Hudson River PCBs Superfund Site

Updates Various EPA Activities

March 31, 2022

Hudson River PCBs SUPERFUND SITE

Hudson River Superfund Site

EPA Activities

(Conceptual- not to scale)

Upper Hudson
(~40 Miles)

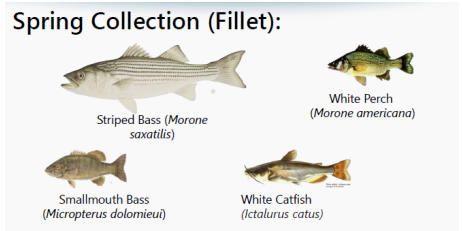
Lower Hudson
(~160 Miles)

Remnant Deposits (OU1)

***Remedy (OU2)**

Waterline Transfer to Municipalities

Lower River Monitoring (upper portion only)



Hudson Falls
(GE Plant Site - DEC)

Fort Edward
(GE Plant Site - DEC)

Former Fort Edward Dam
Rogers Island

Schuylerville

Waterford

Troy (Dam)

Albany

Catskill

PCB Sites (DEC)
- BASF
- Hastings
- BIC

Poughkeepsie
(salt front)

Tappan Zee

George Washington

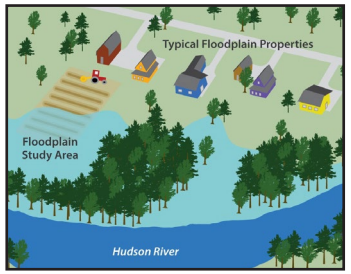
NJ

New York City Battery

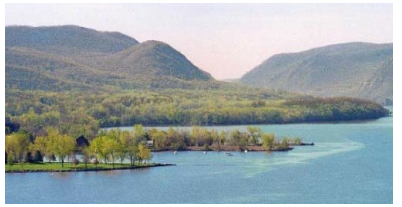
NY Harbor

Powerhouse and Allen Mill Deconstruction

Floodplain RI/FS (OU4)



Supplemental Studies (OU5)



Hudson River
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Five-Year Review (FYR) – anticipated timeline

- FYR planning/scheduling – currently underway
  - Data from 2017-2021 will be evaluated (five years of data)
- Initiate FYR in April 2022 – public notice
- Laboratory data delays – 2021 samples (supply chain and other challenges - COVID)
  - Water (received), fish (expected in April) and sediment (expected in May)
  - Analysis will be conducted as data is received
- FYR team formation (EPA will check on interest)
  - Similar approach to last FYR (3 to 5 meetings - cover data analysis)
- Report - expected in November
  - EPA anticipates opportunity for public comment
- Complete FYR - early 2023 (signed final document)

Hudson River Superfund Site

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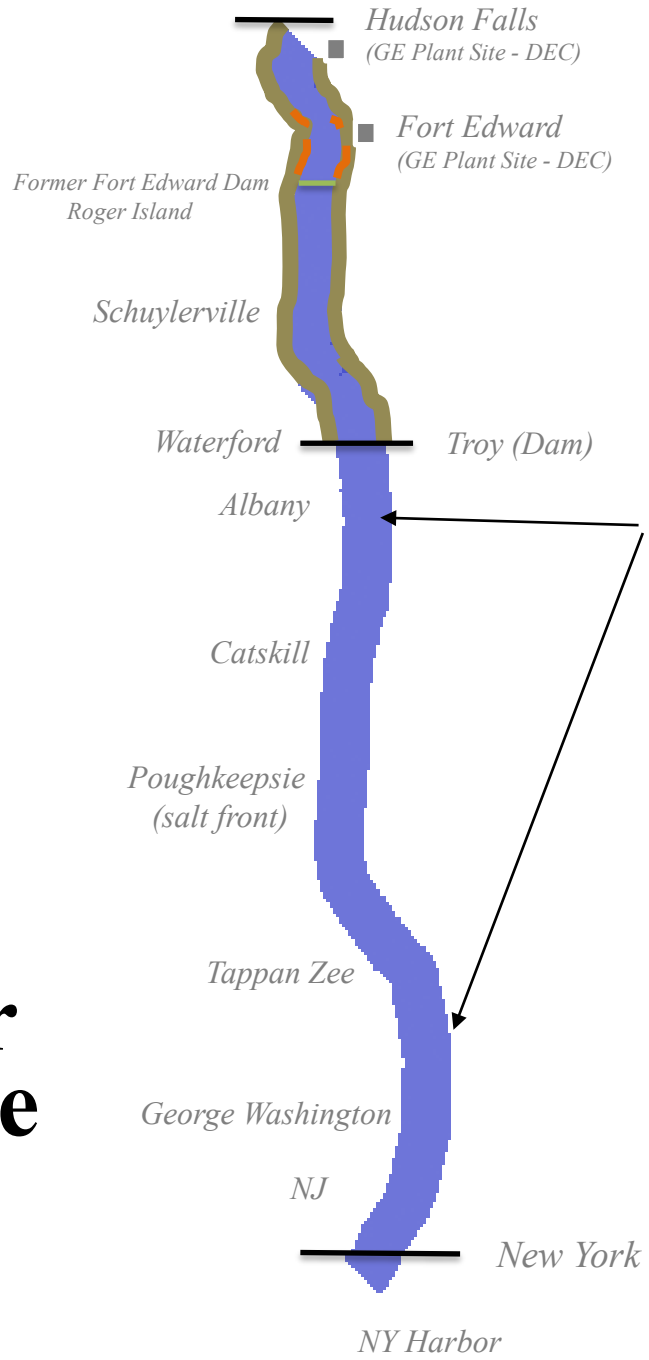


Supplemental Studies (OU5) – Conceptual Approach

- Agreement with GE – discussions ongoing
- EPA data and literature research - ongoing
- Extensive desktop work to develop preliminary scopes of work
  - Close coordination with DEC
  - Phased work approach
  - Two to three years to conduct the work
- Key Consideration
  - Unacceptable risk – fish consumption - advisories
  - Very limited data available – expand data sets
  - Improve EPA's understanding of conditions
  - Inform EPA decision making and next steps
- Sampling to include:
  - Additional water column sampling locations
  - Expanded fish sampling locations and species
  - Sediment sampling
    - Recently deposited surface sediment
    - Sediment at fish locations
    - Sediment cores – evaluate deposition over time

Hudson River PCBs SUPERFUND SITE

Lower River - Supplemental Studies (OU5)

- 160-mile portion of Superfund site
  - 22 miles along west shore in NJ
  - Saltwater front near Poughkeepsie
  - Complex system
- Literature review and data collection – various sources
  - Goal is to reach common understanding of available data and information
- Preliminary takeaways from the data/literature review
  - Very limited data available to evaluate changes in data over time
  - Current fish data shows slow or no PCB decline moving downstream (some fish recovery in Albany/Troy area)
  - Other contaminants will be evaluated

Schedule Overview – preliminary

CONCEPTUAL APPROACH

Beginning 2022

- Water sampling
- Sediment collection – recently deposited (surface) including in tributaries
- Fish sampling – availability of species by location

2023

- Sediment collection – area of fish stations (near surface)
- Fish sampling – follow-up round as needed
- Develop scope of work for deeper sediment sampling
- Evaluate water data and need for additional sampling

2023/ 2024+

- Sediment collection – cores – deeper samples to evaluate sediment deposition over time (locations will be determined based on all available sediment data)
- Data will inform decision making
- Evaluate data – develop next steps – additional investigations

Water Column – conceptual approach

- Purpose: Collect water data to understand variability throughout the Lower River
  - Tidal estuary conditions present additional challenges and complexity
  - Sampling locations will represent various salinity, flow, and turbidity conditions in the Lower River estuary
- Scope:
  - Monthly water column sampling (5 locations)
    - Albany/Troy, Catskill, and Poughkeepsie (generally freshwater)
    - Newburgh, Tappan Zee (generally brackish/saline)
  - Data evaluation following 2022 collection

Fish – conceptual approach

- Purpose: Provide sufficient data for various species in their respective habitats
  - Habitats vary by salinity, depth, vegetation, currents, turbidity, etc. along the length of the river
  - Local and migratory species to be collected
  - Improve understanding of contamination in fish as they relate to human and ecological risk
  - Evaluate relationship between sediment and fish
  - Focus sample on fish species that are likely to be consumed
  - Seek assistance from DEC on collection methods and availability of species

Hudson River PCBs SUPERFUND SITE

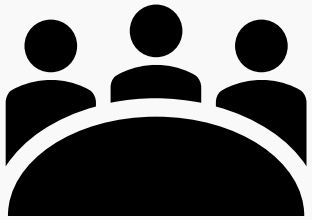
Fish Stations – preliminary

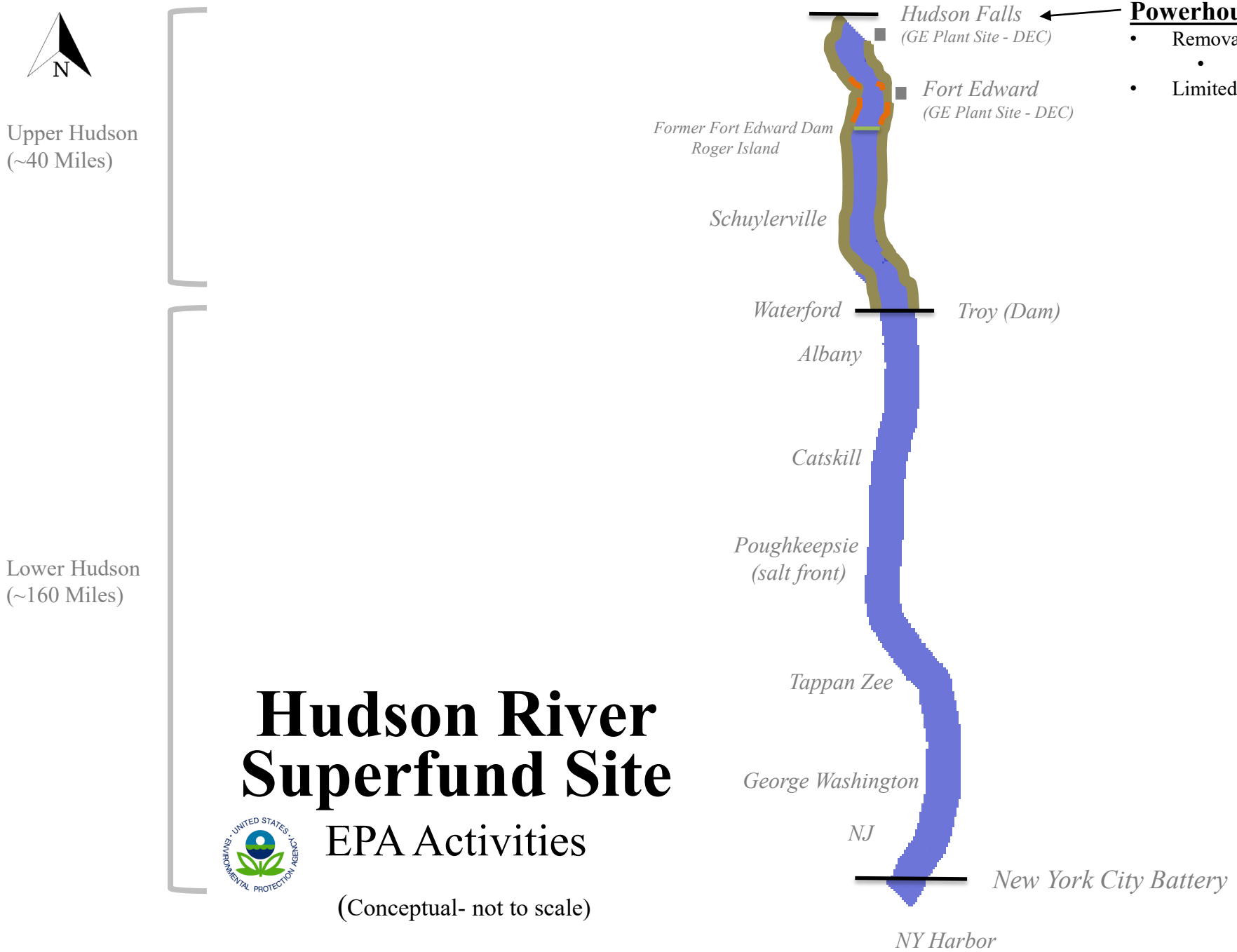
CONCEPTUAL APPROACH

- **Albany/Troy (RM 152): Primary location** - Freshwater - Striped bass, pumpkinseed, black bass, forage fish (spottail shiner), channel catfish, perch, carp
- **Coeymans (RM131): Secondary location** - Freshwater - Pumpkinseed
- **Catskill (RM 113): Primary location** - Freshwater - Striped bass, pumpkinseed, black bass, forage fish (spottail shiner), channel catfish, bullhead, perch, hogchoker/carp
- **Red Hook (RM 98): Secondary location** - Fresh/brackish water - Pumpkinseed
- **Poughkeepsie (RM 75): Primary location** - Fresh/brackish water - Striped bass, pumpkinseed, black bass, forage fish (spottail shiner), channel catfish, bullhead, perch, bluefish, hogchoker/carp
- **Newburg (RM 60): Secondary location** - Fresh/brackish water – Local species (TBD)
- **Hudson Highlands (RM 45): Secondary location** - Fresh/brackish water – Local species (TBD)
- **Haverstraw/Tappan Zee/Piermont (RM 32-27): Primary location** - Fresh/brackish water - Striped bass, channel catfish, perch, bluefish, blue crab, hogchoker/carp, American eel, forage fish (silverside)
- **George Washington Bridge (RM 11): Primary location** – Saline water - Striped bass, channel catfish, perch, bluefish, blue crab, hogchoker, forage fish (silverside)
- **New York Harbor (RM 5): Secondary location** - Saline water – Local species (TBD) including forage fish (silverside)

Sediment – conceptual approach

- Collect sediment data to understand:
  - Current surface sediment conditions (top 2 cm)
  - Sediment where fish were collected (top foot)
  - Sediment deposition over time (3 to 4 feet)
    - data from 1990 to current surface
- Other considerations
  - Technical challenges
    - Fish collection will require phased approach and lessons learn approach
    - Sediment deposition over time sampling – finding undisturbed areas where sediment has accumulated since ~1990
- Next steps
  - Close coordination with DEC/DOH
  - Further discussion with GE
  - Continued updating of CAG and other stakeholders
  - Consider expansion of CAG to incorporate additional representation from the Lower River
  - Work plans will be made available for review
- **Important – information is preliminary - work is in planning stages – more to come!**





Powerhouse and Allen Mill Deconstruction

- Removal agreement with GE/NMPC - in progress
  - minimize potential for a release into the river
- Limited documents provided by GE/NMPC to agencies

Hudson River Superfund Site

EPA Activities

(Conceptual- not to scale)

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Powerhouse and Allen Mill Deconstruction

- Niagara Mohawk Power Corporation (NMPC) – property owner
- Powerhouse structure is condemned - needs to be deconstructed
  - GE Hudson Falls contamination migrated to the NMPC property
  - Disturbance during deconstruction and/or further building deterioration has potential to cause a release
  - GE is conducting additional studies concerning PCBs adjacent to buildings
  - Preliminary deconstruction and monitoring plans under review by agencies
- EPA is requiring that removal action activities be done with EPA oversight
  - Parties are in discussions on a legal agreement (GE and NMPC)
  - Monitoring and precautionary planning measures will be required
  - EPA will be the lead agency
    - Close coordination with all parties essential
    - DEC and other agencies will be involved

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Former GE Hudson Falls Plant
Allen Mill
Powerhouse
Dam
Hudson River
(low flow condition)

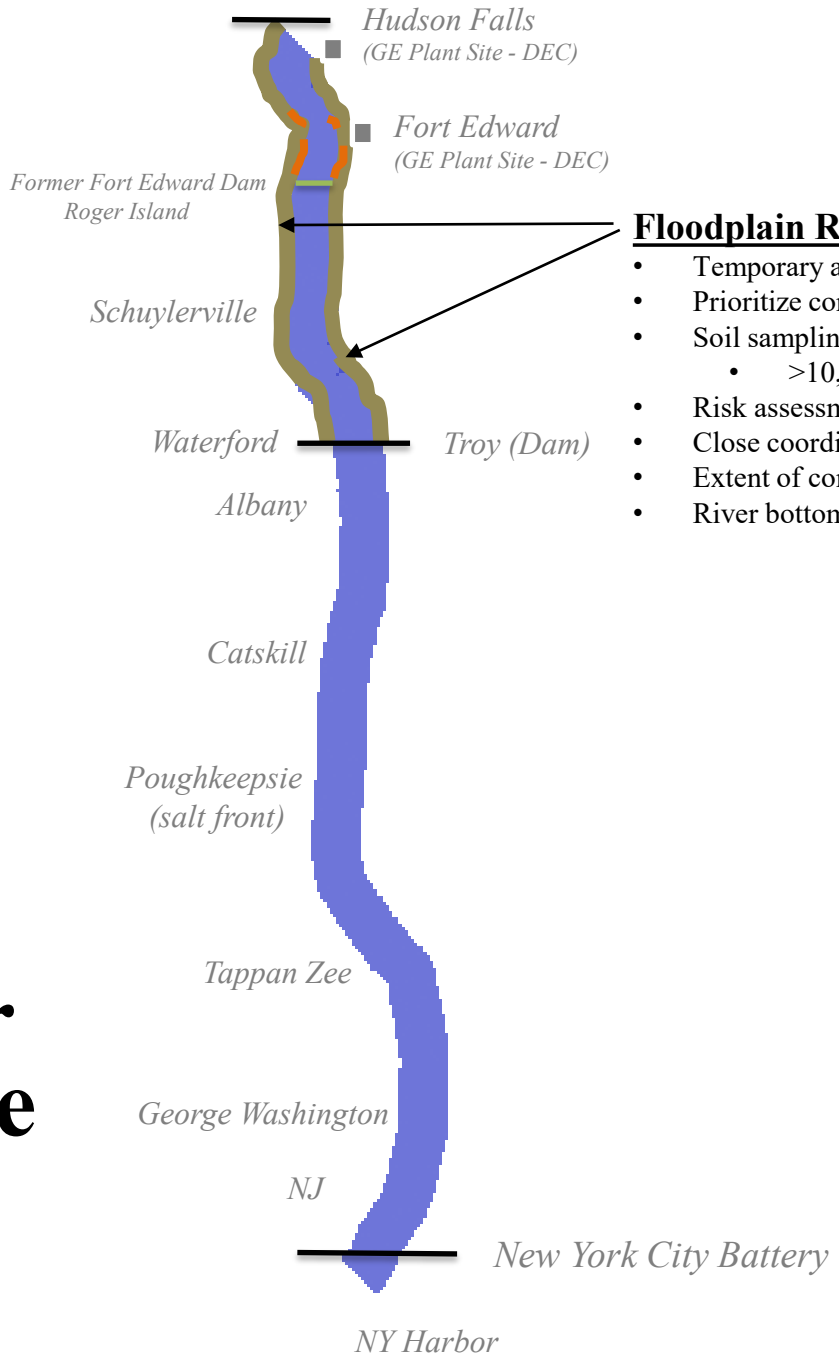
Upper Hudson
(~40 Miles)

Lower Hudson
(~160 Miles)

Hudson River Superfund Site

EPA Activities

(Conceptual- not to scale)



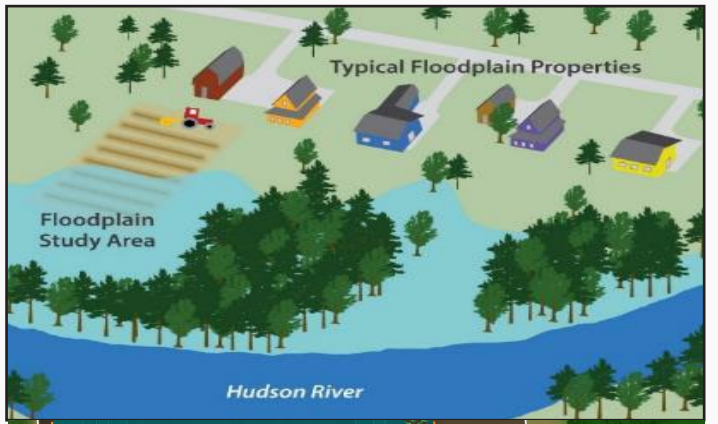
Floodplain RI/FS (OU4) – 43 miles ~ 5,500 acres

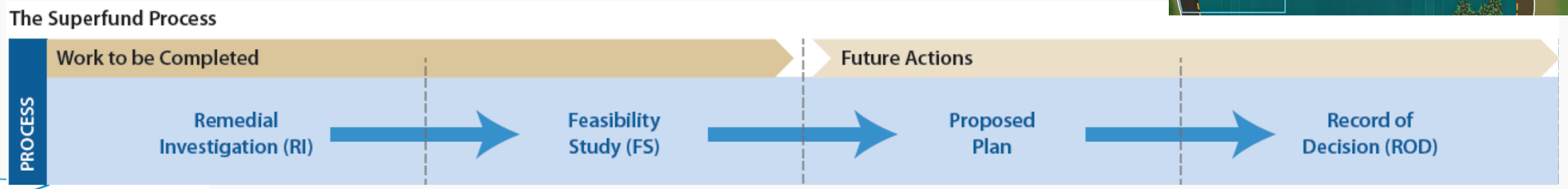
- Temporary actions (~70) –areas used by people (>10ppm)
- Prioritize community projects – Old Champlain in Schuylerville
- Soil sampling – extent of contamination – ongoing
  - >10,000 samples collected to date - ongoing
- Risk assessment work – ongoing
- Close coordination with NYSDEC/NYSDOH (sample by sample basis)
- Extent of contamination close to river – challenges
- River bottom exposed during low flow being evaluated

Hudson River
PCBs SUPERFUND SITE

Floodplain Comprehensive Study

- Comprehensive Study – assess the risk PCB contamination poses to human health and the environment
- 43-miles (Hudson Falls to Troy)
  - ~ 5,500 acres (1,800 properties)
  - Sampling – more planned
    - > 10,000 soil/sediment samples
    - Water and some biota (earthworms)
- Logistically challenging – access to properties
  - Close communication with property owners and local officials
- Risk assessment ongoing – initial screening level assessments underway
- Where are the PCBs? - more upstream and closer to the river
- Areas of river bottom exposed when water levels drop are being assessed





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Floodplain Comprehensive Study

- Actions taken to address immediate threats to human health (>10ppm PCBs)
  - Topsoil with grass or gravel covers (50 areas – 2 this season)
  - Signage - along trails and less frequently used areas (26 areas)
  - Areas are inspected and maintained on regular basis
- Ongoing sampling
  - Multiple rounds in past years and more this year
    - Flood mud samples collected to assess impacts from flood events
    - Sampling to better understand spatial distribution and variability of PCBs in soil
    - Human use areas – EPA in collaboration with DEC/DOH continue to identify these areas as property use along the river changes
- Areas regularly used by people have been prioritized for sampling
- Sampling associated with community projects are also prioritized

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Flood Mud – recent sampling

- Spring 2021
  - Sediment traps were inspected and cleaned in March 2021
- High flow event in early August 2021 last triggered a flood mud sampling event
  - High flow threshold of 15,000 cfs was exceeded at Ft. Edward (typical spring sampling event)
  - 3 sediment trap samples collected
  - Sample results ranged from not detected to 0.5 ppm
- Sampling ongoing as high flows occur

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Focused Sampling – near river edge

- Some challenges associated with fully understand PCB distribution near edge of river
- Important for risk assessments
- Sampling effort on 11 select properties
  - November 2020 - December 2021
  - Many individual samples collected on each property
- Data under EPA review

Use Area – recent sampling

- Additional frequently used areas within the floodplain were identified for sampling
- Samples collected September – October 2021
  - 29 locations (90 samples)
- Five properties
  - Two residential and three public
- PCB results to be mailed to property owners
- Additional sampling will be conducted as new use areas are identified

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Old Champlain Canal - overview

- Town/Village have long-term recreational and economic development plans for the Old Champlain Canal
- Sediment sampling program was developed in close coordination with DEC and DOH
- Initial sampling of the Canal was conducted in 2012 and 2017
- Focused sampling was conducted in 2019 and follow-up sampling completed in late 2021
- EPA expecting 2021 sampling results soon

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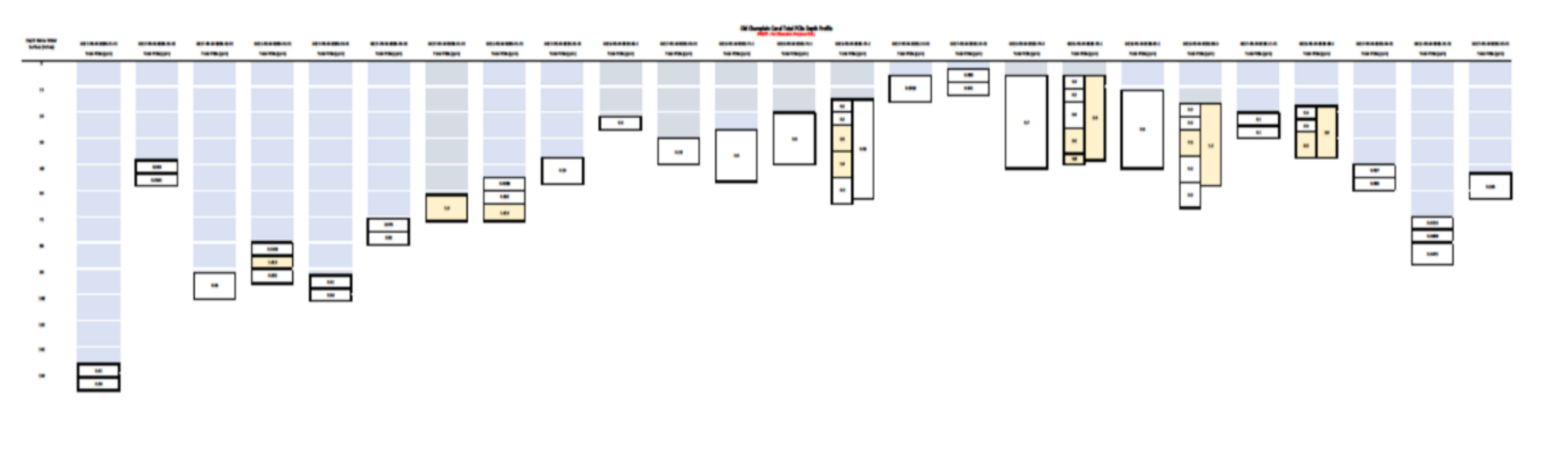
Old Champlain Canal – sample locations

Hudson River PCBs SUPERFUND SITE

Old Champlain Canal – summary of data

- Total of 43 locations and 68 samples from the canal
- PCB results in canal range from ND to 9.5 mg/kg
  - Highest concentrations generally deeper in the sediment
- Other parameters generally low
  - Some elevated levels compared to DEC standards (typically located where PCBs were detected)
- Water depths vary throughout the canal



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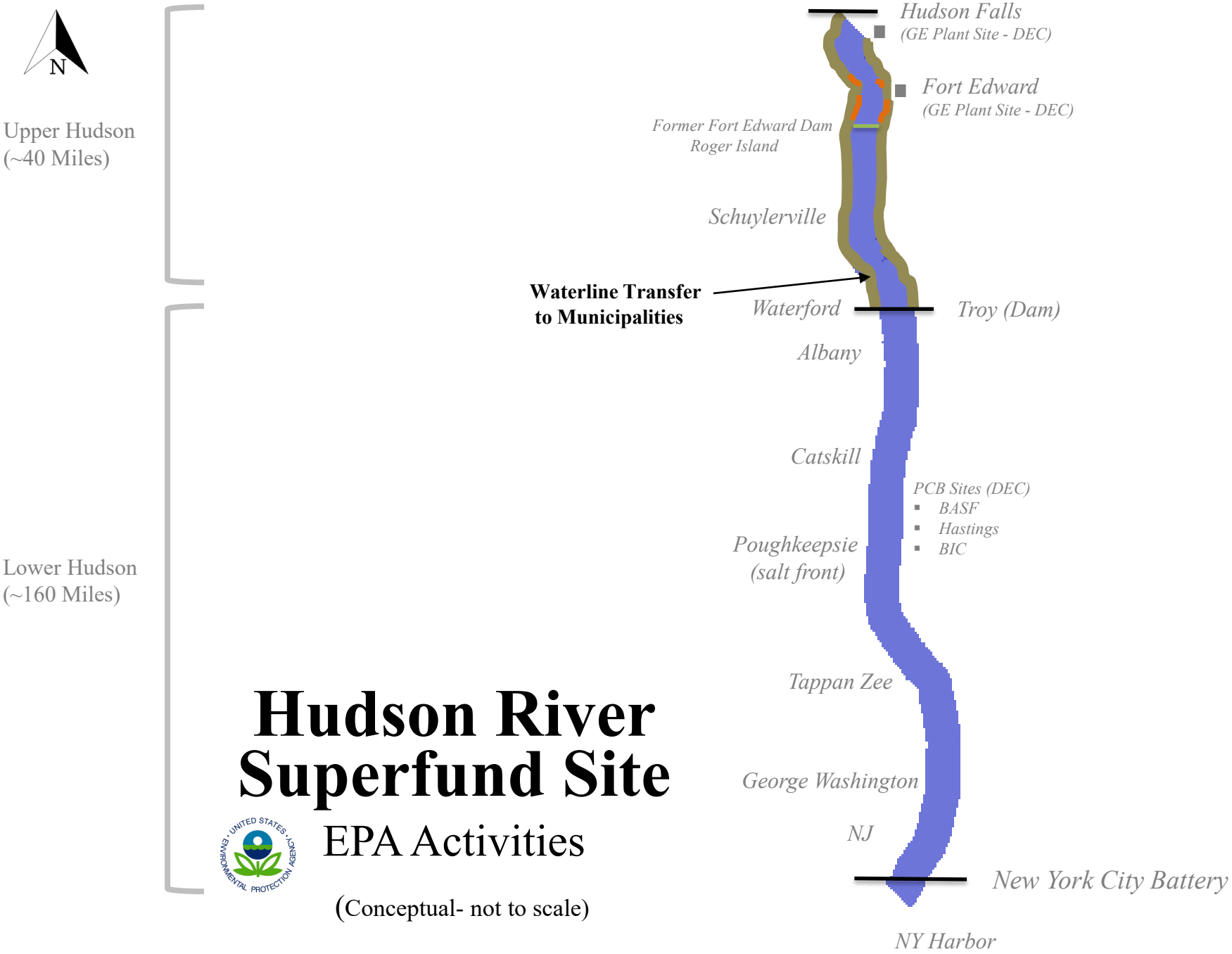

Hudson River Superfund Site

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(Conceptual- not to scale)

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Waterline Transfer to Municipalities

- Approximate 8-mile-long waterline constructed to provide alternate water from Troy to Waterford and Halfmoon during dredging is being turned back to those municipalities at no cost – EPA will keep DEC and DOH informed as the transfer moves forward

Town of Halfmoon

Town of Waterford

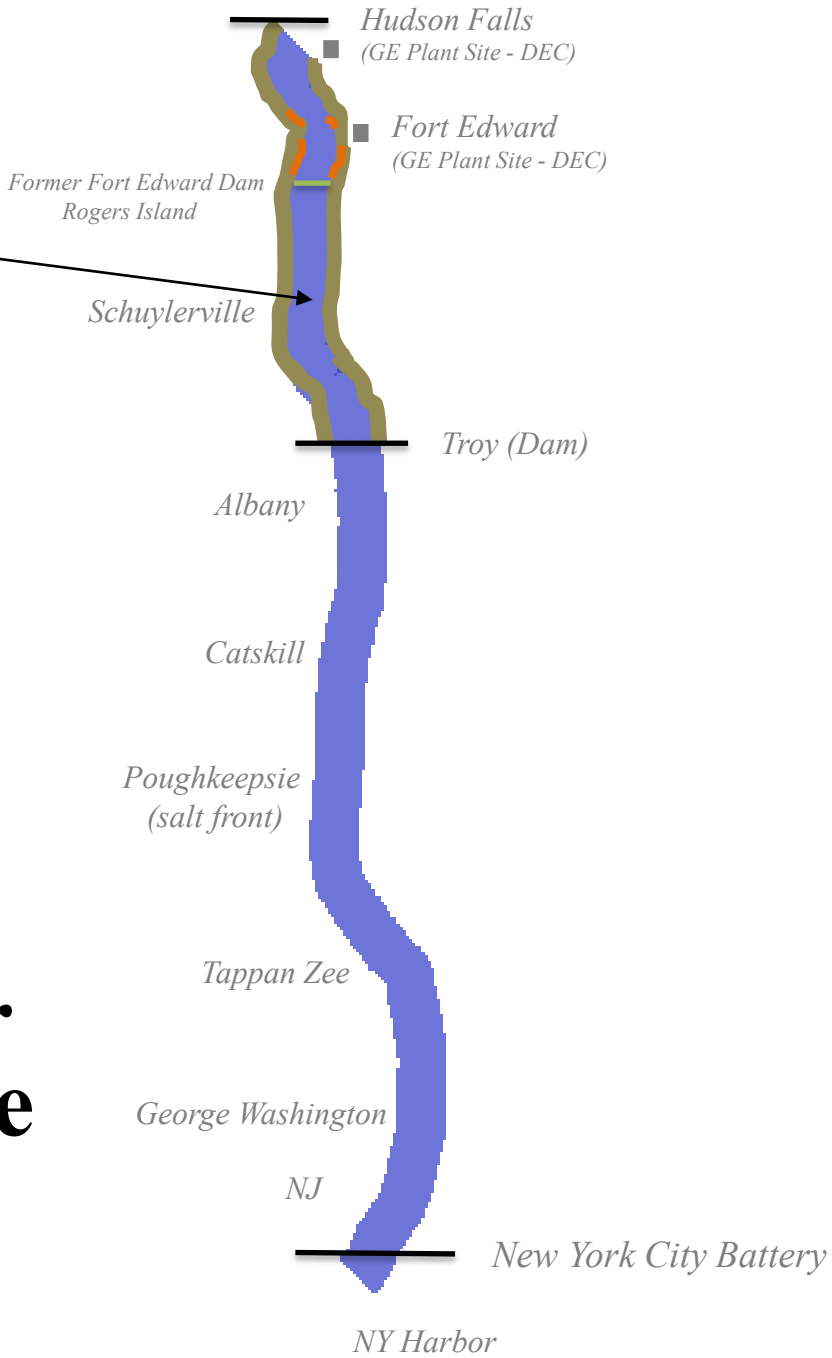
City of Troy (source)

Upper Hudson
(~40 Miles)

Lower Hudson
(~160 Miles)

OU2 Habitat Monitoring and Response

- Observe and compare monitored habitat plots against benchmarks and success criteria
- Response actions planned depending on habitat performance



Hudson River Superfund Site

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Hudson River
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Habitat Overview

- River-bottom habitats were disturbed as a result of dredging
  - Unconsolidated river bottom
  - Submerged Aquatic Vegetation and Floating Aquatic Vegetation (95 acres)
  - Riverine Fringing Wetlands (30 acres)
- Benchmarks and success criteria were established for monitoring recovery
- Habitat monitoring includes
  - Percent cover, plant species composition, survival of plants, sediment/soil properties
  - Additional monitoring - stem density and biomass
- Other activities
  - Invasive species and wildlife observations (herbivory)
  - Benthic macroinvertebrates (sediment dwelling species)

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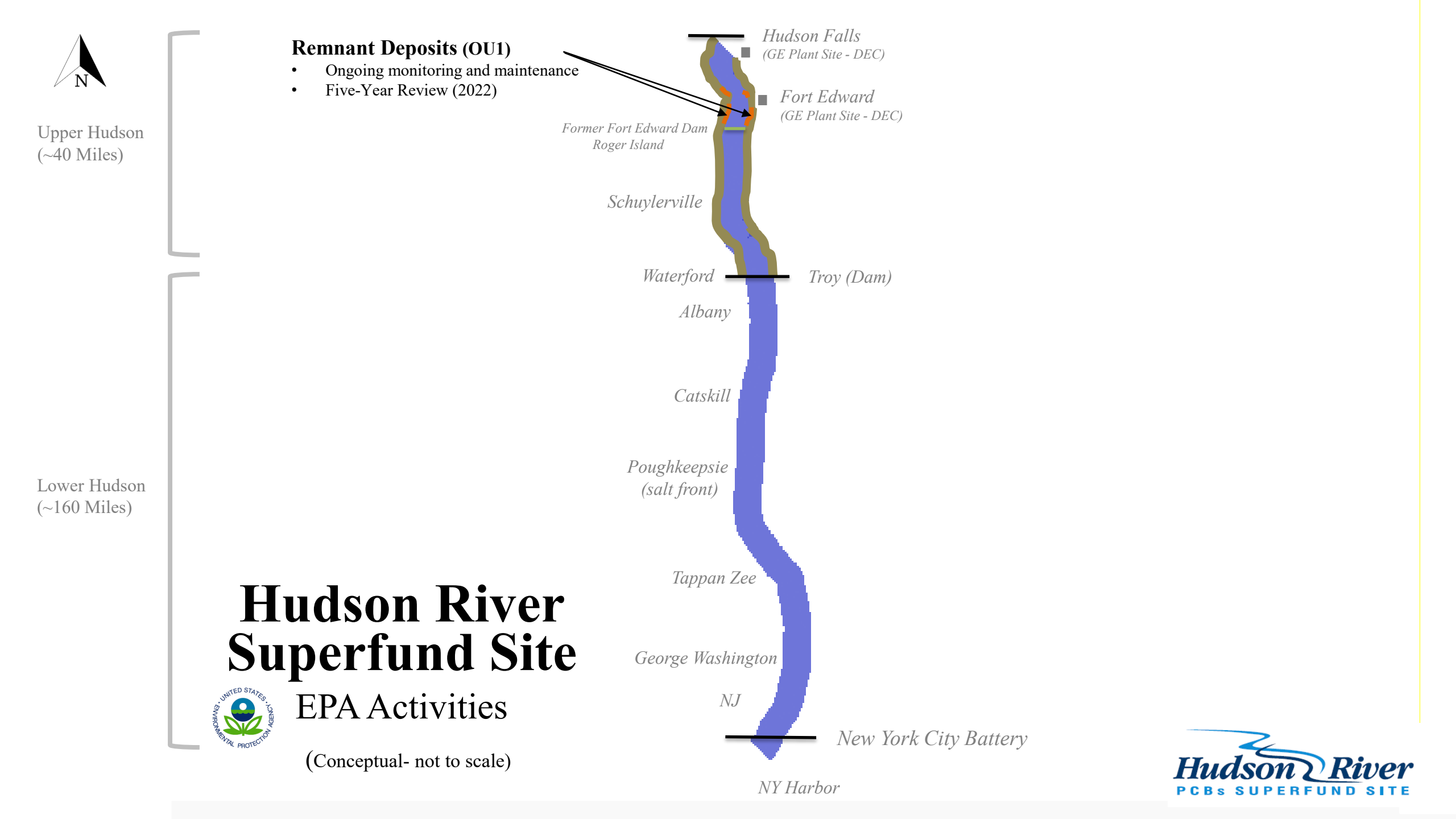
Habitat Response Actions

- Response actions occur annually based on needs identified in surveys completed in the previous year
  - New survey approaches include – drone and bio sonics
  - High flows are challenging (including in late 2021)
    - Make surveys difficult to conduct
    - Response actions may be less successful
- Robust 2021 response actions
  - Submerged Aquatic Vegetation
    - Seed buoys installed 3 selected areas
  - Riverine Fringing Wetlands
    - 9 selected areas had erosion control coir logs installed
    - 11 areas were seeded for wild rice
    - 4 areas were planted and/or re-planted
    - 16 areas required invasive species removal
- Additional response actions are planned for 2022

Hudson River PCBs SUPERFUND SITE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• Ongoing monitoring and maintenance
• Five-Year Review (2022)
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Hudson River
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Remnant Deposits (OU1)

- Fort Edward Dam removed in 1973 – exposed sediment along banks
- EPA is coordinating with DEC to determine ownership in order to establish long-term institutional controls
  - Remnant deposits are capped/covered
    - Annual inspections, maintenance, and reporting continues
  - There has been community interest in using deposits 2 and 4 as passive park

Hudson River PCBs SUPERFUND SITE

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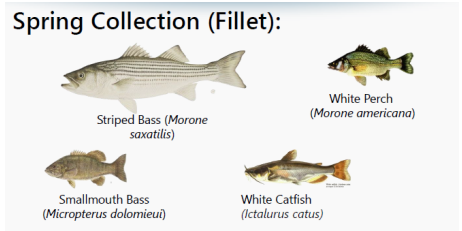

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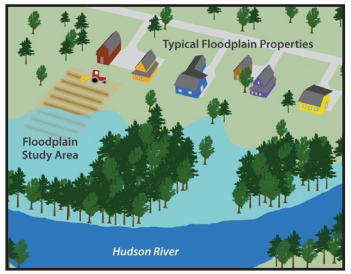

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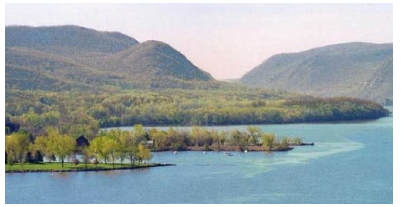

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Overall Site – notable next steps

- Five-Year Review – initiate the 3rd Five Year Review (Remnant Sites and Upper River Remedy)
  - Follow-up FYR team
- Lower River - continue discussions with GE (and other parties) for Lower River investigations
  - Support CAG with additional membership/representation
  - More to come on this work!
- Powerhouse/Allen Mill deconstruction – continue discussion with NMPC and GE on comments on removal agreement
- Floodplain Comprehensive Study - move forward with risk assessments and conduct further data gap sampling/analysis
  - Close coordination on sample-by-sample basis with DEC/DOH
- Waterline - transfer of waterline to municipalities
- Habitat - continue close coordination with DEC on habitat surveys and response actions
- Upper River - review and establish long-term monitoring programs
  - Reminder - remedy is two parts (dredging and monitored recovery)

Questions?

Hudson River
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