Project Updates: Floodplain Investigation

EPA

Hudson River
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2024 Floodplain Ongoing Work

- Comprehensive study of the floodplain (RI/FS) is underway under an agreement with GE
- 2024 field work includes:
  - Soil sampling in use areas
  - New Short-Term Removal Actions (STRAs)
  - STRA inspections
  - Flood mud sampling
  - Wetland data gap sampling
- EPA is assessing results from verification study to determine next steps
  - Verification study completed between 11/2020 and 2/2024

Use Areas Soil Sampling

- EPA's goal is to assess all areas of the floodplain that are actively being used by people so that action can be taken if necessary. The goal is to limit people's contact with PCBs while the comprehensive study is underway.
- A complete evaluation of the floodplain was previously done to identify these areas and assess them
- As new areas are identified they are sampled
  - Change in ownership
  - Change in use
  - Community projects (e.g. Hudson Crossing Master Plan)
- 2024 Sampling - 66 samples collected on nine properties
  - PCB concentrations varied
  - Three properties to receive short-term removal action

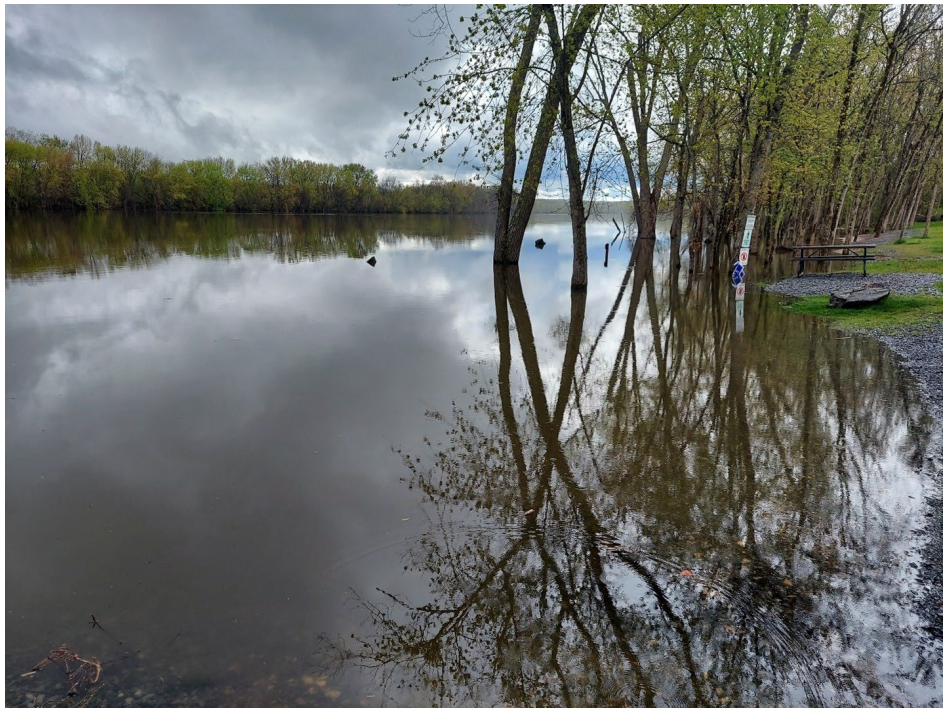
Floodplain Short-Term Removal Actions (STRAs)

- Areas regularly used by people with elevated PCBs receive Short-Term Removal Actions (STRA)
  - Soil covers or signage depending on use and location
  - All work is on a property by property, area by area basis in close coordination with property owners
- Annual inspection of STRAs to confirm covers are in place
  - 2024 inspections are ongoing
  - Repairs conducted annually based on inspection results
- Short-Term Actions to date
  - 72 areas (49 grass or gravel covers, 4 natural covers, 19 warning signs)

Soil cover at Saratoga Boat Launch

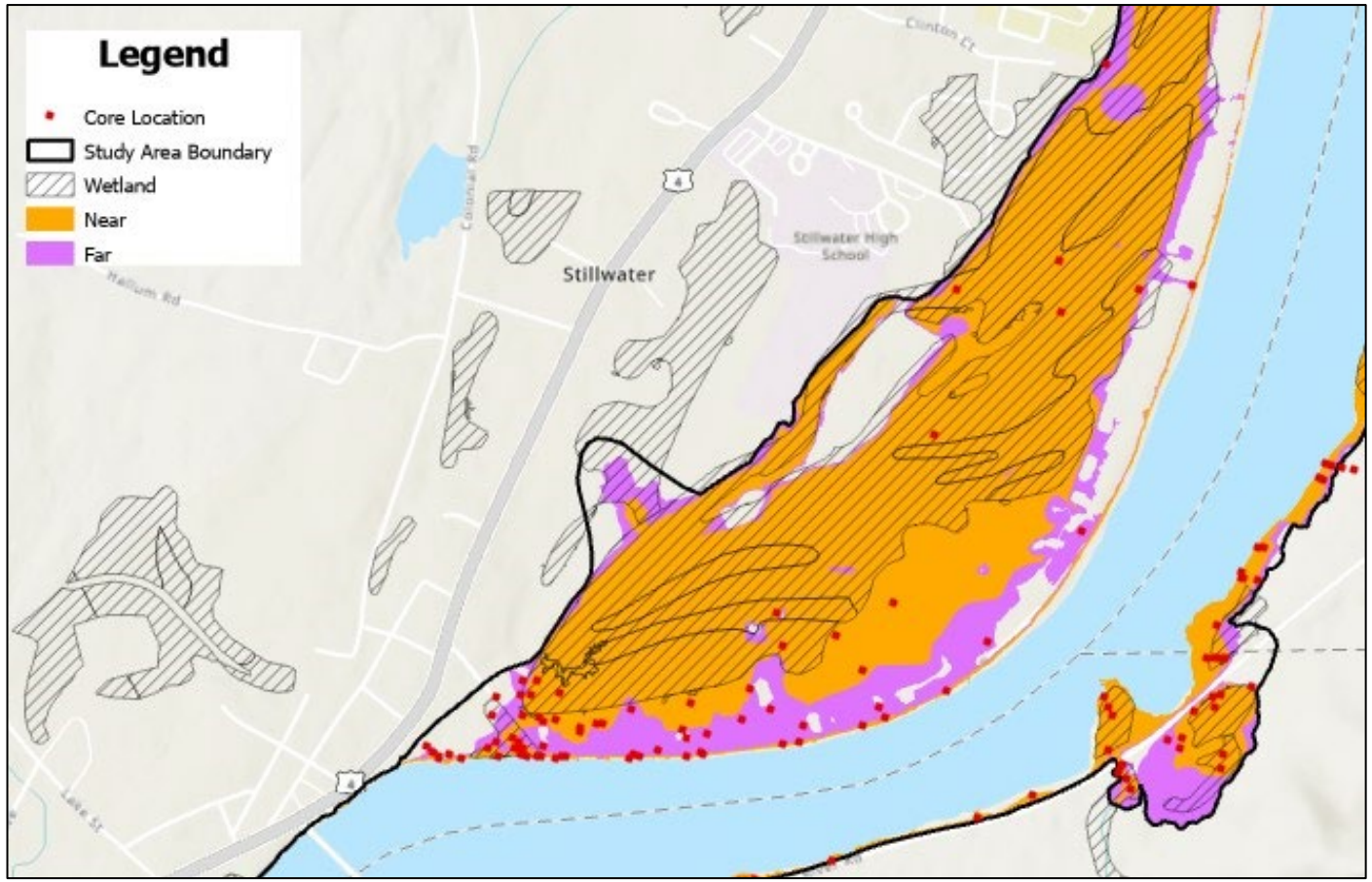
Flood Mud Program

- The goal is to assess PCB concentrations in sediment deposited during high flow/flooding events.
- EPA program began in 2010
  - DEC data from since 2008
- Total of 26 locations targeted for sampling during each event (scrapes and device)
  - Flows >15,000 cubic feet per second at Fort Edward
- 2024 high flow event: 12/2023 through 1/2024
  - 16 samples collected
- Overall, the results are generally low
- Results will be further evaluated in the RI/FS



2024 Wetland Data Collection

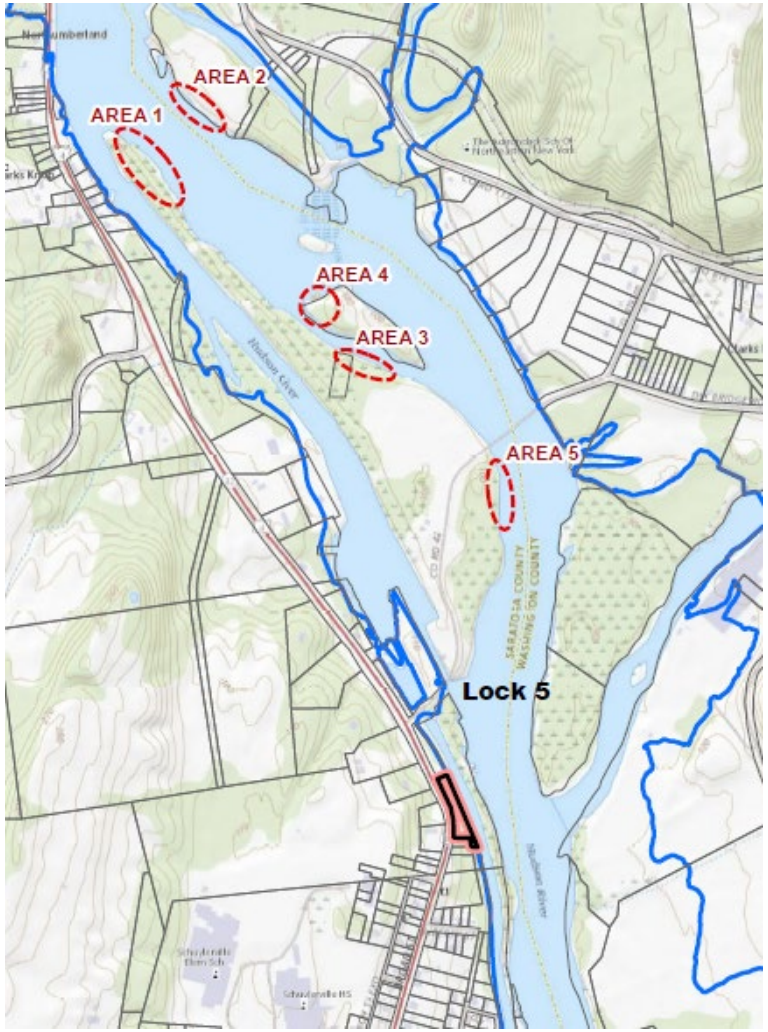
- Wetlands are an important part of the ecological risk assessment
- Additional PCB soil data collection is planned for this fall

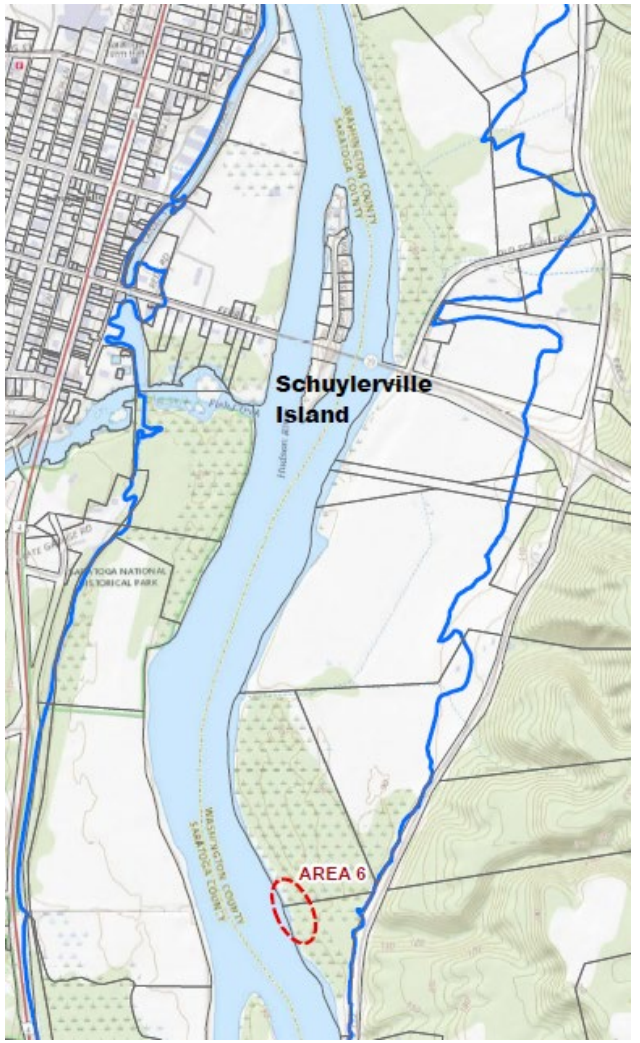


Summary of Use Areas Identified by CAG Member (Schuylerville Area)

- Several areas used by people identified
  - Potential: swimming/fishing/campfire/lanterns observed at night
- EPA visited each of these areas with the CAG member
  - EPA reviewed each of the areas with NYSDEC/NYSDOH and the GE's team
- Six primary areas were identified
  - Other areas also discussed that did not need further evaluation – i.e., previously sampled or rocky
  - Some of these areas are public property - others private
- The need for further sampling was identified and completed on five of the six areas
- EPA has continued to regularly check these areas since they were identified
  - Checking on how they are used (note any changes), need for additional sampling, and the need for response actions
  - Response actions have been implemented where needed to limit contact with PCBs

Summary of Use Areas Identified by CAG Member (Schuylerville Area), cont'd





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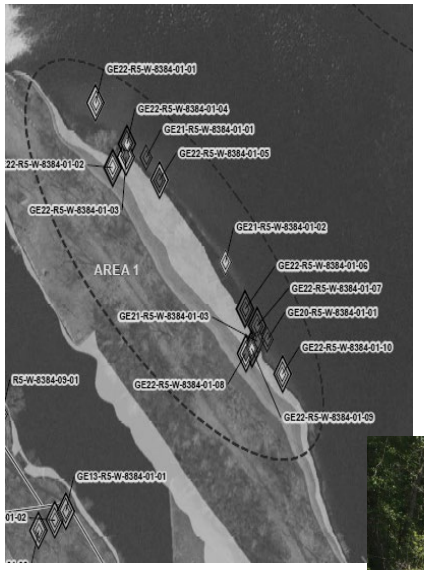
Area 1 – Hudson Crossing Park – below Northumberland Dam

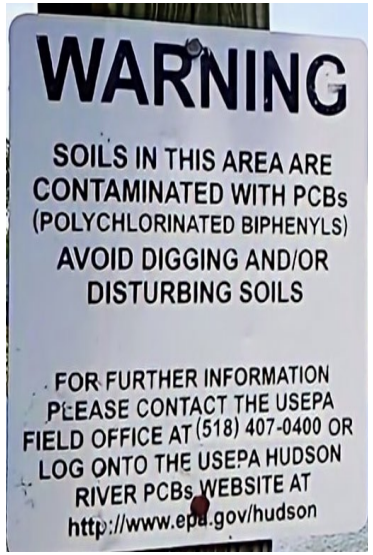
Description: Area consists of a narrow strip of land at the northern end of Hudson Crossings Park along the west shore of the river. Access to the area involves a steep descent from the trails to the river's edge. There are signs of use in the area (bench, campfire, footprints, fishing). This area is underwater most of the year.

Sample History and Results: Sampling conducted in 2020, 2021 and 2022. 14 locations (38 samples) in total collected in this general area. Some soil/sediment results are elevated (above the 10 ppm PCB action level - for EPAs short term removal actions).

EPA Actions: Multiple rounds of sampling conducted to evaluate extent of contamination; signage has been installed to notify users of the presence of PCBs in the area.

Next Steps: EPA and GE are coordinating with NYSCC, and Hudson Crossing Park to implement further access restrictions. Close consultation is also ongoing with NYSDEC/NYSDOH. GE is working on a design for further access restriction and next steps.





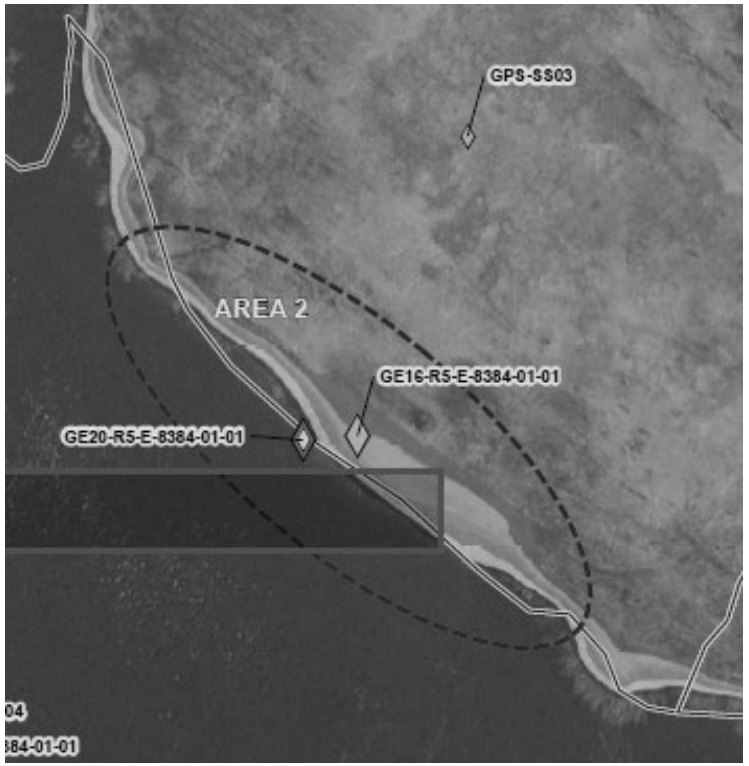
Area 2 – Private Property – east shore downstream of Northumberland Dam

Description: Private property - possible fishing and recreation along the edge of the river.

Sample History and Results: Sampling conducted in 2016 and 2020. Two locations (3 samples) in total collected in use area. Surface results are low (less than 3ppm).

EPA Actions: Additional sampling conducted in 2020 based on observed use of the area. Results in this area are low and no action required at this time.

Next Steps: Area will continue to be evaluated as part of the RI/FS. Continue to check area for possible changes in use.



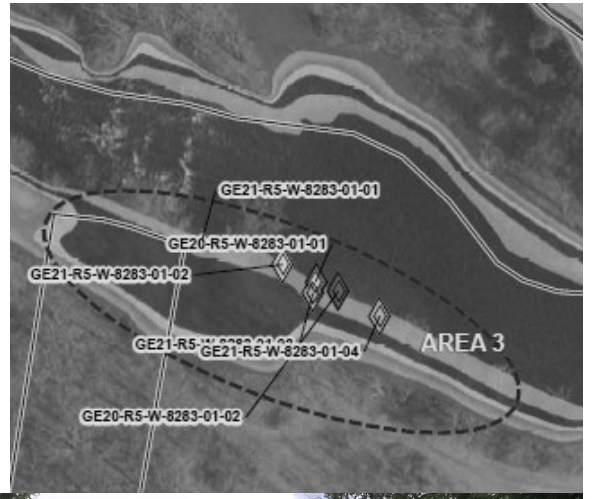
Area 3 – Hudson Crossing Park – possible swimming area near small island

Description: Area of Hudson Crossing Park that was reportedly used occasionally for swimming and accessing the river.

Sample History and Results: Sampling conducted in 2020 and 2021. Six locations (11 samples) in total collected in this area. One surface result exceeded EPAs short term response action number of 10ppm (17 ppm); all other samples were less than 10ppm.

EPA Actions: Sampling conducted in 2020 with follow-up sampling in 2021. Signage has been installed to notify user of potential for exposure to PCB soil/sediment in the area. Soil/sediment should be washed off by those swimming or wading as is recommend for lakes and rivers.

Next Steps: Area will continue to be evaluated as part of the RI/FS and inspected regularly to confirm signage is in-place.



Area 4 – Hudson Crossing Park – northern tip of small island

Description: Northern tip of island adjacent to Hudson Crossing Park. Reported to be used by kayakers, however during field recon, area did not seem accessible except potentially during high water.

Sample History and Results: Sampling has not been conducted at this area as there is no easy access by boat or by foot.

EPA Actions: EPA evaluated the practicality of sampling this area but determined sampling was not feasible. Other samples in this area are low and representative of overall conditions on and near the island.

Next Steps: Area will continue to be evaluated as part of the RI/FS and inspected regularly to confirm if it is being accessed.

Area 5 – Hudson Crossing Park – eastern side main island - possible fishing and overlook area

Description: Narrow section of shoreline in Hudson Crossing Park and utilized for fishing, adjacent to a trail overlook. Access to the area is down a steep bank.

Sample History and Results: 1 location (2 samples) collected in 2020. Surface results less than 10 ppm.

EPA Actions: EPA sampled this area in 2020, results indicate that a short-term response action is not necessary at this time.

Next Steps: Area will continue to be evaluated as part of the RI/FS and inspected regularly to confirm its frequency of use.

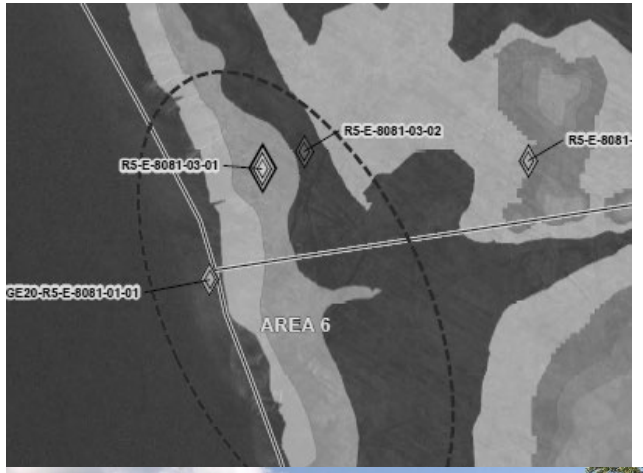
Area 6 – Private property – recreational boater use - eastern shore south of Schuylerville

Description: Large low-lying area on private property which boaters often frequent.

Sample History and Results: 3 location (7 samples) collected in 2008 and 2020. Surface results all less than 1 ppm.

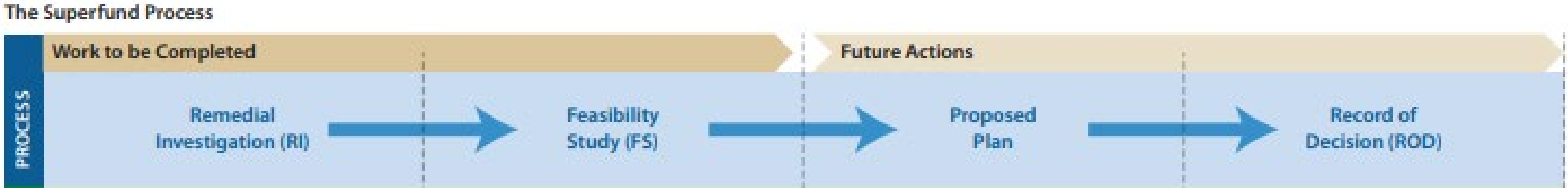
EPA Actions: Results indicate that no response action is needed at this time.

Next Steps: Area will be included in the comprehensive floodplain study.



Floodplain – Next Steps

- Continue coordination with municipalities and NYSDEC/NYSDOH
- Continue field reconnaissance to identify new use areas/changes in use
- Continue Screening Level Risk Assessments
- Installation of new Short-Term Actions and continued inspection and maintenance of existing Short-Term Actions
- Continued soil sampling and data evaluation
- Flood mud sampling after high flow events



Project Updates:
Lower Hudson River

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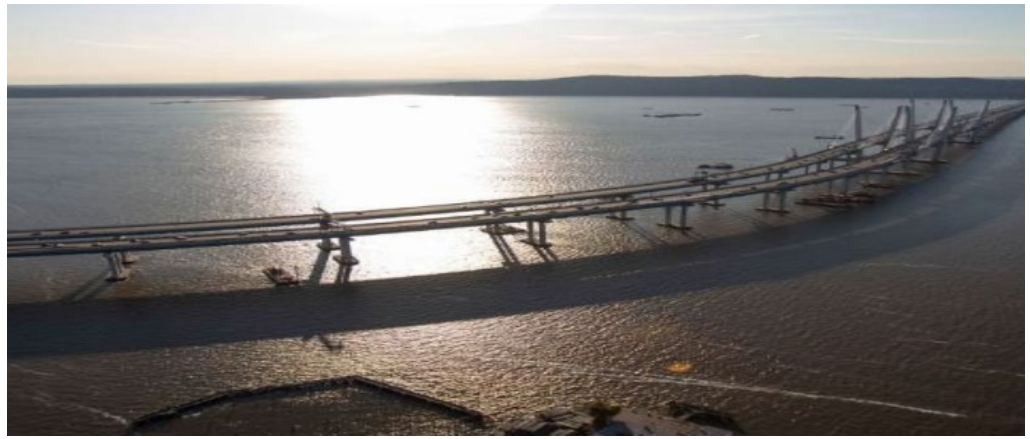
2024 Lower Hudson River Ongoing Work

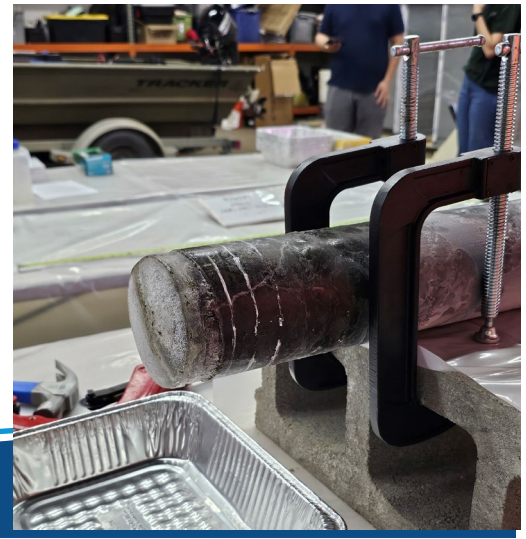
- Investigations are underway under an agreement with GE
- 2024 field work includes:
  - High Resolution (High-Res) Core Sampling
  - Supplemental Core Sampling
  - Water Column Sampling
  - Fish Sampling

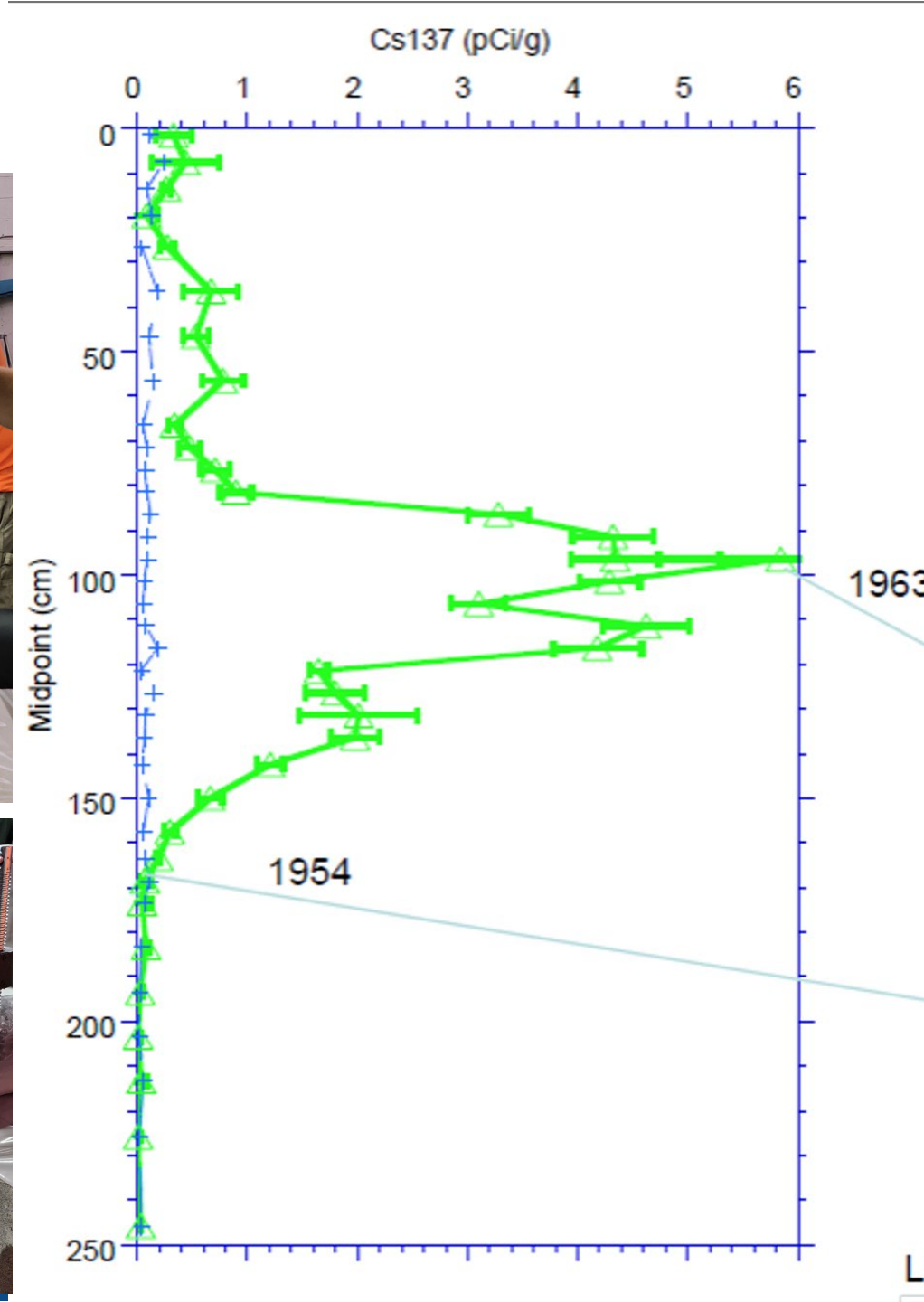


- EPA is assessing results to determine next steps:
  - 2023 Beryllium-7 data
  - 2023 and 2024 fish data
  - 2023 and 2024 water column data
  - Consideration of other contaminants

High Resolution Sediment Coring

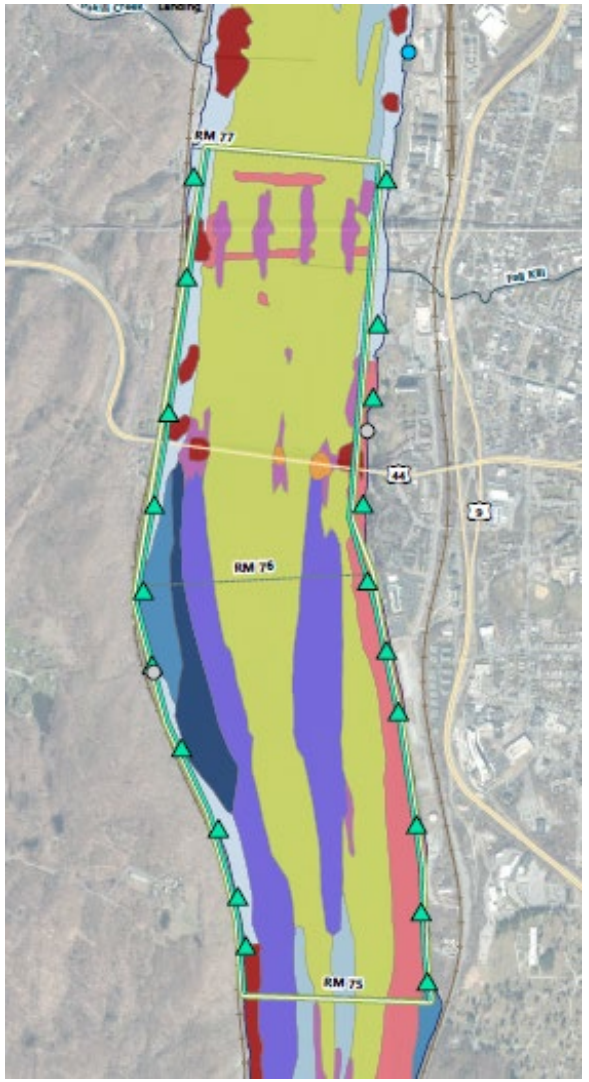
- Cores collected to determine how PCB concentrations have changed over time.
- Areas where sediment accumulates are difficult to find.
- Very thin slices are collected from the core (approx. two centimeters thick).
- Core samples are dated using Cesium-137, a by-product of nuclear weapons testing.
  - Two dates can be determined:
  - 1954: the onset of atomic weapons testing.
  - 1963: the most active year of atomic weapons testing.





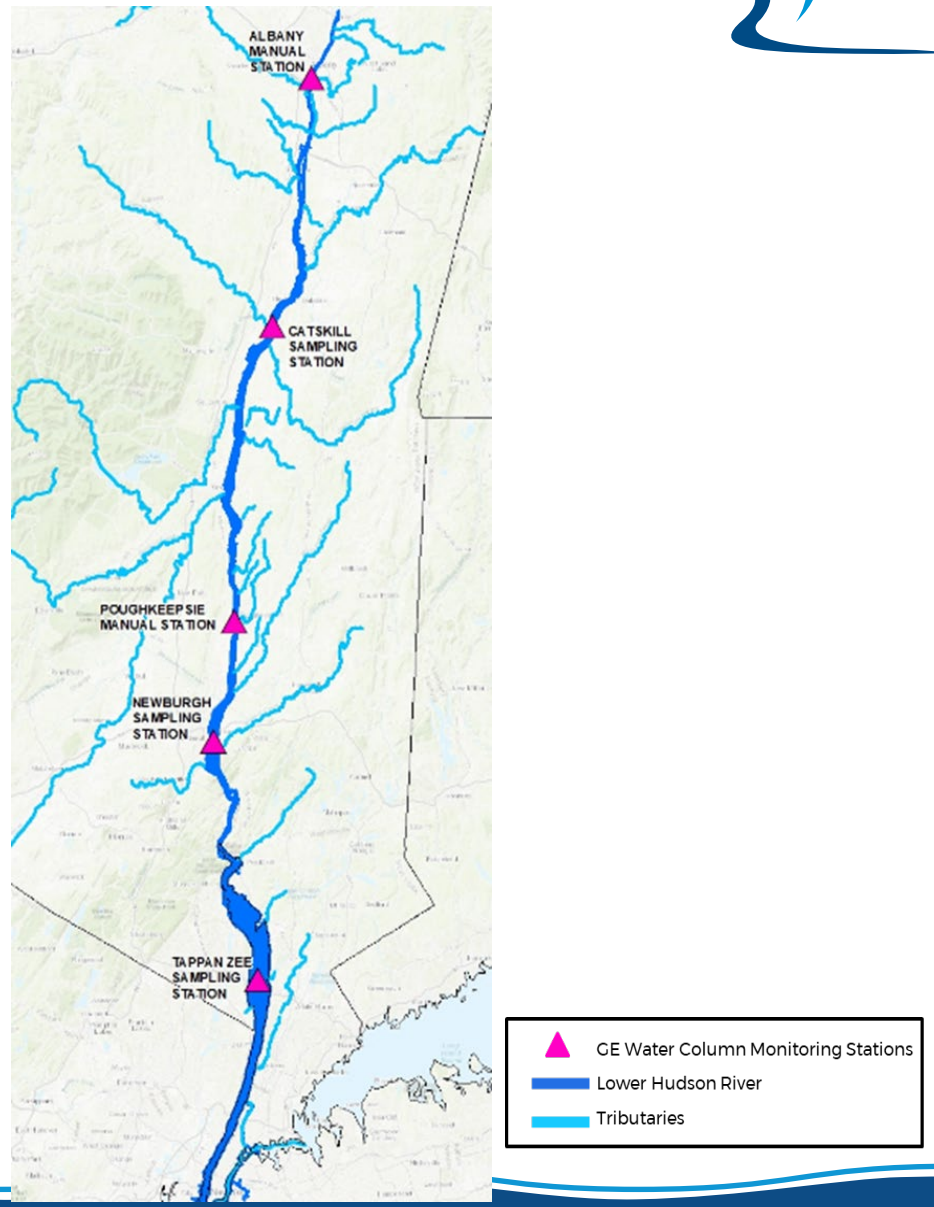
Lower Hudson Supplemental Coring Update

- 200 cores collected between 6/2024 and 7/2024
- Core locations were focused on fish habitat areas
- Cores were generally collected to three feet
  - Top 0-6 inches are being analyzed for PCBs
  - Remainder of core archived for possible future analysis
- Data will help EPA's understanding of the fish water sediment relationship and variability in PCB sediment concentration in Lower Hudson River
- Data expected in early 2025



Lower Hudson River Water Column Update

- Historically, the Lower Hudson River had two water collection stations: Albany/Troy and Poughkeepsie
  - Samples have been collected monthly
- Three stations were added to the program in 2023: Catskill, Newburgh and Tappan Zee
  - These locations were extended into the 2024 program
- 2023 samples collected: 58
- 2024 samples collected to date: 50



Lower Hudson River Fish Update

- Fish and crab collected from six primary monitoring stations throughout the Lower Hudson River
  - 14 fish species and blue crab
  - 2024 spring sport fish collected: 175 (April – August)
  - 2024 spring blue crab: 40
  - 2024 fall pumpkinseed: 10 (August)
- Fish are being processed and data are being analyzed to determine the need for sample collection from secondary stations in 2025
- EPA reviewing data and evaluating trends

Lower Hudson River Next Steps

- Analyze 2023 and 2024 data collected under the Lower Hudson River sampling program
  - Fish tissue and blue crab
  - Water column
  - Be-7 bearing PCB surface sediment samples
  - Supplemental sediment cores
  - High-resolution sediment cores
- Identify data gaps and if necessary, collect additional samples under the Lower Hudson River sampling program in 2025

Project Updates:
Upper Hudson River

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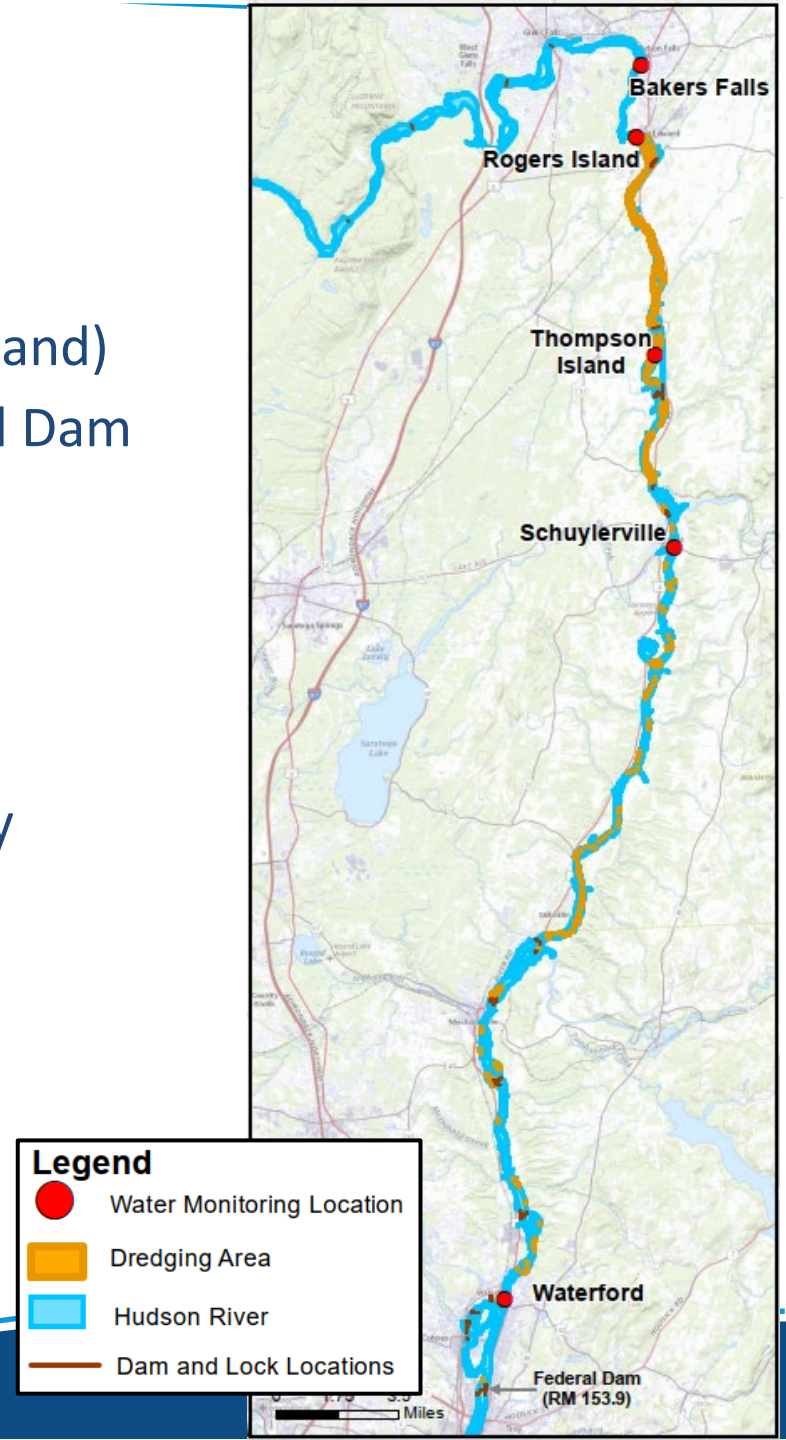
2024 Upper Hudson River Ongoing Work

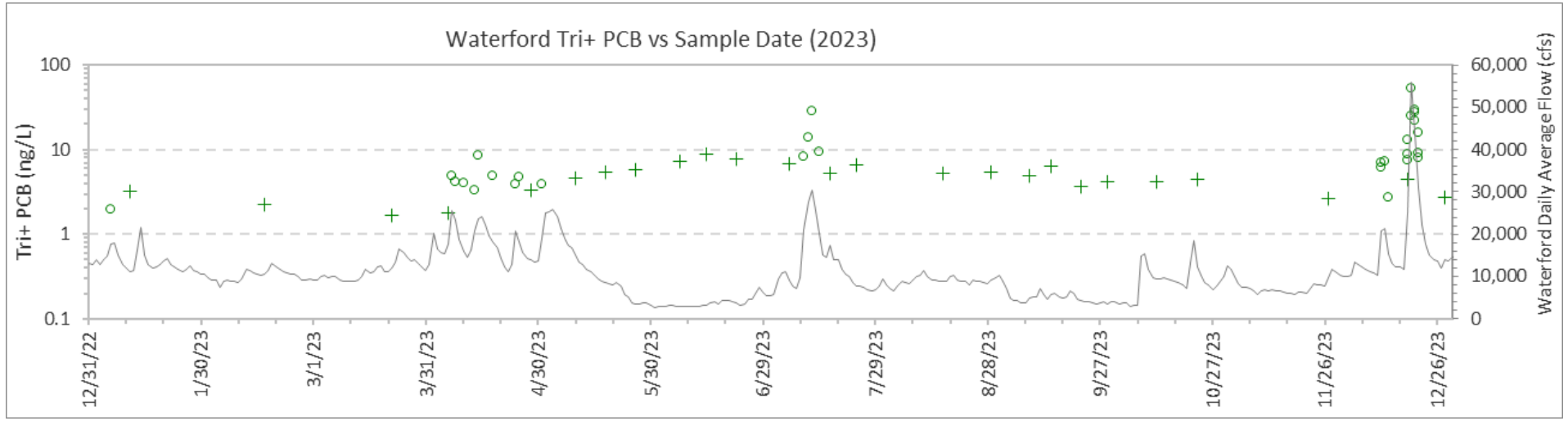
- Development and release of Third Five-Year Review
- Water Column Sampling (routine and high flow)
- Fish Sampling (fall and spring collection)
- Habitat (annual monitoring and response actions)
- Ongoing evaluation of 2023 special studies
  - Be-7 sediments, Passive Samplers, particulate organic content, Mohawk concentrations
- Development of new special studies
  - Five-Year Review follow-up and special study follow-up (e.g. fish aging, whole body bass, assess potential localized impacts etc.)
- Ongoing evaluation of cap survey data from 2023

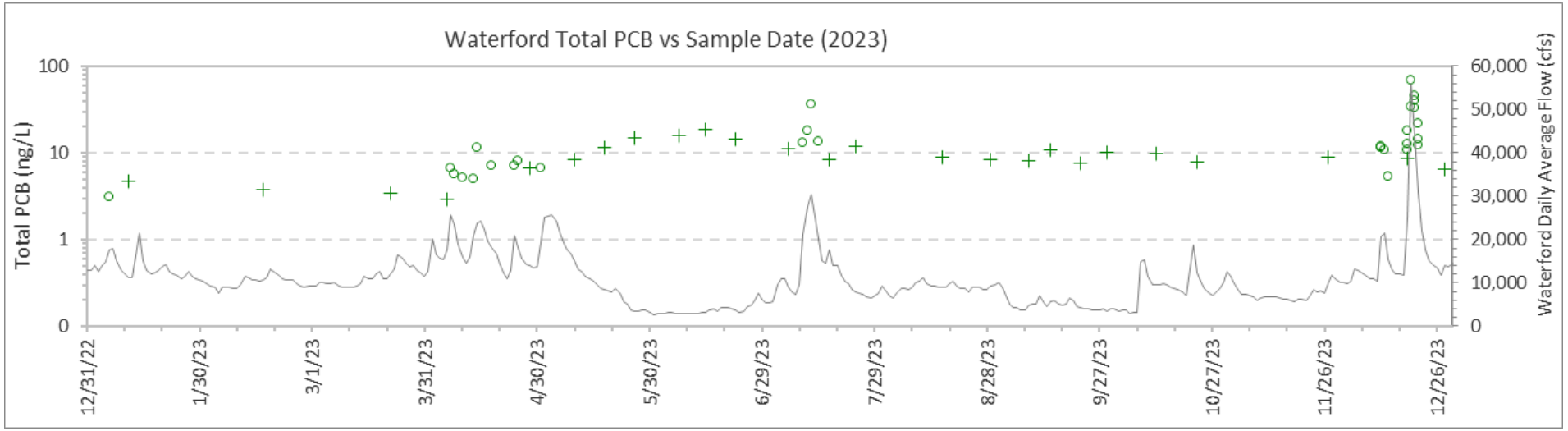
Upper Hudson River Water Column Update

- Five monitoring locations are sampled regularly
  - Two locations upstream of dredging (Bakers Falls and Rogers Island)
  - Three locations amongst dredging areas (RS1: Thompson Island Dam (TID), RS2: Schuylerville, RS3: Waterford)
- Data is collected to assess different flow conditions
  - Routine sampling (All Stations)
    - Bakers Falls and Rogers Island: Monthly
    - Thompson Island Dam, Schuylerville, and Waterford: Weekly (weather permitting)
  - High-flow sampling (Only Schuylerville and Waterford)
    - Samples collected to capture rising and falling water levels
- 2024 samples collected to date: 77
  - Data expected spring 2025
- 2023 samples collected: 130



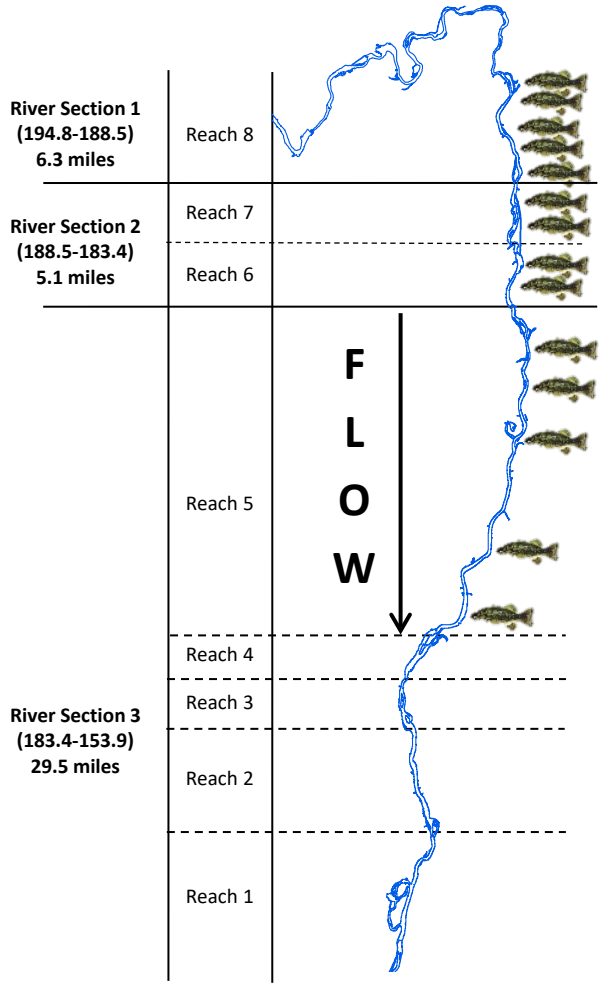
Water Column Load at Waterford





Upper Hudson River Fish Update

- Fish collected annually in the fall and spring
  - Spring fish include fish used in species weighted average (bass, bullhead, perch)
  - Fall fish include pumpkinseed (rapid integrator) and forage fish
  - 2024 collection completed in September
  - Fish collected in the Upper Hudson River: 254
    - Fish currently being processed and analyzed
    - Data expected in spring 2025



Upper Hudson River Fish Update

- EPA has completed its review of the 2023 fish data
  - Primary data evaluation as described in the Record of Decision; species weighted average compared to:
    - 0.4 mg/kg – target- one half-pound fish meal every two months
    - 0.2 mg/kg – target - one half-pound meal every month
    - 0.05 mg/kg - goal - one half-pound fish meal every week
  - EPA data review and analysis includes:
    - Consistent data treatment – results comparable over time
    - Robust QA/QC program (standard reference materials, congener analysis, duplicates, MS/MSDs, surrogate review etc.)
    - Detailed review by species, location, river section etc.
  - Ongoing considerations
    - Impacts of lipids age and diet
    - Variation by species and location
  - Continued coordination with NYSDOH regarding data needs for fishing advisories and restrictions

<u>Spring Collection:</u>

Sport fish Fillet Samples

Largemouth Bass
(*Micropterus salmoides*)

Smallmouth Bass
(*Micropterus dolomieu*)

Yellow Perch
(*Perca flavescens*)

Brown Bullhead
(*Ameiurus nebulosus)*

Yellow Bullhead
(*Ameiurus natalis)*

<u>Fall Collection:</u>

Whole body pumpkinseed samples
Whole body composite forage samples

Pumpkinseed
(Lepomis gibbosus)

Spottail Shiner
(Notropis hudsonius)

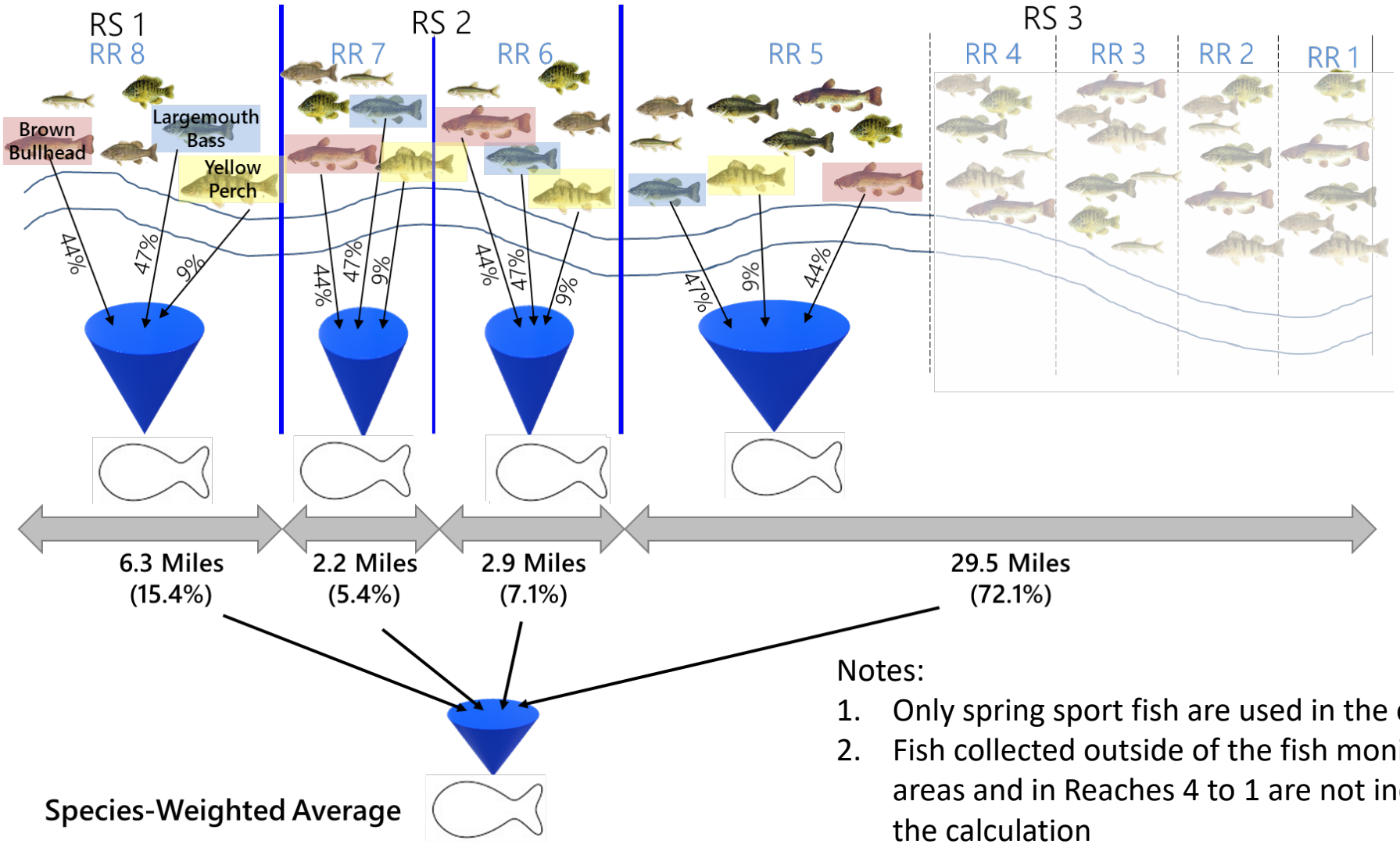
Upper Hudson Species-Weighted Average Calculation

Average PCB concentration by species

Species weighting based on typical angler catch

Species-Weighted Average by River Section or River Reach

River Section or River Reach weighting proportional to length



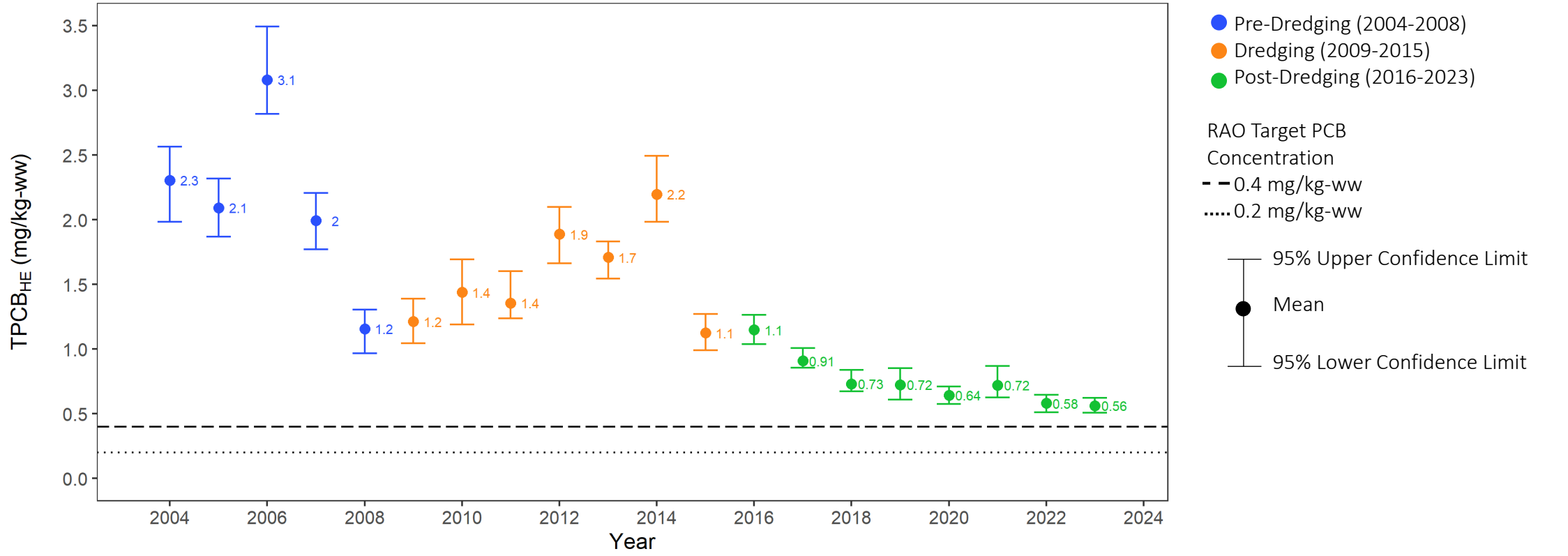
Notes:

1. Only spring sport fish are used in the calculation
2. Fish collected outside of the fish monitoring areas and in Reaches 4 to 1 are not included in the calculation

Species-Weighted Average Wet-Weight $TPCB_{HE}$

Draft - Subject to Change

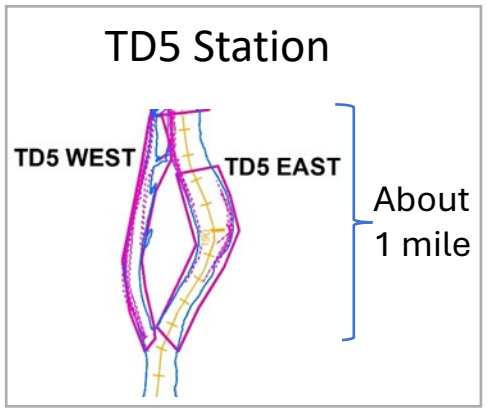
Upper Hudson River (RS 1 to RS 3)

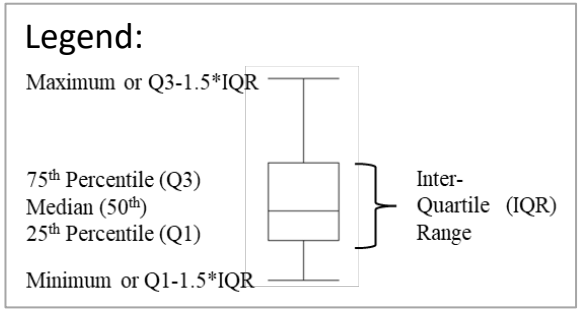


Notes

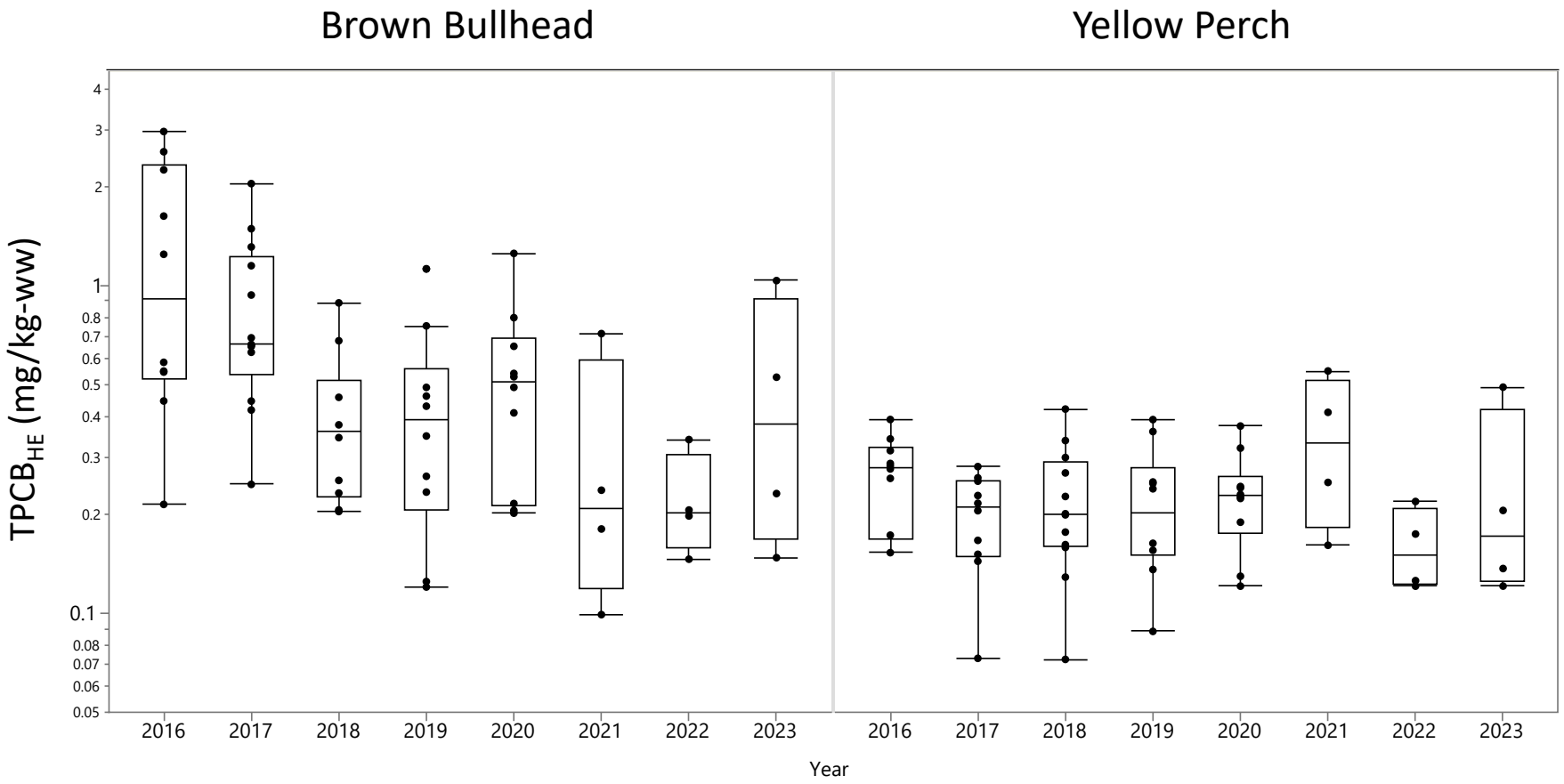
1. A single correction factor is used to convert the 2017-2022 data from Aroclor basis to Total PCB-homologue equivalent ($TPCB_{HE}$). The matched pairs used in the correction factor are from 2018,2020, 2021 and 2022
2. Individual species are averaged by collection station and then averaged together by River Section
3. River Section fish tissue PCB concentrations are weighted by species. Largemouth and smallmouth bass = 47%, brown bullhead = 44%, yellow perch = 9%
4. Upper Hudson River average is weighted by both species and river section length. River Section 1 = 6.3 miles (15.4%); River Section 2= 5.1 miles (12.5%); and River Section 3= 29.5 miles (72.1%). Data from river Reaches 4 through 1 are not included in this calculation since they were not collected regularly. Reach 5/River Section 3 is weighted to reflect all 29.5 miles of River Section 3, while the fish monitoring stations representing River Section 3 are all located in Reach 5, which is 14 miles long
5. 95% confidence limits on the mean are calculated using a bias-corrected and accelerated (BCA) bootstrap method
6. The samples from 2007-2013 are rib-out fillets, all other data is NYSDEC standard fillet samples

Changes of PCB Concentrations Over Time Vary by Species





Station TD5 – Individual Species $TPCB_{HE}$ from 2016 to 2023



Habitat Update

- Annual habitat monitoring:
  - Riverine Fringing Wetlands (RFW)
    - 489 total quadrats selected in riverine fringing wetlands
  - Submerged Aquatic Vegetation (SAV)
    - 836 total quadrats selected in submerged aquatic vegetation, BioSonics imaging conducted in and outside of planting areas
    - Pilot-scale hyper spectral imaging completed
- 2024 Response Actions:
  - SAV seed buoy deployment in five CUs
  - 4,250 individual RFW plantings and 220 feet of wave break installations
  - Targeted invasive species removal

Upper Hudson River Next Steps

- Finalize Five-Year Review Report
  - Respond to comments
- Special studies follow up
- Analyze and report out on 2024 fish and water data
  - Determine if a protectiveness statement can be made
- Continue sample collection under the OM&M program
  - Water and fish sampling in 2025
  - Next sediment sampling in 2026

Project Updates: Powerhouse & Allen Mill Deconstruction

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Powerhouse & Allen Mill - Background

- The buildings are located adjacent to the GE Hudson Falls Plant Site
  - GE plants at Hudson Falls and Fort Edward have been removed
  - Extensive remedial systems are located at each site as required by NYSDEC
  - GE's contamination remains under the Powerhouse and Allen Mill
- EPA reached legal agreement with National Grid and GE in July 2022 to oversee deconstruction of the Powerhouse and Allen Mill
  - EPA involvement due to potential for release
- Close coordination NYSDEC/NYSDOH
- Project challenges
  - Deteriorated building conditions
  - Project schedule (weather and river flows)
  - Limited access and work area
  - Working from heights and on/near water
  - Environmental conditions

Powerhouse Deconstruction - Overview

- Powerhouse deconstruction began in October 2022 and is nearly complete
- Extensive environmental monitoring and protective measures
  - River water, groundwater and air monitoring
  - River turbidity curtain and absorbent boom
- Environmental monitoring data indicates
  - A release to the river was successfully prevented
    - Downstream river water data consistent with baseline
  - No significant changes observed in groundwater/LNAPL

Powerhouse Deconstruction Progress

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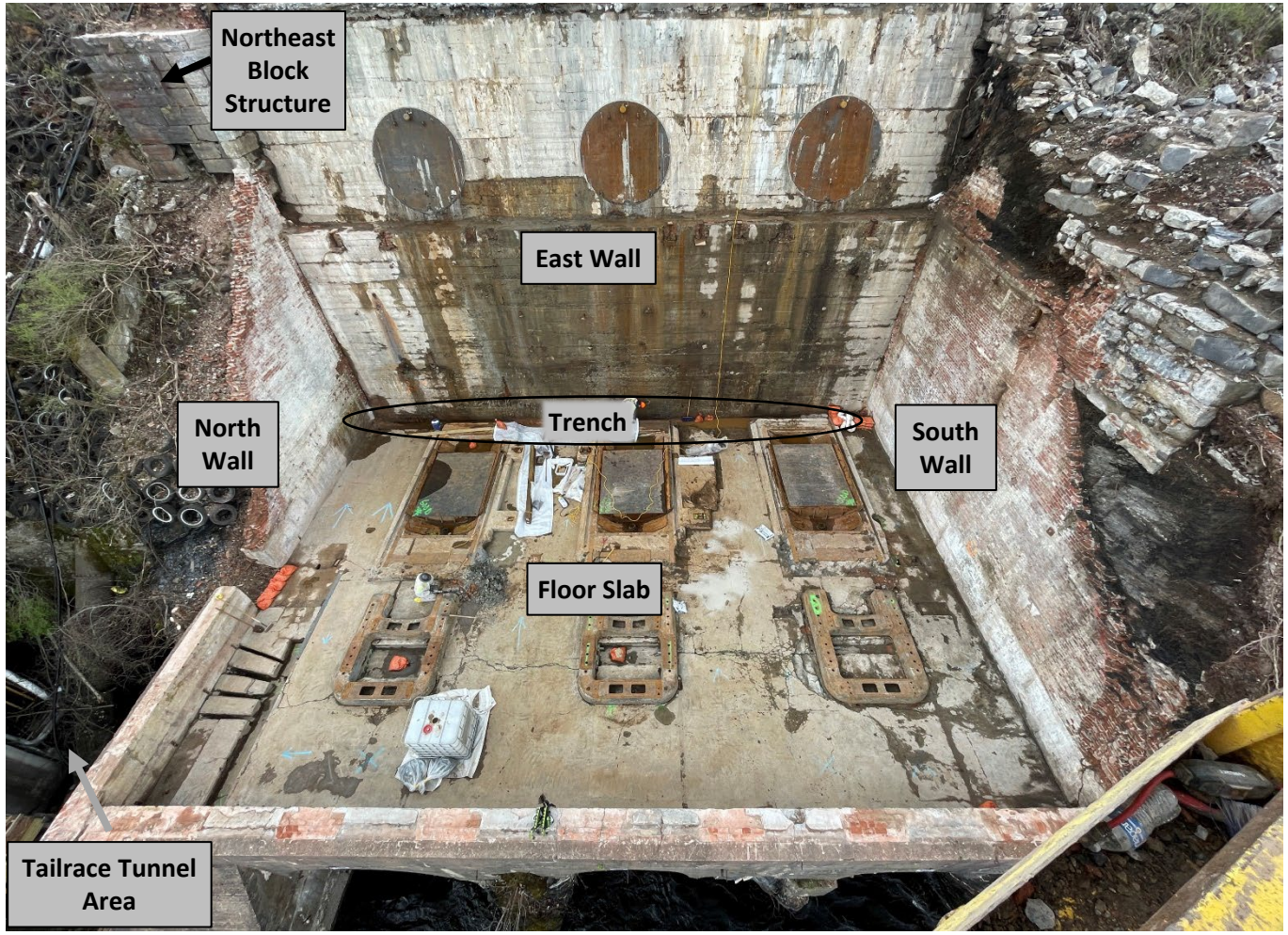
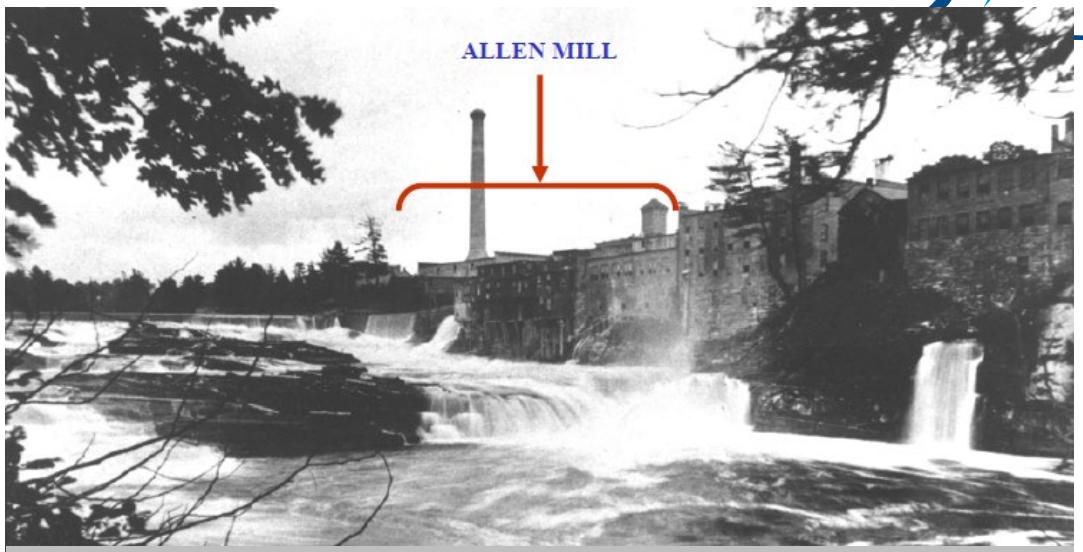
Recently Completed and Remaining Powerhouse Work

- Work completed in late 2023 and 2024
  - Debris removal from the tailrace tunnel (Oct 2023)
  - Removal of Northeast block structure (Dec 2023)
  - Floor slab cleaning (Jan 2024)
  - Ongoing water collection from trench
  - Continued investigation of floor slab piping
- Remaining Powerhouse Work:
  - Floor slab drainage and trench approach
    - Further investigation of floor slab piping and additional pipe plugging scheduled for Sept 2024
    - Ongoing management of trench water
    - Long-term comprehensive plan needed
  - Finalize plans for remaining building features (e.g., north and south walls)

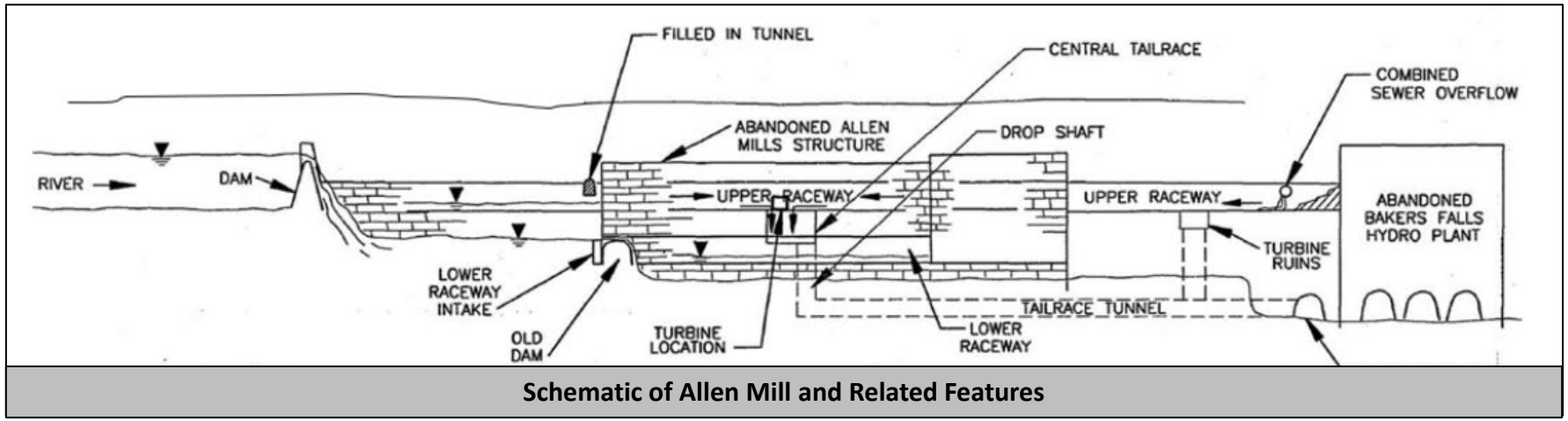


Allen Mill History and Layout

- Originally built in the 1800s as a paper manufacturing facility
- Complex building history and layout
- River water conveyed through channels to generate power
  - Eastern Raceway
  - Lower Raceway
  - Tailrace Tunnel



Allen Mill (Date Unknown, taken between 1888-1907)

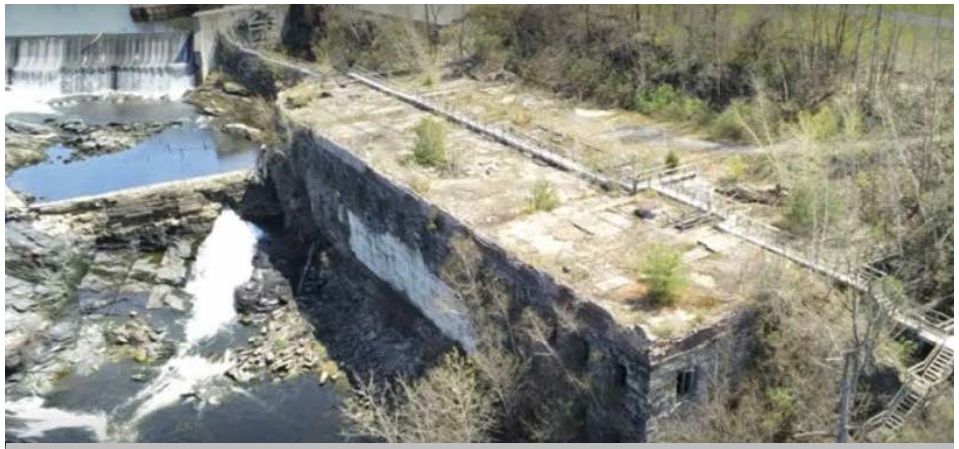


Schematic of Allen Mill and Related Features

Allen Mill Deconstruction Status

- Building Condition Assessment (August 2023)
- Access to the building obtained in September 2023
  - Some areas remain restricted due to deteriorated conditions
  - Work is underway to provide access to tailrace tunnel and lower tunnel
- Extensive pre-design investigation work needed before deconstruction can proceed
  - Access restrictions have limited the ability to conduct environmental work in and around the building
  - Pre-design investigation includes:
    - Building characterization sampling
    - Eastern Raceway investigation
    - River plunge pool and Baker's Falls – baseline sampling
    - Air conditions – baseline evaluations
    - Groundwater investigations near the edge of the river

Allen Mill (Exterior)



Allen Mill (Aerial)

Allen Mill Pre-Design Investigation Work

- Building Characterization
  - Sampling performed throughout late 2023 and 2024
  - Included sampling of walls, ceilings, floors, roof, various debris, standing water, and materials in tanks, turbines and chambers
  - Additional characterization sampling planned for later 2024
- Eastern Raceway
  - Investigation of debris (soil and rock fragments) and water in early 2024
  - Ongoing collection of accumulated water for treatment
  - Clean-out work scheduled for fall 2024

Lower Mill

Lower Mill

Eastern Raceway

Lower Raceway

Allen Mill Pre-Design Investigation Work

- Baseline Water Monitoring
  - River water sampling from 2 plunge pool locations (weekly/biweekly)
  - Baker's Falls inspections and water sampling
- Baseline Air Monitoring
  - Weekly sampling from 8 locations in the Allen Mill and the surrounding area
- Groundwater investigation
  - Re-development and sampling of wells in the vicinity of the Allen Mill that have been inaccessible

An example of an air monitoring station

Inspection of Baker's Falls

Baseline River Water Sampling

Allen Mill Deconstruction Next Steps

- Continue pre-design investigation work
- Eastern Raceway clean-out (fall 2024)
- Deconstruction design (late 2024)
- Contractor procurement (2025)
- Deconstruction – scheduled to begin fall 2025

View of Baker's Falls