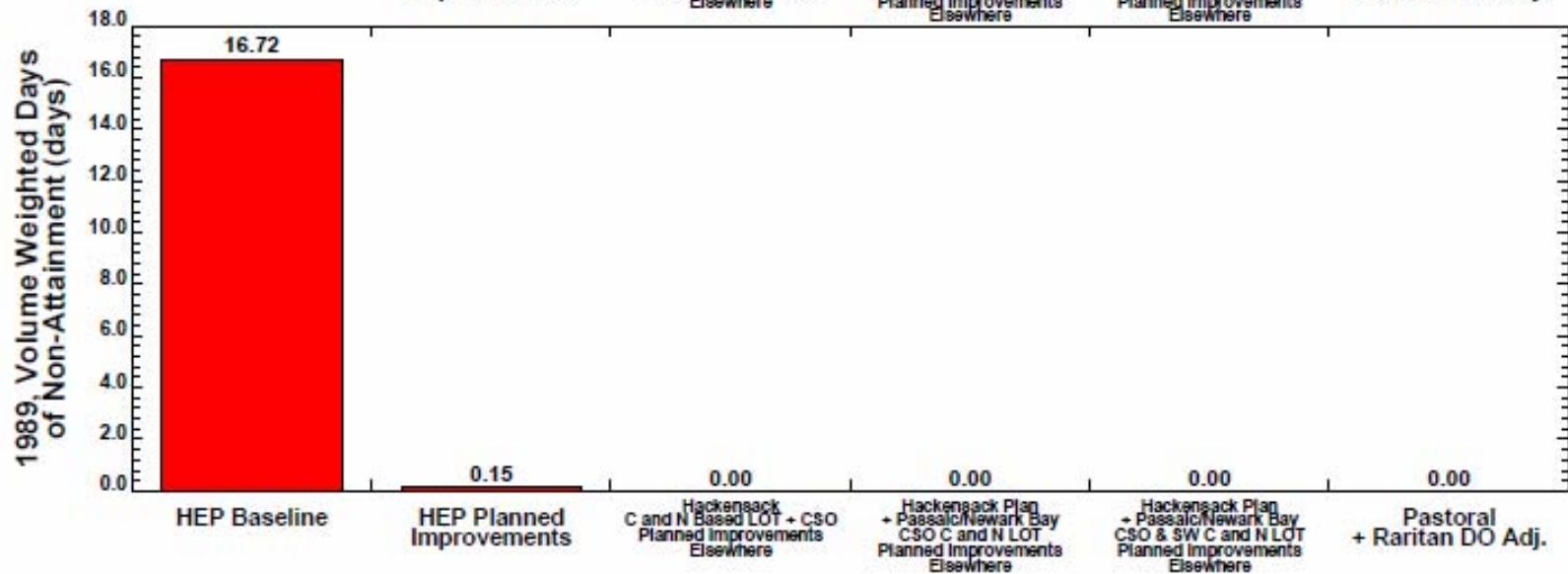
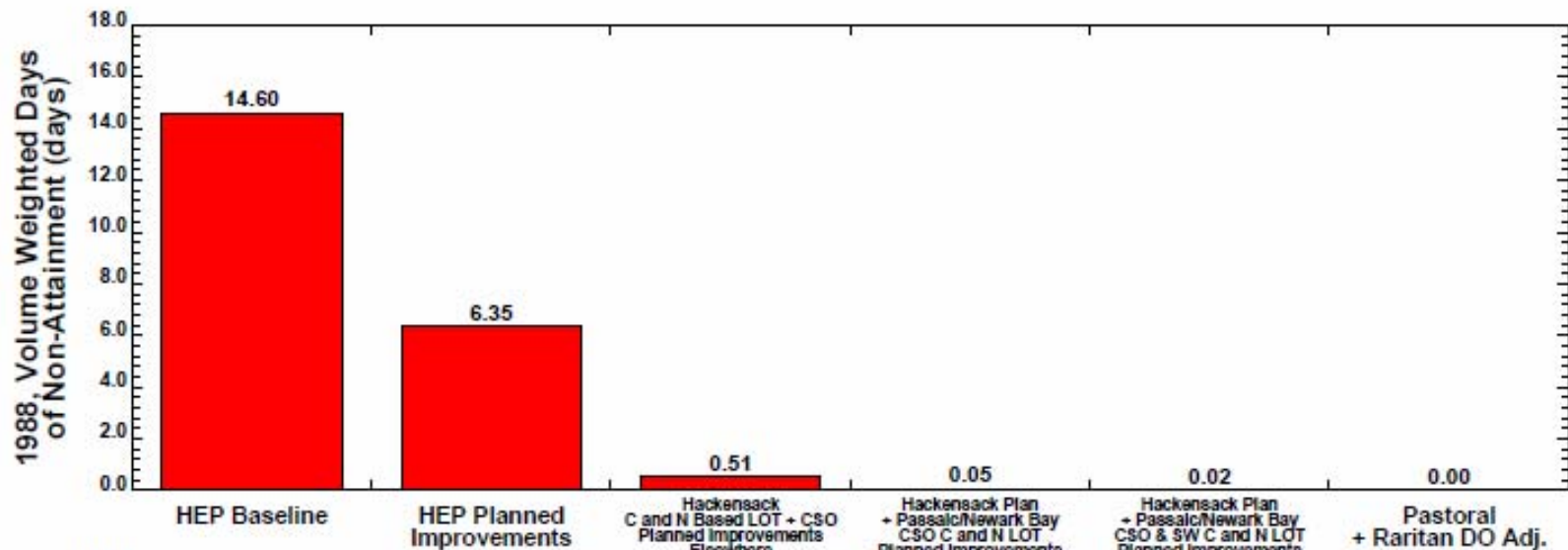
# Hackensack River Plan Results

(see report Table ES-1 & Appendix 1G & 1Q)

<u>SE1 Reach</u> DO > 4 mg/L DO > 5 mg/L 24-hr avg.	SE1 standard not attained Meets larval recruitment fishable/swimmable
<u>SE2 Reach</u> DO > 4 mg/L	SE2 not attained
<u>SE3 Reach</u> DO > 3 mg/L	SE3 standard attained With downstream plans meets SE2 & larval recruitment fishable/swimmable



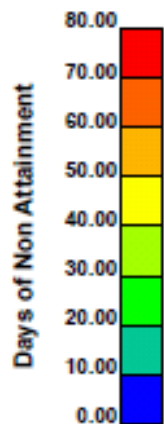
Passaic River Total Volume Weighted Days of Non-Attainment of current standards



Newark Bay Total Volume Weighted Days of Non-Attainment of current standards

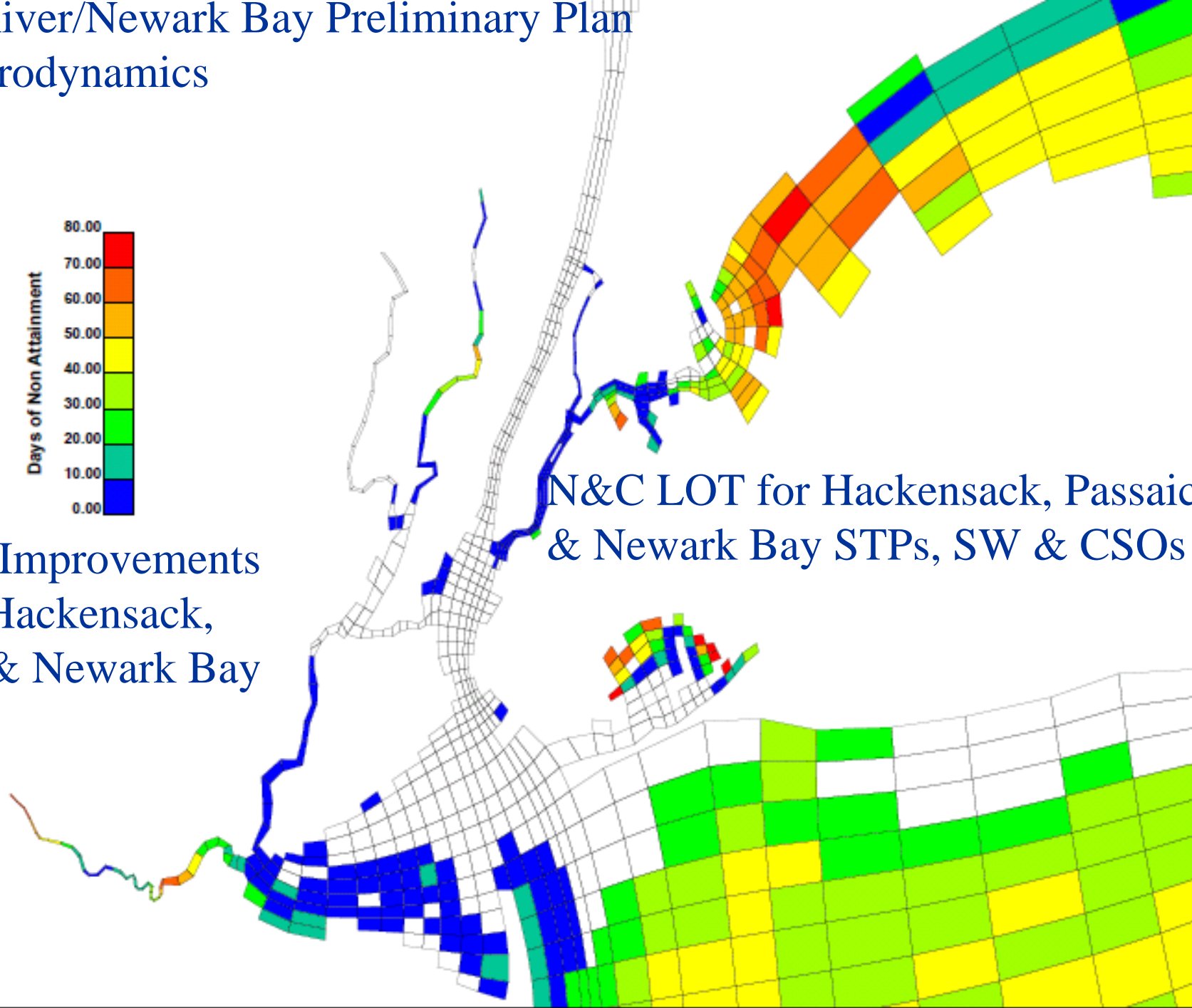
# Passaic River/Newark Bay Preliminary Plan

1988 hydrodynamics



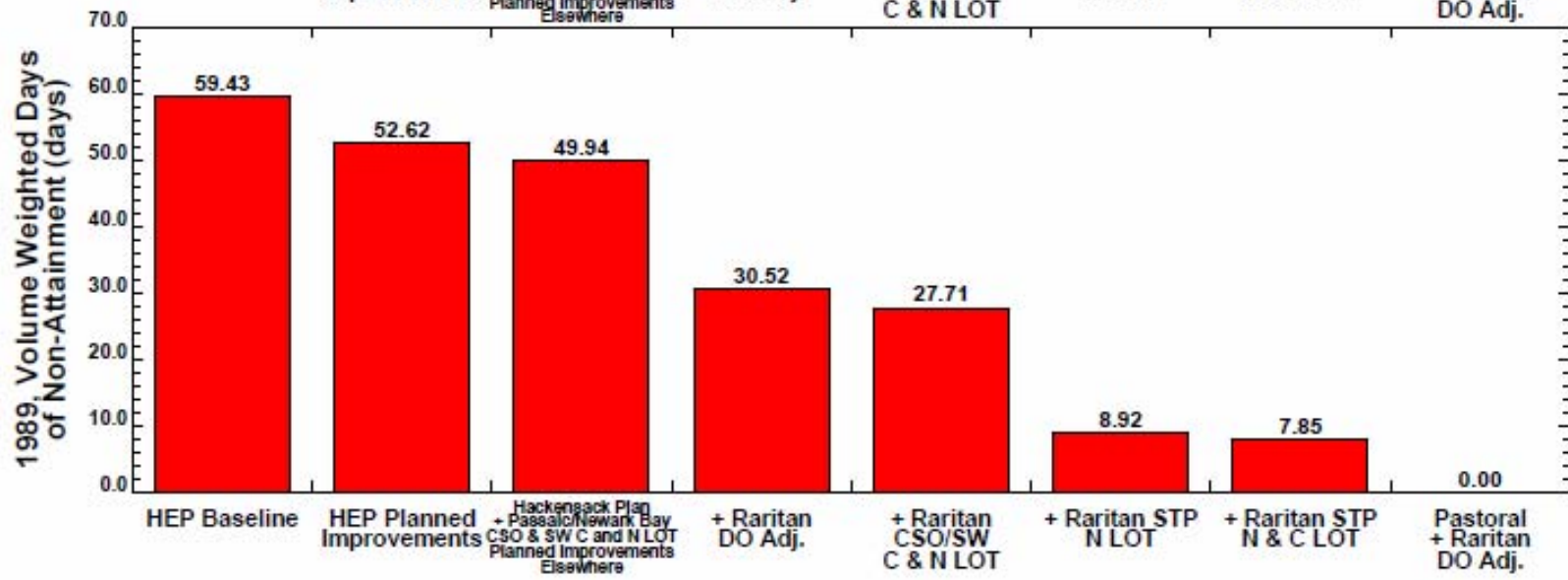
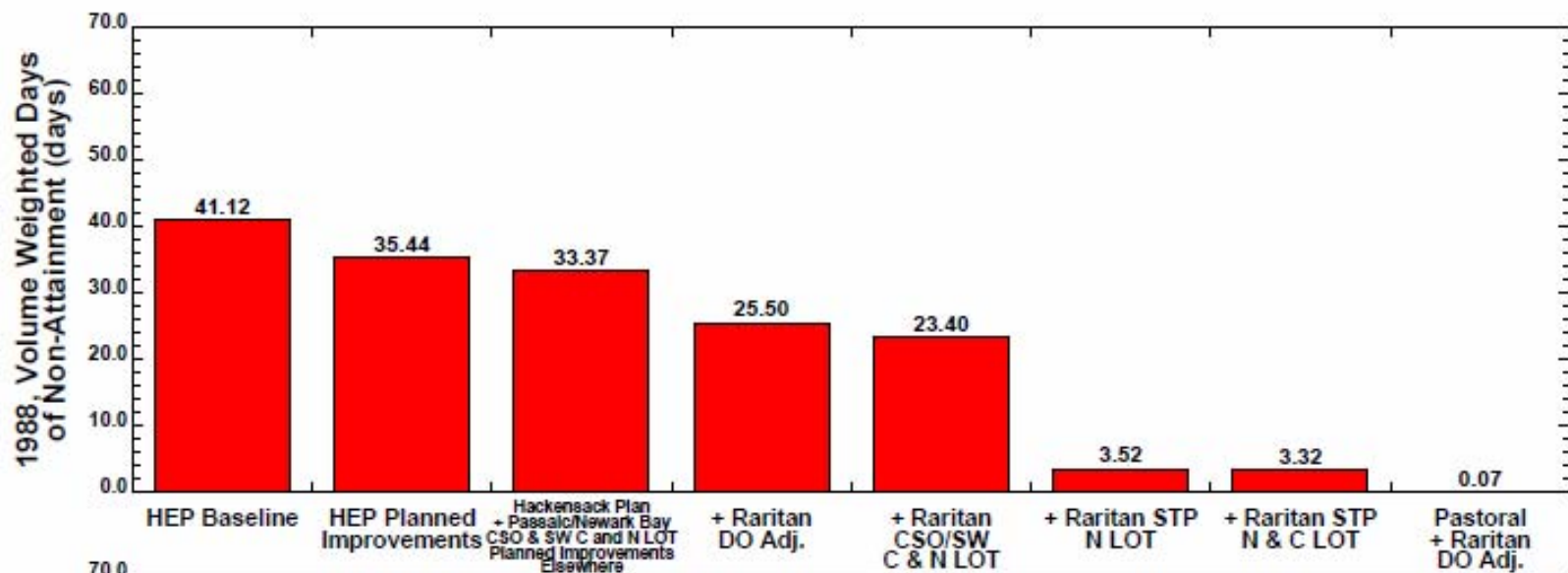
Planned Improvements  
outside Hackensack,  
Passaic & Newark Bay

N&C LOT for Hackensack, Passaic  
& Newark Bay STPs, SW & CSOs

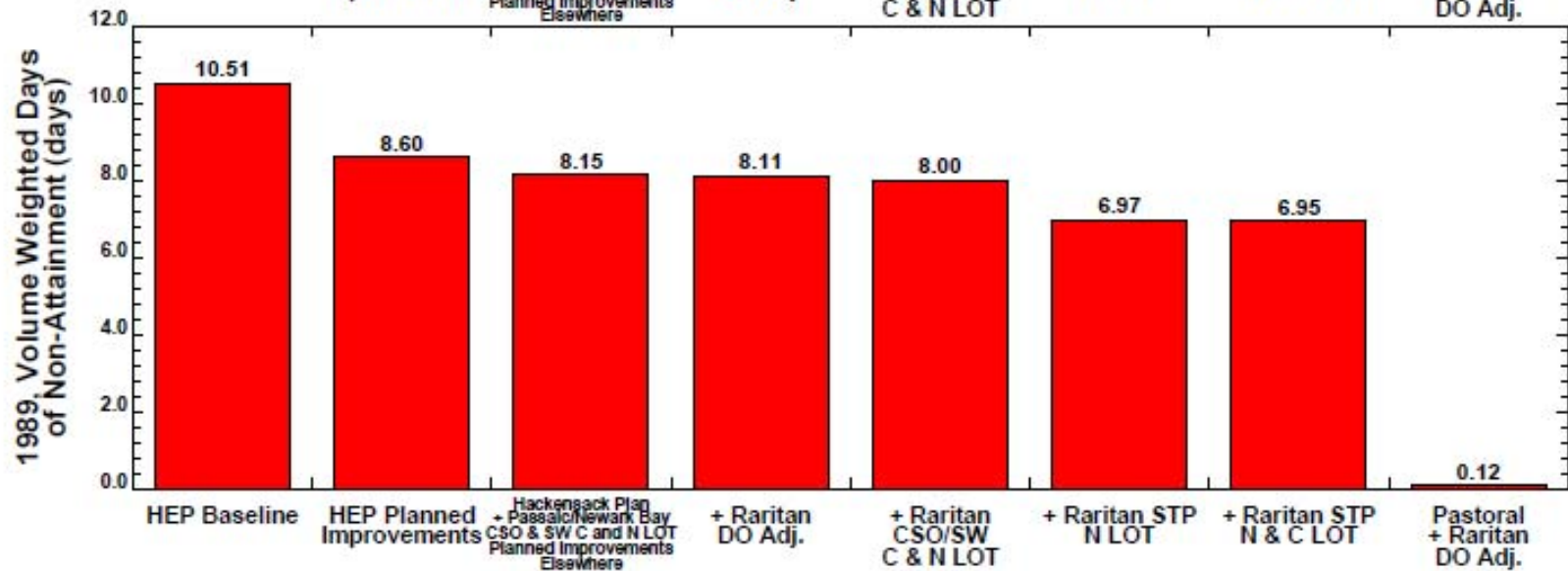
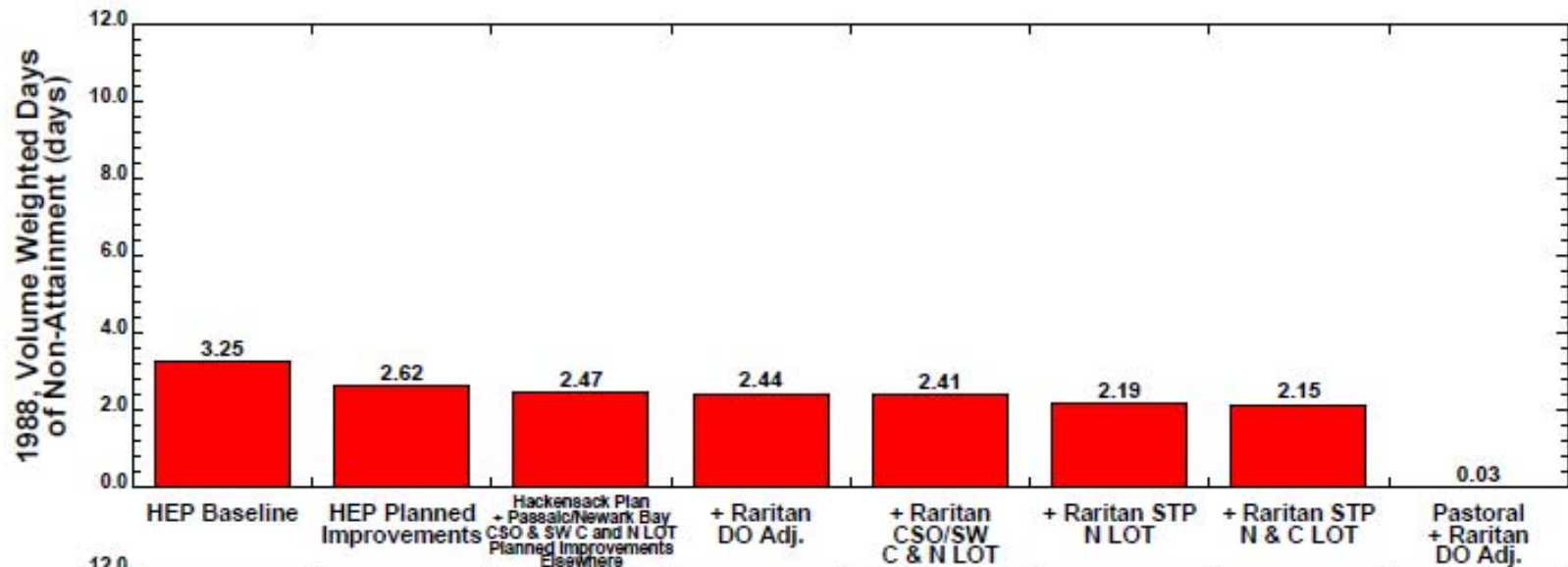


# Passaic River & Newark Bay Plan Results (see report Table ES-1 & Appendix 1I & 1Q)

<u>Passaic River FW2-NT/SE2</u> DO > 4 mg/L DO > 5 mg/L 24-hr avg.	FW2-NT/SE2 attained Achieves fishable/swimmable
<u>Passaic River SE3</u> DO > 3 mg/L	SE3 almost attained With downstream plans, meets larval recruitment fishable/swimmable
<u>Newark Bay SE3</u> DO > 3 mg/L	SE3 almost attained



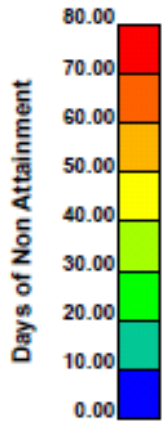
Raritan River Total Volume Weighted Days of Non-Attainment of current standards



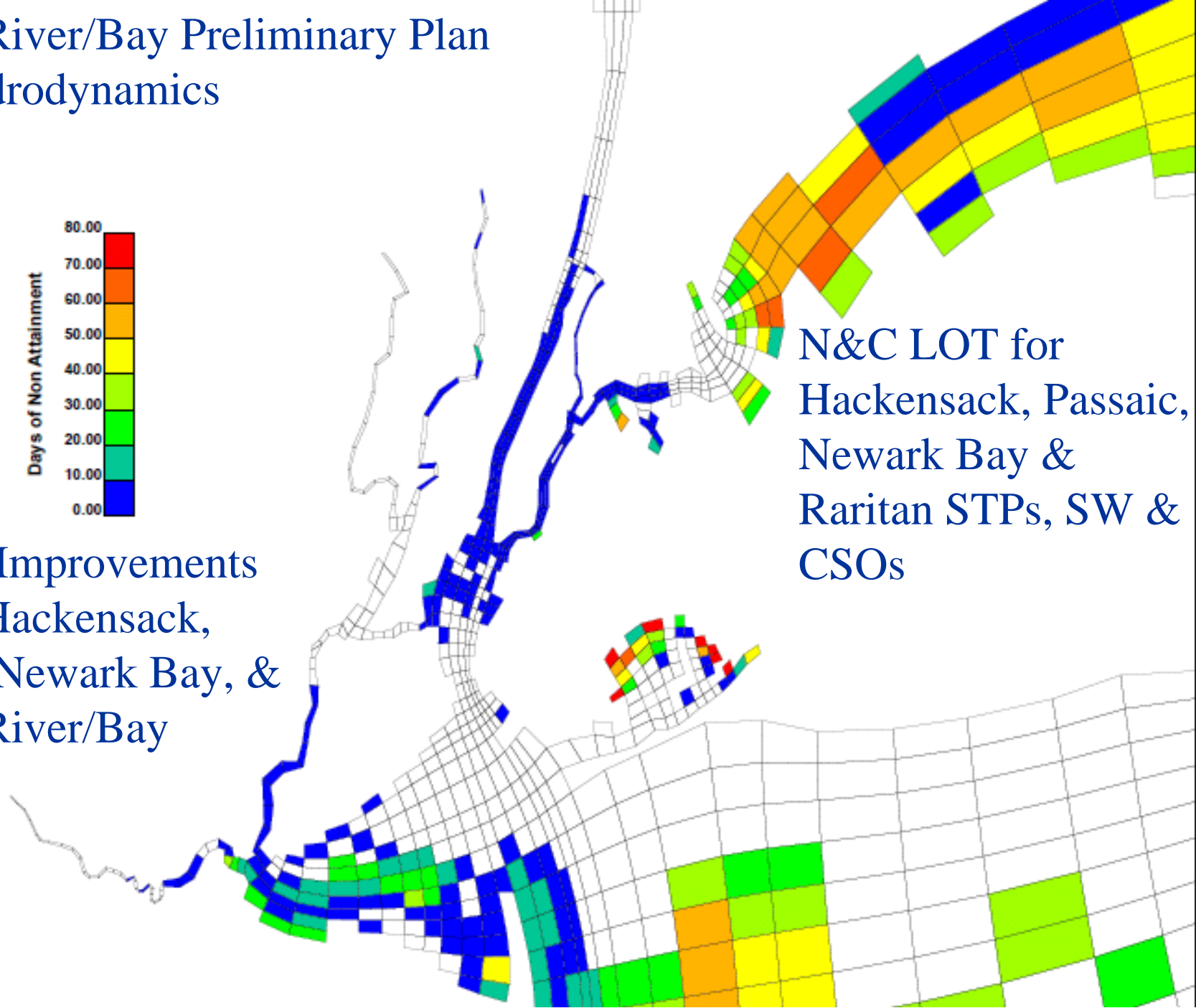
**Raritan Bay Total Volume Weighted Days of Non-Attainment of current standards**

# Raritan River/Bay Preliminary Plan

## 1989 hydrodynamics



Planned Improvements  
outside Hackensack,  
Passaic, Newark Bay, &  
Raritan River/Bay



N&C LOT for  
Hackensack, Passaic,  
Newark Bay &  
Raritan STPs, SW &  
CSOs

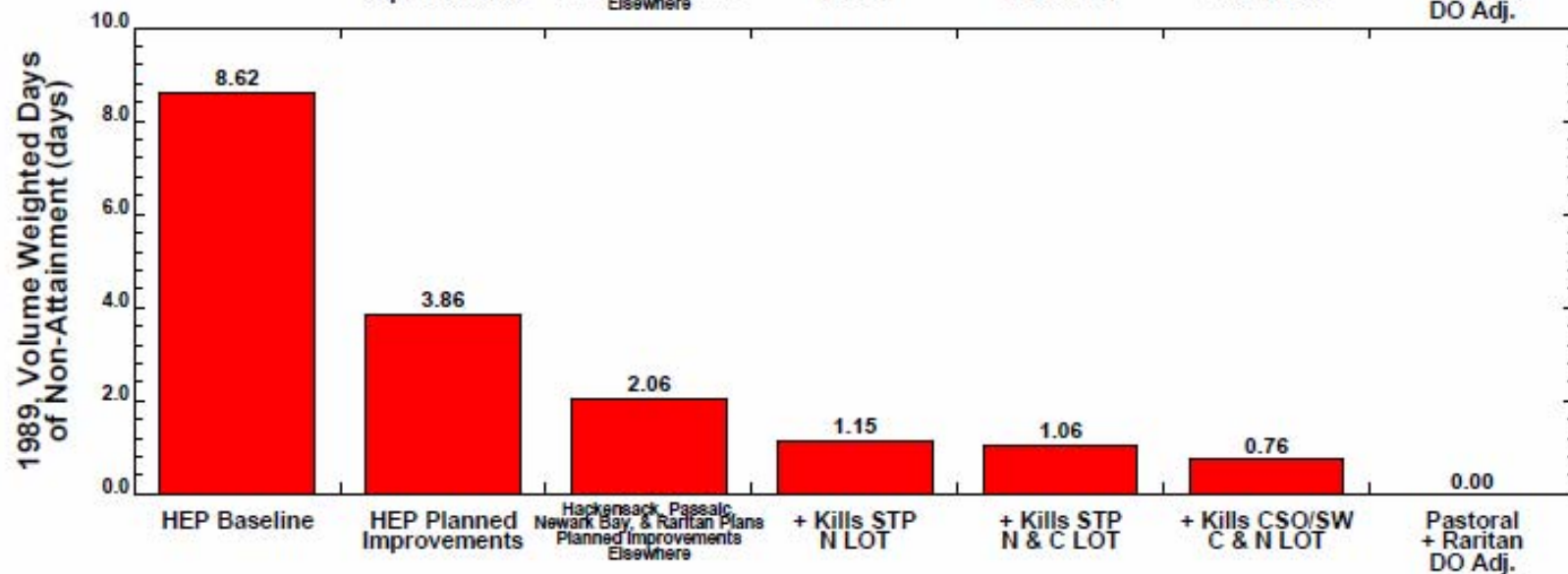
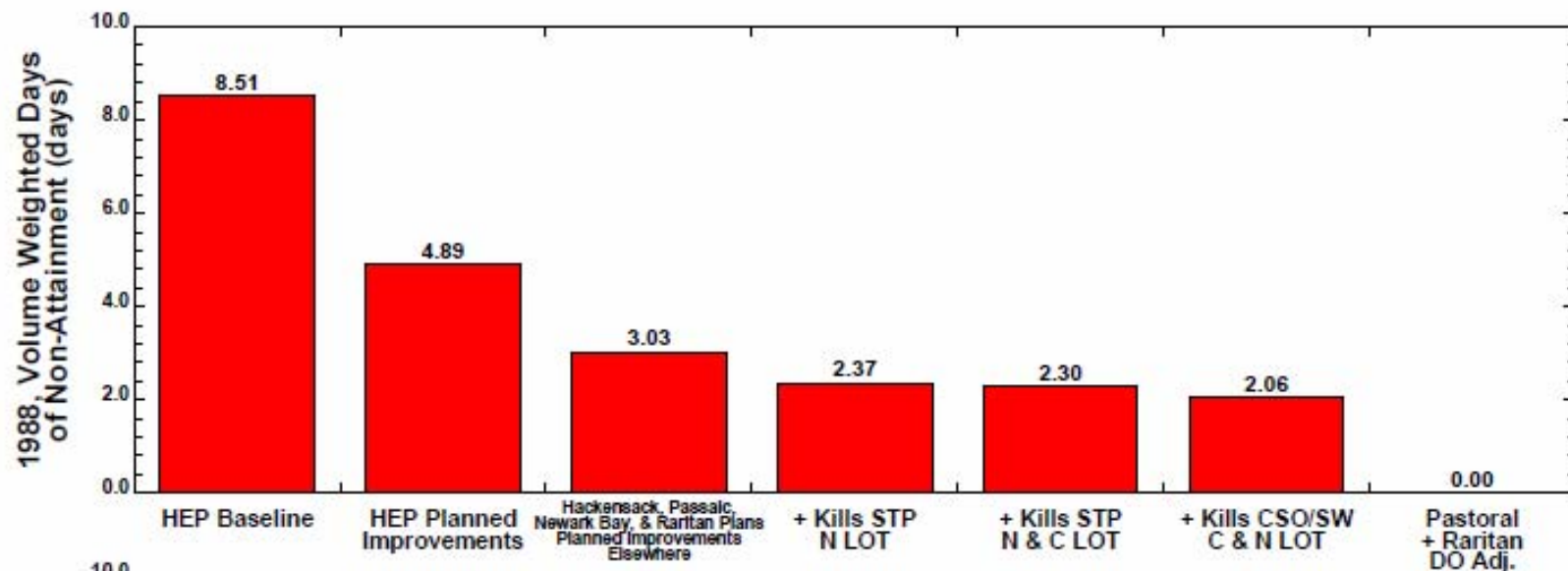
# Raritan River/Bay NJ Waters Plan Results (see report Table ES-1 & Appendix 1M & 1Q)

Raritan River FW2-NT DO > 4 mg/L DO > 5 mg/L 24-hr avg.	FW2-NT attained Achieves federal larval recruitment fishable/swimmable
Raritan River SE1 DO > 4 mg/L DO > 5 mg/L 24-hr avg.	SE1 not attained Almost achieves larval recruitment fishable/swimmable
Raritan Bay SE1 DO > 4 mg/L DO > 5 mg/L 24-hr avg.	SE1 not attained

# Raritan Bay NY Waters Plan Results

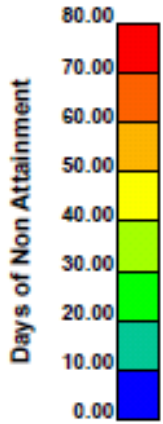
(see report Table ES-1 & Appendix 1M & 1Q)

<u>I Reach</u> DO > 4 mg/L	I practically attained Achieves SA/SB With downstream plans, attains larval recruitment
<u>SA Reach</u> DO > 3 mg/L 3.0 < DO > 4.8 for periods	Almost attains SA and larval recruitment
<u>SB Reach</u> DO > 3 mg/L 3.0 < DO > 4.8 for periods	Attains SB Attains larval recruitment



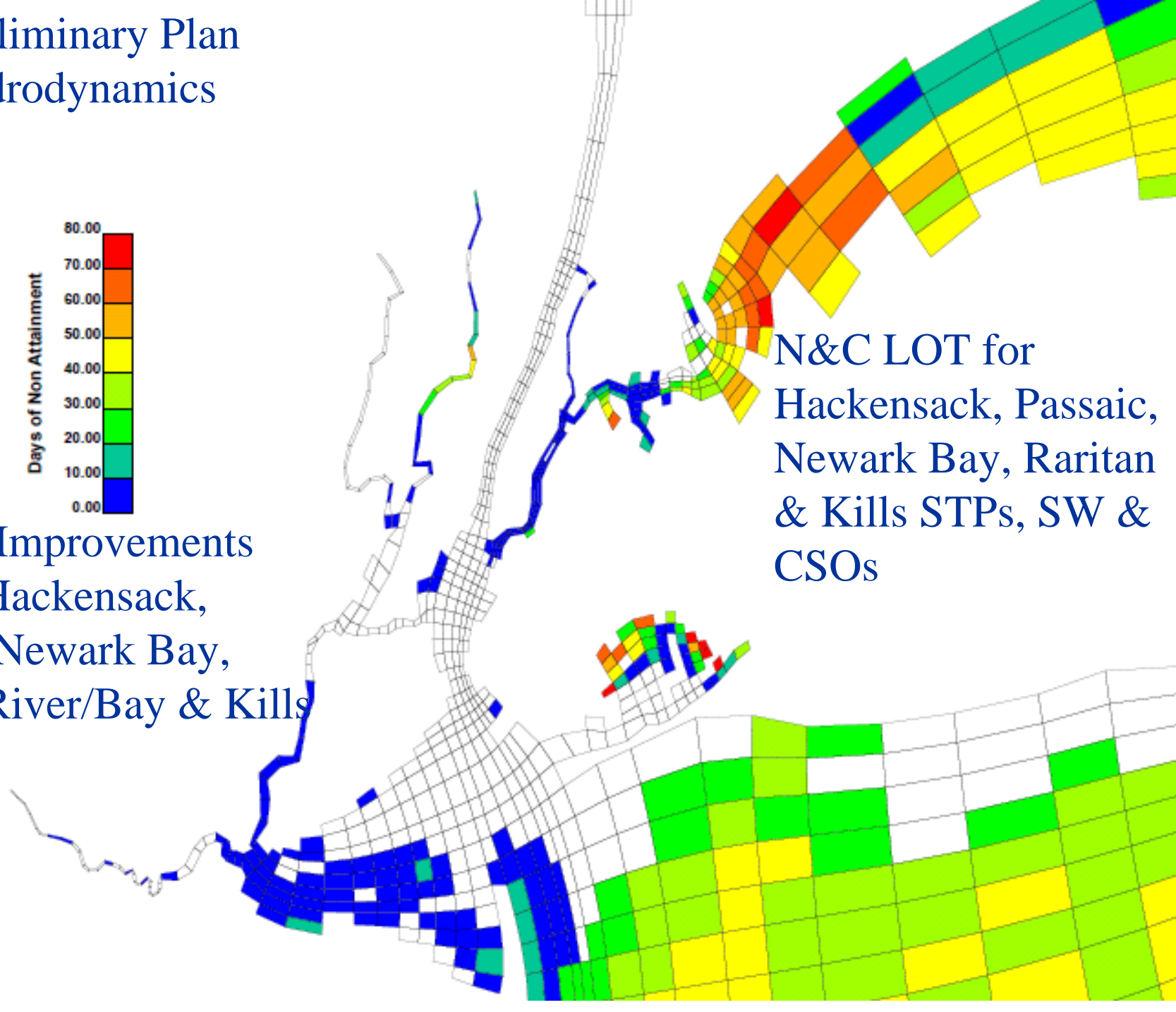
Arthur Kill and Kill Van Kull Total Volume Weighted Days of Non-Attainment of current standards

# Kills Preliminary Plan 1988 hydrodynamics



Planned Improvements  
outside Hackensack,  
Passaic, Newark Bay,  
Raritan River/Bay & Kills

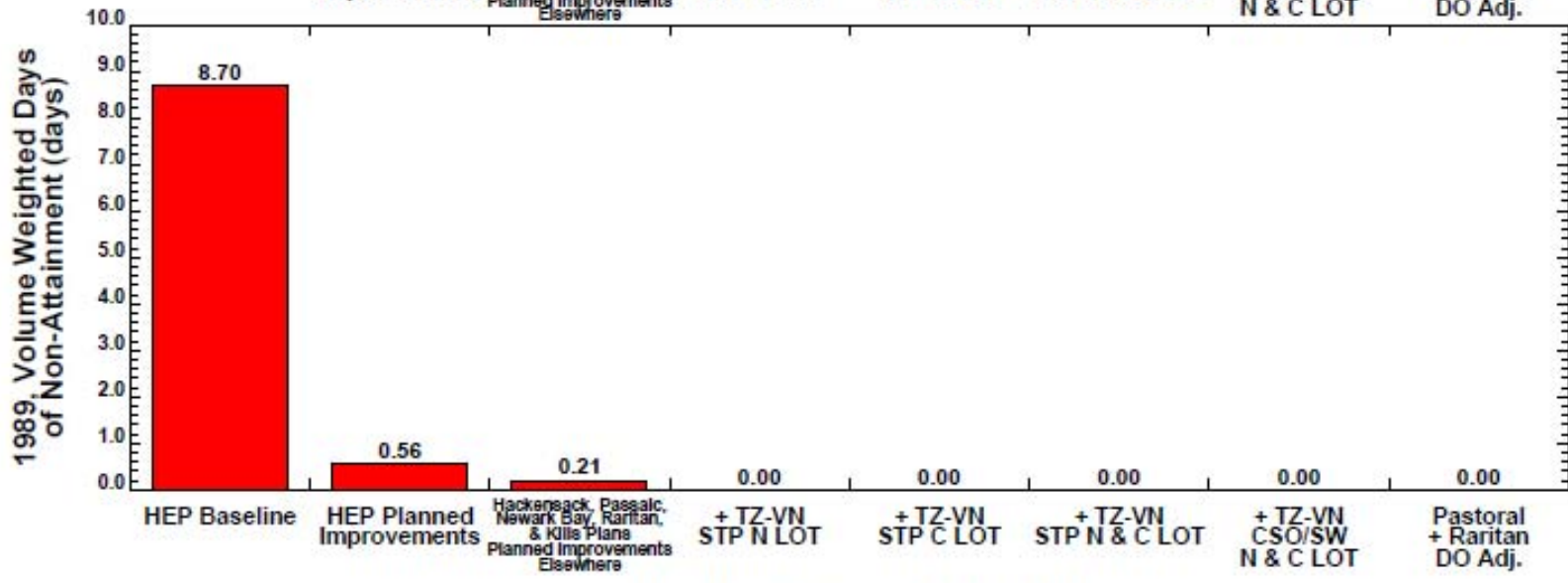
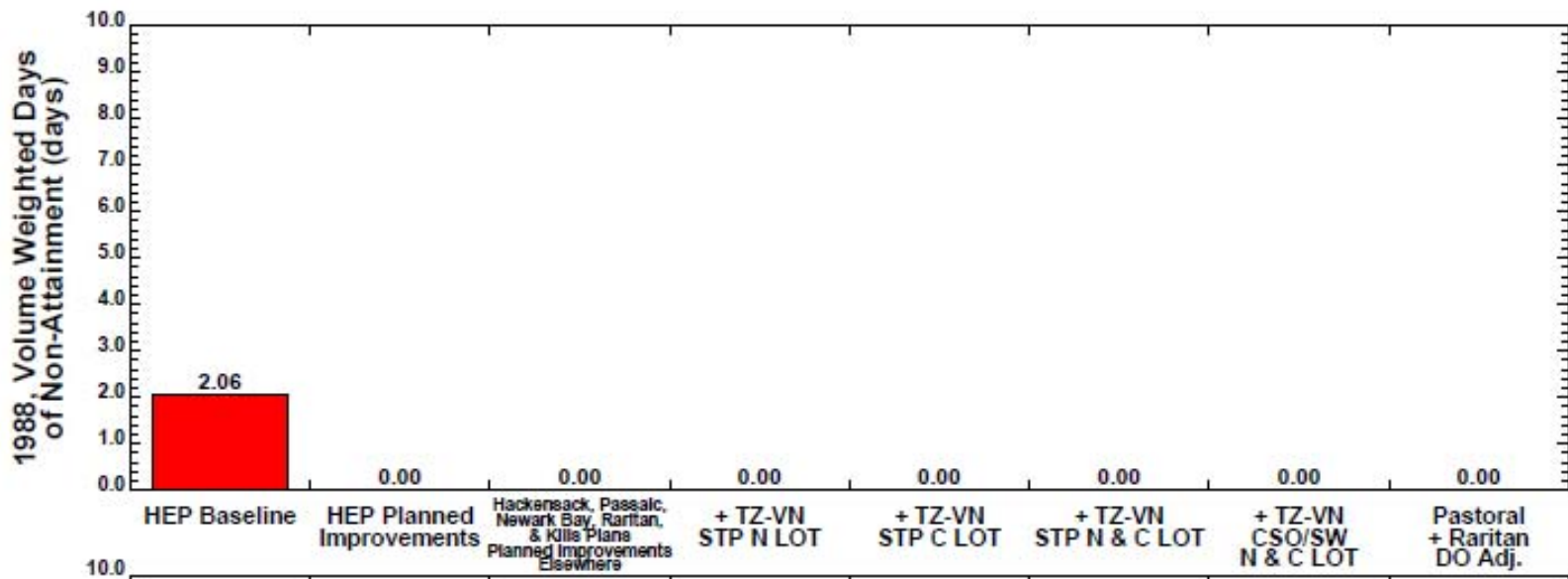
N&C LOT for  
Hackensack, Passaic,  
Newark Bay, Raritan  
& Kills STPs, SW &  
CSOs



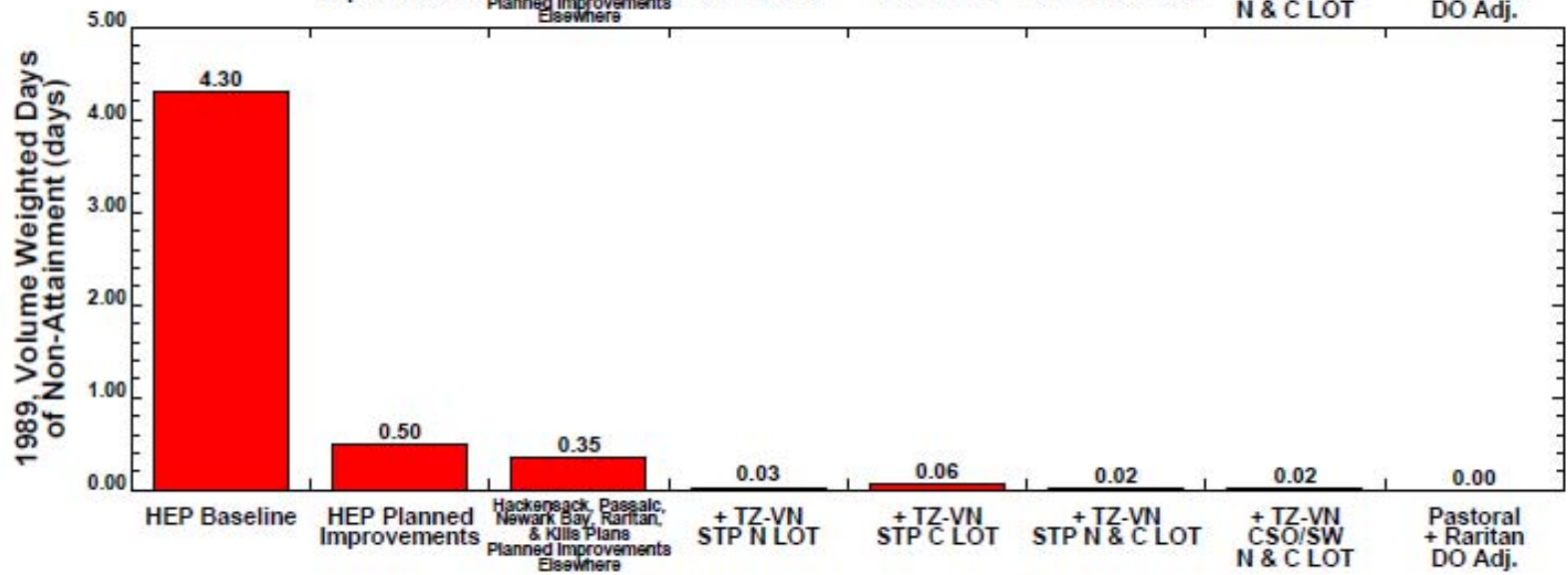
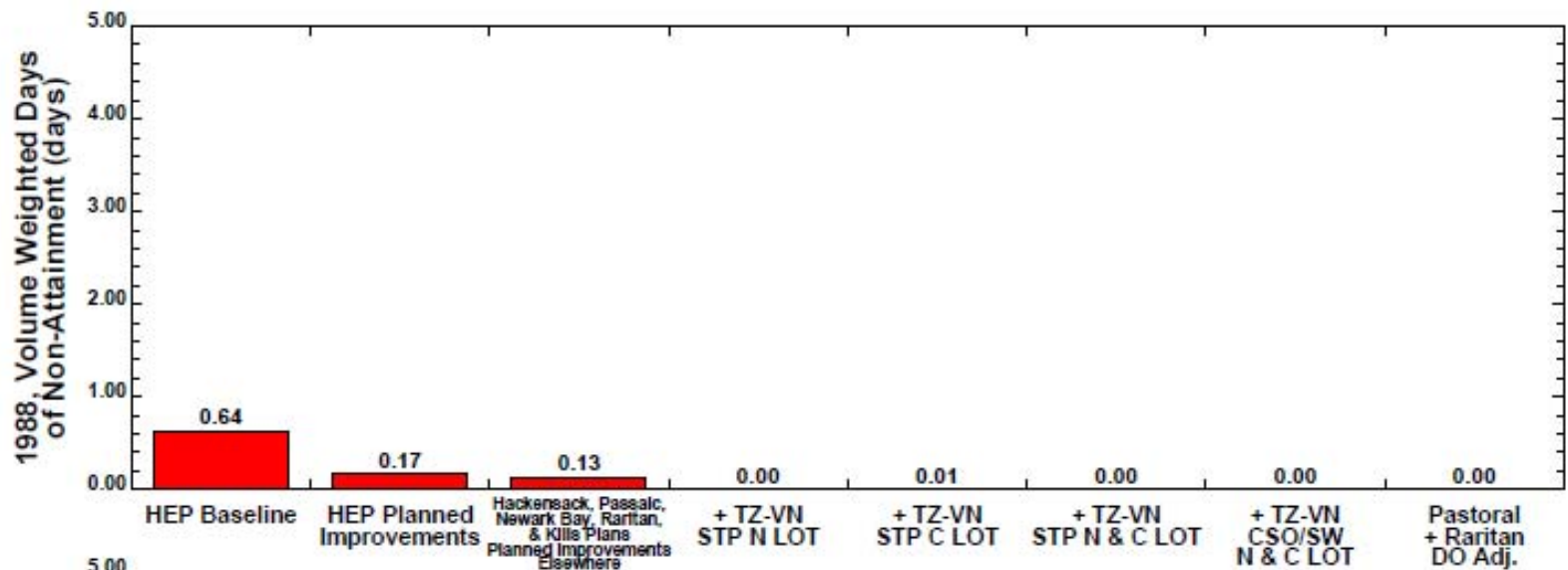
# Kills Plan Results

(see report Table ES-1 & Appendix 1P & 1Q)

<u>Kill van Kull SE2/I</u> DO > 4 mg/L	Attains SE2/I Attains larval recruitment & NY chronic
<u>Kill van Kull SE3/SD</u> DO > 3 mg/L	Attains SE3/SD Attains larval recruitment, SE2/I & NY chronic
<u>Arthur Kill SE3/SD</u> DO > 3 mg/L	Almost attains SE3/SD
<u>Arthur Kill SE2/I</u> DO > 4 mg/L	Almost attains SE2/I Attains larval recruitment & NY chronic

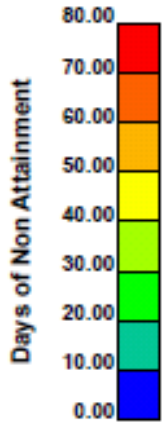


**Hudson River, Tappan Zee to Battery  
Total Volume Weighted Days of Non-Attainment of current standards**



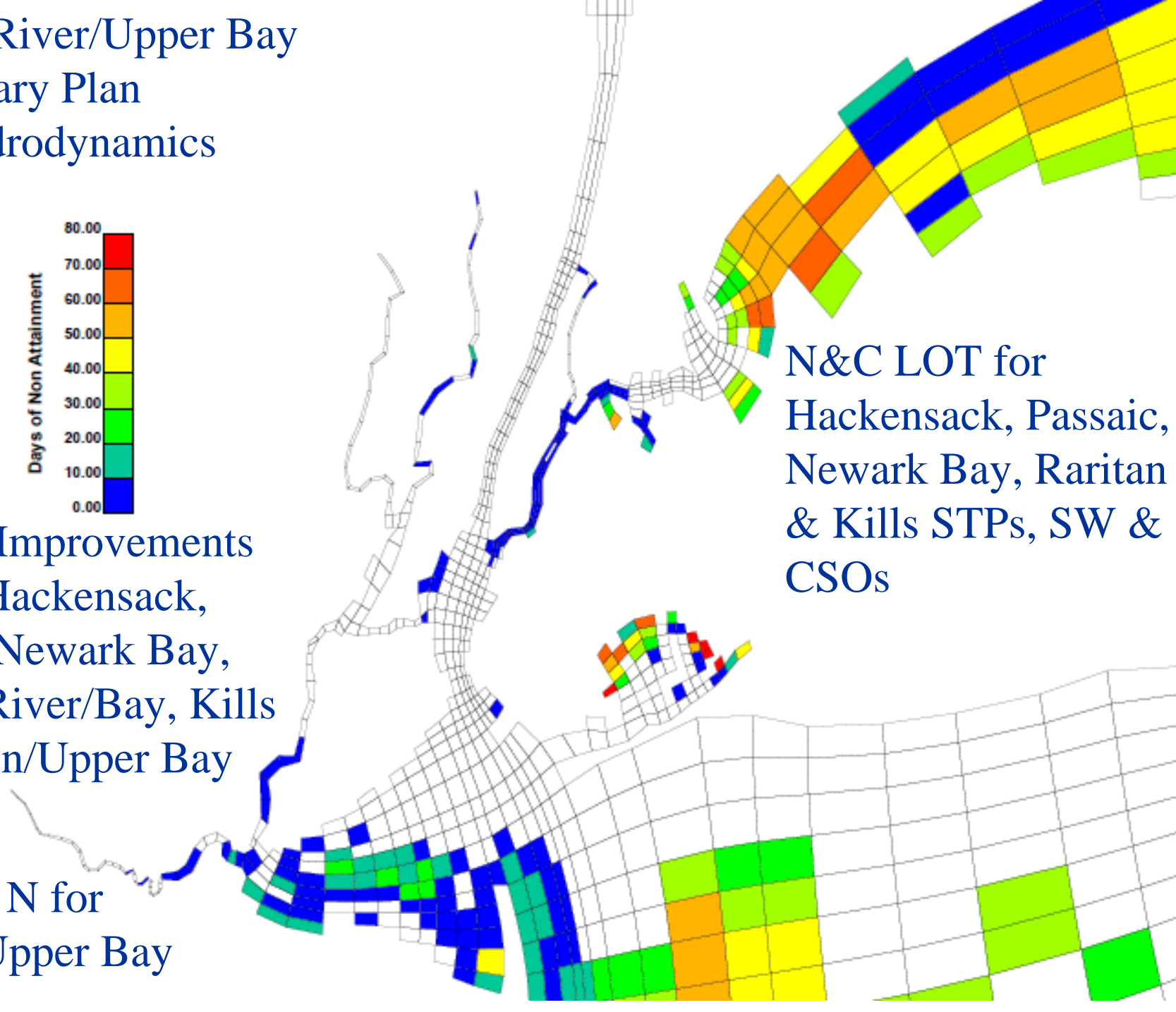
**Upper Bay, Battery to Verrazano Narrows  
Total Volume Weighted Days of Non-Attainment of current standards**

Hudson River/Upper Bay  
Preliminary Plan  
1989 hydrodynamics



Planned Improvements  
outside Hackensack,  
Passaic, Newark Bay,  
Raritan River/Bay, Kills  
& Hudson/Upper Bay

Low STP N for  
Hudson/Upper Bay

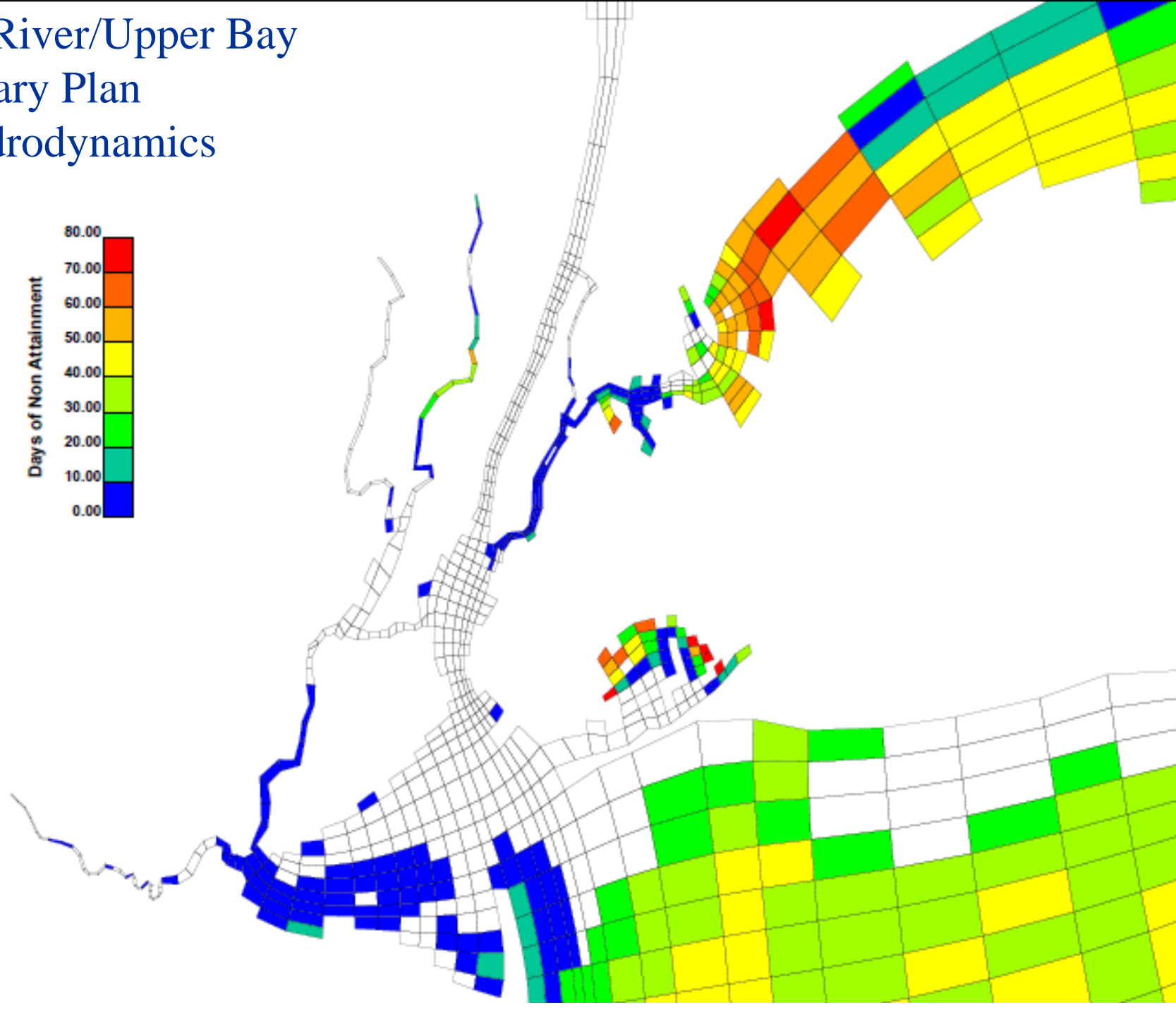


N&C LOT for  
Hackensack, Passaic,  
Newark Bay, Raritan  
& Kills STPs, SW &  
CSOs

# Hudson River/Upper Bay

## Preliminary Plan

### 1988 hydrodynamics



# Hudson River/Upper Bay NJ Results (see report Table ES-1 & Appendix 1Q)

<u>Hudson River SE1</u> DO > 4 mg/L DO > 5 mg/L 24-hr avg.	Attains SE1 Attains fishable/swimmable larval recruitment
<u>Hudson River SE2</u> DO > 4 mg/L	Attains SE2 Attains fishable/swimmable larval recruitment
<u>Upper Bay SE2</u> DO > 4 mg/L	Almost attains SE2 & fishable/swimmable larval recruitment

# Hudson River/Upper Bay NY Results (see report Table ES-1 & Appendix 1Q)

<u>Hudson River SB</u> DO > 3 mg/L 3.0 < DO > 4.8 mg/L	Attains SB Attains fishable/swimmable larval recruitment
<u>Hudson River I</u> DO > 4 mg/L	Attains I & NY Chronic Attains fishable/swimmable larval recruitment
<u>Upper Bay I</u> DO > 4 mg/L	Attains I & NY Chronic Attains fishable/swimmable larval recruitment

# Remaining HydroQual Tasks

- Sub-regional SWEM Simulations **Now Done !**
- Support Sub-regional Stakeholder Optimization and Implementation Planning Workshops
- SWEM Simulations of Final Sub-regional Plans
- TMDL Document Preparation Assistance

# Possible Next Runs? (1)

## (for EPA, State, Stakeholder discussion)

- Eliminating CSO & SWO reductions from Passaic/Newark Bay plan (slides 12 vs. 8; slides 10 & 11)?
- Simplifying the Raritan plan to just STP N LOT – eliminating Raritan STP C, CSO, & SW LOT reductions (slide 14)?
- Excluding LOT reductions for loads to Raritan Bay SB waters (slide 20)?

## **Possible Next Runs? (2)**

### **(for EPA, State, Stakeholder discussion)**

- Applying Kills plan only to Arthur Kill loads – omit LOT reductions for loads to Kill van Kull (slides 20-21)?
- Eliminating low level STP N removal for STPs discharging to SE1 and SB waters from Hudson/Upper Bay plan (slides 24 – 26)?