Hudson River PCBs SUPERFUND SITE

Region 2: NJ, NY, PR, VI • 290 Broadway, New York, NY 10007

Hudson River PCBs Superfund Site Second Five-Year Review Fact Sheet

June 2017

Updated June 8, 2017

What is a five-year review?

The purpose of a five-year review is to determine if a Superfund cleanup remedy is working as intended and is protective of human health and the environment.

If any issues that affect protectiveness are found during the five-year review, recommendations are made to address them.

How is protectiveness determined?

Protectiveness is determined by answering the following three questions:

- Is the remedy functioning as intended?
- Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives used at the time of remedy selection still valid?
- Has any other information come to light that could call into question the protectiveness of the remedy?

When is a five-year review conducted?

The Superfund law requires that five-year reviews be performed when a cleanup action leaves some hazardous substances on a site at levels that do not allow for unlimited use and unrestricted exposure. These reviews are required every five years from the start of construction of the cleanup action. The first five-year review for the Hudson River PCBs Superfund site was completed in 2012.

What information was evaluated for the Hudson five-year review?

All available project data were evaluated for the Hudson River PCBs Superfund site, including all available fish, water and sediment data.

Because dredging was completed in 2015, the most recent data available (collected in 2016) reflect conditions less than a year after completion of dredging, and are still influenced by dredging-related impacts.

How did EPA perform the Hudson five-year review?

Usually, the EPA performs the five-year reviews with some input from state partners, but in the case of the Hudson River PCBs site five-year review, the EPA took the unusual step of establishing a team that included representatives from state and federal agencies, as well as the Hudson River Natural Resource Trustees, and representatives from the site's Community Advisory Group. The EPA consulted with this team as it developed its five-year review. Although the EPA typically does not seek public comment on five-year reviews, the EPA will hold a public comment period on the Hudson River five-year review.

What was the outcome of the Hudson River PCBs site five-year review?

The EPA believes that the available data and information show that the Hudson River PCBs site remedy is working as designed and is expected to accomplish its goal of long-term protection of human health and the environment. As expected, average PCB concentrations in fish in the Upper Hudson are declining but have not yet reached protective levels. Therefore, EPA recognizes the remedy to be not yet protective of human health and the environment. In the interim, the State of New York has fishing restrictions and advisories in place to control human consumption of contaminated fish. Although human health and ecological remedial goals have not yet been reached, they are expected to be reached in the future, when the remedy—including the natural attenuation component—is complete.

The EPA's five-year review acknowledges that more years of post-dredging data are needed to identify, with a higher degree of confidence, long-term trends in the river's recovery.

EPA expects that the remedy at Operable Unit (OU) 2 (see explanation of OUs on page 2) will be protective of human health and the environment upon completion.

The Hudson River PCBs Superfund Site

The Hudson River PCBs Superfund site encompasses a nearly 200-mile stretch of the Hudson River from Hudson Falls, New York, to the Battery in New York City. The site is divided into two major areas: the Upper Hudson River, which runs from Hudson Falls to the Federal Dam at Troy (a distance of approximately 40 miles); and the Lower Hudson River, which runs from the Federal Dam at Troy to the southern tip of Manhattan at the Battery in New York City.

The EPA is addressing the Hudson River PCBs Superfund site in discrete phases or components known as Operable Units (OUs). **Only OUs 1 and 2 are being evaluated under this five-year review (see site map below).**

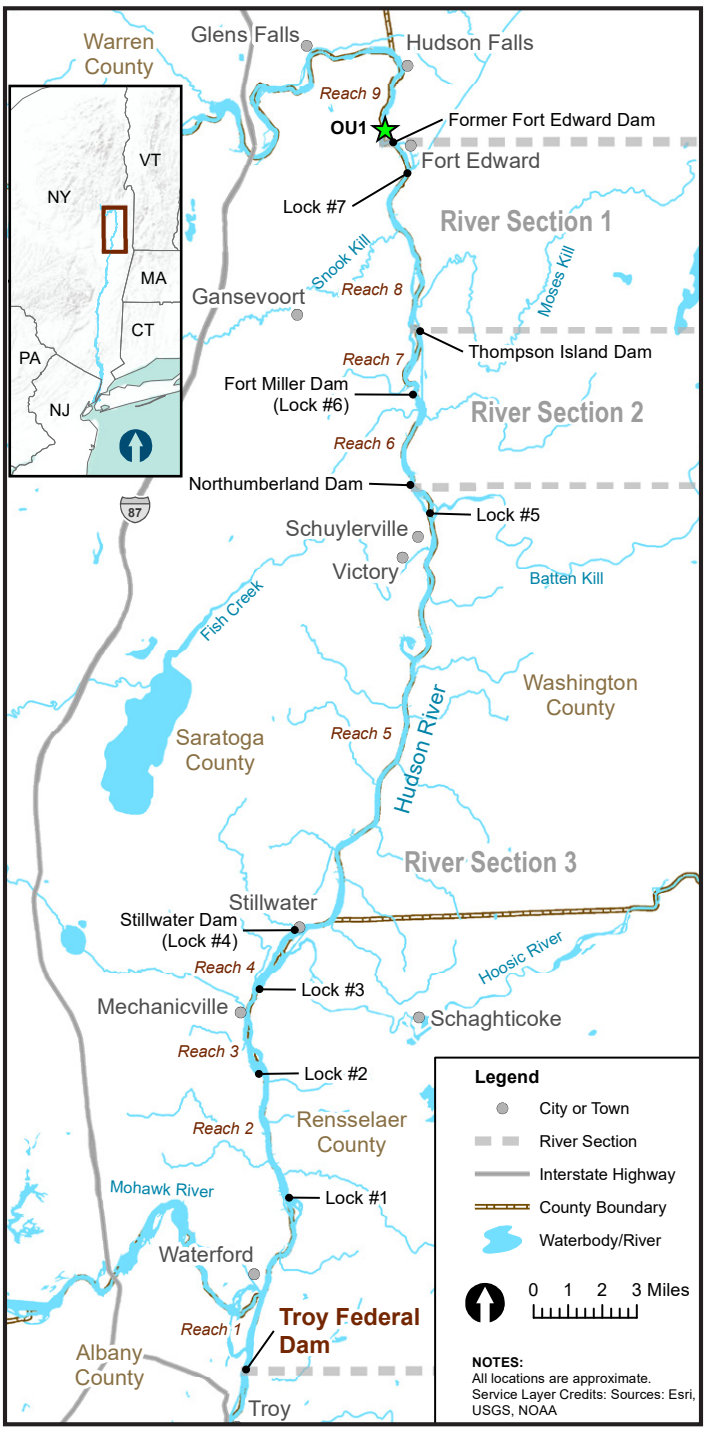
OU1 (Remnant Deposits): In 1984 the EPA selected a cleanup plan, embodied in a Record of Decision (ROD), to address the Remnant Deposits. The Remnant Deposits are areas of PCB-contaminated sediment that became exposed after the river water level dropped following the removal of the Fort Edward Dam in 1973. The cleanup of the Remnant Deposits included an in-place containment and cap system, perimeter fencing and signage. The in-place containment was completed in 1991.

OU2 (In-River Sediments): The EPA's 2002 ROD selected dredging to address PCB-contaminated sediment in the Upper Hudson River, as well as monitored natural attenuation (MNA) of PCB contamination that remains in the river after dredging. Dredging began in spring 2009 and was completed in fall 2015. Long-term monitoring will be conducted to track the recovery of the river over time.

The "floodplains" portion of the site, which includes the low-lying shoreline areas on the east and west banks of the Upper Hudson River, will be addressed under future EPA decisions and is not assessed by this five-year review.

What is monitored natural attenuation (MNA)?

Monitored natural attenuation is a risk reduction approach for contaminated sediment that uses ongoing naturally occurring processes to contain, destroy, or reduce the availability or toxicity of contaminants in sediment to living organisms. Monitoring of the ecosystem during MNA ensures that the conditions needed for MNA to take place haven't changed and that progress is being made towards cleanup goals.



Upper Hudson River Project Area
This section of the river is covered under Operable Unit 2

OU2 (In-River Sediments) Site History

Over a 30-year period ending in the late 1970s, an estimated 1.3 million pounds of PCBs entered the river from two General Electric (GE) capacitor manufacturing plants located in Fort Edward and Hudson Falls, New York.

Since 1976, high levels of PCBs in fish have led New York State to close various recreational fisheries and to issue advisories restricting the consumption of fish caught in the Hudson River.

In February 2002, the EPA finalized a ROD for the Hudson River PCBs Superfund site to address the contaminated in-river sediment. That two-part plan called for targeted environmental dredging of approximately 2.65 million cubic yards of PCB-contaminated sediment from a 40-mile section of the Upper Hudson River between Fort Edward and Troy, NY, followed by MNA. GE performed the dredging pursuant to the terms of a 2006 legal agreement, under EPA oversight.

The dredging of the Hudson River was designed to occur in two phases. The first phase of the dredging project was conducted in 2009. The plan for dredging underwent extensive review by the EPA and GE at the end of the 2009 dredging season. The plan was also reviewed by a panel of independent scientific experts in 2010, and various stakeholders participated in that review, including the State of New York, the Hudson River Natural Resource Trustees, the Hudson River Community Advisory Group and other members of the public. The second and final phase of dredging began in June 2011 and concluded in fall 2015.

This five-year review considers all available data, including in particular the new data that have been generated and the activities conducted or completed between 2012 (when the first review was conducted) and the preparation of this second five-year review. EPA anticipates conducting reviews every five years well into the future.

Site Chronology

1947-1977	GE uses PCBs at its Hudson Falls and Fort Edward facilities. PCBs discharged directly and indirectly into the Hudson River via both non-permitted and permitted discharges.
1984	The Hudson River PCBs Superfund site is formally placed on the National Priorities List (NPL). The EPA issues a Record of Decision (ROD) for the Remnant Deposits (OU1) which specifies in-place containment. For the in-river sediment (OU2), EPA makes an interim No Action decision.
1989	EPA announces decision to initiate a detailed reassessment of the interim No Action decision for the in-river sediment.
1990-1992	Capping of Remnant Deposits (OU1) performed by GE.
2002	EPA signs a ROD calling for the removal of an estimated 2.65 million cubic yards of PCB-contaminated sediment from the Upper Hudson River followed by MNA.
2005	GE signs a Consent Decree with EPA in which GE agrees to perform Phase 1 of the environmental dredging and the construction of the sediment processing facility, and also agrees to a process whereby, following Phase 1, GE will either opt in or opt out of performing Phase 2 of the dredging.
2007	Sediment processing facility and rail yard construction begins.
2009	Phase 1 dredging begins.
2010	Independent peer review of Phase 1. GE agrees to conduct Phase 2.
2011	Phase 2 dredging begins.
2012	First five-year review conducted, which covered the time period between 2007 and 2012.
2015	Phase 2 dredging ends and processing facility demobilization begins.
2016	Phase 2 habitat reconstruction and processing facility demobilization completed.
2017	Second five-year review conducted which covers the time period between 2012 and 2017.

Activity Since the Last Five-Year Review

OU1 (Remnant Deposits)

Maintenance is ongoing in accordance with the 1990 legal agreement (consent decree) between EPA and GE.

OU2 (In-River Sediments)

Phase 2 dredging and backfilling of the Hudson River was completed in fall 2015. In total, approximately 2.75 million cubic yards of sediment were dredged from the river, processed and shipped via rail to approved, permitted landfills for disposal. During 2016, restoration of habitat areas disturbed by the dredging was completed. The 100-acre Fort Edward facility that was constructed to dewater and process the dredged sediment was also taken apart and the property was restored. Infrastructure was left behind, to the extent possible, to support future beneficial use of the site. As of spring 2017, the project is transitioning from the remedial action phase of the cleanup to the Operation, Maintenance & Monitoring (OM&M) phase, which will continue for the foreseeable future. During the OM&M phase, long-term monitoring is conducted to track the ongoing recovery of the river and the effectiveness of the cleanup over time.

Second Five-Year Review Protectiveness Summary

Operable Unit:	*Protectiveness Determination:*
OU1 (Remnant Deposits)	*Short-term protective*

Protectiveness Statement:

The remedy at OU1 currently protects human health and the environment, as the in-place containment and cap system prevents human exposure, and as perimeter fencing and signage continue to be maintained. However, in order for the remedy to be protective in the long-term, an institutional control needs to be implemented to ensure that the future use of the Remnant Deposits does not compromise the integrity of the cap system or result in unsafe exposures.

Operable Unit:	*Protectiveness Determination:*
OU2 (In-River Sediments)	*Will be protective*

Protectiveness Statement:

Based on data collected and reviewed to date, EPA expects that the remedy at OU2 will be protective of human health and the environment upon completion. Remedial activities completed to date have substantially reduced PCB source materials in the Upper Hudson River. As expected in the Record of Decision, average PCB concentrations in fish in the Upper Hudson are declining but have not yet reached protective levels. Therefore, as of the date of this five-year review, EPA recognizes the remedy at OU2 to be not yet protective of human health and the environment. Because the remedy includes not only the dredging component but also the subsequent period of monitored natural attenuation, EPA will not consider the OU2 remedy to be complete until the natural attenuation component also has been completed. Based on all the available data to date, EPA expects that continued natural attenuation following the completion of dredging will achieve the long-term remediation goal for the protection of human health with regard to fish consumption (0.05 mg/kg PCBs in species-weighted fish fillet). As EPA indicated in the ROD, EPA believes it likely that improvement will occur gradually over several decades at least. In the interim, the State of New York has in place fishing restrictions and advisories against consumption of fish to control human exposure pathways that could result in unacceptable risks. EPA acknowledged in the 2002 ROD that the consumption advisories are not fully effective in that they rely on voluntary compliance in order to prevent or limit fish consumption. EPA will continue to work with New York State to ensure the ongoing maximum effectiveness of the advisories.

Key Findings of the Second Five-Year Review

The following findings of the 2017 second five-year review are the cornerstones of EPA's assessment that the remedy is functioning as intended. These findings are discussed in detail in the five-year review report (Section 5: Technical Assessment of the Second Five-Year Review Report):

- EPA's remedy for the contaminated sediments was implemented successfully and within expectations described in the ROD.
- Overall, the dredging was implemented as anticipated in the EPA's 2002 ROD. There were some differences from dredging assumptions in the ROD that may create a lag in projected fish recoveries. These differences include a delayed start to dredging, significantly more mass removal, the use of a single processing facility, and dredging in multiple river sections at once.

- The New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health have maintained the fishing restrictions and advisories with modifications, as appropriate, and those departments continue to conduct public outreach to minimize human consumption of fish.
- Cleanups being overseen by the New York State Department of Environmental Conservation at GE's Fort Edward and Hudson Falls plants have reduced levels of PCBs getting into the river as anticipated by EPA's 2002 ROD.
- Post-dredging data from 2016 are encouraging, but additional monitoring is needed. These data are not sufficient to define post-dredging trends, and likely still reflect impacts from the dredging operations. As noted in the ROD, EPA's expectation was that following dredging, the system would require one to two years to stabilize to post-dredging conditions and exposures with continued natural attenuation thereafter.
- Contamination is naturally attenuating at rates of decline that are generally in agreement with the modeling done for the ROD.
- Monitoring of water, fish and sediment will continue into the future to confirm that natural attenuation and recovery are occurring and the remedy is functioning as intended.
- The remedy is reducing ecological risks and is expected to continue to reduce these risks over time.

Other Findings

In addition, the following are recommendations that were identified during the second five-year review but do not affect current and/or future protectiveness:

Fish Recovery

Data trends observed from fish monitoring measurements collected under the monitored natural attenuation (MNA) period from 1995 to 2008 were compared to MNA forecasts developed as part of the ROD for 1998 to 2008. These observations displayed the anticipated consistent decline in fish tissue concentrations when moving downstream within the project area. In addition, observed PCB concentrations in fish tissue in the Upper Hudson River and upstream from the Green Island Bridge in Troy were declining more rapidly than in the rest of the Lower Hudson River, downstream from the Green Island Bridge. These comparisons (extensive detail is provided in Appendix 3 of the Second Five-Year Review Report) suggest potential differences in exposures between the Upper Hudson River and Lower Hudson River, in addition to suggesting that MNA may be working more slowly in the Lower Hudson River than in the Upper Hudson River. EPA recognizes there are other sources of PCBs in the Lower Hudson River (although less significant than the GE sources of PCBs at Hudson Falls and Fort Edward), the Lower Hudson River is a tidal estuary with characteristics that are very different than the freshwater Upper Hudson River, and PCB contamination in the Lower Hudson has been studied less than in the Upper Hudson River. It will therefore be important to collect additional data and other information in order to better understand the PCB contamination in the Lower Hudson River.

NYSDEC believes that there is uncertainty and skepticism around whether the fish PCB targets will be achieved in the timeframes anticipated by the ROD (NYSDEC 2016[1]). The first rounds of post-dredging fish data (from 2016) indicate that concentrations have returned to pre-dredging or slightly below pre-dredging levels, which is encouraging (see Appendix 3 of the Second Five-Year Review Report). EPA has developed the remedy performance monitoring under OM&M to collect data necessary to address uncertainty to a reasonable extent. It is important to keep in mind that EPA anticipates as many as eight or more years of actual post-dredging fish data are needed to establish a statistical trend in PCB levels in fish. This generally expected timeframe for obtaining more certainty regarding post-remedial fish trends is based upon scientific analysis and has been known since the establishment of the Baseline Monitoring Program. EPA has shared this information with involved parties since 2003.

Operation, Maintenance and Monitoring Adjustments

Long term monitoring (OM&M) of water, fish, sediment, caps and habitat is an important part of the remedy. It is necessary that OM&M plans reflect the current understanding of the system being monitored and that monitoring plans have the flexibility to be adjusted as necessary during the ongoing natural recovery period of the remedy.

[1] NYSDEC. 2016. "Recommendations to EPA for the 'Five Year Review Report' for Hudson River PCBs Site." December 2016.

Community Involvement and the Five-Year Review

Throughout the five-year review process, the EPA sought to provide multiple opportunities for the public to participate. The public was notified of and invited to participate in the five-year review process via press releases, public workshops, the Hudson River Listserv and the EPA's Hudson River PCBs Superfund site webpage: www.epa.gov/hudson. Additionally, stakeholders are represented by an active Community Advisory Group (CAG) which meets four to five times per year. These meetings are open to the public.

Public Workshops

Three public workshops were held at varying locations in the project area during the five-year review process to discuss the purpose of the review and the timeline, and to provide status updates and an opportunity for members of the public to provide input and ask questions.

Public Comment Period and Public Meetings

The EPA is providing an opportunity for the public to provide input on the findings of the Proposed Second Five-Year Review Report. On June 1, 2017, the EPA released the report for public comment. The public comment period was originally set to end on June 30, 2017. In response to requests from of several parties, the EPA has extended the public comment period until **September 1, 2017.**

Written comments can be sent by mail or email to:

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

Email: epahrfo@outlook.com

Two public information meetings have been scheduled during the public comment period. The EPA will discuss the purpose, scope and findings of the five-year review and answer questions from the public. Details of the public meetings are as follows:

Wednesday, June 28, 2017
6 p.m. – 8 p.m.
Poughkeepsie Grand Hotel
Terrace Ballroom
40 Civic Center Plaza
Poughkeepsie, NY 12601

Wednesday, July 19, 2017
6 p.m. – 8 p.m.
The Saratoga Hilton
Saratoga Ballroom - Room 1
534 Broadway
Saratoga Springs, NY 12866

For More Information

For more information, visit,* call toll-free, or write to the EPA Region 2 Hudson River Office at the address below. More information about the Hudson River PCBs Superfund site is also available online: www.epa.gov/hudson.

EPA Contacts:

- **Gary Klawinski, *Project Director***
  EPA Region 2 Hudson River Office
  187 Wolf Road, Suite 303, Albany, NY 12205
  (518) 407-0400 or (866) 615-6490 Toll-Free
  epahrfo@outlook.com

- **Larisa Romanowski, *Community Involvement Coordinator***
  EPA Region 2 Hudson River Office
  187 Wolf Road, Suite 303, Albany, NY 12205
  (518) 407-0400 or (866) 615-6490 Toll-Free
  epahrfo@outlook.com

**The Hudson River Office hours are Monday - Friday 8:00 am - 4:30 pm, with evening hours by appointment.*

Regional Public Liaison:
If you would like information on general environmental concerns or the federal Superfund hazardous waste program, have concerns or complaints about the Superfund program, or if you seek assistance in resolving site-specific issues that were not fully addressed by the EPA, please contact: George Zachos, U.S. EPA, Regional Public Liaison,
(732) 321-6621, zachos.george@epa.gov, or toll free at (888) 283-7626.