

**HUDSON RIVER HABITAT  
RESTORATION  
ECOSYSTEM RESTORATION  
DRAFT INTEGRATED FEASIBILITY REPORT AND  
ENVIRONMENTAL ASSESSMENT**

**Appendix G3:  
Hazardous Toxic and  
Radioactive Waste**



**U.S. ARMY CORPS OF ENGINEERS  
NEW YORK DISTRICT  
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## CHAPTER 1: INTRODUCTION

This Hazardous, Toxic, and Radioactive Waste (HTRW) Appendix was prepared for the Hudson River Habitat Restoration Draft Feasibility Report/Environmental Assessment (FR/EA). The U. S. Army Corps of Engineers (USACE), New York District (District) Hudson River Habitat Restoration Study covers an area in which the USACE has been active for over a century in multiple navigation projects. This FR/EA assesses ecosystem restoration actions in the Hudson River, led by the District along with its non-Federal sponsor, the New York State Department of Environmental Conservation (NYSDEC). The study area (Figure 1) encompasses the Hudson River and its tributaries, from the Tappan Zee Bridge and the Troy Lock and Dam, a length of about 125 miles. The goal of this study is to identify a cost effective ecosystem restoration plan that maximizes habitat benefits while minimizing impacts to environmental, cultural, and socioeconomic resources. The study describes the federal and state interest in restoring the aquatic ecosystem along portions of the Hudson River and its tributaries based on identification of significant resources.

As required by USACE Engineering Regulation 1165-2-132, the District facilitated early identification and appropriate consideration of HTRW in the study area. The District conducted an extensive search for each project area to assess the likelihood of existing HTRW concerns. The search included state (New York State Department of Environmental Conservation, 2019) and federal (USEPA, 2019A) environmental databases, literature searches, and other relevant databases for the study sites.

### 1.1 STUDY OVERVIEW

The project area is bounded by the Gov. Mario M. Cuomo (former Tappan Zee) Bridge (South) and the Troy Lock and Dam (North) and generally encompasses 125 miles of Hudson River as well as the immediate tributaries and land east and west of the Hudson River between these two boundaries. Within this project area, 6 restoration sites were selected including (**Error! Reference source not found.**):

- Binnen Kill
- Schodack Island
- Henry Hudson Park
- Charles Rider Park
- Rondout Creek – Eddyville Dam
- Moodna Creek including Aquatic Organism Passage (AOP)1 (Utility Crossing); AOP2 (Firth Cliff Dam); and AOP3 (Orr's Mill Dam)

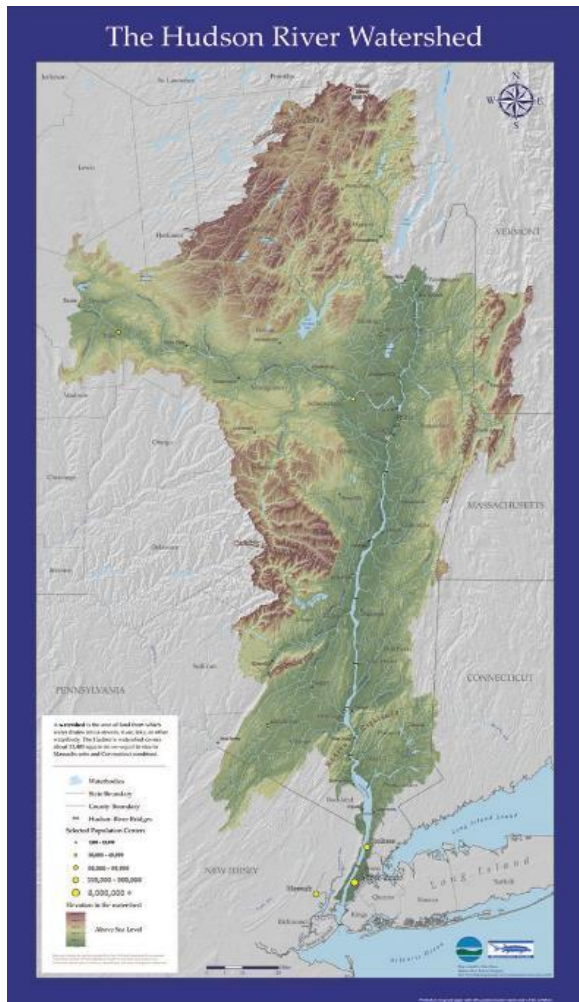


Figure 1. Hudson River Watershed

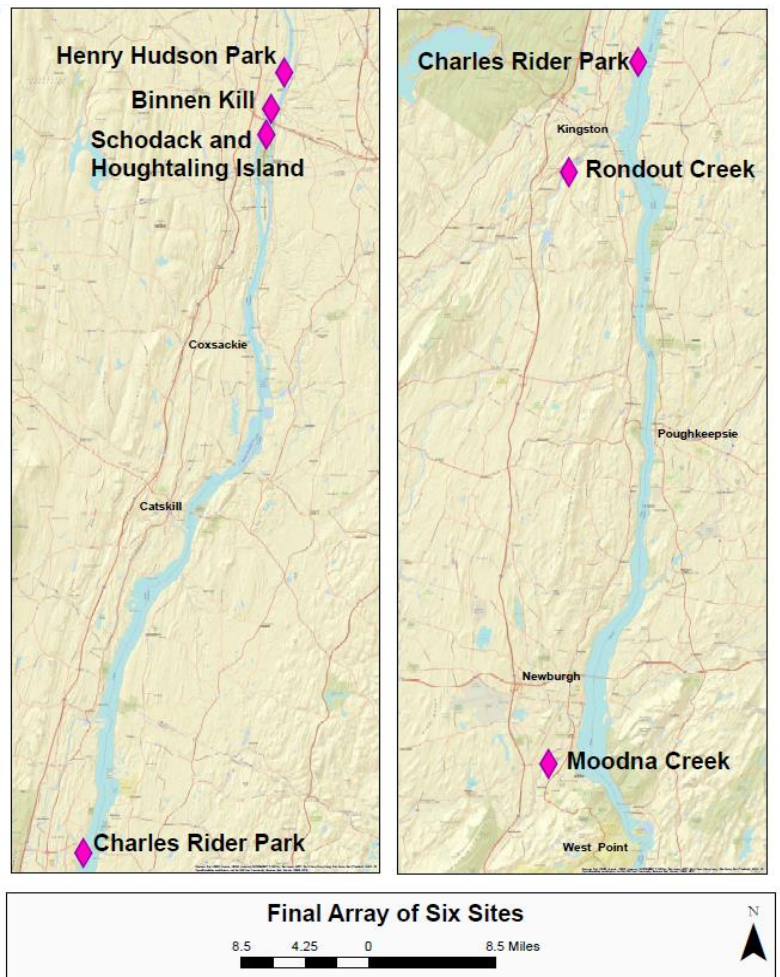


Figure 2. Final Array of Sites

The **Binnen Kill** site is located on the west shore of the Hudson River on the borders of the Towns of Bethlehem and Selkirk, New York and encompasses approximately 1,000 acres of publicly and privately-owned lands. The eastern edge of the site originally included islands that were separated from the historic shoreline by side channels in the 1800's but that are now contiguous with the site due to USACE placement of dredge material. The Binnen Kill proper is a tidal freshwater tributary that is surrounded by a complex of tidal wetlands, upland forests, non-tidal swamps, and farmland. Proposed actions at the site consist of the restoration of wetlands and hydrological connections through the creation of side channels.

**Schodack Island** project site is part of the Schodack Island State Park that sits off the eastern shore of the Hudson River just south of Albany. Approximately seven miles of Hudson River and Schodack Creek shoreline bound the 1,052-acre park. The park has been designated a State Estuary, and a portion of the park shelters a Bird Conservation Area that is home to bald eagles, cerulean warblers, and blue herons. Eight miles of multi-use trails wind through a variety of ecological communities. In addition, the park has 66 campsites for use, an improved bike trail, volleyball nets, horseshoe pit, and a kayak/canoe launch. Interpretive signage highlights the park's historic and environmental significance. Historically, there were six islands within the area. In the late 1800s and early 1900s the USACE connected the all but one of the islands with dredge material from the Hudson River. Proposed actions at the site consist of the restoration of wetlands and hydrological connections through the creation of side channels.

**Henry Hudson Park** is located on the west shore of the Hudson River and is bisected by the Vloman Kill. The park encompasses approximately 64.2 acres of public open space owned by the Town of Bethlehem. In the late 1800's the USACE built up the shoreline utilizing Hudson River dredge material. The Hudson River shoreline consists of a dilapidated timber cribbing structure, which has either partially or completely failed along the majority of the structure. Proposed actions at the site focus on shoreline restoration and consist of shoreline stabilization using living shoreline techniques including the establishment of tidal wetlands.

**Charles Rider Park** is located on the west shore of the Hudson River and encompasses approximately 29.6 acres of public open space owned by the Town of Ulster. The shoreline consists of failed timber cribbing and rock riprap and is largely void of vegetation. Proposed actions at the site focus on shoreline restoration and consist of shoreline stabilization using living shoreline techniques including the establishment of tidal wetlands

**Rondout Creek** and the Eddyville Dam is located on the boundary between the Towns of Esopus and Ulster. The 12-foot high dam sits on a bedrock ledge and is the current head of tide. Proposed actions at the site will seek to restore aquatic organism passage by removing or breaching the structure or installing a technical fishway.

**Moodna Creek includes three AOP barriers:**

**Moodna AOP1 (Utility Crossing)** is located along Moodna Creek upstream of the Forge Hill Road (Route 74) crossing. A concrete encased decommissioned sewer line crosses Moodna Creek forming a weir that creates a vertical drop of water approximately 2 feet in height during low flows. This sewer line is a potential barrier to AOP, including both

migratory and inland resident fish. Proposed actions at the site seek to restore aquatic organism passage by removing the structure or installing a rock ramp.

**Moodna AOP2 (Firth Cliff Dam)** is located along Moodna Creek adjacent to the former textile manufacturing factory historically known as Firth Carpet Company. The factory was previously demolished but the nine-foot high dam remains, acting as a barrier to AOP. Proposed actions at the site seek to restore aquatic organism passage by removing the structure or installing a technical fishway.

**Moodna AOP3 (Orr's Mill Dam)** is located along Moodna Creek upstream of the Route 32 crossing. The 10-foot high dam is in poor condition and a barrier to AOP. Normal river flow passes under the spillway suggesting the structure is substantially undermined. Proposed actions at the site seek to restore aquatic organism passage by removing or breaching the structure.

## **CHAPTER 2: HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE RESULTS**

This report identifies sites that are expected to have HTRW concerns and identifies potential actions that would be required prior to restoration actions. The literature used in performing the review is described throughout the narrative text and summarized in the References section. All HTRW concerns within 1 mile of the site were investigated. Conclusions and recommendations regarding potential site-specific issues that will influence planning of a site, including potential construction impacts due to HTRW issues associated with the project sites, are provided

### **2.1 HUDSON RIVER**

In September 1984 the U. S. Environmental Protection Agency (USEPA) listed the Hudson River, Identification Number NYD980763841 on the CERCLA National Priorities List (NPL). This includes the Hudson River from the Village of Hudson Falls in Washington County south to the Battery in New York City. For nearly thirty years the General Electric Company (GE) used polychlorinated biphenyls (PCBs) in its capacitor manufacturing operations at its Hudson Falls and Fort Edward, New York facilities. PCB oils were discharged both directly and indirectly from these plants into the Hudson River. Many of the PCBs discharged to the river adhered to sediments and accumulated with the sediments as they settled in the impounded pool behind the Fort Edward Dam, and other depositional areas farther downstream. The dam was removed in 1973 exposing the contaminated sediments and transporting the PCB laden sediments downstream.

Studies conducted to evaluate the extent of the problem revealed that most of the contaminated sediments were in "hot spots" situated in a 40-mile stretch of the river between the town of Fort Edward and the Troy Dam. In February 2002, the EPA issued a Record of Decision (ROD) for the Hudson River PCB Superfund Site that called for targeted environmental dredging of approximately 2.65 million cubic yards of PCB-contaminated sediments from this 40-mile section of the Upper Hudson River. A total of

2.75 million cubic yards of PCB-contaminated sediments were removed from the river bottom between 2009 and 2015 and monitoring is ongoing (USEPA, 2019B).

The U. S. Environmental Protection Agency EPA lists the Hudson River from Hudson Falls, NY to the mouth on the 2016 EPA 303(d) list, as; Part 2b - Multiple Segment/Categorical Waterbody Segments Impaired due to Fish Consumption Advisories. The fish consumption impairment extends into and include tributary waters to the first impassable barrier. This advisory is due to the GE PCB contamination.

The New York State Department of Environmental Conservation (NYSDEC) list the Hudson River on its State Superfund Program, Site Code: 546031, from Hudson River, Hudson Falls-NYC Battery The site includes the main stem of the Hudson River, as well as the associated flood plains, river banks, riverine fringing wetlands, and backwater areas. This is also due to the GE PCB contamination.

## **2.2 BINNEN KILL**

A review of the databases yields no sites within or near the Binnen Kill site. There may be remnant agricultural chemicals at the site, as some areas have been used for agriculture since 1940 and older forms of pesticides can result in lead, arsenic, and other contamination. The PCB laden sediments from the GE Superfund site are not anticipated to be on site as the placement of dredge material occurred prior to the GE's manufacturing operations.

## **2.3 SCHODACK ISLAND**

A review of the databases yields no sites within or near the Schodack Island site. The PCB laden sediments from the GE Superfund site are not anticipated to be on site as the placement of dredge material occurred prior to the GE's manufacturing operations.

## **2.4 HENRY HUDSON PARK**

A review of the databases yields no sites within or near the Henry Hudson Park site. The PCB laden sediments from the GE Superfund site are not anticipated to be on site as the placement of dredge material occurred prior to the GE's manufacturing operations.

## **2.5 CHARLES RIDER PARK**

A review of the databases yields no sites within or near the Charles Rider Park. The PCB laden sediments from the GE Superfund site are not anticipated to be on site as the placement of dredge material occurred prior to the GE's manufacturing operations.

## **2.6 RONDOUT CREEK**

A review of the databases yields four Brownfield sites, five New York state Superfund sites, and one NYSDCE sampling report. One of the Brownfield sites has been

remediated. Of the remaining three Brownfield sites, one has conducted a Phase II Environmental Site Assessment and has identified heavy metals, semi-volatile organic compounds (SVOCs) and petroleum related volatile organic compounds in the soils. The other two Brownfield sites contain heavy metals and SVOCs as well. All of the Brownfield sites are downstream of the Eddyville site and do not present a HTRW concern for the Rondout Creek restoration site.

New York State Superfund Site Code: 356030 is listed for PCB and other contaminants. The site is approximately 4 miles downstream of Eddyville Dam. An interim remedial measure (IRM) was completed in May 2016. The IRM eliminated the potential for contact with, and migration of contaminated soil from the site, and has reduced groundwater contamination in monitored locations within and downgradient of the target area. The site does not present a HTRW concern for the Rondout Creek restoration site.

New York State Superfund Site Code: 356028 was listed for PCBs but site assessment determined PCB levels are below the established hazardous waste threshold and, as such, do not meet the definition of hazardous waste. Site has been removed from the Registry and therefore does not present a HTRW concern for the Rondout Creek restoration site.

The State of New York completed a Site Characterization in September 2010 of Superfund Site Code: 356040. The site does not qualify for addition to the Registry of Inactive Hazardous Waste Disposal Sites Current Actions. Based on information gathered to date the site does not qualify for placement on the registry. Therefore the site does not present a HTRW concern for the Rondout Creek restoration site.

New York State Superfund Site Code: 356052 is approximately 4 miles downstream of the site and is listed for tetrachloroethene (PCE). Groundwater and soil samples offsite did not detect PCE. Because contaminants are not moving from the site it does not present a HTRW concern for the Rondout Creek restoration site.

New York Superfund Site Code: 356050 is approximately about 5 miles upstream of the Eddyville Dam. Volatile organic compounds are of concern for the site. Downgradient wells that were installed during the Remedial Investigation showed no impacts of the VOCs in the vicinity of the creek. Soil contamination is limited to the site. This site does not present a HTRW concern for the Rondout Creek restoration site.

On September 11, 2003, the NYSDEC (2003) conducted soil sampling in the Rondout Creek. One core and two surficial samples were collected behind the Eddyville Dam and upstream in the Rondout Creek. Samples were analyzed for metals, organics and grain size. Two guidelines were established for each chemical, the threshold effect concentration (TEC) and the probable effect concentration (PEC). The TEC represents the level of concentration at which a chemical of concern will rarely to be observed to cause toxicity. The PEC represents the concentration at which a chemical of concern



will frequently be observed to cause toxicity. The metals data from the core sample at R1 indicate that the top five centimeters of sediments had no levels exceeding the TEC. No metals were at concentrations greater than the PEC at any of the sampling sites or depths. The sample from site R3 had lower concentrations of metals than site R2, which may be due to the lower organic carbon content of this site. R3 also had much higher solids than the core sample.

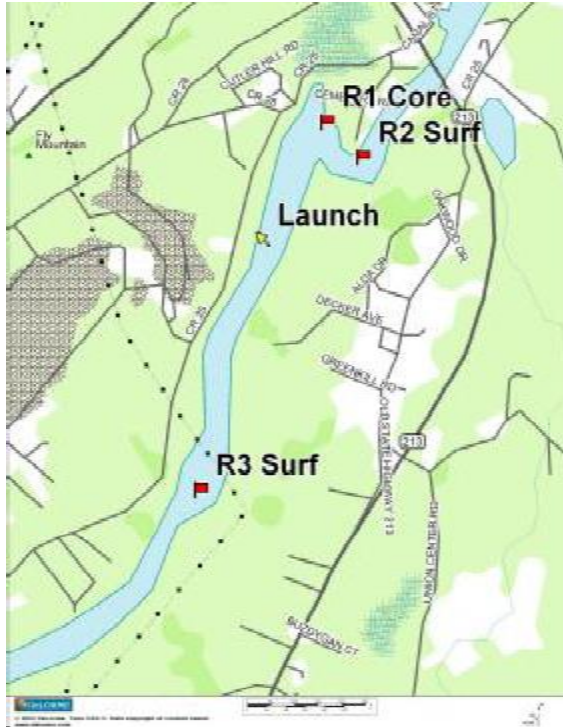


Figure 3. Rondout Creek Sample Sites 2003

Metals were detected at very low concentrations, mostly below the conservative Threshold Effect Concentration (TEC) and none in excess of the Probable Effect Concentration (PEC). PCBs (Aroclors) were not detected in any sample; however, detection limits for some samples exceeded the TEC but were well below the PEC. Only one compound each of DDT and its metabolites - DDD, and DDE - were analyzed and were either estimated or not detected in any sample. However, since total DDT, DDD, and DDE were not analyzed, direct comparison with the sediment guideline was not possible. Despite this limitation, the report draws from past sampling results to infer that DDT/DDD/DDE concentrations are likely above TEC but below PEC. PAHs and other organics were largely not detected; however, detection limits frequently exceeded the TEC and, in some cases, exceeded the PEC.

The report also reviews and compares results to previous sampling in 2001 and 1998 in the region. In 2001 on Rondout Creek downstream of Eddyville Dam, total PCBs were detected below or slightly above the TEC, and total DDT was detected in excess of TEC but below PEC. In addition, in 1998, sampling on the Hudson River yielded concentrations of PCBs in excess of PEC and concentrations of total DDT in excess 22 of TEC but below PEC. Sampling upstream from Eddyville Dam on the Wallkill River (Sturgeon Pond) yielded concentrations of PCBs below TEC and concentrations of total DDT above PEC.

Collectively, these results suggest that the Wallkill River may be a source of DDTs, the majority of which have been deposited in Sturgeon Pond, and that the primary sources of PCBs in the Hudson River are located upstream of Rondout Creek.

Based on this data the potential for contaminants behind the Eddyville dam are low however, more soil testing prior to any construction work should be conducted.

## **2.7 MOODNA CREEK**

A review of the databases yields two state Superfund sites. The New York State Superfund Site Number: 336028 is just below AOP 2 for metals, chlorocarbons, and hydrocarbons. Remediation at the site is complete. Contamination was removed from the site and in 2016, the NYSDEC determined the site was no longer a hazard to public health or the environment and was delisted. However, sediment upstream of the dam should be sampled for contaminants prior to construction.

The New York State Superfund Site Number: 336008 is located upstream of AOP 3 about 3 miles near Woodbury Creek which flows into Moodna Creek. The site was the subject of numerous environmental investigations and remedial activities, between 1985 and 1997, including a Phase I Investigation of a former landfill and RCRA Facility Assessments and Investigations of several other on-site and off-site release areas. The site was never remediated. Contaminants of concern are lead, chlorinated VOCs, and petroleum hydrocarbons. According to the State the concern is with groundwater and well water contamination. As the site is more than three miles from AOP 3 and not in the Moodna Creek the site does not present a HTRW concern.

## **CHAPTER 3: RECOMMENDATION**

Based on the information gathered and on observations made during this investigation, recommendations are to perform sediment testing behind the Eddyville Dam on Rondout Creek and AOP 2 Firth Cliff Dam on Moodna Creek prior to any construction work. The Henry Hudson Park, Charles Rider Park, Binnen Kill, Schodack Island, and Moodna AOP 1 and 3 are not anticipated to have contaminated sediments however; they should be sampled during geotechnical analysis to confirm no contaminants.

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