

Review of NY/NJ Harbor Nutrient/DO TMDL Plan

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November 29, 2010

NY/NJ Harbor Estuary Program TMDL Oversight
Group Meeting

HydroQual

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TMDL Plan Overview

- A plan for nitrogen and carbon reductions was developed which meets the NY SA/SB/SC “best science” standard for dissolved oxygen in all marine waters throughout the NY/NJ Harbor for at least some portion of the year.
- For those times/locations where attainment is incomplete, other endpoints have been identified.

A review of plan results and plan elements follows.

TMDL Plan Results

- Tabulations have been prepared for attainment of all State and federal DO standards in all waters for each grid cell (previously distributed).
- Results presented here are focused on the NY SA/SB/SC “best science” standard.
- Available results include tracking of standards attainment and living marine resource metrics “mortality volume days” and “biomass reduction volume days”.

Review of TMDL Plan Attainment Results

Sub-Region	Attains Current Standard	Attains SA/SB/SC NY Standard	Attains Other all times/locations
Hackensack SE1	no	> 350 days	24-hr avg > 2.5 mg/L juvenile and adult survival > 0.6 mg/L
Hackensack SE2	no	>288 days mp11.4 - 3.8 yes mp 3.8 - 0.6	24-hr avg > 0.4 mg/L > 0.3 mg/L
Hackensack SE3	yes	yes	

Review of TMDL Plan Attainment Results

Sub-Region	Attains	Attains	Attains Other
	Current Standard	SA/SB/SC NY Standard	all times/locations
Passaic FW2-NT/SE2	yes	yes	
Passaic/ Newark Bay SE3	yes	>337 days 3 cells yes for others	24 hr avg >2.9 mg/L juvenile & adult survival >2.4 mg/L
Raritan FW2-NT	yes	yes	
Raritan River SE1	no	yes-omit 3 cells <0.2 days	3<24 hr avg<4.8 larval recruitment >1.5 mg/L

Review of TMDL Plan Attainment Results

Sub-Region	Attains Current Standards	Attains SA/SB/SC NY Standard	Attains Other all times/locations
Raritan Bay SE1	no	>342 days (24 cells) yes (34 cells)	24 hr avg >2.7 mg/L juvenile & adult survival > 0.6 mg/L
Raritan Bay I	no	yes	
Raritan Bay SA	yes (almost)	yes (omit 2 cells < 0.5 days)	3.0<24 hr avg<4.8 mg/L larval recruitment > 2.5 mg/L
Raritan Bay SB	yes	yes	

Review of TMDL Plan Attainment Results

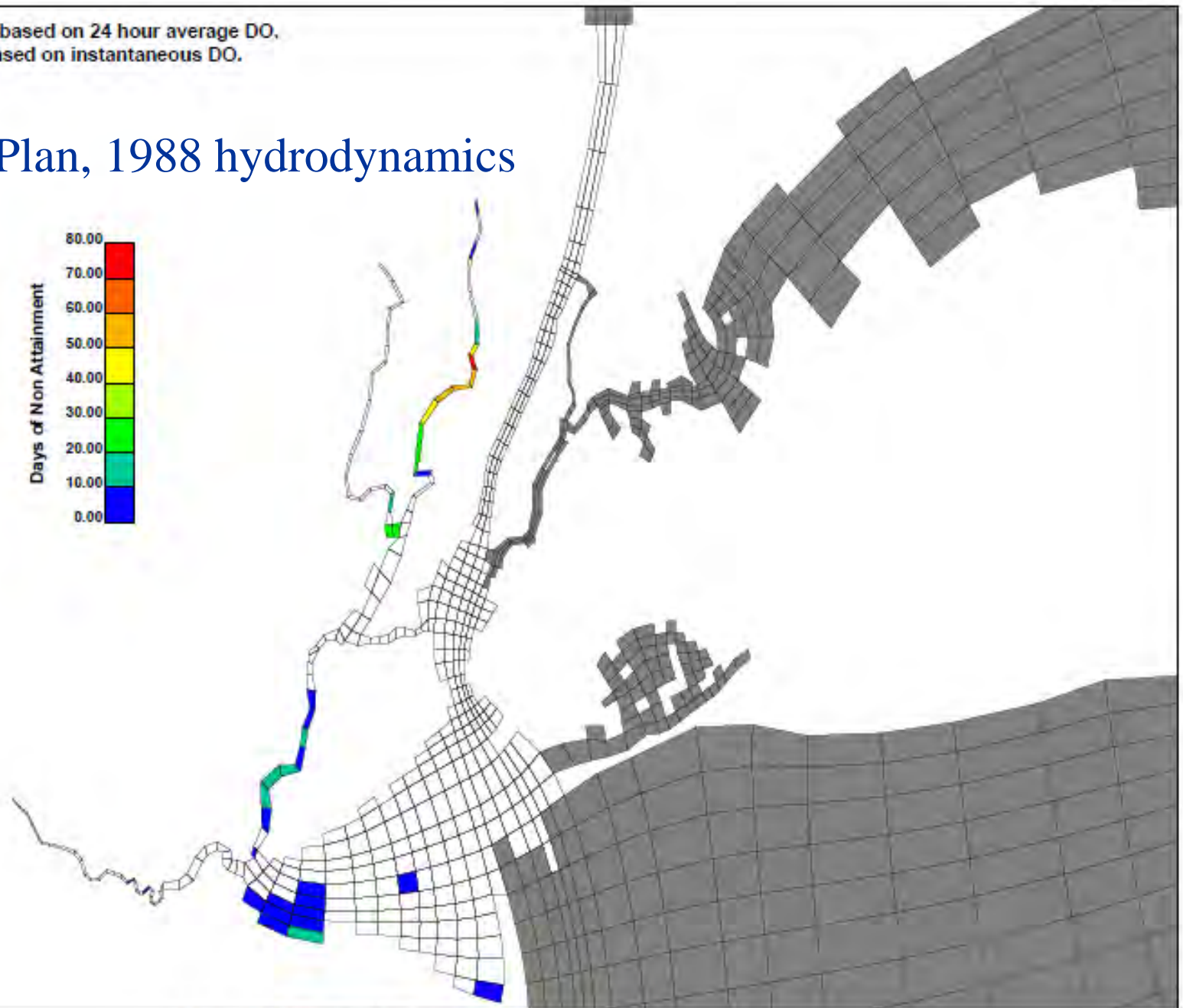
Sub-Region	Attains Current Standards	Attains SA/SB/SC NY Standard	Attains Other all times/locations
Kill van Kull	yes	yes	
Arthur Kill SD/SE3	no	>345 days mp 15 – 8.3 yes mp 8.3 to 4.1	24-hr avg >2 >1.6
Arthur Kill I/SE2	no	yes (omit 2 cells, <1 day)	3.0<24 hr avg<4.8 larval recruitment >2.3 mg/L

Review of TMDL Attainment Plan Results

Sub-Region	Attains Current Standards	Attains SA/SB/SC NY Standard	Attains Other
Hudson SE1	yes	yes	
Hudson SB	yes	yes	
Hudson SE2	yes	yes	
Hudson I	yes	yes	
Upper Bay SE2	yes (almost)	330 days 1 cell yes all others	24 hr avg > 3.6 mg/L juvenile adult survival > 3.2 mg/L
Upper Bay I	yes	yes	

NYS Chronic is based on 24 hour average DO.
NYS Acute is based on instantaneous DO.

With Plan, 1988 hydrodynamics

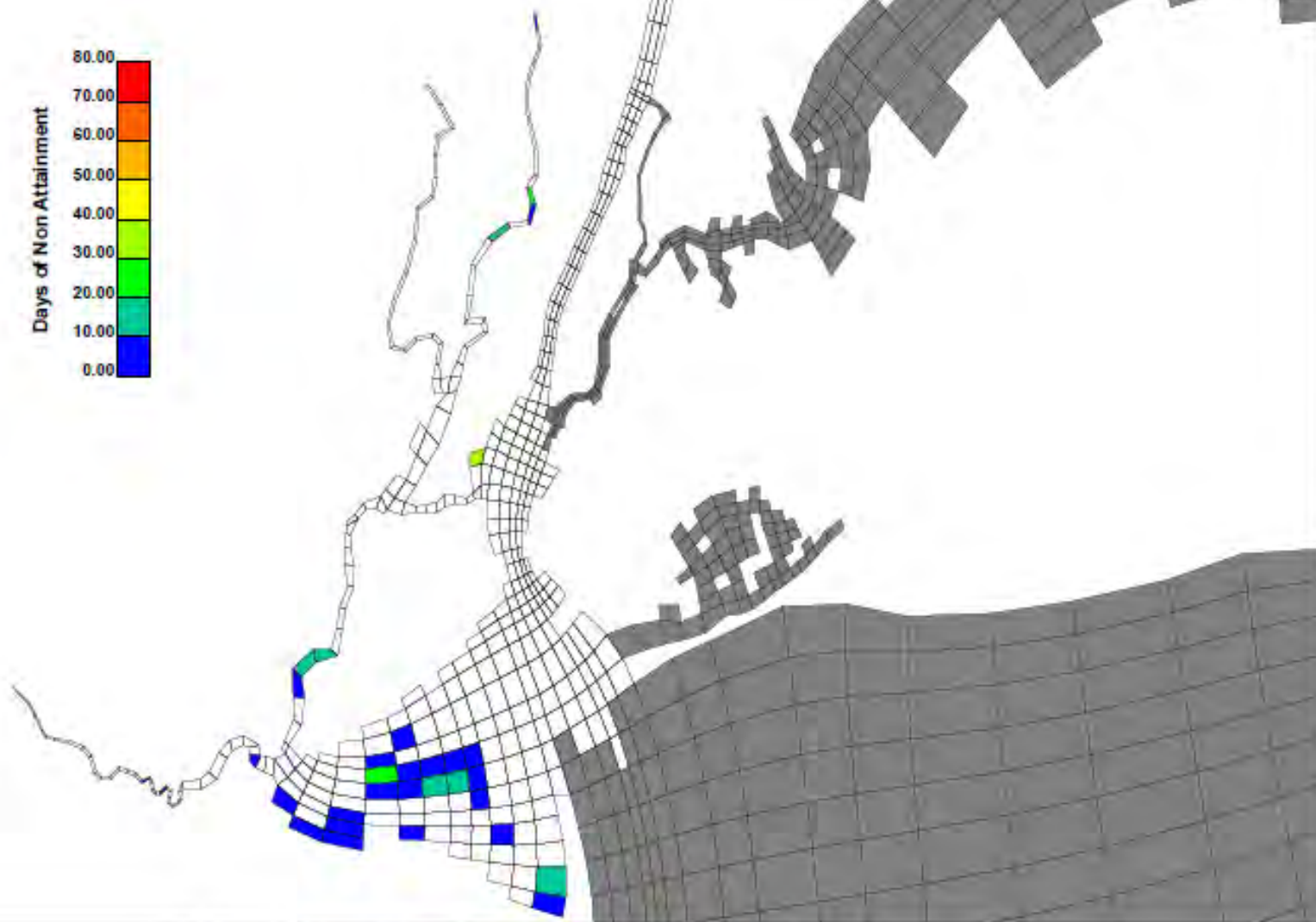


Max of New York State Chronic and Acute Criteria

Revised Sub-regional Plans (Step 5, 2/15/2010 memo), 1988 Hydrodynamic Conditions

*NYS Chronic is based on 24 hour average DO.
NYS Acute is based on instantaneous DO.

With plan, 1989 hydrodynamics

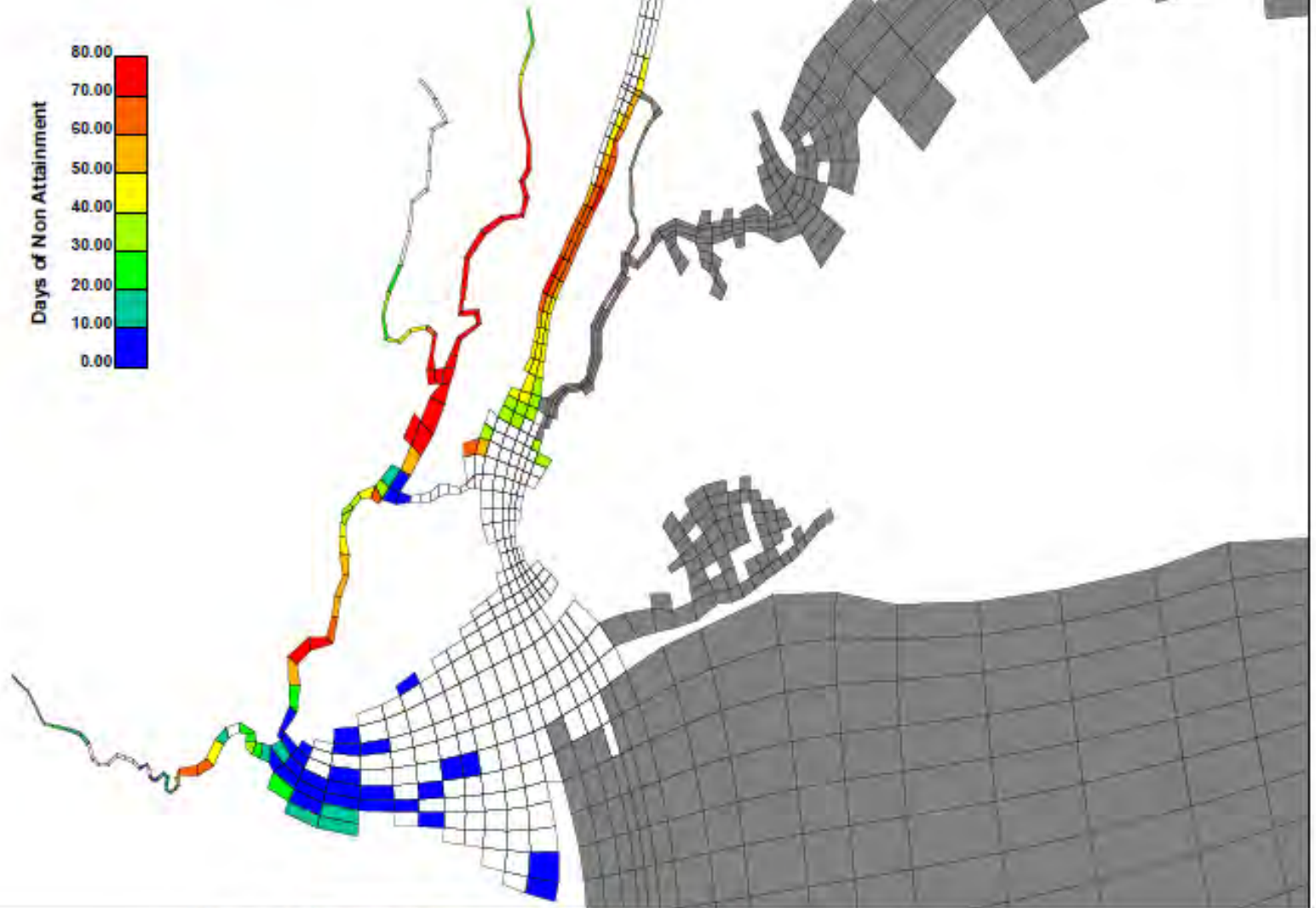


Max of New York State Chronic and Acute Criteria

Revised Sub-regional Plans (Step 5, 2/15/2010 memo), 1989 Hydrodynamic Conditions

NYS Chronic is based on 24 hour average DO.
NYS Acute is based on instantaneous DO.

Without plan, 1988 hydrodynamics

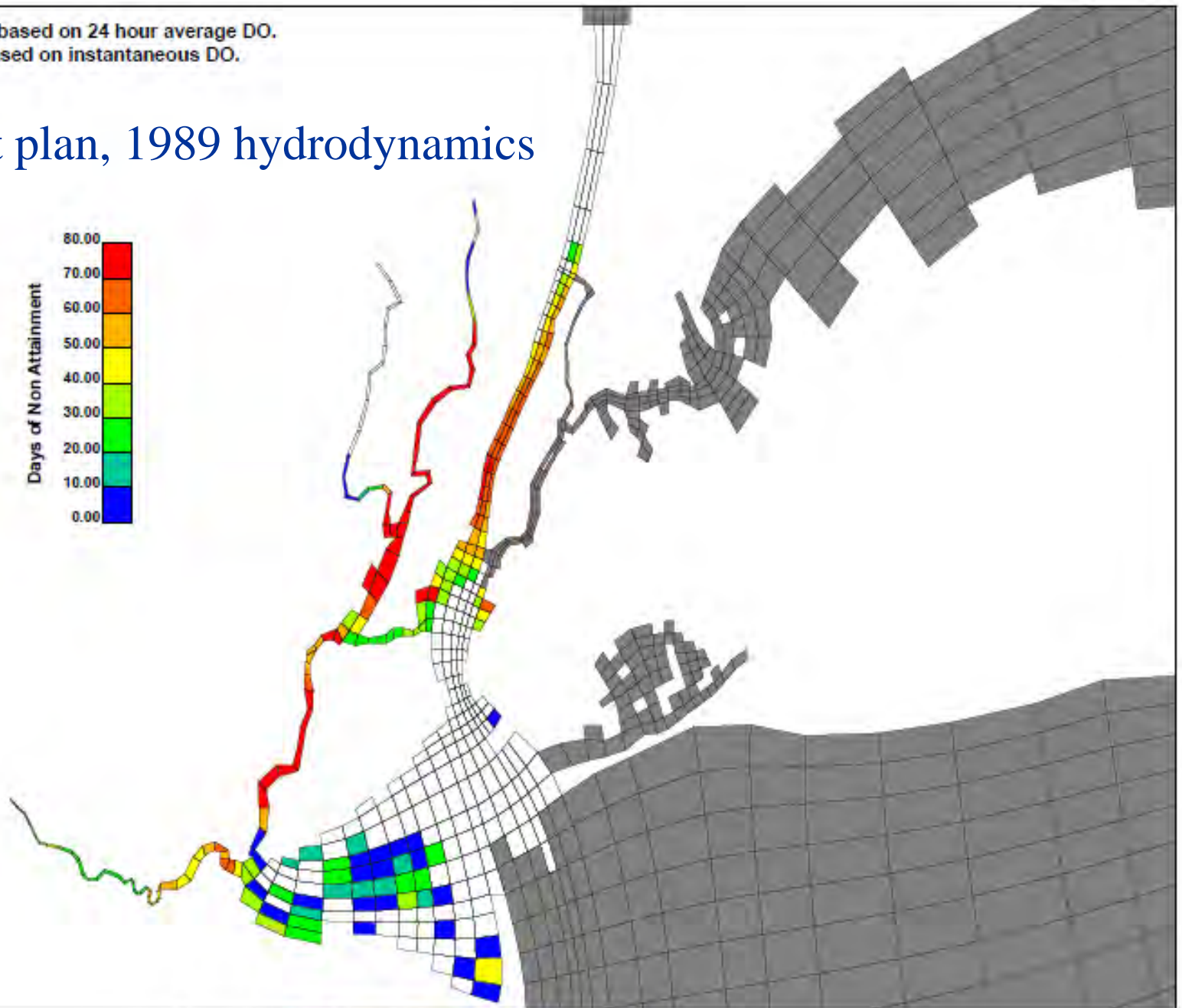


Max of New York State Chronic and Acute Criteria

NWG Baseline, 1988 Hydrodynamic Conditions

NYS Chronic is based on 24 hour average DO.
NYS Acute is based on instantaneous DO.

Without plan, 1989 hydrodynamics



Max of New York State Chronic and Acute Criteria

NWG Baseline, 1989 Hydrodynamic Conditions

Plan Elements

- Plan developed based on sequential evaluations of individual management actions reviewed by Oversight Group last year. (will review today)
- Plan C & N loading tables have been prepared & distributed for each sub-region for:
head-of-tide, stormwater, CSO, STP, atmospheric deposition
- Plan loadings are qualitatively described here

“Already Planned Improvements” Included in the Plan

- “No Net Increase” in other sources
- Clean Air Interstate Rule (CAIR) reductions to atmospheric deposition, overland runoff, and head-of-tide
- Upper Passaic River P TMDL
- Upper Raritan River P TMDL
- North Bergen STP effluent relocation to PVSC
- Updated Owl’s Head STP
- Jamaica Bay Consent Order
- Long Island Sound Nitrogen TMDL
- In-progress NYC CSO volume reductions
- SW MS4 reductions included (5%N, 10%C)
- Peconic TMDL included with LIS TMDL
all else, as 94-95

The Selected Plan- Beyond Already Planned Improvements

Sub-Regional Improvements Simulated with SWEM	
SUB-REGION	IMPROVEMENTS
Hackensack River	BCUA and SMUA C & N LOT CSO C & N LOT SW C & N LOT
Passaic River and Newark Bay	CSO C & N LOT SW C & N LOT
Raritan River/Bay	MCUA N LOT CSO C & N LOT SW C & N LOT
Kill van Kull	None
Arthur Kill	LRSA, JMEU, RSA N LOT CSO C & N LOT SW C & N LOT
Hudson River/Upper Bay	PVSC, EMUA, NBMUA, Hoboken (NHSA Adams Street), West New York (NHSA- River Road), Yonkers, North River, Owls Head "C & N Low N"

Selected Plan Elements Modified per Previous Oversight Group Instructions

Raritan Bay

- LOT N (not LOT C too) at MCUA
- Omit Oakwood Beach STP reductions

Kills

- Omit LOT reductions at Kill van Kull STPs
- LOT N (not LOT C too) at Arthur Kill STPs

Hudson/Upper Bay

- STP “low N” C&N reductions (something less or trading still to be considered?)

Plan Modifications Cued Up Already

- Headwater inputs for Raritan & Passaic Rivers per NJDEP spec
- Relief in definition of “Low N” carbon reductions
- Other opportunities for “Low N” C or N relief?

Recommended Changes to “Low N” Definition

NJHDG did two versions of the costing report. The first version defined CBOD for low N as 8 mg/L and was the basis of the current plan run definition of “low N”. The second version defines CBOD for low N as 15 mg/L. HydroQual did a calculation suggesting standards attainment with low N CBOD at 15 mg/L rather than 8 mg/L for the 5 NJ STPs in the Hudson/Upper Bay. NYCDEP's definition of low N CBOD for North River and Owls Head is 15 mg/L and those two plants and Yonkers were already in the TMDL plan run at 15 mg/L so no change for NY plants. All of the Hudson/Upper Bay facilities would have the same effluent concentration requirement for CBOD =15 mg/L for low N.

In the TMDL plan run, effluent N for “low N” was set at the lower of the concentration from the costing reports or the 94-95 measurements. HydroQual calculations suggest standards attainment with effluent N for “low N” strictly at the “low N” costing report definitions to provide some relief. These “low N” effluent N concentrations would still result in standards attainment with CBOD at 15 mg/L. (Yonkers, North Bergen, West New York, Edgewater, Hoboken)

Other Decisions for Relaxing Low N

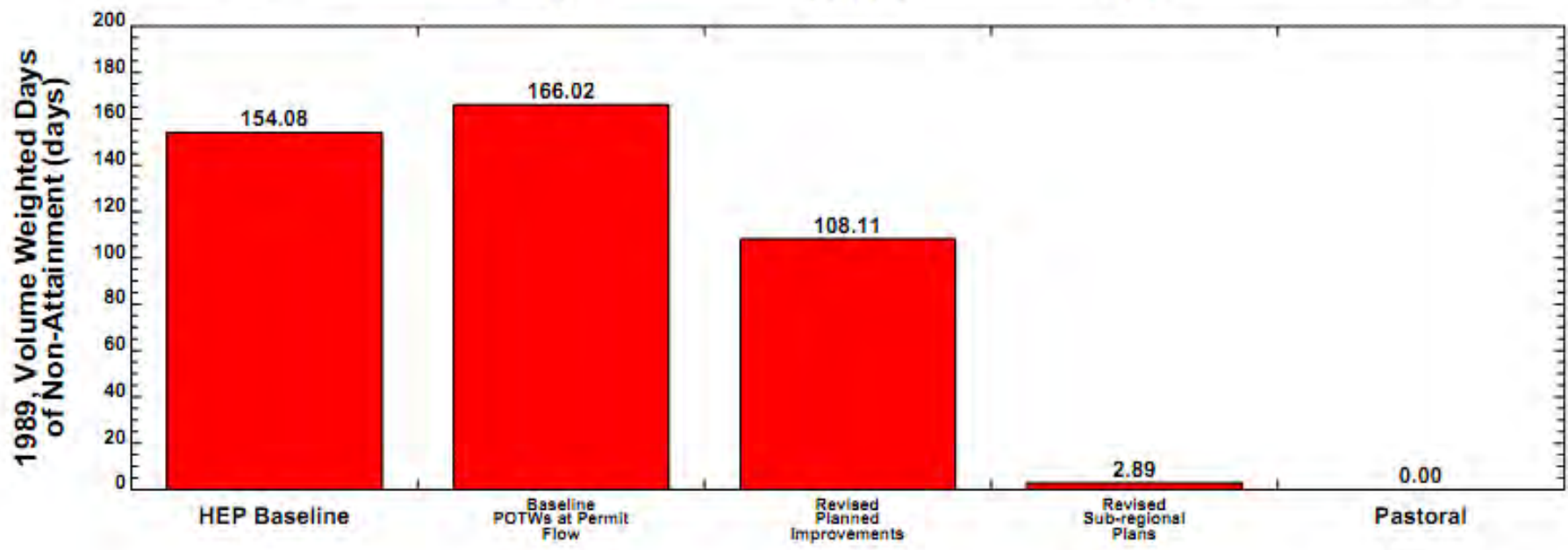
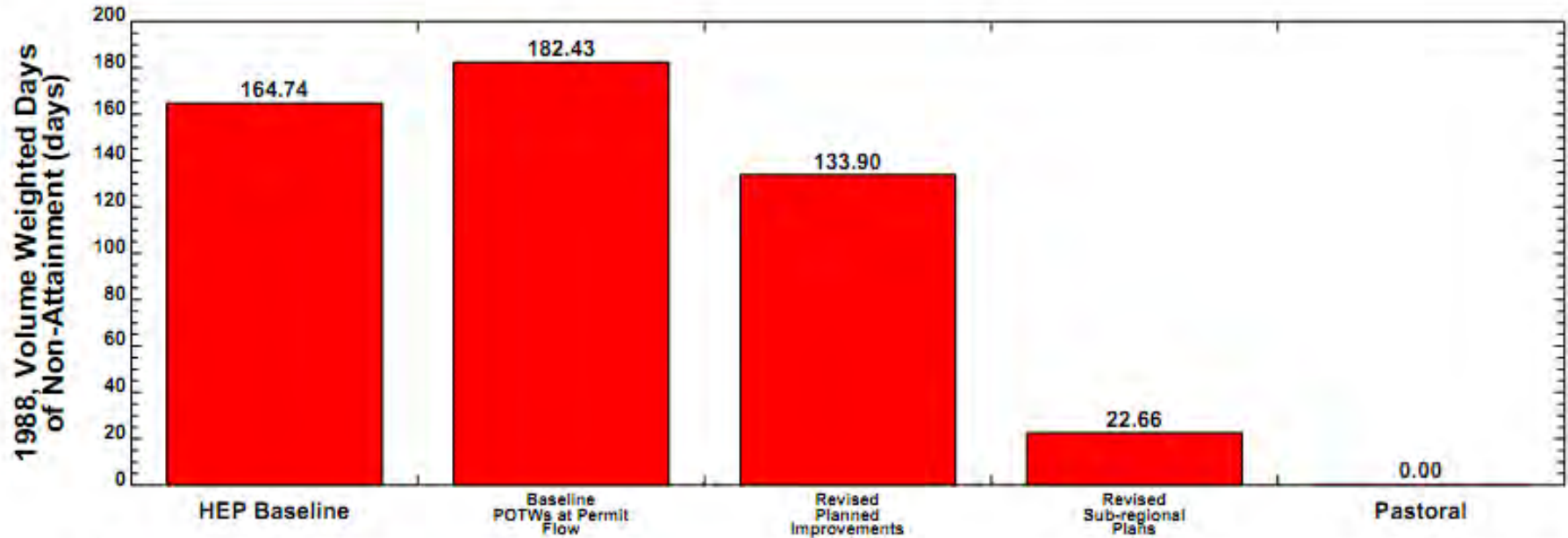
- Yonkers – existing? worst “Low N” quality from those plants costed for “Low N”? Other options?
- While “Low N” is equitable across plants for BOD, there is disparity between “Low N” effluent nitrogen concentrations. Should we be working toward uniform/closer nitrogen concentrations for “Low N” plants when trying to relax overall requirements?

Plan Definitions

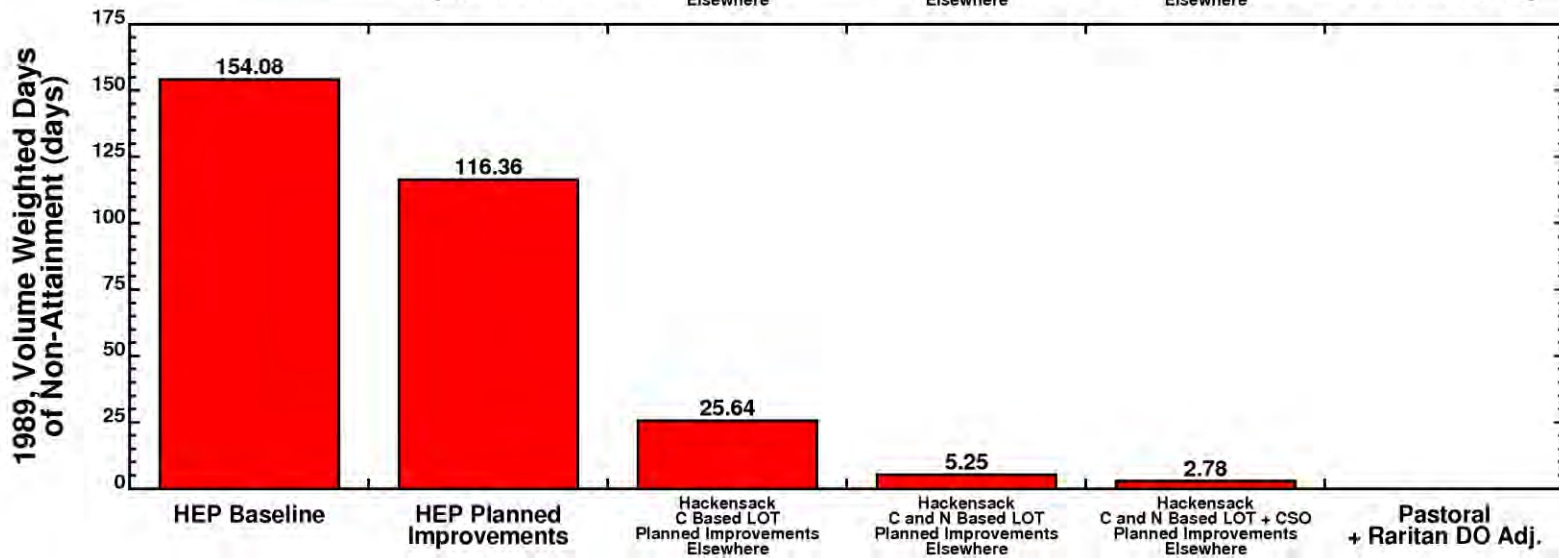
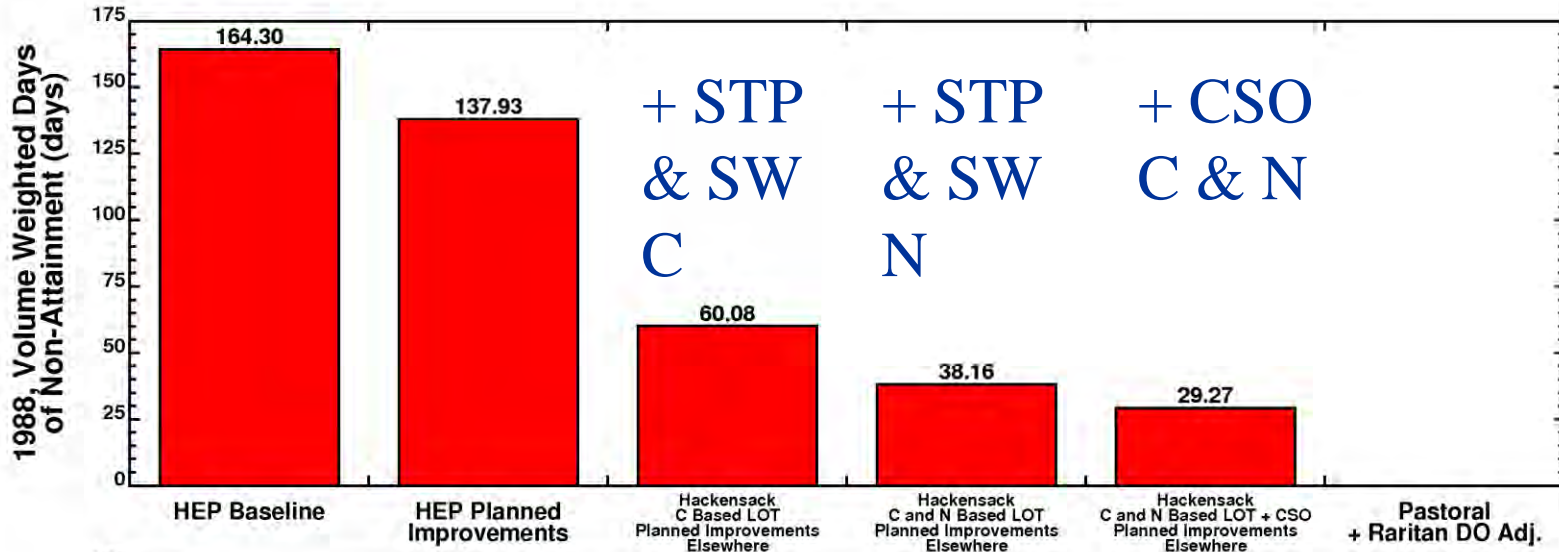
- CSO LOT = 40%C, 25%N reductions
- SW LOT = 15%C, 20%N reductions
- STP LOT = plant specific per costing reports
- STP Low N = plant specific per costing reports

Plan Individual Management Actions By Sub-Region –Hackensack River

- Involves LOT reductions for both C & N



Hackensack River Total Volume Weighted Days of Non-Attainment of NYS Chronic Standard

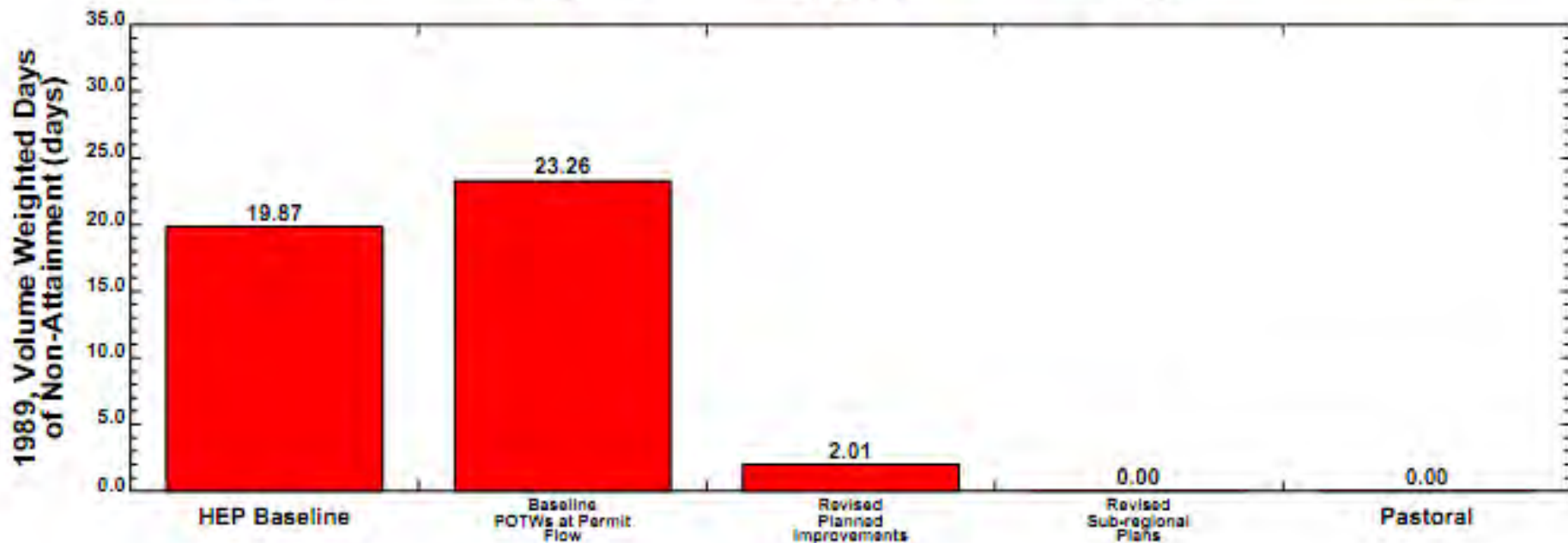
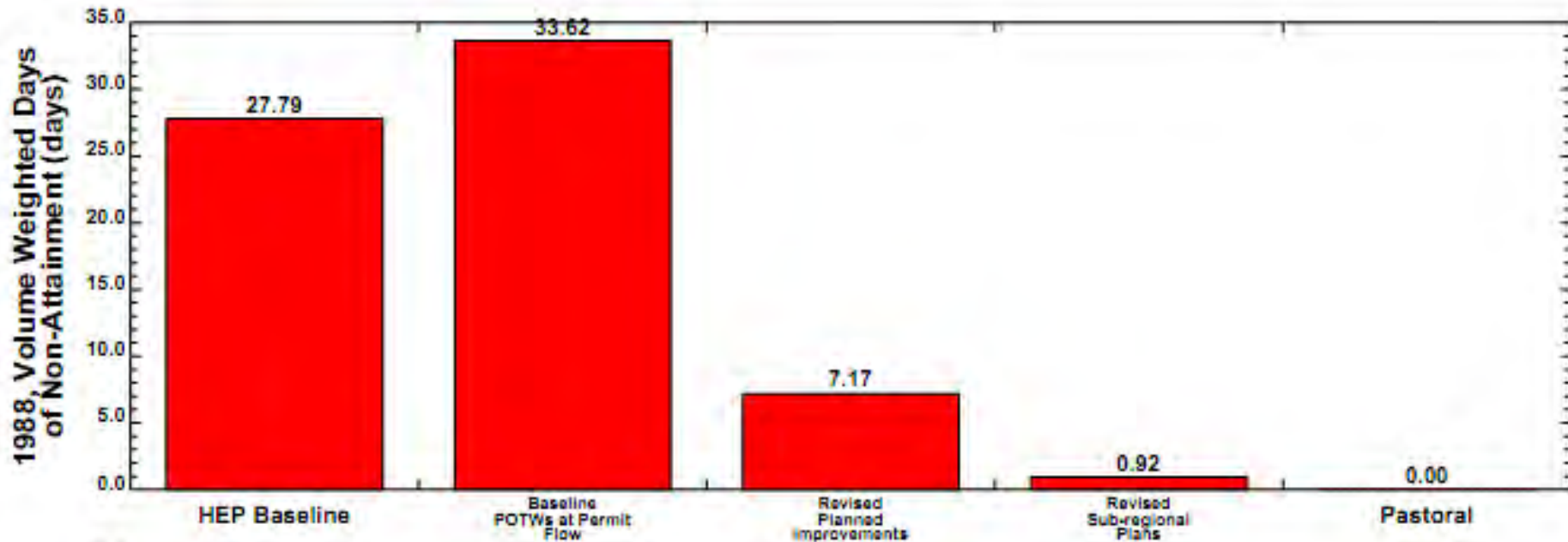


Hackensack River Total Volume Weighted Days of Non-Attainment of NYS Chronic Standard

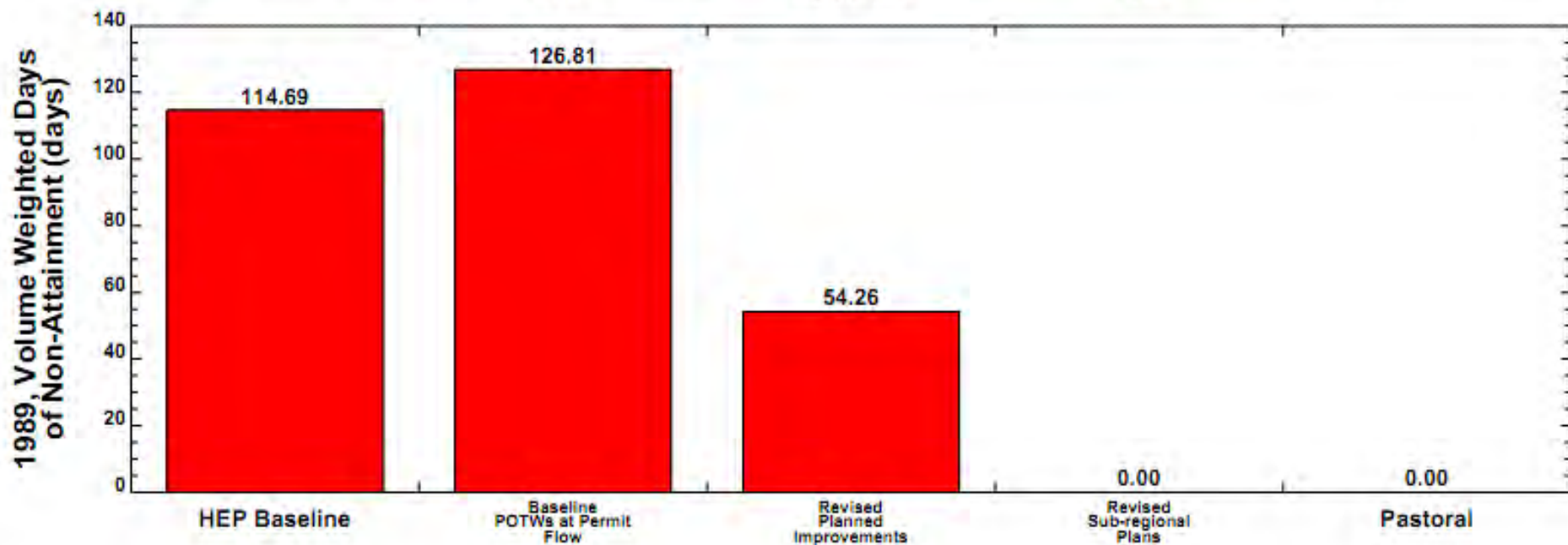
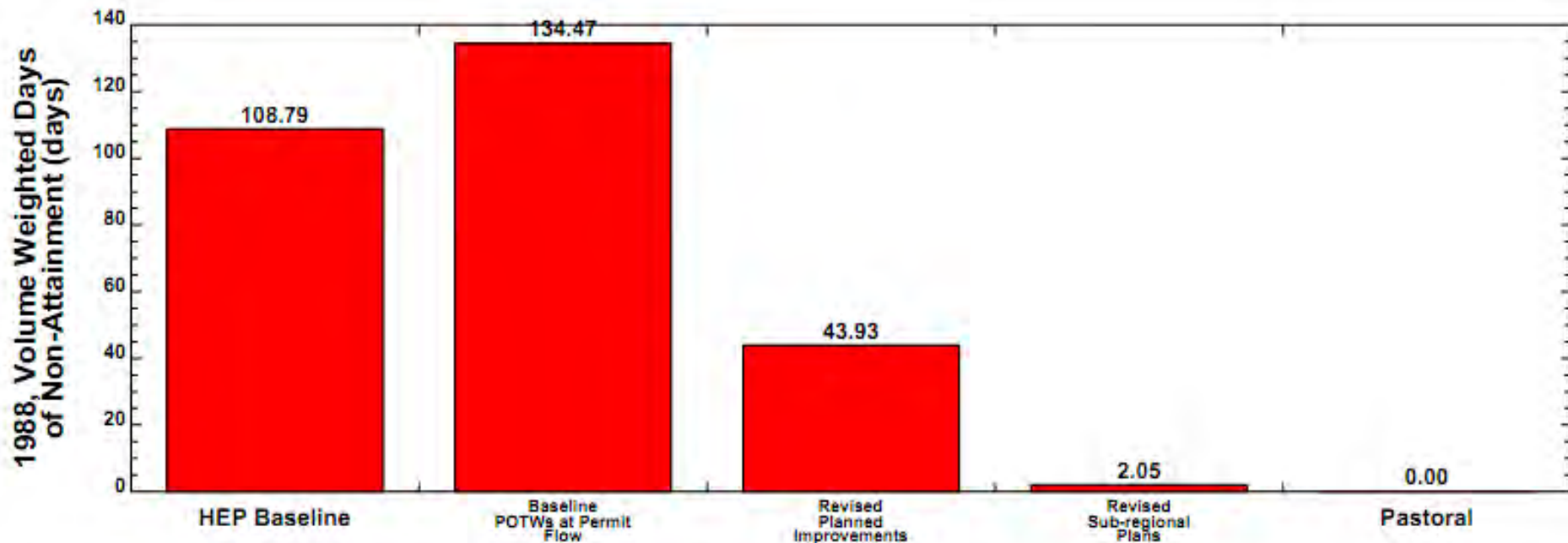
Plan Individual Management Actions By Sub-Region –Passaic River & Newark Bay

Although separate diagrams are presented for each of the Passaic River and Newark Bay, they were considered jointly in formulating the plan.

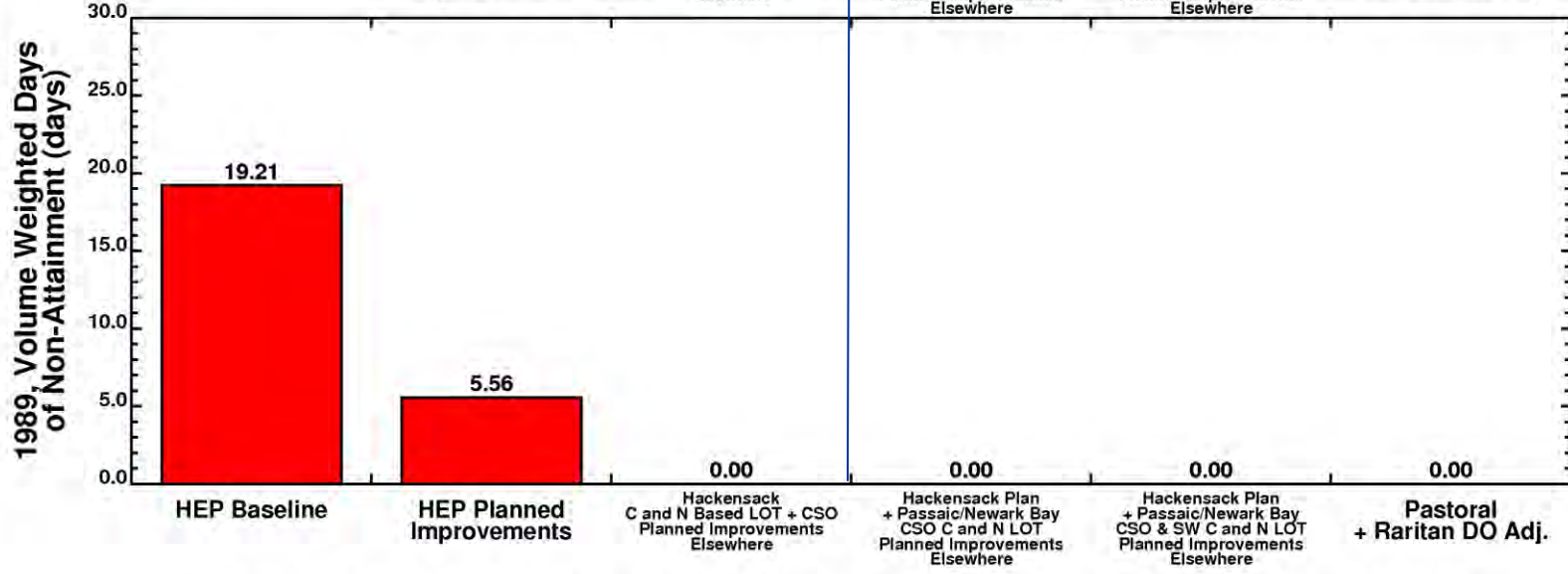
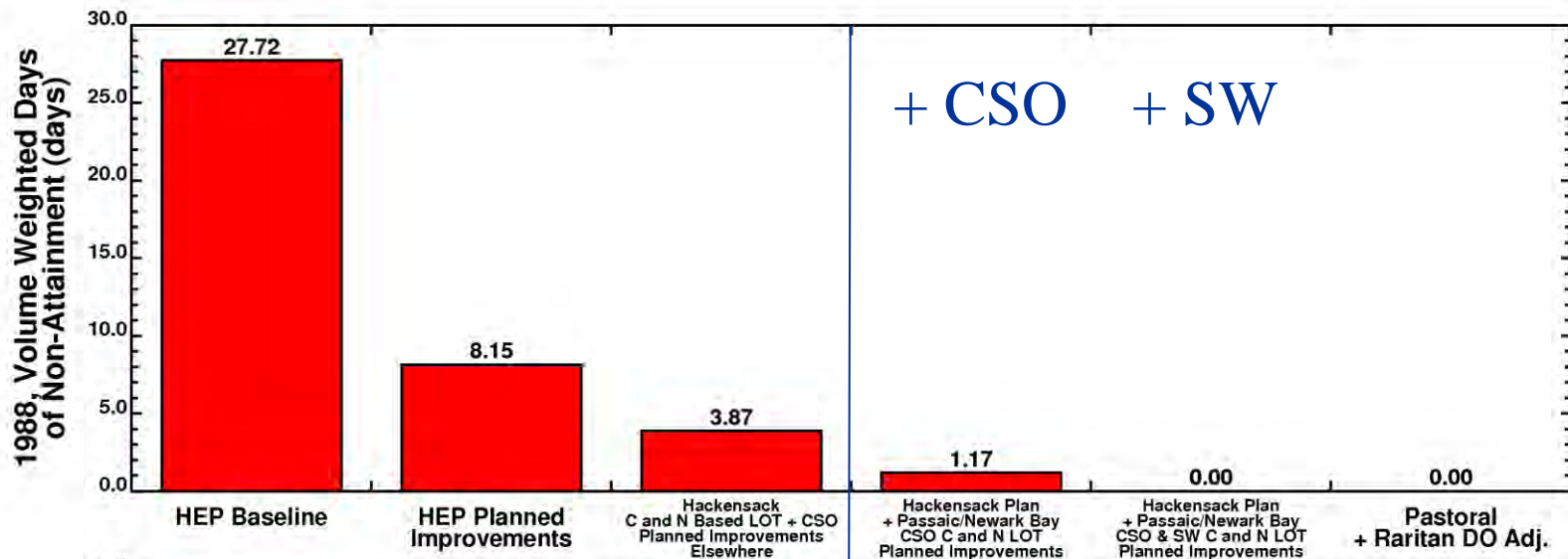
Involves LOT reductions for both C & N



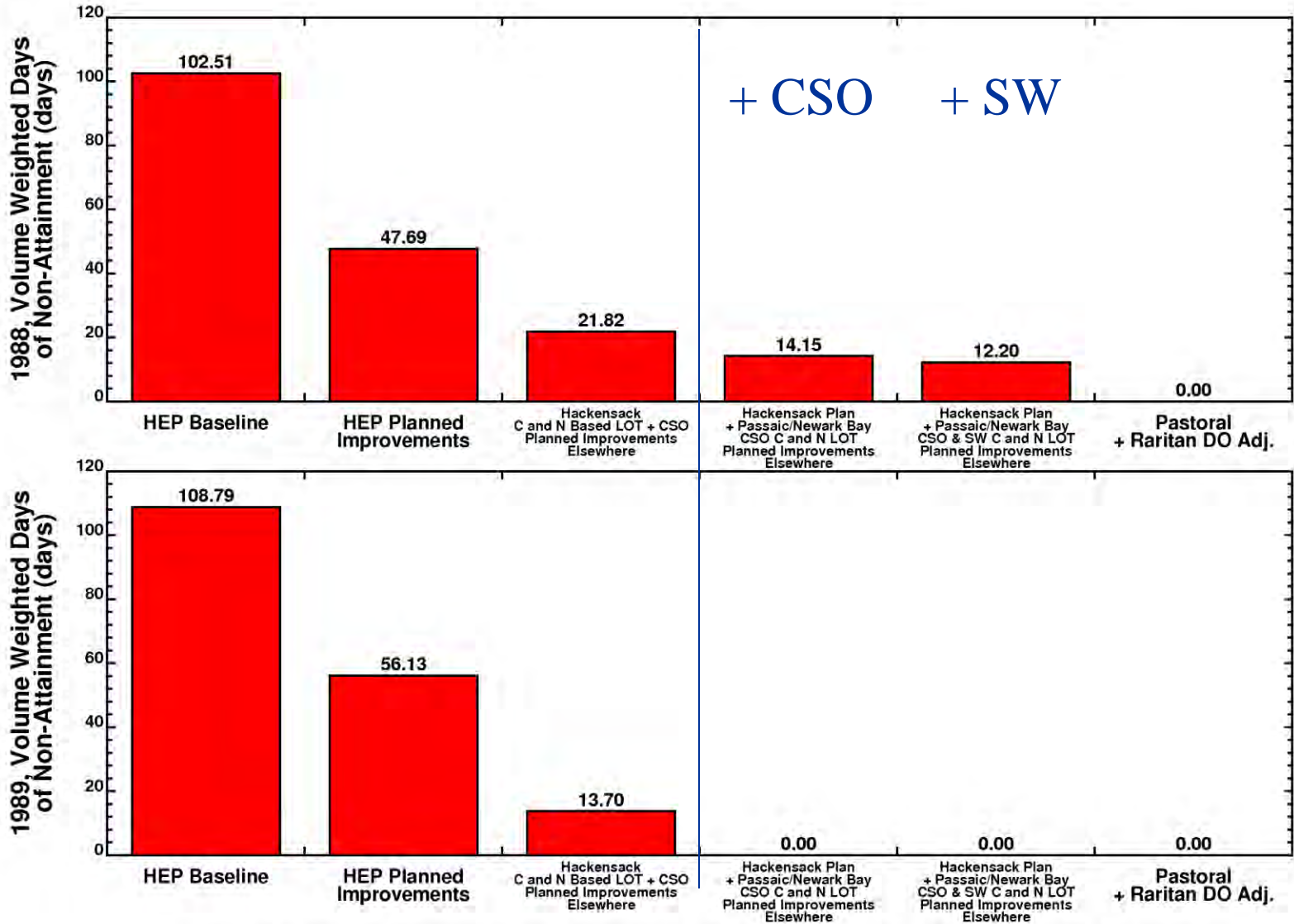
Passaic River Total Volume Weighted Days of Non-Attainment of NYS Chronic Standard



Newark Bay Total Volume Weighted Days of Non-Attainment of NYS Chronic Standard



Passaic River Total Volume Weighted Days of Non-Attainment of NYS Chronic Standard

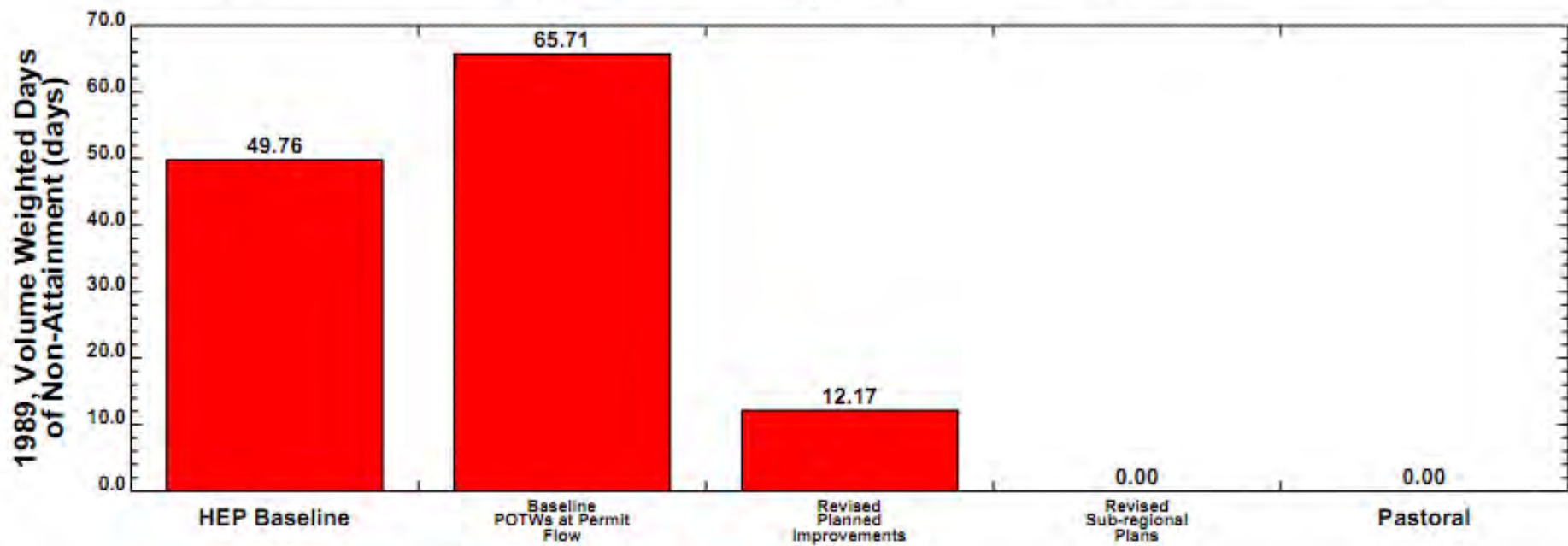
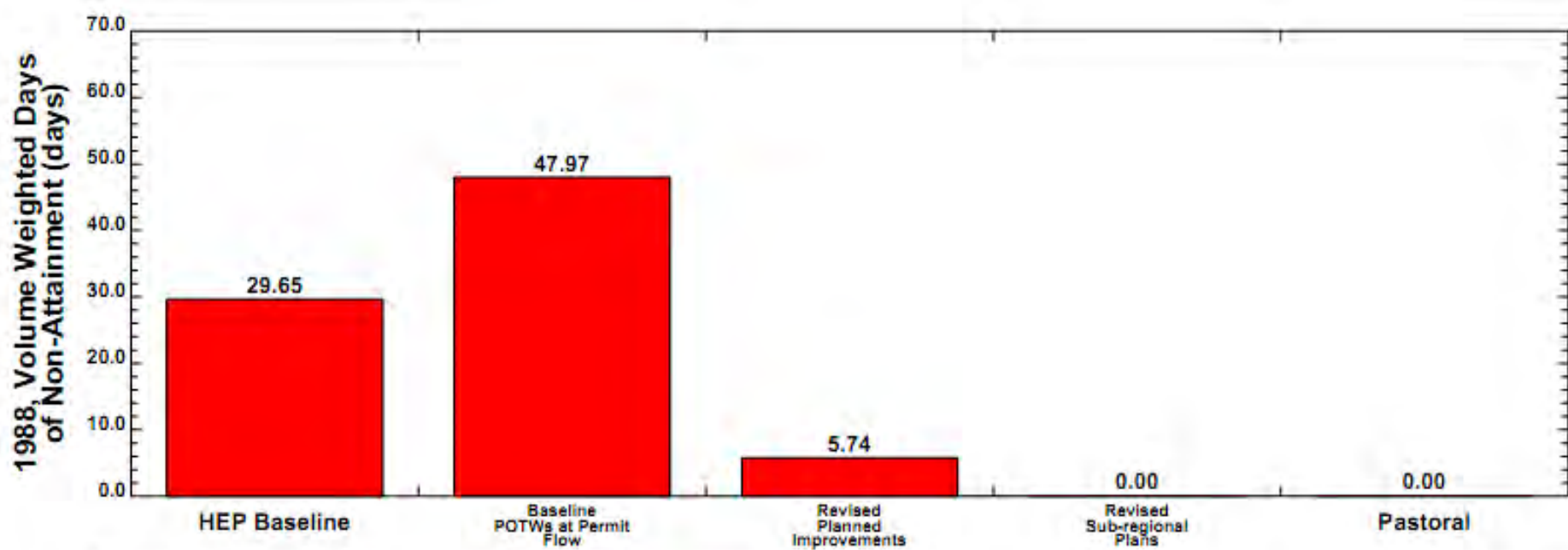


Newark Bay Total Volume Weighted Days of Non-Attainment of NYS Chronic Standard

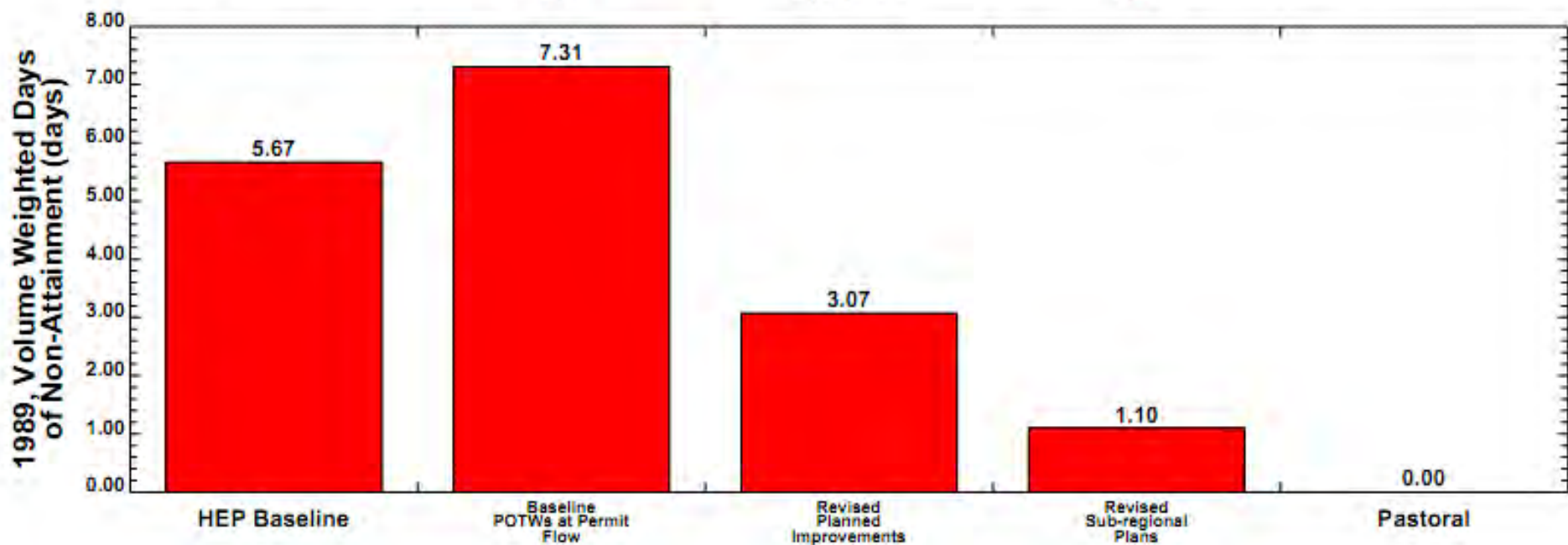
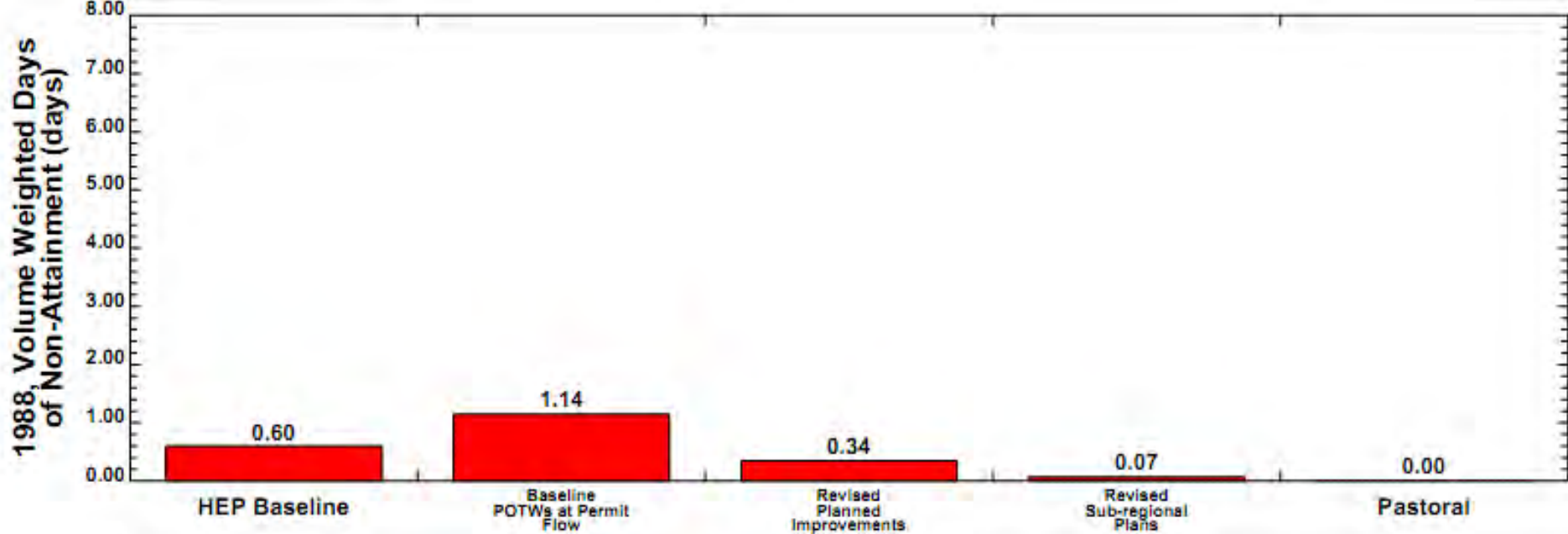
Plan Individual Management Actions By Sub-Region- Raritan River & Bay

Although separate diagrams are presented for each of the Raritan River and Raritan Bay, they were considered jointly in formulating the plan.

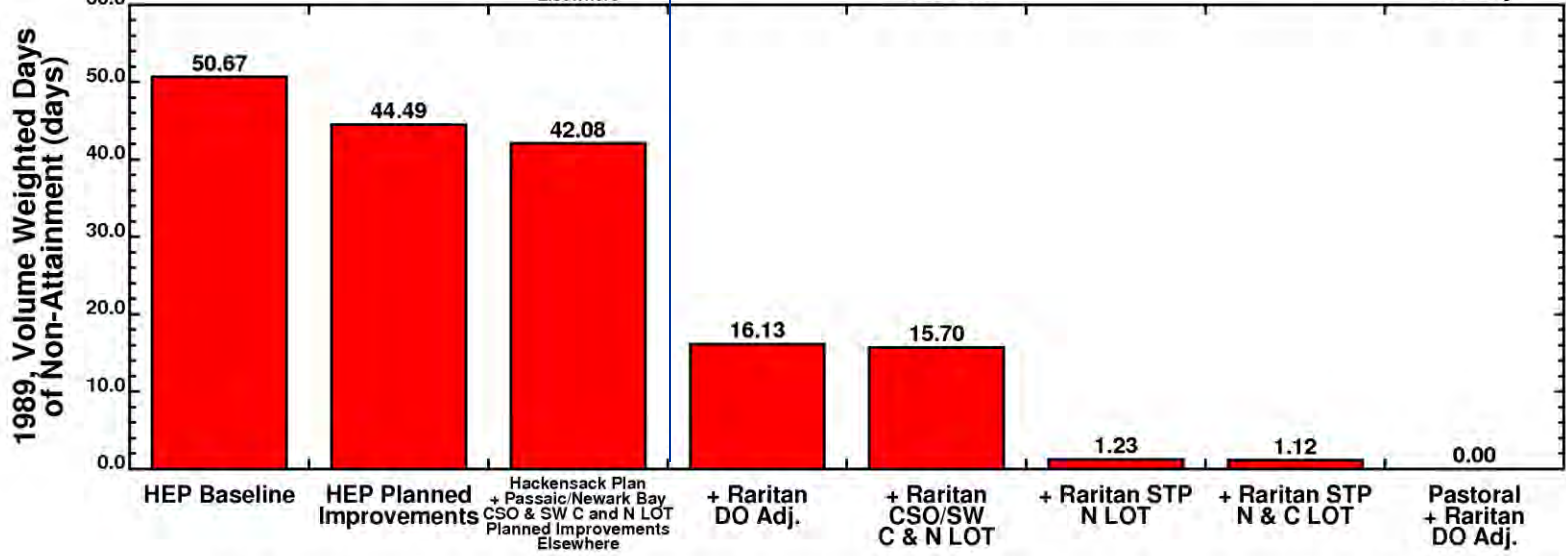
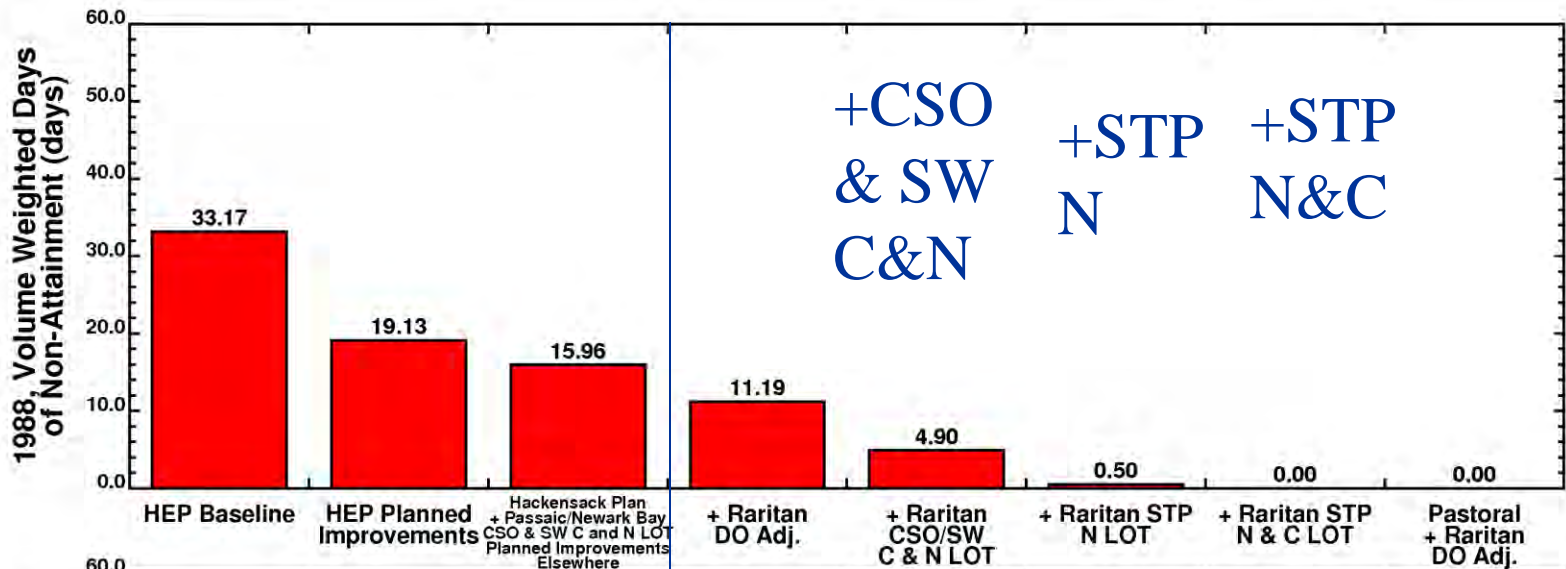
Involves LOT reductions for both C & N



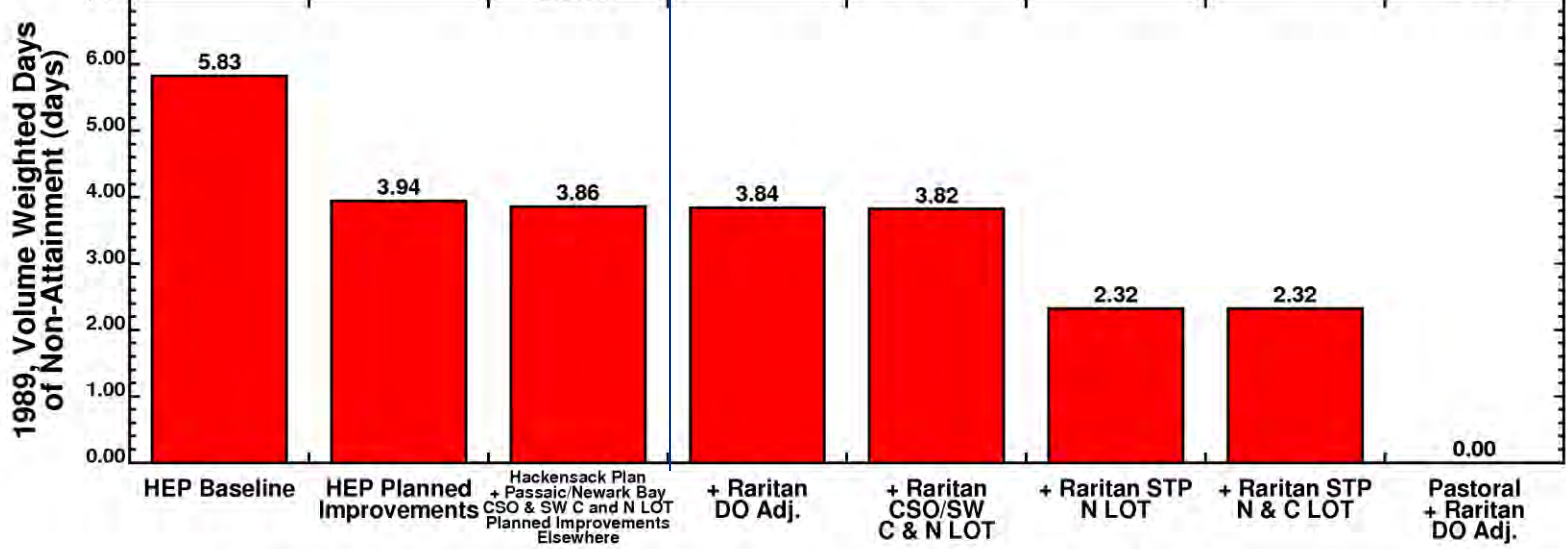
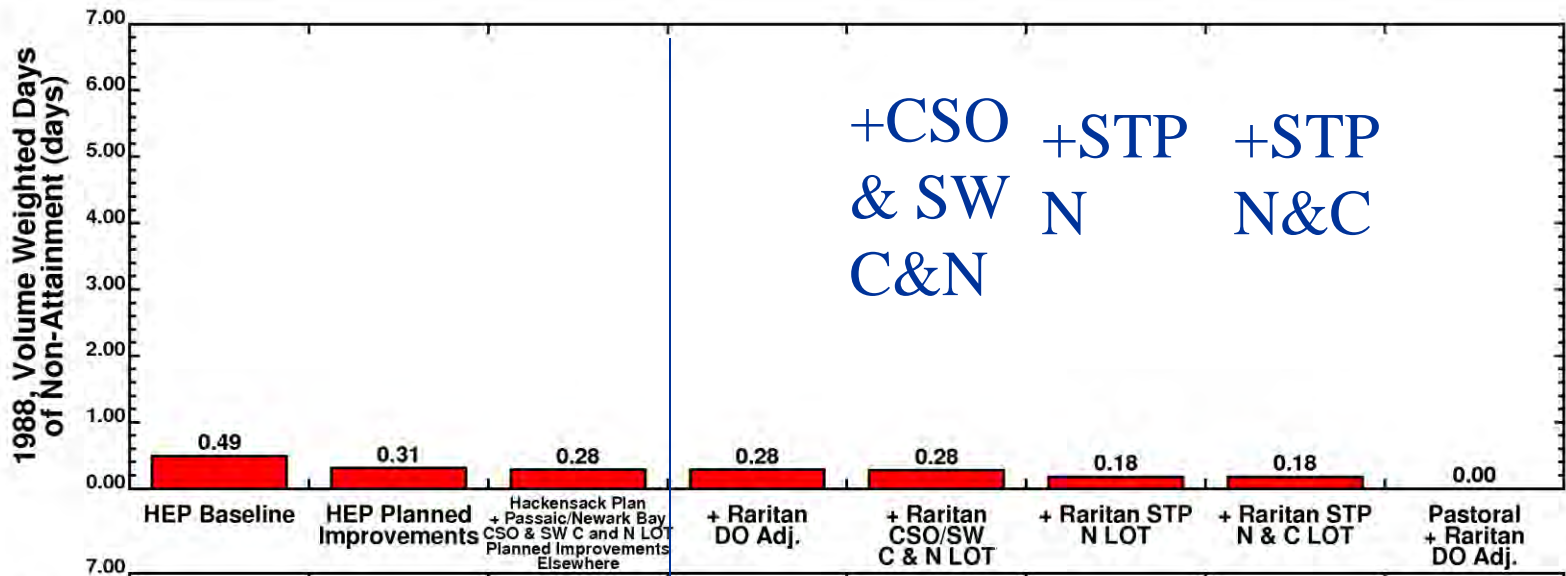
Raritan River Total Volume Weighted Days of Non-Attainment of NYS Chronic Standard



Raritan Bay Total Volume Weighted Days of Non-Attainment of NYS Chronic Standard



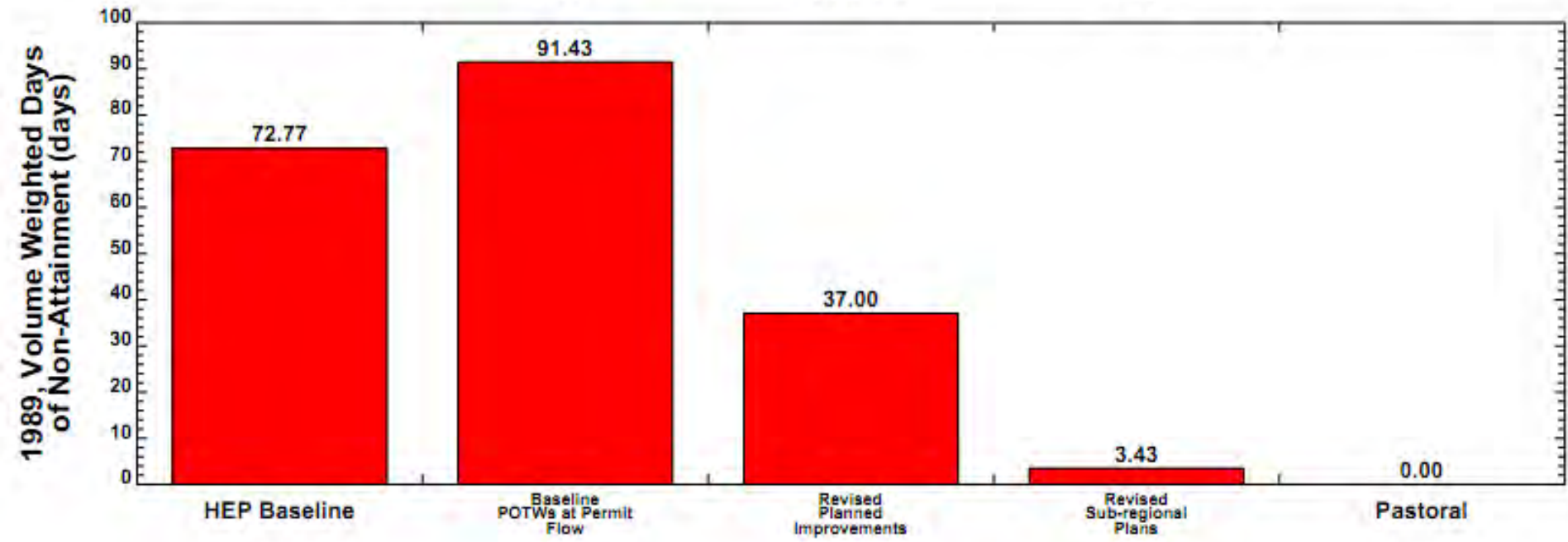
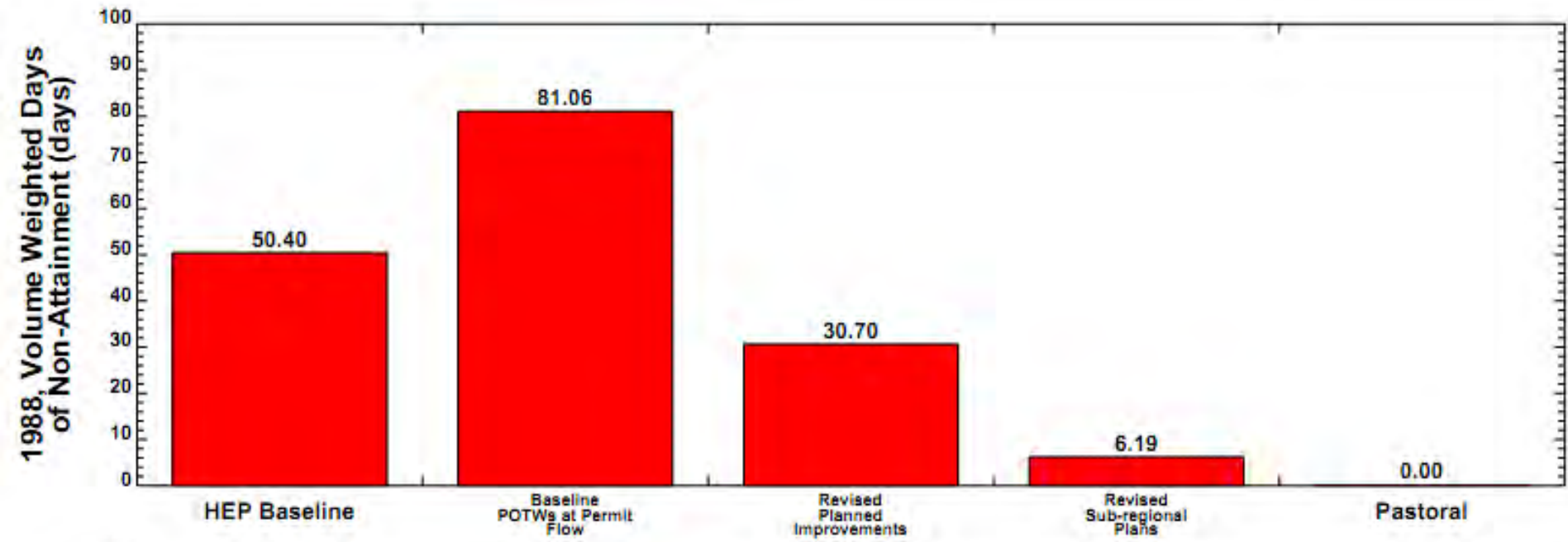
Raritan River Total Volume Weighted Days of Non-Attainment of NYS Chronic Standard



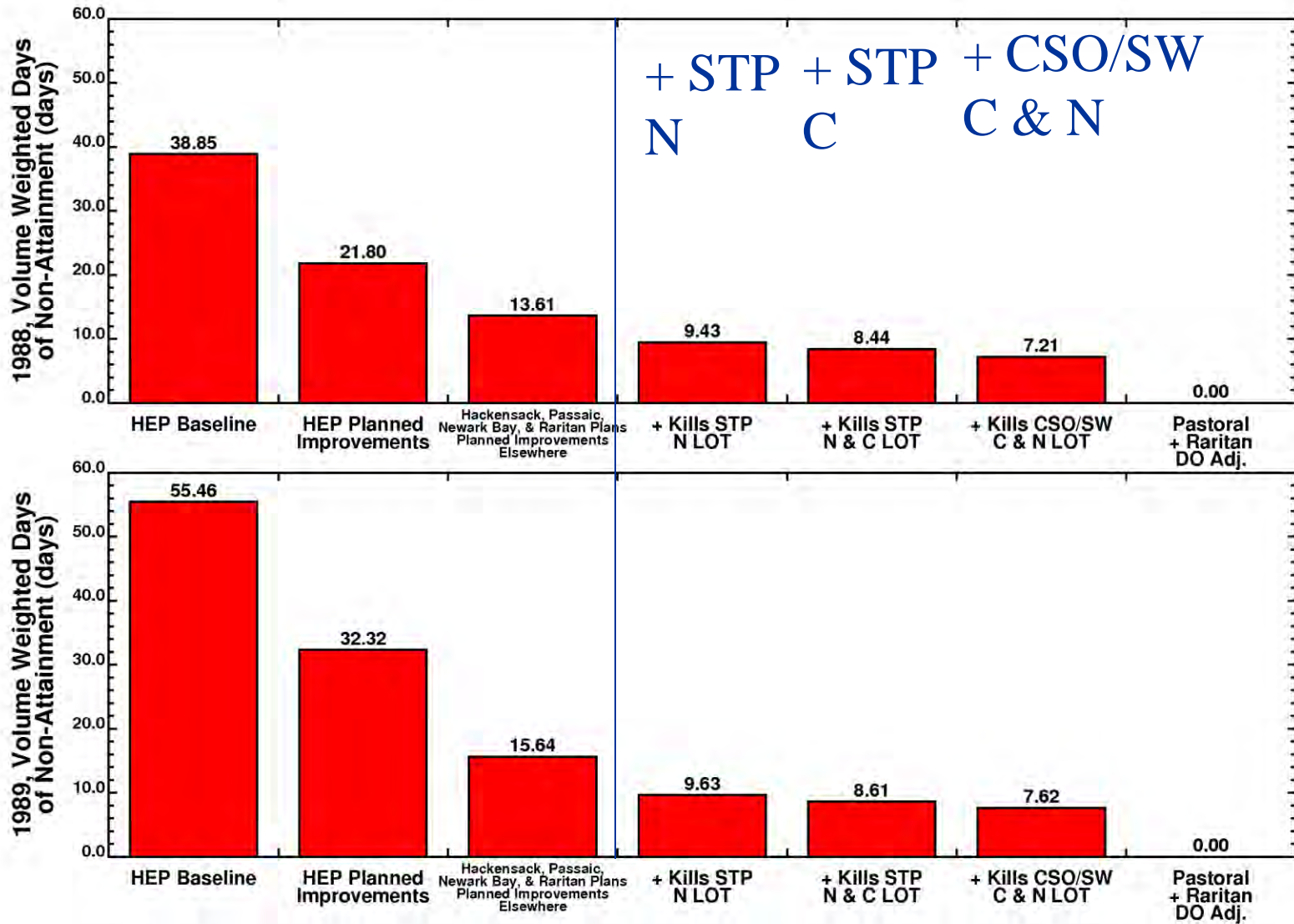
Raritan Bay Total Volume Weighted Days of Non-Attainment of NYS Chronic Standard

Plan Individual Management Actions By Sub-Region- Arthur Kill

Involves LOT reductions for both C & N



Arthur Kill Total Volume Weighted Days of Non-Attainment of NYS Chronic Standard

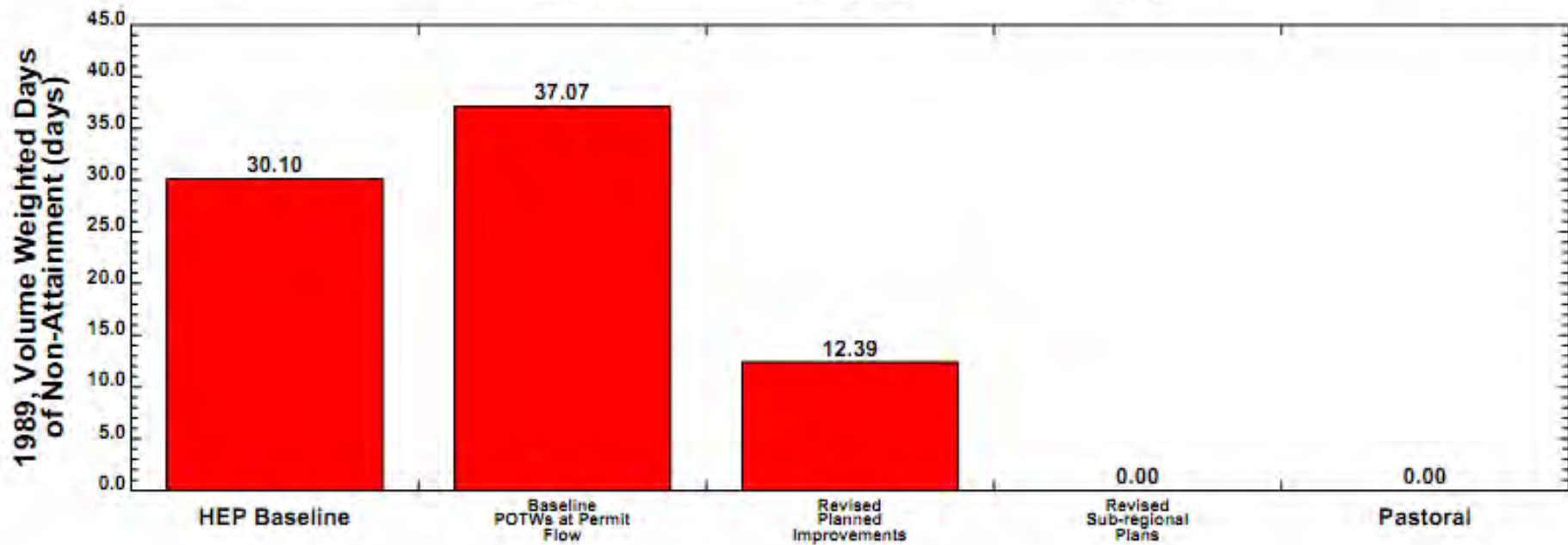
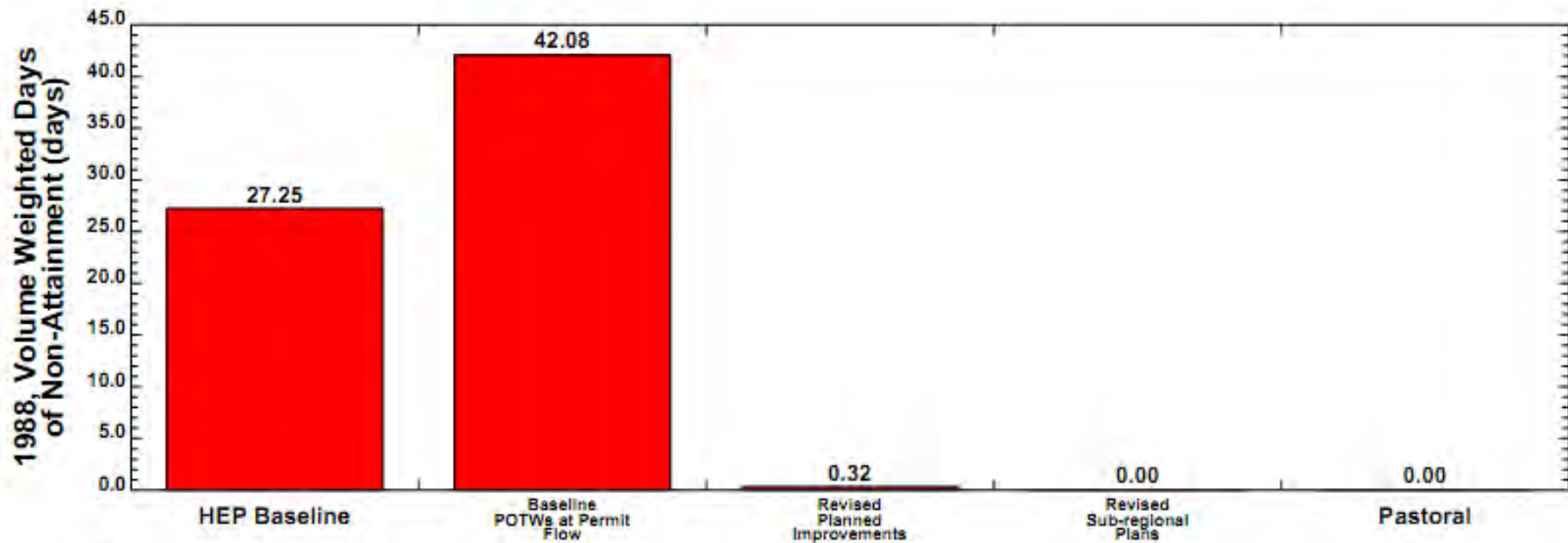


Arthur Kill and Kill Van Kull Total Volume Weighted Days of Non-Attainment of NYS Chronic Standard

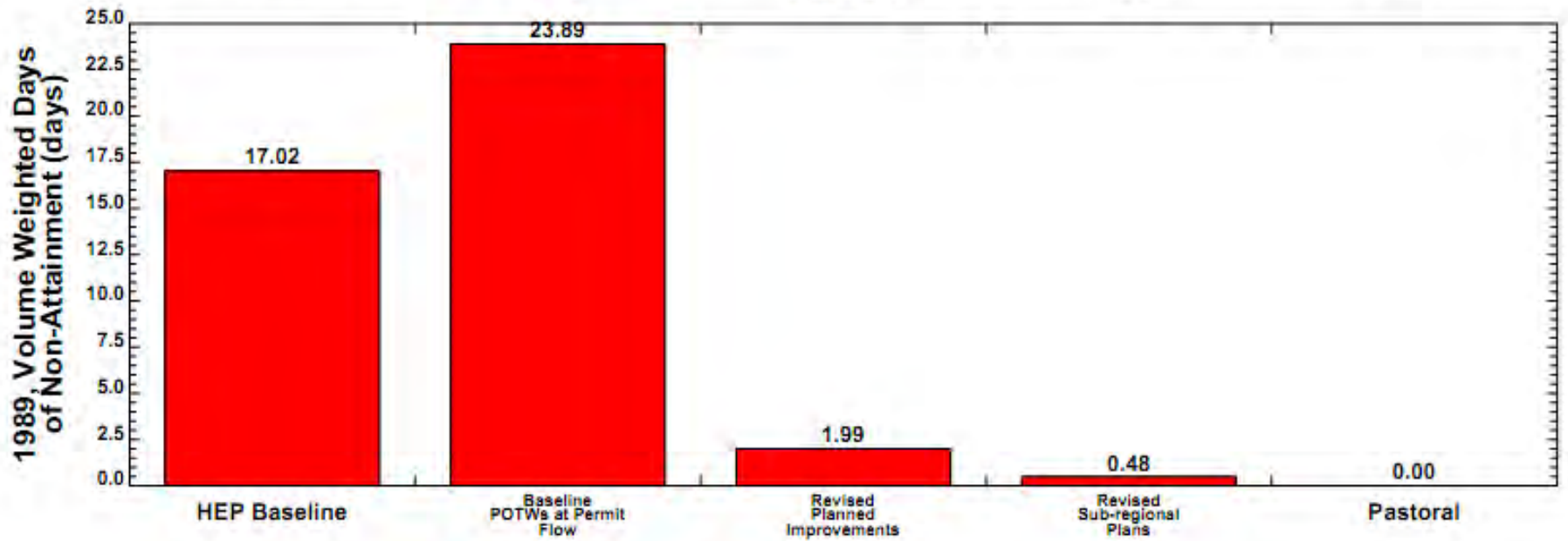
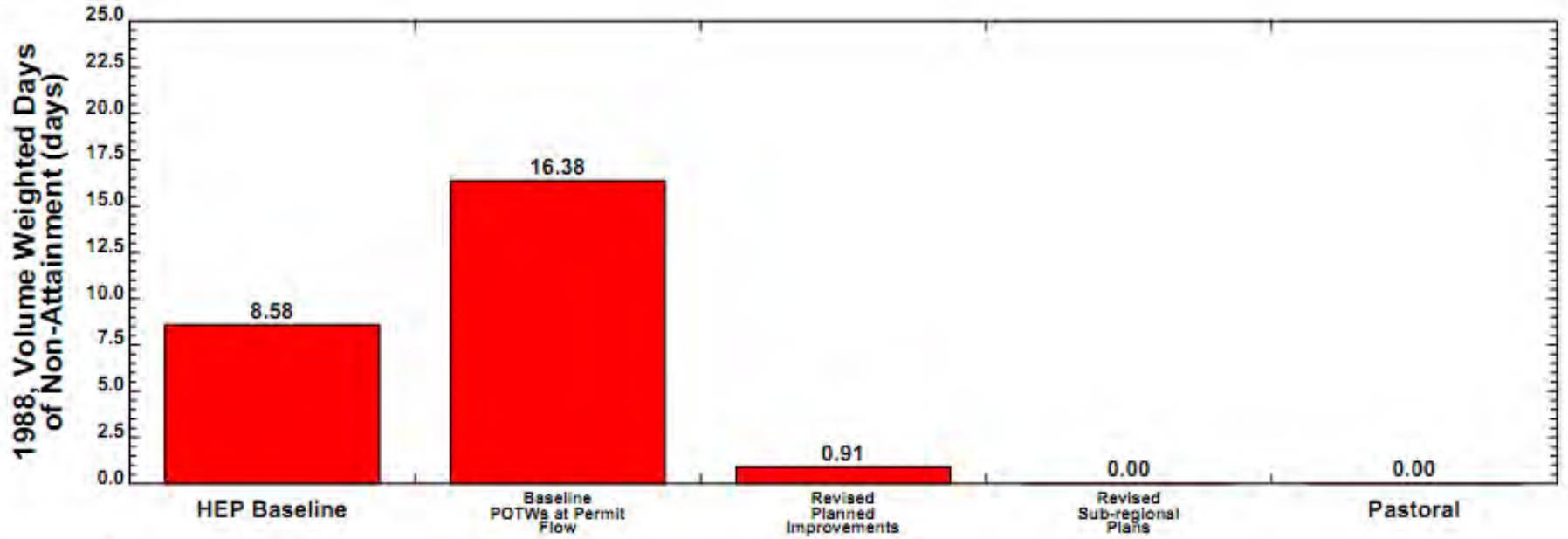
Plan Individual Management Actions By Sub-Region- Hudson River & Upper Bay

Although separate diagrams are presented for each of the Hudson River and Upper Bay, they were considered jointly in formulating the plan.

Involves “Low N” reductions for both C & N

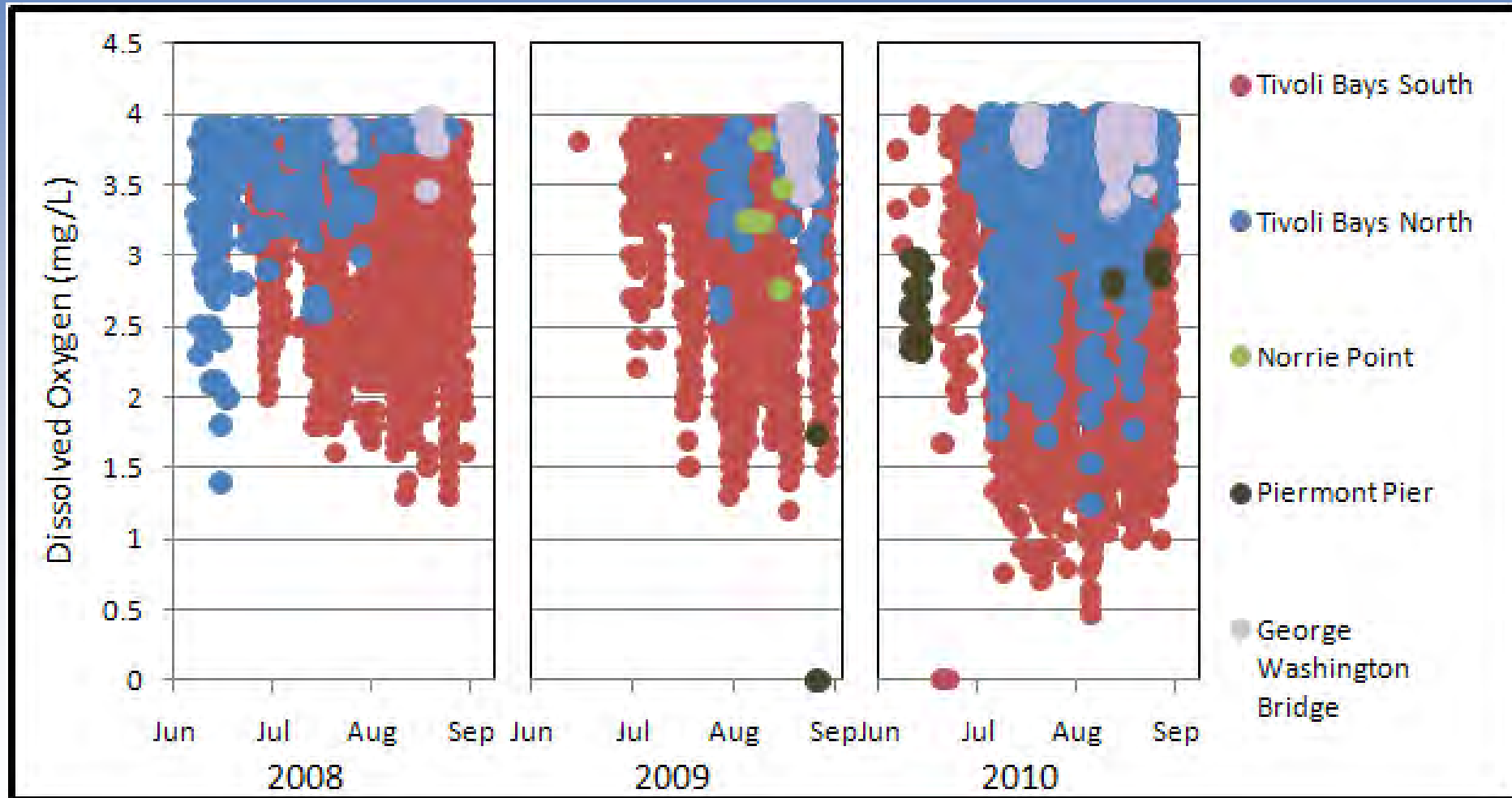


Hudson River, Tappan Zee to Battery
Total Volume Weighted Days of Non-Attainment of NYS Chronic Standard



Upper Bay, Battery to Verrazano Narrows
 Total Volume Weighted Days of Non-Attainment of NYS Chronic Standard

HRECOS Measured DO Problem in the Hudson River (< 4 mg/L current SE2/I standards)



Other Anticipated Work

- Revised par value/trial trading ratio analysis
- Drafting of plan/TMDL document
- Several implementation planning/post public document SWEM simulations
- ???????