



# Hudson River PCBs Superfund Site

Draft Third Five-Year Review Overview &  
Lower River Investigation Update  
CAG Meeting, July 31, 2024



# Today's Agenda



## Upper Hudson River - Draft Third Five-Year Review

- Key Takeaways
- Background
  - What is a five-year review?
  - Other important consideration
  - What part of the Hudson River cleanup did EPA review?
  - Five-Year Review Team
- Overview: Draft Third Five-Year Review Report
  - Key Findings
  - Conclusions Summary
  - Special Studies, Supplemental Fish Collection and Follow-Up Items
- New York State Fish Consumption Restrictions & Advisories
- Timeline & Schedule



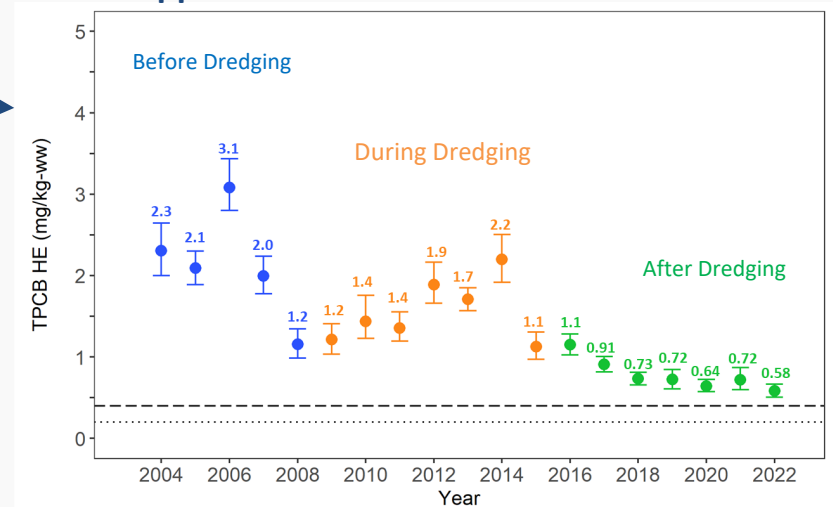
## Lower Hudson River – Investigations – Update on field work

# Key Takeaways: Draft Third Five-Year Review



- On July 10, 2024, the EPA released the draft Five-Year Review report for the Upper Hudson River cleanup for 90-day public comment (by October 8<sup>th</sup>)
- PCB levels in water and fish are going down overall, but the EPA needs more years of fish data before the Agency can draw a statistically reliable conclusion
- Post-dredging sediment data is inconclusive regarding recovery - another sediment sampling event is planned for 2026
- The EPA will make a determination as soon as it can in late 2025, 2026 or 2027 (based on previous years data) as an addendum to this report
- The Agency is enhancing monitoring of the river to better understand its recovery.
  - Special studies and follow up is planned (some underway)
- Much progress has been made
  - Before dredging, fish concentrations were typically at or over 1.0 ppm
  - Now more than 80 percent of the fish are below 1.0 mg/kg – ppm and overall declining
  - About 50% are below 0.5 mg/kg – ppm (2022 results are 0.58 ppm)
  - Cleanup plan expected gradual recovery over more than 50 years
- The EPA expects continued cooperation from GE

Upper Hudson River Fish Concentrations



# What is a five-year review?



- ***Purpose: To ensure that cleanups are working as intended and protect people's health and the environment***
- Legally required under the Superfund law when contaminants remain at site and begin five years after cleanup construction work starts on a project.
- During the review, the EPA determines if the cleanup work is functioning as intended, if the assumptions made at the time of the cleanup decision are still valid, and if new information calls into question the effectiveness of the cleanup remedy.





# What is a five-year review? (continued)



- If the EPA identifies any issues during the review that could affect protectiveness, the Agency makes recommendations to address them. These could include additional studies to gather more information.
- The process is intended to assess protectiveness of the selected cleanup; not to explore alternative cleanup options or strategies.



# Other Considerations



- **Aspects of the Cleanup:**
  - Reduce impact to wildlife (ecological risk) through reduction in fish concentration
  - Habitat reconstruction/restoration
  - Limit to the extent possible fish consumption (institutional controls)
    - Help inform the public of the health risks associated with eating contaminated fish
      - Upper – Restriction and advisories in place
      - Lower (not part of this review)
        - » Some fish consumption allowed for general population
- **EPA Perspective** – must follow the science when evaluating river recovery
  - Appropriate analysis – using multiple technical approaches to look at the data
    - Analysis is technically complex in some cases
  - Use of national experts and experience from other similar sites
  - Encourage independent review
  - Ask questions:
    - What we know
    - What we don't know
    - What we need to find out (additional data collection, analysis – special studies)



## Upper Hudson River PCB cleanup (In-River Sediment):

- **Two-part cleanup plan** (Record of Decision) signed 2002: targeted environmental dredging followed by an extended period (decades) of natural recovery.
  - Gradual improvement in water, fish and sediment would occur over more than 50-year timeframe.
  - Key objective: lowering PCB levels in fish tissue (reduce risk to people and wildlife).



# What did EPA review? (continued)



- **First part – dredging (completed)**

- Substantially reduced mass of PCBs in the Upper Hudson River.

- GE removed about 2.7 million cubic yards of PCB-contaminated sediment between 2009 and 2015.

- Regarding PCBs left behind after dredging:

- The discrepancy between what was originally estimated to be in the sediment and what was actually in the sediment was resolved before the areas were dredged.
- The mass of PCBs sediment removed met project requirements (planned 65% - actual reduction 76%).
- The post-dredging surface concentrations met project requirements (overall 80% reduction and post dredging sampling showed the surface area more than 99% compliant with project requirements).
  - Areas of interest (they are not hot spots) continue to be monitored and continue to decline.
- Inside and outside dredge areas, by river section and by reach are continuing to be evaluated.
- Cohesive and non-cohesive sediments were and continue to be evaluated.
- Note: Extensive discussions of all these items are in the 2<sup>nd</sup> Five-Year Review.



# What did EPA review? (continued)



- **Second part – natural recovery (ongoing)**
  - Long-term monitoring to track the recovery of the river over time.
  - Monitoring includes:
    - water, fish and sediment
    - reconstructed habitats (plantings)
    - stone and gravel caps – very little inventory capped – mostly residuals on rock



# What is EPA reviewing? (continued)



## Remnant deposits:

- 1984 cleanup plan: Addressed areas of PCB-contaminated sediment that became exposed in the Upper Hudson River when the river water level dropped after the Fort Edward Dam was removed in 1973.
- Areas are capped, maintained, and monitored.
  - Signs and fencing around the area.



# In-River Sediment (40 miles)



# Remnant Deposits (2 miles)



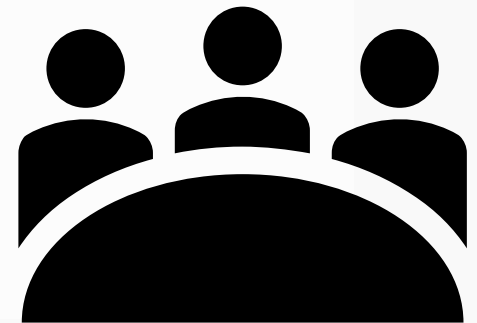
# Five-Year Review Team



- EPA invited agency and community representatives to join Five-Year Review team.
- Included EPA technical experts, support agencies, members of Community Advisory Group.
- Team members provided input to EPA during technical meetings.
- Input was incorporated into the report as appropriate.

*Team provided input on the performance and implementation of the cleanup based on information that included:*

- Environmental data
- Document review
- Site inspection (considering current/future land and resource use)

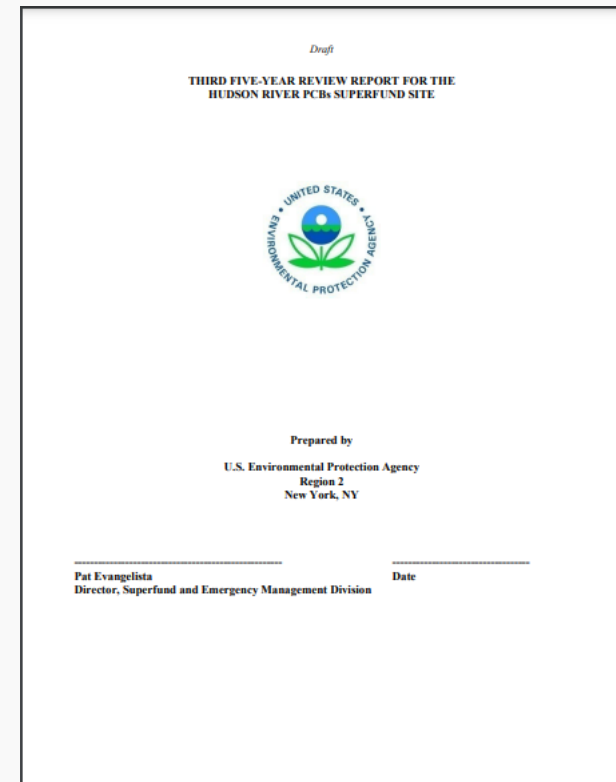




# Overview of the Report



- Draft report released July 10, 2024
- Based on sound scientific analysis and extensive evaluation of the data
  - All of the available water, fish and sediment data since end of dredging through 2022
- Comprehensive report is over 900 pages
  - Executive Summary
  - Text ~ 80 pages
  - Appendices - 11 detailed technical evaluations
  - Fact sheet
- Report and fact sheet are available on project webpage [www.epa.gov/udsonriverpcbs](http://www.epa.gov/udsonriverpcbs)
- Public comments will be accepted through October 8
- EPA will carefully consider all comments



# FYR Conclusions Summary



**PCB levels in water and fish are going down overall, but EPA needs more data before the Agency can make a protectiveness determination.**

- More years of fish data is needed before a decision can be made about whether the cleanup in the upper river is meeting the expectations of the original cleanup plan.
- Consistent with the Agency’s 2019 2<sup>nd</sup> Five-Year Review, EPA needs at least eight years of fish data after dredging to begin to draw science-based conclusions about the rate of recovery in the fish and EPA still does not have that.

2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Dredging ended	Year of Equilibrium	Year 1 Sediment collection	Year 2	Year 3	Year 4	Year 5 Sediment collection	Year 6	Year 7	Year 8	Year 9	Year 10 Sediment collection	Year 11	Year 12	Year 13
Upstream dredging  Work ended in late November	Fish were collected in April – May (about 4 to 5 months after dredging ended)  Demobilization of dredging equipment and habitat work	First full year of recovery						Preliminary data shows continued fish decline	3 <sup>rd</sup> Five-Year Review  Spring sport fish have been collected	Addendum - possible determination based on previous years data. Example: decision in late 2025 would be based on 2024 data				4 <sup>th</sup> Five-Year Review

# FYR Conclusions Summary (continued)



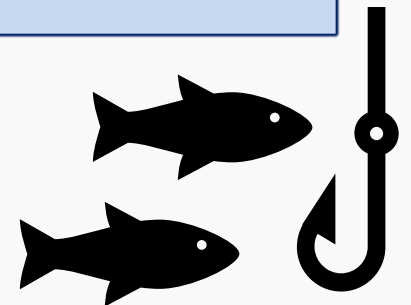
- Overall, the fish are recovering. The question is whether the Agency is satisfied with how quickly they are recovering.
- Over the next few years, the EPA expects to have the data it needs to identify reliable trends in the river's recovery and answer that question.
- The EPA also needs more years of data to fully evaluate the PCB levels in the river bottom sediment. The next sediment sampling is in 2026.
- EPA could make a protectiveness determination sooner based on the fish data.
- Evaluating the water and sediment data helps the EPA evaluate the overall recovery of the river.





## Why does EPA Need More Fish Data?

- EPA uses statistical analysis to evaluate water, fish and sediment sampling data to identify patterns and trends.
- EPA has good quality data, but the Agency needs at least eight years of fish data to see a trend.
- As expected, some fish are recovering faster than others. A statistical analysis provides a better understanding of how the cleanup actions are working.
- This is important so that EPA can tell if the project is on track to meet the goals of the original cleanup plan.





## EPA will make a determination as soon as it can.

- The need for more years of data does not mean that EPA will wait another five years to decide.
- EPA experts will look at new data and will issue an addendum to the current five-year review report as soon as enough fish data is available, and as early as next year, which will include the agency's protectiveness determination. The EPA expects to issue the addendum no later than 2027.





## EPA is enhancing monitoring of the river to see what's happening.

- The latest report identifies several uneven patterns of recovery. To understand these patterns better, the report contains a series of recommendations and follow up items, which include carrying out special studies to take a closer look at water, fish and sediment in specific areas of the river.
- Some of these studies are already underway.
- These studies will help EPA understand how the river is recovering and guide the Agency's next steps.



# Other Findings



- The concentration of PCBs in Hudson River water coming into the dredged area from upstream are very low, as expected.
- The stone and gravel caps placed on some areas of the river bottom during dredging to isolate PCBs from the surrounding environment remain in place.
- Institutional controls, in the form of fishing restrictions and fish consumption advisories continue to be in place.
- The caps placed on the remnant deposits are intact and functioning as intended.



## Special Studies – Potential Differences in Fish Recovery

The current data shows that some types of fish and certain areas of the river are recovering differently. The EPA will conduct special studies to look into why this is occurring.

## Special Studies – Localized Areas of Remaining PCBs in Soil/Sediment

The EPA will look more closely at floodplain soil and river bottom sediment in certain areas. The EPA's focus will be areas with elevated PCBs that could contribute to the uneven recovery of the river.







## Supplemental Fish Collection to Inform Fish Advisories

The New York State Department of Health has fish consumption advisories and restrictions in place to help inform people about the risks from eating fish contaminated with PCBs to reduce the risk from people eating the fish that they catch.

For NYSDOH to make adjustments to the advisories and restrictions, the project will need to collect and test additional types of fish for PCBs.

## Ecological Risk: Collection of Additional Fish

The EPA needs more PCB data on largemouth bass (the whole fish) and spottail shiner to evaluate potential exposure to animals like mink and otter. The EPA is planning to collect this fish data over the next few years.

# Issues/Recommendations/Other Findings



1. **Additional Information Needed – not enough annual sets of fish data**
2. **\*Potential Differences in Fish Recovery Studies**
3. **\*Localized Areas of Remaining PCBs - Potential Impact on Fish and Water Recovery Studies**
4. **\*Supplemental Fish Collection to Inform Fish Advisories**
5. **Institutional Controls – Continued Funding to Support Fish Advisory Institutional Controls**
6. **\*Ecological Risk – Collection of Ecological Risk Target Species**

1. **IRIS Database**
2. **Capping Institutional Controls**
3. **Additional Monitoring to Support the Operation, Maintenance & Monitoring Program**
4. **Rogers Island High-Flow Water Sampling Study**
5. **Mohawk River Water Sampling Study**
6. **Passive Sampler Water Column Study**
7. **Dissolved Phase and Particulate Organic Carbon Water Column Study**
8. **Lipid Normalization and Observed Recovery Trends**
9. **Recently Deposited Be-7 Bearing Sediments**
10. **Sampling of Cap Isolation Layer Material**

# NYS Fish Consumption Restrictions & Advisories



- Fish consumption restrictions and advisories are a part of the cleanup plan EPA selected for the Upper Hudson River and will continue to be necessary to protect people's health.
- The restrictions and advisories are designed to help inform people about the risks from eating fish contaminated with PCBs to reduce the risk from people eating the fish that they catch.
- The restrictions and advisories in the Upper Hudson River will need to remain in place until PCB levels in fish are reduced and New York State determines that changes can be made to the restrictions and advisories.
  - Based on 2020, 2021 and 2022 data, greater than 80 percent of the sport fish collected from the Upper Hudson River are now below 1.0 ppm and about 50 percent are below 0.5 ppm.
  - As fish continue to decline over time, it is expected that the advisories and restrictions could be relaxed, recognizing that there are other factors which are considered in relaxing fish consumption advice.



*Lower Hudson River Signage*



*Upper Hudson River Signage*



- New York State advises that the general population can eat some types of fish and crab that they catch in the Lower Hudson River.
- However, sensitive populations, including people who can have children and children under 15, should not eat any fish from the Upper and Lower Hudson River.
- The New York State advice about the type and amount of fish and crab that people can eat is available on the New York State Department of Health webpage.
- The EPA is supporting the New York State Hudson River fish advisory education and outreach program.





# Other Ongoing Hudson River Work



EPA is working on multiple fronts throughout the Superfund site to continue to hold GE accountable for the PCBs that came from its plants in Hudson Falls and Fort Edward.

## Upper Hudson River

- Extensive floodplain study to evaluate PCB contamination in soil in shoreline areas along a 43-mile stretch of river between Hudson Falls and Troy, NY.
- Oversight of the deconstruction of the Powerhouse and Allen Mill in Hudson Falls, NY – two structures located adjacent to the former GE Hudson Falls plant.



# Other Ongoing Hudson River Work (continued)



## Lower River

- Under a legal agreement with the EPA, GE is sampling water, fish, crab and sediment as part of an investigation of the Lower River between Troy and the Battery in New York City.
- The sampling work began in spring 2023 and will continue through at least 2025.



# Third Five-Year Review Timeline & Schedule



- **July 10:** Draft third five-year review released for public comment
- **July 31:** CAG meeting presentation on third five-year review
- **August 21:** Public Information Meeting on third five-year review
- **October 8:** End of public comment period



# Public Comment Period



**Written comments** on the report are being accepted until October 8.

Comments can be sent by mail to:

Gary Klawinski, Director  
EPA Region 2, Hudson River Office  
187 Wolf Road, Suite 303  
Albany, NY 12205

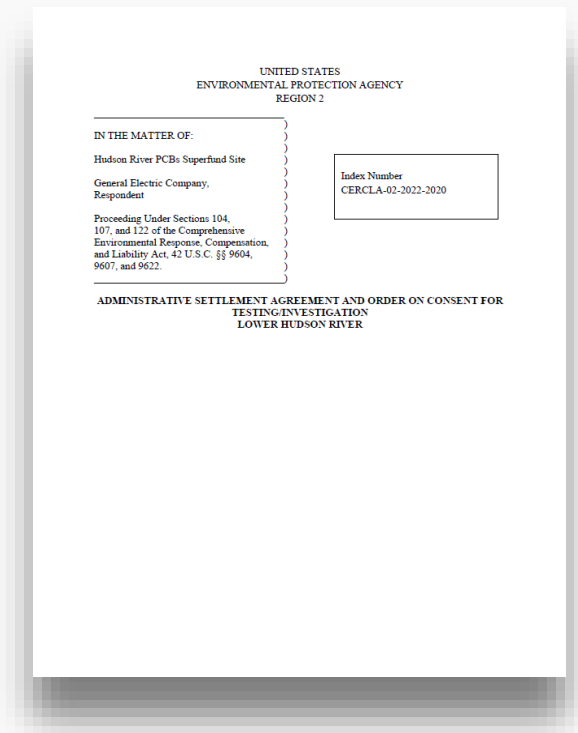
Send comments by email to [epahrfo@outlook.com](mailto:epahrfo@outlook.com)



# Lower Hudson River Sampling Agreement



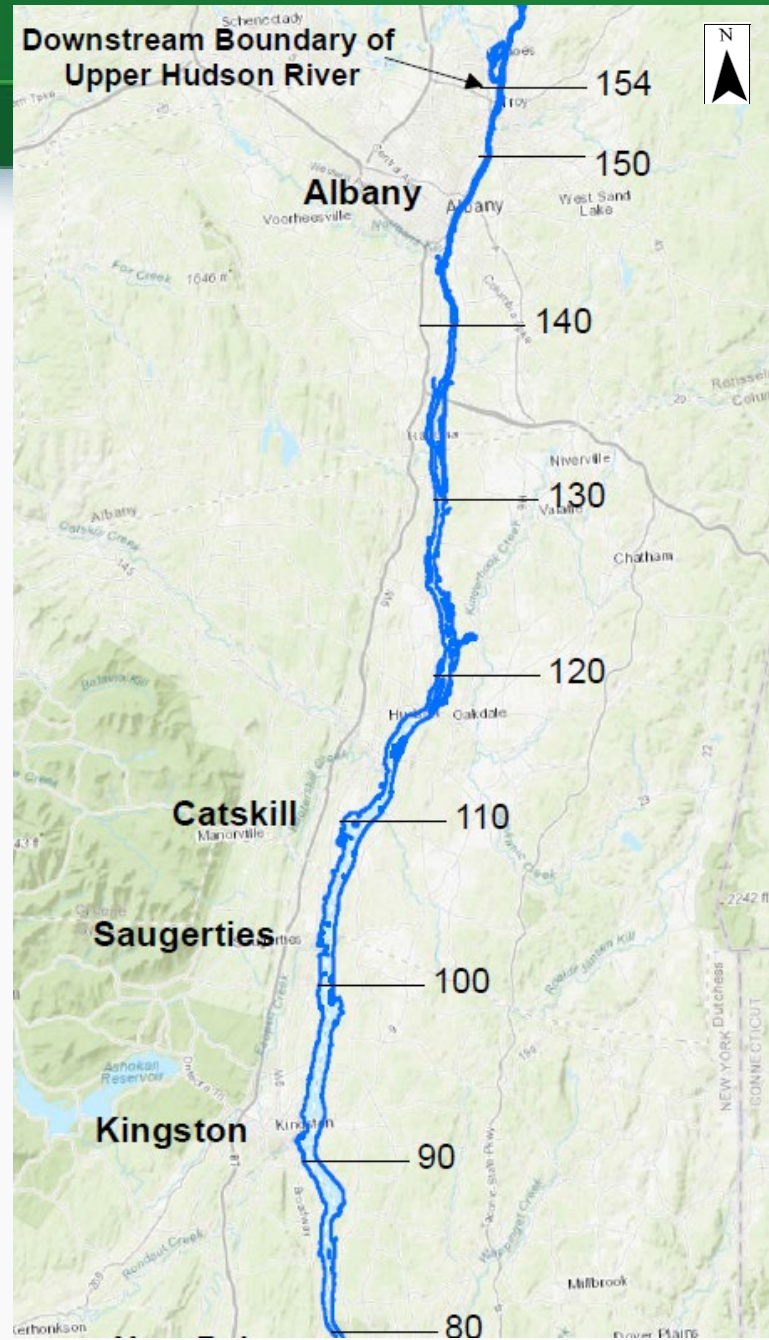
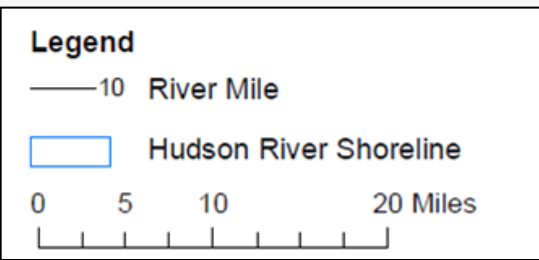
- EPA signed a legal agreement with GE in September 2022 for extensive fish, water and sediment sampling
- Data will be used to determine next steps and scope of future work
- Field work began last spring and will continue through at least 2025
- Designed to be a phased process
  - Results from initial sampling will inform future sampling
- Focus is on PCBs – other contaminants will also be evaluated



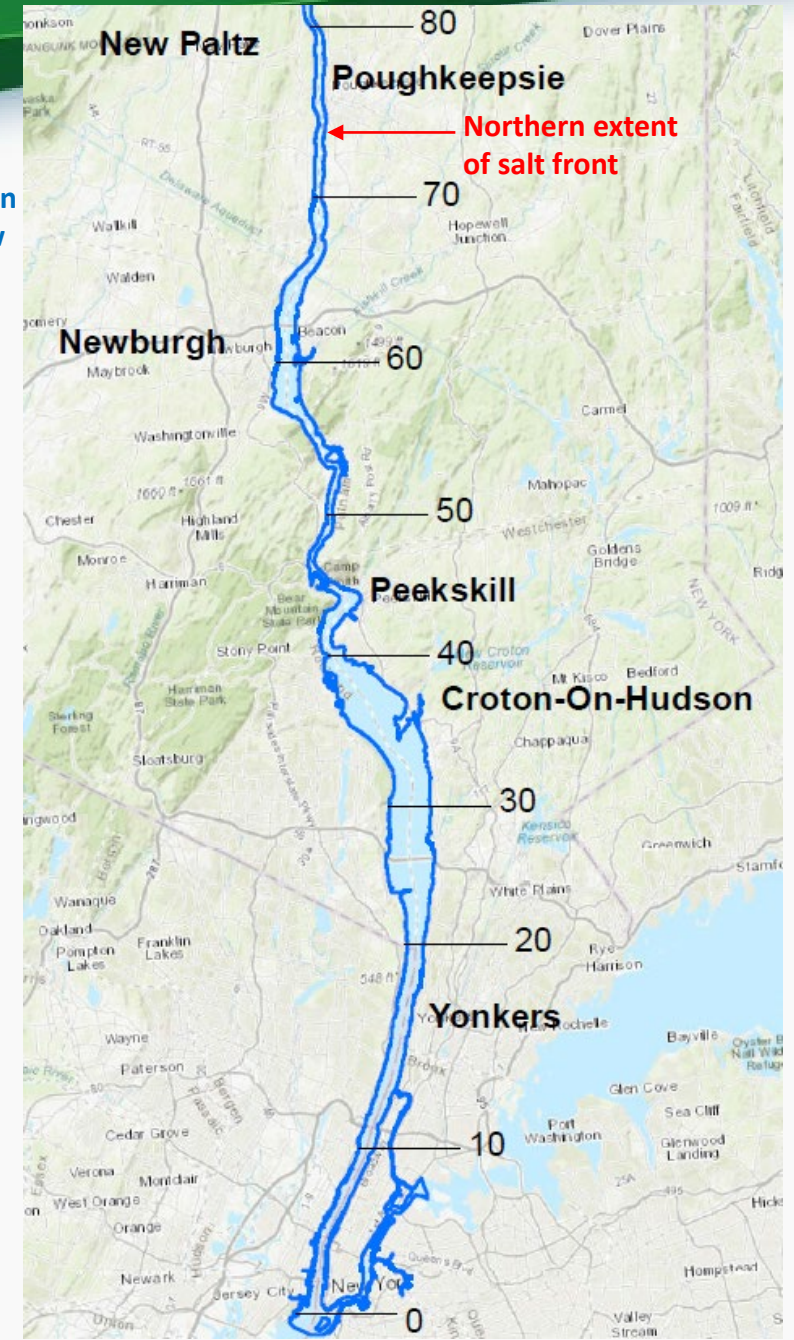
# Lower Hudson River



- Lower River extends from Battery at Manhattan (RM 0) to the Federal Dam in Troy (RM 154)
- The lower Hudson River is an estuary where fresh water and salty seawater meet. The estuarine salt front extends upriver to Poughkeepsie (~ RM 73)



Direction of Flow





# Lower Hudson River Agreement



- Five primary programs:
  - Water column (*ongoing*)
  - Fish tissue (*ongoing*)
  - Recently deposited sediment (*complete*)
  - Supplemental sediment coring (*completed earlier this summer*)
  - High-resolution sediment coring - historical trends (*current*)
- This work will not interfere with people's use of the river; some vessels may be visible from shoreline areas
  - \*Core sampling is a process that removes sections of river sediment in hollow tubes for testing



# Sampling and Investigations

## Supplemental Sediment Monitoring



- Purpose:
  - Examine local and river-wide PCB concentrations and other contaminants in Lower River sediment.
  - Provide information about the relationships among fish, water and sediment.
- Scope:
  - Target samples from 10 sampling areas of 20 cores for each station at the primary and secondary fish sampling stations (200 samples).
  - Collect to a depth of three feet
    - Top 0-6 in segment analyzed for PCBs.
    - Bottom segments will be archived for possible future analysis.





# Sampling and Investigations

## *High Resolution Sediment Coring*



- Purpose:
  - To further evaluate how PCBs have deposited in the Lower River over time.
  - Evaluate the recovery in the sediment (with regard to PCBs).
- Scope:
  - Target six initial core locations (at least 3 cores at each location.)
    - Select locations spread throughout the Lower River.
    - Target previous successful locations; four of the six cores will be collected at the same locations where high-resolution cores were collected previously 1990s and early 2000s.
    - Cores will be collected to a depth of 4-8 ft below the river bottom; PCBs will be analyzed along the length of the core in approximate 2-inch segments.
    - Sediment layers in the core will be dated based on radionuclide scanning.
  - Evaluate whether additional cores are needed, based on initial results.

# Sampling and Investigations Schedule (Lower River)



## 2023

- Water sampling (monthly 5 stations)
- Fish sampling (800+) – based on availability of species
  - Salt and freshwater species
  - Migratory, local and forage fish
  - Blue crab and eel
- Sediment collection – recently deposited (tributaries 100 and 150 main stem)
- Data evaluation



## 2024

- Monthly water column sampling continued
- Fish sampling continued
- Sediment collection
  - Supplemental sediment sampling (10 areas with 20 samples per area at locations where fish are collected)
  - High resolution coring (6 to 10 locations to span the length of the lower river)
- Data evaluation



## 2025

- Collect additional samples as necessary to support the objectives and purpose of the sampling work
- Develop next steps
- Data evaluation



More information about the Hudson River PCBs Superfund site is available online:  
[www.epa.gov/hudsonriverpcbs](http://www.epa.gov/hudsonriverpcbs).

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# Discussion