Will New York Harbor ever be "Clean" or just Cleaner?

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HRES CONFERENCE
CLEAN WATER ACT AT 40:
FACING THE FUTURE
MAY 7, 2012
VASSAR COLLEGE
POUGHKEEPSIE, NY

NY Harbor

Receives daily discharge from:

Hudson, Passaic, & Raritan Rivers

Over 10 million people live in the metropolitan area

Clean Water Act of 1972

Overall Objective of the CWA

- "restore and maintain the chemical, physical, and biological integrity of the Nation's Waters"

Goals

- Attainment of water quality sufficient to support protection and propagation of fish, shellfish and wildlife… and recreation – the *fishable/swimmable* goal
- Prohibition of the discharge of toxic pollutants in toxic amounts
- Financial support for POTWs and promotion of *areawide* waste treatment

Major issues in NY Harbor that have been addressed by the Clean water Act

- Poor water quality due to raw or partially treated sewage and storm water
  - Dissolved Oxygen
  - Pathogens
- Toxic substances affecting marine life and fish consumption (and dredging)
- Degradation of habitat through filling

Background: Sewage Treatment

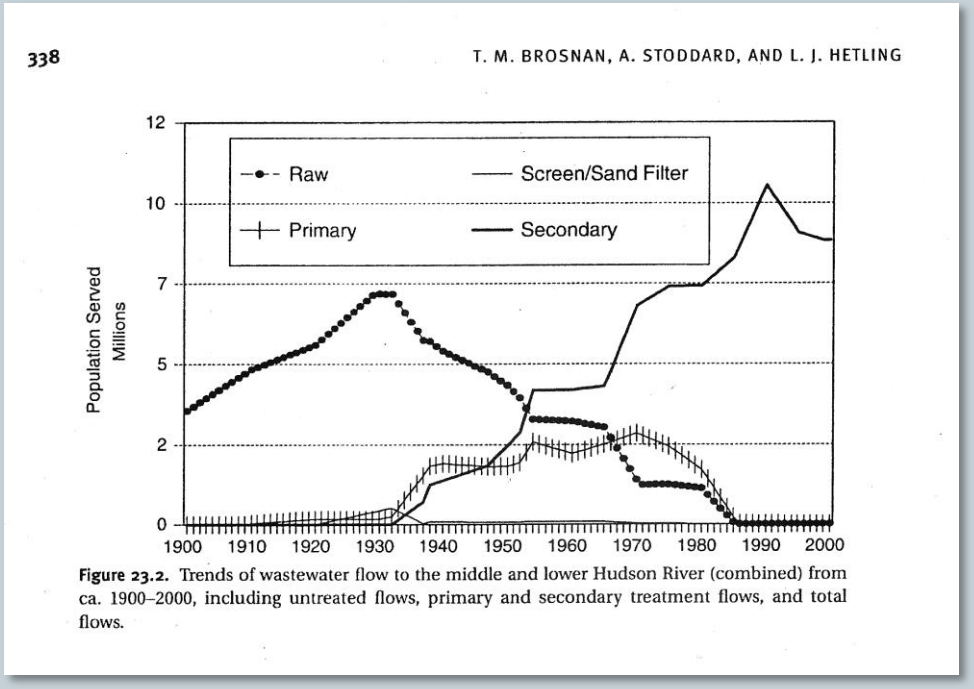
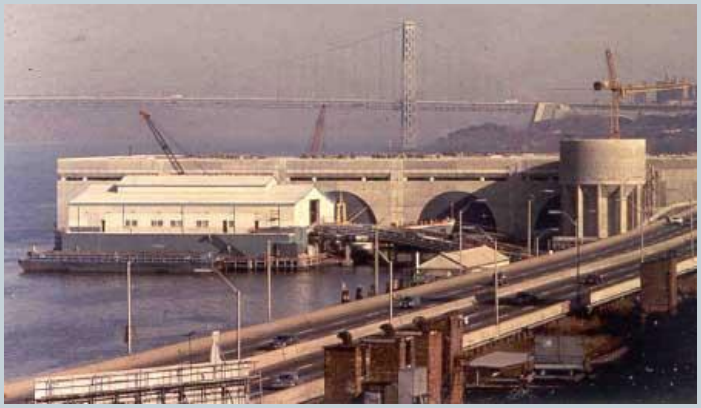
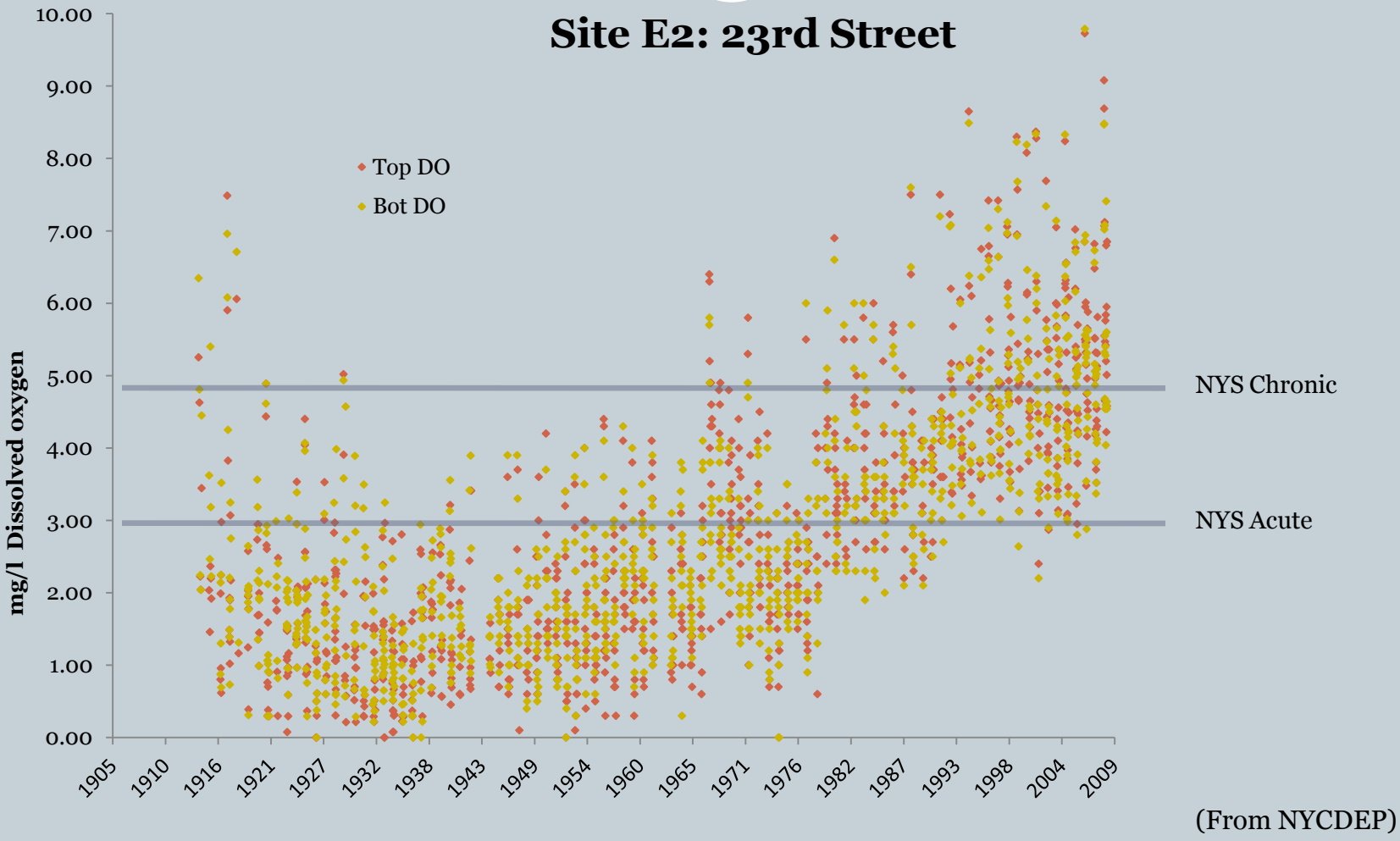


Figure 23.2. Trends of wastewater flow to the middle and lower Hudson River (combined) from ca. 1900–2000, including untreated flows, primary and secondary treatment flows, and total flows.



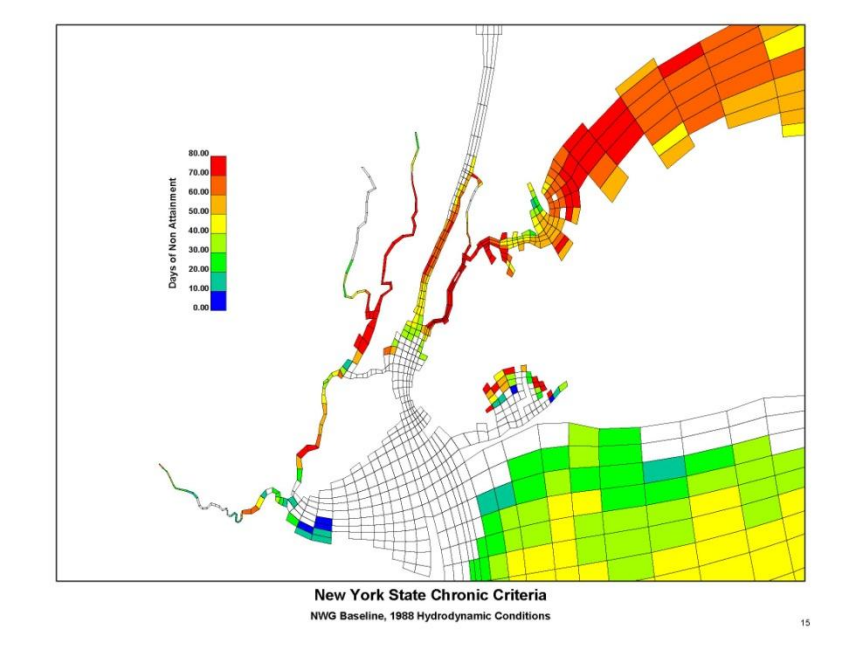
Background: Dissolved Oxygen



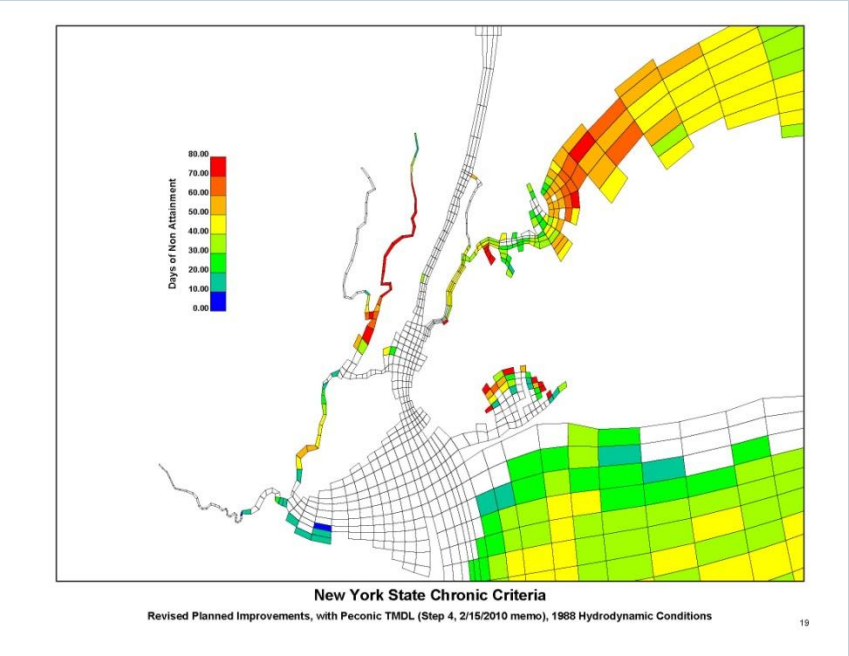
(From NYCDEP)

Dissolved Oxygen

"Baseline"



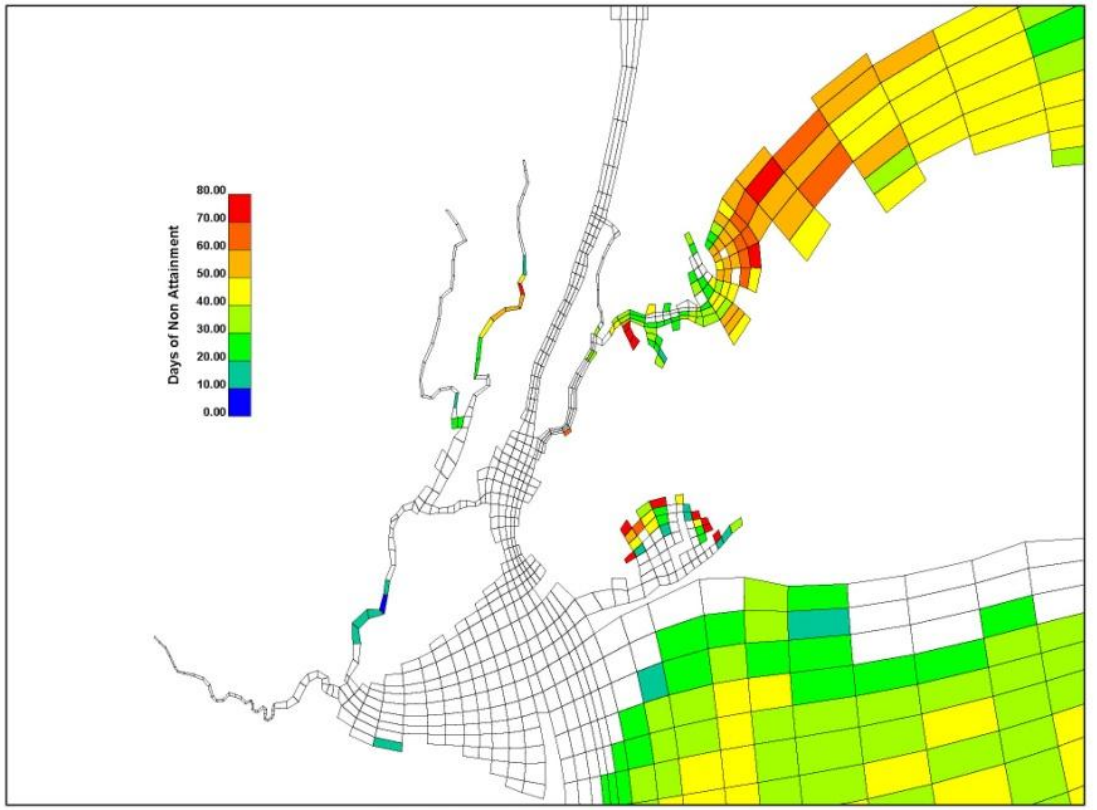
With Planned Improvements



(HydroQual, 2010)

Future Dissolved Oxygen

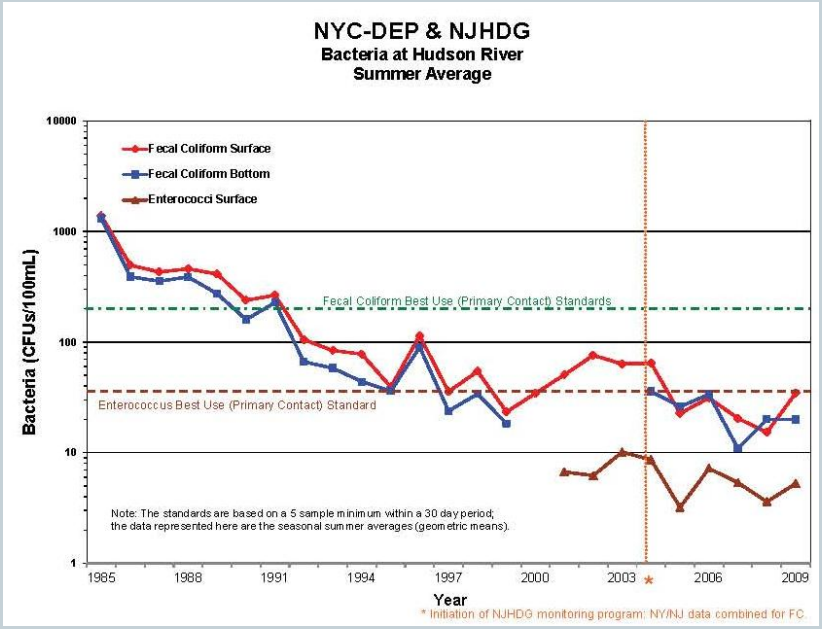
With TMDL



(HydroQual, 2010)

Pathogens

Coliform Bacteria Trends



Enterococcus

(NYCDEP, 2011)

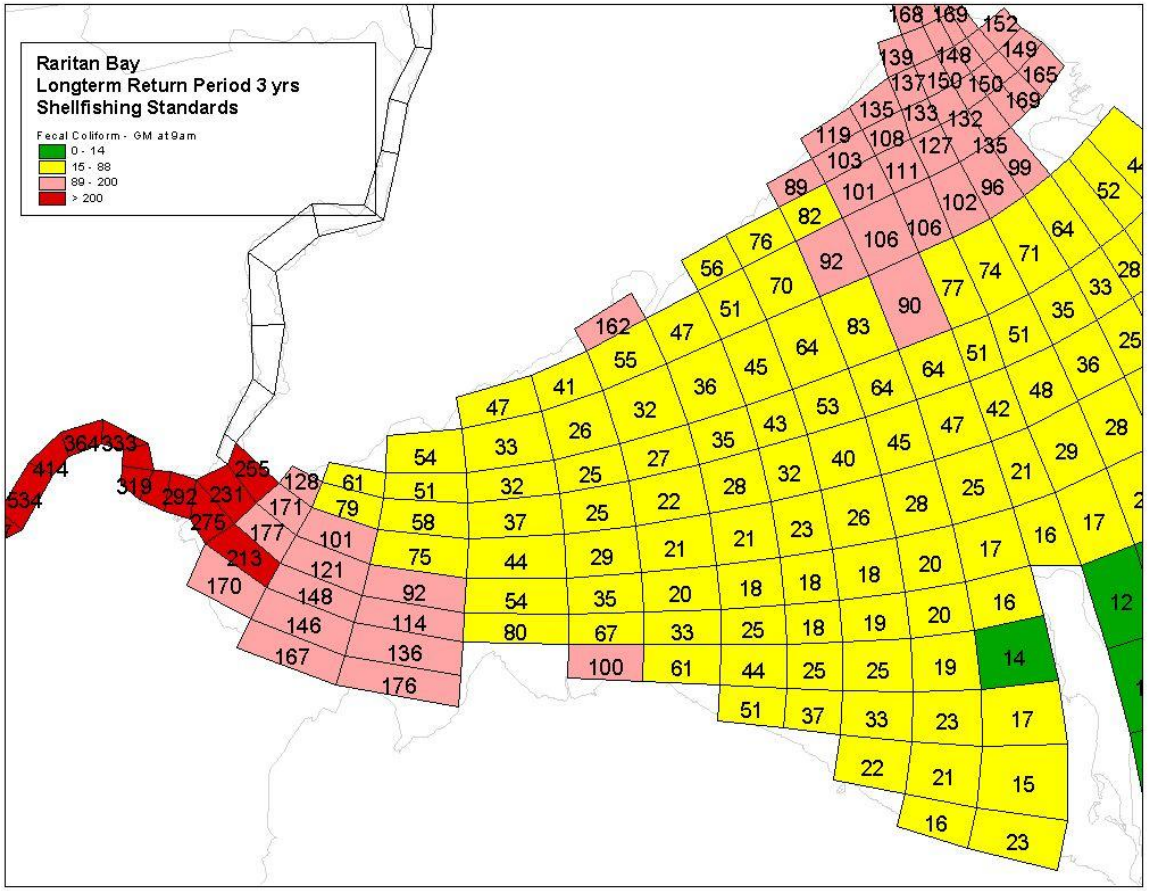
Pathogen Standards for Shellfishing (NY)

Fecal Coliform Geometric Means

Green=Direct harvest OK

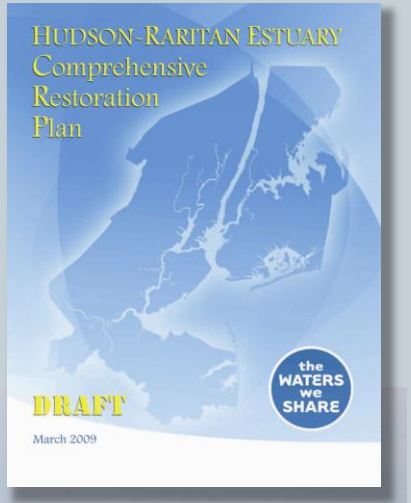
Yellow = Depuration OK

Red/pink=No depuration or direct harvest allowed



(HydroQual, 2010)

Oyster Restoration



Toxic Substances

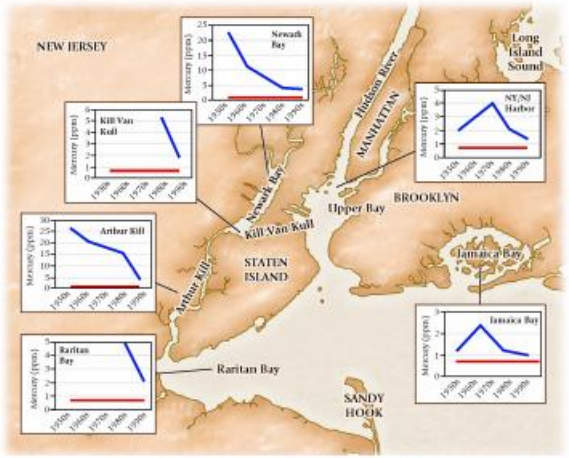


Figure 23 *Mercury concentrations in NY/NJ Harbor Estuary sediments over multiple decades. Red line on graphs indicates ER-M for mercury (see sidebar on ER-Ms) (Bopp 2000).*

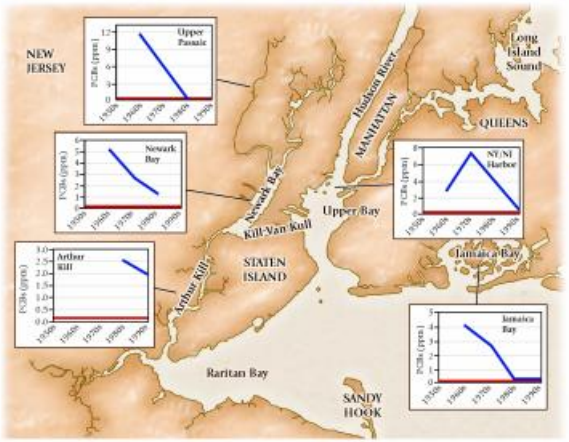


Figure 24 *PCB concentrations in NY/NJ Harbor Estuary sediments over multiple decades. Red line on graphs indicates ER-M for PCBs (see sidebar on ER-Ms) (Bopp 2000).*

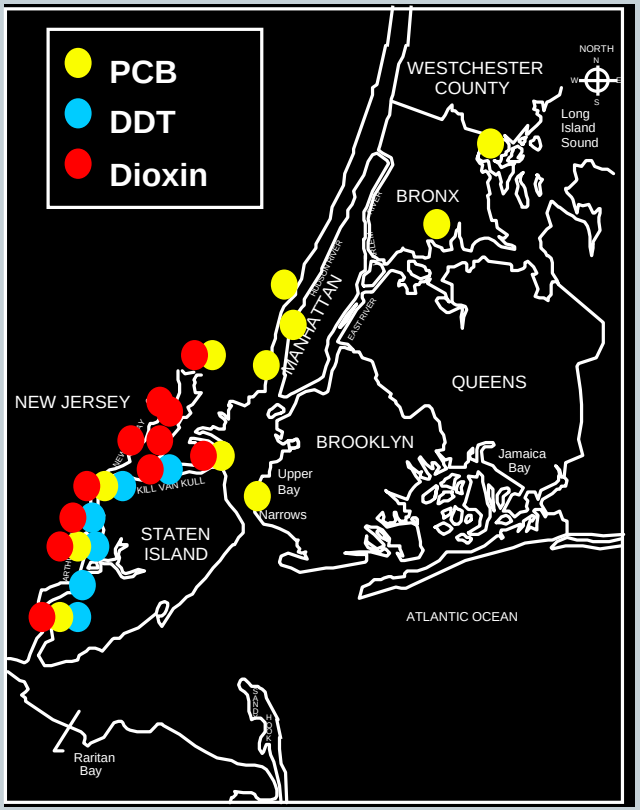
Toxics

Fish Consumption Advisories

	Upper Bay	Harlem East River	Kills/ Newark Bay	Jamaica Bay	Lower Bay	NY Bight Apex
PCBs	●	●	●	◐	●	◐
Chlordane	◐	●	●	●	◐	○
DDT	○	○	◐	○	○	○
Dioxins	●	ns	●	○	ns	◐
Mercury	○	◐	○	○	○	○

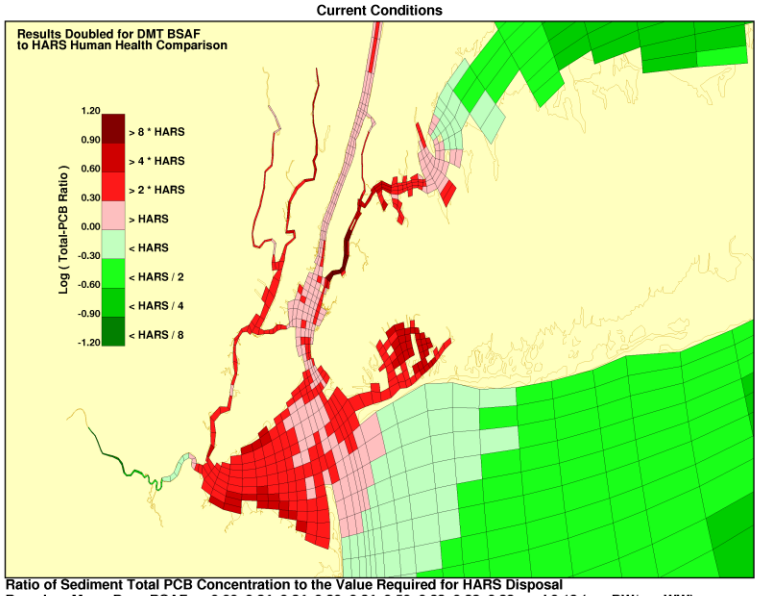
○ No species above action limit ◐ 1 species above action limit ● 2 or more species above action limit ns = Not sampled

Dredged Material Criteria Violations

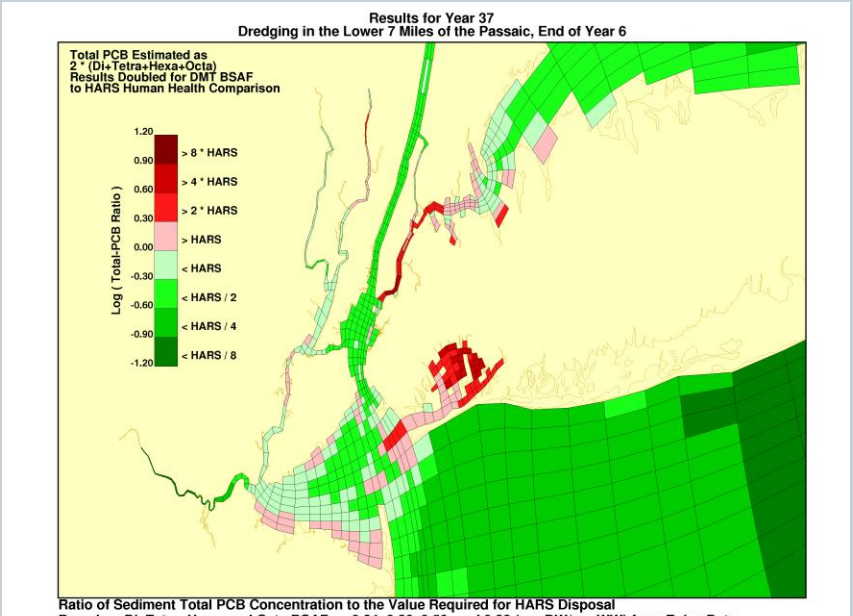


Toxics

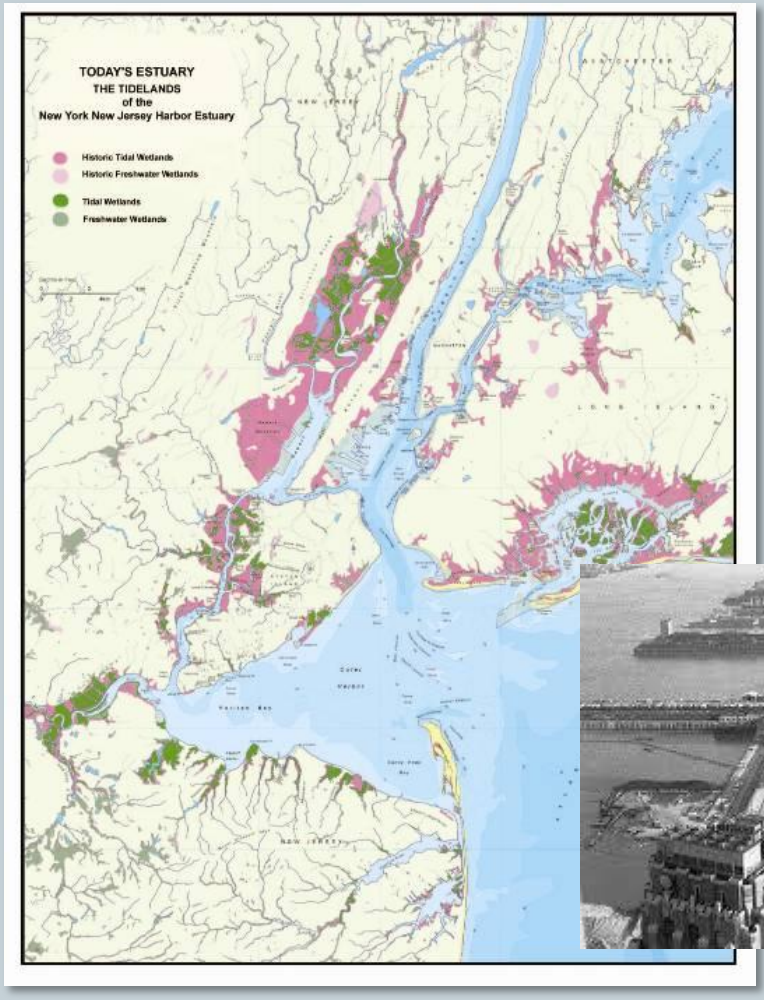
Conditions in ~ 2000

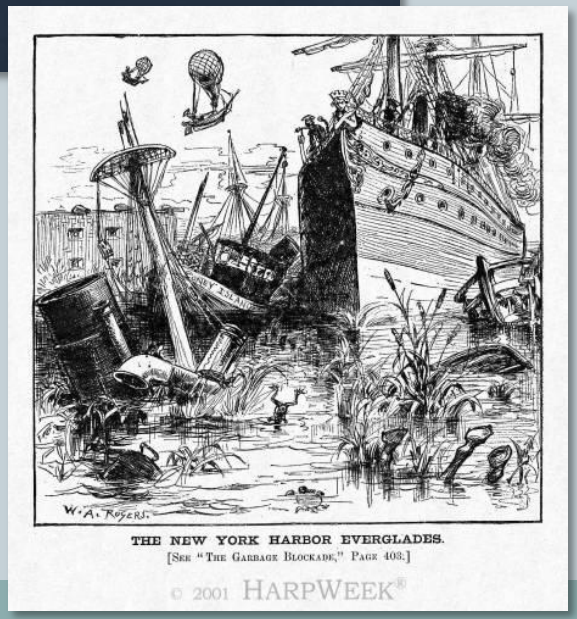


If Upriver PCBs are Removed

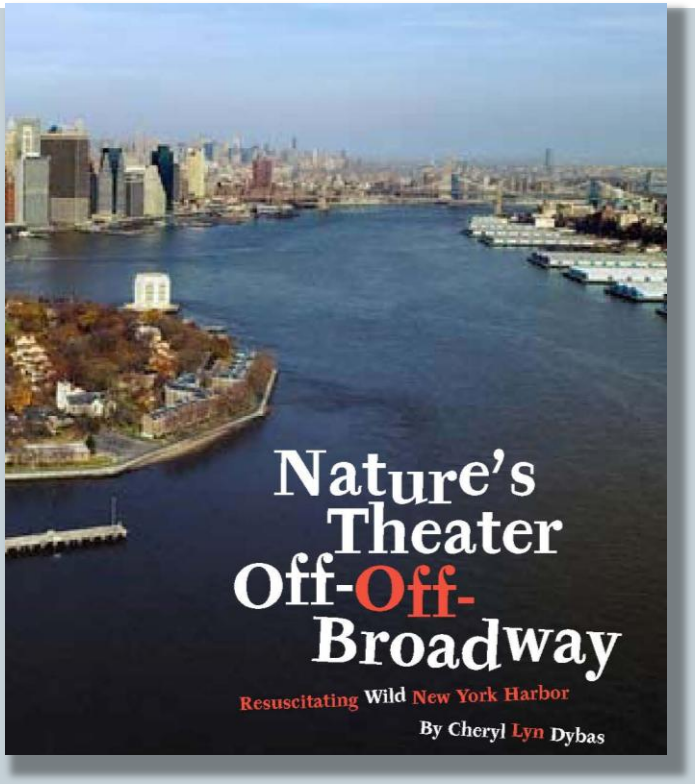


Sec. 404 – Filling of Waters & Wetlands





Shoreline Restoration



Can Sec. 404 of the CWA work with the Comprehensive Restoration Plan? Why not?

Preparing for the Future

Conclusions

- CWA has resulted in unprecedented environmental improvement to NY Harbor
- Much of the harbor, however, is not considered *fishable* or *swimmable* …and arguably, the chemical, physical and biological integrity of the harbor has not been restored
- CWA will continue to be an important component of the "toolbox" to improve the harbor environment…. but it won't be the only, nor the most important "tool" in many cases in the future
  - CWA will work in combination with Comprehensive Harbor Restoration, SuperFund and other authorizations

Conclusions (cont.)

- New public attitudes about the Harbor will likely encourage water quality upgrades and ecosystem restoration
- Challenges to becoming fully "Clean" include:
  - Solutions less obvious and more complicated
  - Lack of resources, exacerbated by poor economy
  - Political and agency indifference, also exacerbated by poor economy
  - Limits of science and technology
- We should celebrate what's been achieved by the CWA and find creative ways to enhance the CWA's ability to restore the environmental integrity of the Harbor