

GENERAL SITE INFORMATION, CHARACTERISTICS, AND STATUS

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| Project Name | <u>MARATHON BATTERY</u> | ProjectID: 02-09 |
| Last Updated: | 11/15/03 | |
| City: | Cold Spring | |
| County: | Putnam | |
| State: | NY | |
| Country: | USA | |
| Bodies of Water: | East Foundry Cove, Marsh, and Pond; West Foundry Cove; Constitution Marsh; small cove near Cold Spring Pier in Lower Hudson River | |
| US EPA Region: | II | |
| Status (Active, Complete, or Monitoring Only): | Complete. Site delisted from NPL in October 1996. | |
| Date On NPL: | 1981 | |
| ROD/ESD Date: | 1986 (Area I) and 1989 (Area III) | |
| Operable Unit: | OU-1 and OU-3 | |
| Areas of Concern (length or acres): | 340 acres of backwater marshes and sheltered cove; 200 acres of open cove; and a small cove in the Lower Hudson River (near Cold Spring Pier). | |
| Other Characteristics of Water Body: | East Foundry Cove Marsh, the 12.4 acre waste receiving marsh, with up to 40,000 ppm Cd; the sheltered East Foundry Cove and Pond, and Constitution Marsh, 329 acres with up to 2700 ppm Cd; and the open West Foundry Cove and cove in the Lower Hudson at Cold Spring Pier, 200 acres with up to 1030 ppm Cd. East Foundry Cove Marsh is hydraulically connected to the other cove, marsh, and river areas. East Foundry Cove consists of about one-third marsh and two-thirds tidal flat. Water depths in West Foundry Cove and near the Cold Spring Pier vary from zero to 20 feet. | |
| Contaminants of Concern: | metals (primarily Cd; also Ni and Co) | |
| Source of Contamination: | Wastewater discharges from the manufacture of nickel-cadmium batteries at adjacent industrial site. | |
| Contaminated Area | see "Other Characteristics of Water Body" | |
| Physical Characteristics: | | |
| Type of Regulatory Action: | Superfund. Final. | |
| Overall Status Summary: | <p>Completed in early 1995. Approximately 77,000 cy material dredged from cove and pond areas, dewatered, chemically fixated, transported by rail, and disposed in Michigan landfill. An additional 23,000 cy was dry-excavated from a marsh area and handled and disposed in the same manner. Natural recovery (slow burial by deposition of clean sediments) was the selected remedy in 400-plus acres of marsh and open cove area. Site now delisted from the NPL (October 1996).</p> <p>As of April 2001, restoration at East Foundry Cove - Constitution Marsh has been ongoing for five years. Some early setbacks (e.g., geese predation, extreme ice flow conditions) made it difficult to reestablish native plant species (primarily cattails) to the marsh area. As reported in November 1998, about 60% of the required 85% vegetative coverage had been established and muskrats had recently been observed, a positive sign that they are reestablishing in the area.</p> | |
| Remedial Action Planned: | <input checked="" type="checkbox"/> | |
| Risk Assessment: | <input checked="" type="checkbox"/> | |
| Remedial Action Implemented: | <input checked="" type="checkbox"/> | |

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Project Name **MARATHON BATTERY**

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Status of Dredging ☐

PRPs: ☒

Contacts: ☒

References: ☒

Modeling: ☐

Fishing Advisory: ☒

Key Conditions: commercial landfill, dredging, habitat/streambank restoration, more-harm-than-good, natural recovery, post monitoring, rail transport for disposal, solidification/stabilization, tidal fluctuations, water handling limitations, wetlands

REMEDIAL ACTION PLANNED

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| Project Name | <u>MARATHON BATTERY</u> | ProjectID: 02-09 |
| Last Updated: | 03/31/99 | |
| Target Sediment Cleanup Standards (TSCS): | For East Foundry Cove Marsh, 100 ppm Cd for ecological protection; for East Foundry Cove and Pond and the Cold Spring pier area, Cd action levels of 220 ppm for human and 10 ppm for ecological protection were set. Revised decision focuses on removal of sediment with no final concentration level objective (depth removal - 1 foot). | |
| How TSCS Established: | In both 1986 and 1989, a site-specific human health risk analysis established human health protective levels for Cd. Ecological levels for Cd were more restrictive. These were established in both 1986 and 1989 based on a "weight of evidence" approach by consultation with the scientific and regulatory communities, a review of technical findings, sediment bioassay tests (1989 only), and comparison with ambient water quality standards. | |
| Target Bank and Floodplain Cleanup Levels (if applicable): | N/A | |
| Other Target: | Nickel and cobalt (no action level; assumed remedy for cadmium would mitigate these metals as well). | |
| Environmental Sample Data References: | <ul style="list-style-type: none">• Sediment:• Water:• Fish: | |
| Estimated Target Volume: | <p>Area I: Approximately 30,000 cy sediments, East Foundry Cove Marsh (ROD, 1986).</p> <ul style="list-style-type: none">• Hydraulic dredging of sediments containing greater than 100 ppm of cadmium from the East Foundry Cove Marsh (EFCM) of Area I (ROD, 1986). <p>Area III: Approximately 56,000 cy sediments, East Foundry Cove/Pond, and Cold Spring pier (ROD, 1989).</p> <ul style="list-style-type: none">• Dredging one foot of sediments to achieve a 95% removal of cadmium from the East Foundry Cove/Pond (EFC) and Hudson River in the vicinity of the Village of Cold Spring pier (Area III) (ROD, 1989). | |
| Planned Disposal Method: | The dredged sediment would be dewatered, then fixated. Transportable treatment equipment would be situated on-site to fixate the dewatered sediments. Fixation chemically binds the contaminants within the sediments, and would render the sediments non-hazardous. The dredge water would be clarified to remove remaining suspended solids. The clarified water would be tested before being discharged into the Cove and the solids would be added to the thickened sediments. Following treatment, the fixated material would be transported to an off-site sanitary landfill. | |
| Estimated Calendar Time to Implement Remedy: | | |
| Estimated Time to Implement Remedy: | <p>For Area I, East Foundry Cove Marsh, 20 months (ROD, 1996).</p> <p>For Area III, 25 months for East Foundry Cove and pond, and 17 months for Cold Spring Pier (ROD, 1989).</p> <p>Later, the estimated time for remediation of sediments from Areas I and III, in conjunction with plant-site remediation in a separate area (Area II), was assumed to be 48 months (Sevenson).</p> | |

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| Project Name | <u>MARATHON BATTERY</u> | ProjectID: 02-09 |
| Last Updated: | 03/31/99 | |
| Estimated Cost to Implement Remedy: | <p>Area I: Capital costs were estimated at \$16.6 million dollars. Additional operation and maintenance costs included \$3.5 million for the first year, \$180K per year for years 2 through 5, and \$127K per year for years 6 through 30 (ROD, 1986).</p> <p>Area III: Capital costs were estimated at \$25.5 million (ROD, 1989). O&M costs are unclear; inconsistently stated in the 1989 ROD.</p> | |
| Stated Remedial Action Objectives (and Source): | <p>For Area I, ROD 1986: "To alleviate the environmental and potential human health effects stemming from the excessive levels of heavy metals contamination found in the East Foundry Cove Marsh sediments, and to prevent further migration of these highly contaminated sediments to Foundry Cove, the Hudson River, and Constitution Marsh, remedial action is called for."</p> <p>For Area III, ROD 1989: "The risk assessment has concluded that, with the cadmium contamination presently remaining in East Foundry Cove and the Pier Area, a threat to human health and the environment exists. Existing conditions at the site have been determined to pose a threat predominantly from ingestion of contaminated sediments by human and animal populations"</p> <p>"The purpose of this response action is to remove the contaminated sediments to levels consistent with state and Federal ARARs and to ensure protection of the environment from the continued exposure of contaminants from the sediments. Since no federal or state ARARs exist for sediments, the action level was determined through a site-specific risk analysis."</p> <p>For Constitution Marsh and West Foundry Cove, no action (natural recovery) was selected. For Constitution Marsh, according to the 1986 ROD:</p> <p>"The no-action alternative for Constitution Marsh would address restriction of public access and long-term monitoring. Due to the relatively low concentrations of contaminants (180 ppm Cd average) and existing difficult access, erection of a security fence is considered unnecessary. Only warning signs would be placed at prominent locations. Long-term monitoring of the site for thirty years would consist of sampling and testing of sediments and water in order to monitor contaminated sediment migration. Particular emphasis will be placed on monitoring the known cadmium hot spots to determine if, in fact, natural sedimentation and tidal flushing will reduce the cadmium availability."</p> <p>For West Foundry Cove, according to the 1989 ROD:</p> <p>"A no-action alternative was chosen for West Foundry Cove. It was assumed that West Foundry Cove receives cadmium-contaminated sediments from East Foundry Cove and East Foundry Cove Marsh and the Cold Spring Pier Area. Once these sources are remediated, cadmium-free sediments would then be deposited in West Foundry Cove. Tidal action would cause the existing sediments to mix with the newly deposited sediments thereby causing the average cadmium concentration in the sediments to decrease gradually below its current average concentration of 43.9 ppm. A hydrologic analysis of Area III will be conducted in order to evaluate sediment transport routes."</p> <p>An elaboration of the no-action alternative for West Foundry Cove (WFC) is in Reference E-16:</p> <p>"Rates of sediment accumulation in WFC were determined using Cs-137 and Pb-210 measurements over depth. The results of the Cs and Pb activity with depth indicated that WFC was a sediment accumulation area ... Data showed that West Foundry Cove has been accumulating sediments during the last 50 years at an average of 0.42 to 0.45 cm per year."</p> | |

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Results of the surface Cs analysis further suggested that erosion of the sediment surface is limited and that deposited material can be considered fairly stable with time. An important consideration in the stability of the sediments was the observed presence of dense mats of water chestnut with function to both reduce current velocities in the sediment/water boundary and to stabilize the sediments due to the presence of root mats. As a result of these conclusions, no further action in WFC was warranted."

Measures of Success to be Used:

Post-removal verification sampling.

Planned Monitoring and Restoration:

Restoration of dredged areas. Long-term monitoring of sediments, water and/or biota (ROD, 1986; ROD, 1989).

Agency Position on Sediment Removal (and Source):

ROD, September 1989: In Area III, due to the nature of the dredging process, dredging to a specific action level (e.g., 10, 100, or 250 ppm of cadmium) would be technically difficult, since concentrations vary in the sediments by only a few inches. Instead, by dredging the upper 8 - 12" layer of the sediments, 95% of the cadmium would be removed.

"Similarly, the data compiled for the Hudson River in the Cold Spring Pier area indicate that most of the contamination is located in the upper layer (1 foot) of the sediments. However, little is known about the sediments beneath the Cold Spring pier. Therefore, more than one foot of sediment may have to be dredged."

"As a result, it is anticipated that the cadmium concentrations will not exceed 10 ppm in nearly all of the dredged areas."

RISK ASSESSMENT

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Last Updated: 08/11/98

RA Type: Human Health and Ecological

RA Status: Complete

RA Objectives:

Company Ebasco Services (human health); JRB Associates and US EPA (ecological).

Performing RA:

RA Reference Report:

RA Summary and Conclusions: ROD, 1986: "Consumption of aquatic biota was identified as the most probable means of human exposure to site contaminants. Concentrations of cadmium less than 900 ppm in East Foundry Cove Marsh and Constitution Marsh sediments will pose no human health-related threats through the consumption of aquatic biota."

"Based upon Ebasco's probabilistic human health impact assessment, 900 ppm was found to be an acceptable cadmium concentration level to protect public health. Information of a similar nature pertaining to the protection of the environment, however, was not available, although sediment concentrations ranging from 10 ppm (background) to 900 ppm cadmium have been suggested for remediation action levels for the site."

Based upon an analysis of available information and ... research, as well as discussions with state and federal fish and wildlife experts, a site-specific sediment cadmium remediation level of 100 ppm was established.

"ROD, 1989: "Based upon the results of the remedial investigation, the Pier Area and East and West Foundry Cove sediments were determined to be contaminated with cadmium, cobalt, and nickel. Contamination was also detected in area crabs and fish. Based on environmental features and the surrounding location of these areas and organisms, along with possible activities and concerns of nearby residents, the following exposure pathways were considered:

- Ingestion of fish caught in the Foundry Cove/Pier Area
- Ingestion of Blue Crabs caught in Foundry Cove
- Ingestion of contaminated surface water/suspended sediments during water sport activities"

"The potentially exposed population that was evaluated consisted of adults who crab, fish, and swim in the Foundry Cove area."

"Since ingestion is the only contaminant pathway considered, and ingested cadmium and nickel are not considered carcinogens, only reference doses (RfDs) are used in the risk assessment."

"... when the normal dietary intake is added to the chronic daily intake for each of the contaminant pathways, the resulting figure will show whether the RfD has been exceeded. The data show that the blue crab and sediment ingestion pathways are of little concern because they have little probability of exceeding an acceptable intake. The fish pathway remains as the critical exposure pathway for the area."

"Working backwards, it is possible to calculate acceptable sediment concentrations which are protective of human health. In Area III, the resultant figure is 220 ppm for cadmium. A similar analysis was not conducted for nickel due to its lesser toxicity and bioaccumulation rate. In addition, any recommended

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remedial action for cadmium would also apply to nickel."

"Sediment bioassays were conducted on four freshwater estuarine species ... Based on the results of those tests, it was concluded that a level between 10 and 255 ppm of cadmium in the sediment would protect the environment."

"Research performed for EPA (JRB, 1984) established sediment criteria for cadmium based upon limiting concentrations in water to levels below EPA Ambient Water Quality Criteria. Preliminary results have shown that sediment cadmium toxicity decreases with increasing organic content. ... Ebasco's field results showing an average TOC value of 9.4% for this area would imply that a cadmium concentration somewhere in the range of 73 ppm would be required to prevent chronic exposure. The proportion of cadmium found in the sediment to that in aqueous solution in the marsh, however, will depend not only on TOC, but on other site-specific factors, including water chemistry, pH, oxidation/reduction potential, and temperature. Therefore, the model for partitioning based upon simplifying assumptions will only approximate site-specific cadmium criteria (ERT, 1986). NYSDEC feels that even at 10 ppm of cadmium in sediments there may be adverse ecological impacts."

REMEDIAL ACTION IMPLEMENTED

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| Project Name: | <u>MARATHON BATTERY</u> | ProjectID: 02-09 |
| Last Updated: | 11/15/03 | |
| Physical Target: | East Foundry Cove Marsh (Area I), East Foundry Cove, Cold Spring Pier (Area III) | |
| Goals: | Dredging of sediments containing >100 ppm Cd from East Foundry Cove Marsh; dredging one foot of sediment to achieve >95% Cd removal from East Foundry Cove and Pond and a cove in the Lower Hudson River near Cold Spring Pier; natural recovery and monitoring only for the nearly 200-acre West Foundry Cove and the 289-acre Constitution Marsh. | |
| Primary Contractor: | Sevenson Environmental Services; Aqua Dredge, Inc. (dredging contractor) | |
| Other Contractors: | Ebasco Services (RI/FS); Malcom Pirnie (design); Advanced GeoServices (oversight) | |
| Generic Remediation Method: | Hydraulic and mechanical dredging for coves and ponds; dry excavation for marsh; natural recovery for other marsh and cove. | |
| Equipment: | Custom-built Mud Cat Model MC-915 horizontal auger dredge; draft decreased to 1.5' by flotation tanks; silt curtains; vertical control to 1.2 inches by tidal gauges, cutterhead sensors, fathometers, manual sounding rods, and "proprietary methods." Needed barge-mounted clamshell to complete cove in Lower Hudson due to rocks. Remediation of the East Foundry Cove Marsh was accomplished via specialized marsh excavation vehicles (equipped with extra wide tires), low ground pressure tracked excavators, to excavate and remove sediments from the boggy area. About 1800 linear feet of water-filled containment structures were used to hydraulically isolate the marsh during remediation. After repeated failures, large sections of the containment structure were replaced by an earthen berm. | |
| Material Handling: | see "Disposal of Sediment" | |
| Volume Removed: | East Foundry Cove Marsh - 23,000 cy; East Foundry Cove - 53,200 cy; East Foundry Pond - 14,400 cy; Cold Spring Pier - 9,600 cy. Natural recovery for 300-plus acres of Constitution Marsh and West Foundry Cove. | |
| Calendar Time: | August 1993 to April 1995. | |
| Time To Implement: | 1.9 years, including restoration activities. | |
| Total Cost: | Total cost: \$9 - 11 million for East Foundry Cove and Pond and for cove at Cold Spring Pier; \$115 - \$140 per cy | |
| Dredging Cost: | Approximately \$35 per cy | |
| Disposal of Sediment: | Pumped dredge spoils to settling basin; pumped decant water to second basin then through filter presses, then sand filters, prior to discharge; solids removed by backhoe and fixated in a pug mill using Maectite; after curing and TCLP testing, then railcar to commercial landfills. Reportedly, 2,000 tons per day were able to be processed. In all, 189,205 tons of treated "soils and sediments" were transported (in 1,979 railcars) to City Management Landfill in Michigan and 906 tons were disposed at Chem. Waste Mgt's. hazardous waste landfill in Model City, NY. | |
| Volume of Water: | Not available | |
| Method of Water Treatment: | Decant water from the settling basin was pumped to sand trickling filters, then treated with a polymer in a return water settling basin, then discharged into East Foundry Cove. | |
| Water Discharge Limit: | TSS limit under NYSDEC SPDES permit, which, if met, would also meet requirements for total metals. | |

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Air Monitoring During Remediation: Unknown

Water Monitoring During Remediation:

Outcome: In East Foundry Cove Marsh, sediments were excavated, not dredged. The average post-excavation concentration was approximately 25 ppm for cadmium with no sample exceeding 100 ppm (cleanup goal). This area was subsequently capped with BentoMat and soil, and revegetated.

In the East Foundry Cove (part of Area IV), the average post-dredging cadmium concentration was less than 10 ppm with a maximum detection of approximately 20 ppm. However, in one area, large boulders were present and the area could not be dredged.

Also, in Area III in the Hudson River near the Cold Spring Pier, deeper cuts were made in some depositional areas near the pier to remove sediments containing greater than 10 ppm cadmium.

First round of post-removal monitoring sampling of sediments and surface water was conducted in Nov '95. Results had not been obtained or reviewed as of the date of this report. No biota sampling at that time. EPA may tabulate and review data for five years and determine trends. EPA was unsure how to apply input from Constitution Marsh and West Foundry Cove, which were not remediated, based on "more than harm than good" and assuming natural burial with clean sediments would slowly occur in those areas.

Restoration and Post-Monitoring:

- At the completion of the marsh remediation (Area I) and restoration activities in April 1995, the marsh was planted with cattails, bull rush, arrow arum, and upland shrubs. This vegetation is being monitored on a regular basis by the warden of the adjacent National Audubon sanctuary, Constitution Marsh. The objective of the marsh restoration project is to reestablish 85% coverage of native plant species (e.g., cattails) over the area dredged within 5 years following remediation.

As of November 1998, restoration at East Foundry Cove - Constitution Marsh was into year 3 of a proposed 5 year plan. Early efforts to reestablish native plant species (primarily cattails) were hampered by unforeseen natural influences (e.g., geese predation and very cold winters resulting in higher than normal ice flows). The five year plan requires establishment of native vegetation coverage over 85% of the remediated marsh area by end of year 5; presently at 60% coverage. Signs are apparent that muskrats are reestablished in the area.

US EPA will continue to monitor silt and sediment flow through the marsh area and modify the plan to reestablish native vegetation to the marsh to meet the 85% coverage goal by year 5 of the plan.

- The long-term monitoring program for Area III includes monitoring the ground water, East and West Foundry Cove sediments and surface water, and biological sampling and analysis quarterly the first year, semi-annually during years two through five, and annually thereafter for a total of 30 years.

- Site inspections are to be coincident with the monitoring events. The inspections will include visual observations of the marsh soil cover and erosion controls, ground water monitoring wells, and general site conditions. Maintenance will be performed as necessary.

Documentation for 1995-1997 has been obtained (Reference A-532, A-533, and A-534), but not evaluated. Documentation for the year 2000 annual monitoring has been obtained and reviewed (Reference A-982) and the findings are as follows:

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East Foundry Cove Marsh

The cadmium concentrations within the samples of cover soil obtained during the 2000 sampling events range from 0.01 ppm to 2.1 ppm. The concentrations for 2000 are generally consistent with the previous results.

Constitution Marsh

The cadmium concentrations within the samples of marsh soils obtained during the 2000 sampling events ranged from 25.1 ppm to 434 ppm. These values fall within the range of previously reported results. (No remedial activities were performed in Constitution Marsh.)

East Foundry Cove

The majority of the sediment sampling results are generally within the range of previous measured concentrations. Sample EFC-4 (277 ppm) is above the range of previous data. However, a review of the data for all locations shows variations from year to year at each location. As there is no discernible trend of increasing cadmium levels at any of the five EFC sampling locations, these differences are not considered significant.

East Foundry Pond

The cadmium concentrations measured during the 2000 sediment sampling are 3.9 ppm (EFP-1) and 0.4 ppm (EFC-2). These concentrations are less than the previous results for these locations.

West Foundry Cove

The cadmium concentration within the WFC sediment samples obtained in 2000 range from 1.3 ppm to 92.5 ppm, with a mean value of 31.8 ppm. The individual concentrations are within the range of values experienced to date in WFC. (No remedial activities were performed in West Foundry Cove).

Cold Spring Pier Area

The cadmium concentrations within the 1998 sediment samples (CSPA-1S and CSPA-2S) are 1.5 ppm and 42.7 ppm. These levels are consistent with previous data.

Birds

The present concentration of cadmium within the livers and kidneys of wood ducks are generally consistent with previous long-term monitoring and pre-remediation data. The range of liver concentrations for 2000 is 0.98 to 1.43 ppm (with a mean value of 0.66 ppm), and the range of kidney concentrations is 0.24 to 9.94 ppm (mean value of 4.42 ppm).

The cadmium concentrations within the livers and kidneys of Canada geese in 2000 are consistent with the previous long-term monitoring data, although there appears to be a decreasing trend in the mean values. There are no pre-remediation data available for the Canada geese, but these levels are somewhat consistent with the concentrations encountered within the wood ducks.

The cadmium concentrations within the swallows and marsh wrens in 2000 were consistent with previous long-term monitoring results. These values are significantly lower than the measured pre-

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remediation levels.

These species are mobile and can inhabit both remediated (East Foundry Cove Marsh) and unremediated (Constitution Marsh) areas. In general, the cadmium concentrations appear to be slightly less to significantly less than pre-remediation levels. There are also indications of a reduction in cadmium concentrations with time.

Benthic Invertebrates

Unlike the birds, the benthic invertebrate samples can be assigned to specific areas. The benthic samples collected during the 2000 event consist of a mixture of oligochaete worms and chironomid midge larvae. The present cadmium concentrations of the sample collected at Constitution Marsh (an unremediated area) is 1.61 ppm; this is within the range of previous results. The cadmium concentration of the sample collected from East Foundry Cove (a remediated area) is 0.46 ppm, significantly less than most of the previous long-term monitoring results.

Vegetation

Cattail and water chestnut samples were collected from unremediated areas (Constitution Marsh and West Foundry Cove) and from remediated areas (East Foundry Cove and East Foundry Cove Marsh). The 2000 cattail samples from Constitution Marsh have a mean cadmium concentration of 0.375 ppm, similar to pre-remediation and previous long-term monitoring data. The 2000 water chestnut samples from Constitution Marsh and West Foundry Cove have mean cadmium concentrations of 3.24 and 1.36 ppm, respectively, comparable to pre-remediation and previous long-term monitoring values.

Consistent with previous long-term monitoring results, the 2000 samples collected from remediated areas show a significant decrease in cadmium concentrations from pre-remediation levels. Cattail specimens collected in East Foundry Cove Marsh have present concentrations ranging from non-detect to 0.58 ppm, with a mean concentration of 0.17 ppm. (The pre-remediation concentrations range from 0.11 to 16.5 ppm, with a mean concentration of 3.3 ppm.) Water chestnut samples collected from East Foundry Cove have present concentration ranging from 1.46 to 2.42 ppm, with a mean concentration of 2 ppm. (The pre-remediation concentrations ranged from 1.67 to 47.4 ppm, with a mean concentration of 15.6 ppm).

Bioaccumulation Studies

The present bioaccumulation studies show little to no cadmium uptake by the killifish or crayfish. The accumulated concentrations are typically less than 0.1 ppm. Although several of the studies were truncated because of loss of specimens, these values compare favorably with pre-remediation studies, which show a 5-fold increase over a 40-day period for the killifish (with cadmium concentrations of 0.5 to 0.58 ppm) and a 10-fold increase over a 40-day period for the crayfish (with cadmium concentrations of 1.83 to 2.08 ppm).

Marsh Revegetation

Large portions of East Foundry Cove Marsh (EFCM) have been successfully revegetated, although some areas of sparse vegetation remain. The vegetation growth and spread is improving, and volunteers are present in many sparsely vegetated areas. EFCM vegetation is monitored on a regular basis, and supplemental measures (e.g., replanting, transplants, and protective fencing) have been implemented during the past three growing seasons.

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Site-Specific Difficulties: EPA unsure how to apply future input of contaminants from Constitution Marsh and West Foundry Cove, which were not remediated, based on remediation may cause "more harm than good" and assuming natural burial with clean sediments will slowly occur in those areas.

During the remediation of the East Foundry Cove Marsh, failures (blowouts/punctures) of the water-filled containment structures, due to material defects, and one storm-related accidental puncture, forced the PRPs to replace them with an earthen berm along a substantial portion of the containment structure.

Other difficulties included the need to replace the initial dewatering system to improve performance, and following remediation, replacement of restored vegetation in the marsh.

Rocks; extensive in-water vegetation (removed by a weed harvester).

Original approach of feeding dredge slurry directly to in-line screens and centrifuges for dewatering was abandoned in favor of settling basins, due to highly variable feed quality which continuously clogged the screens.

Dredging operations were routinely interrupted by tidal cycles.

Monitoring Data

References:

- **Sediment**
- **Water:**
- **Fish:**

POTENTIALLY RESPONSIBLE PARTIES

Project Name **MARATHON BATTERY**

ProjectID: 02-09

PRP Name: PRP INFORMATION NOT RELEASED

PRPID:

Street Address:

City:

State:

KEY CONTACTS

Project Name **MARATHON BATTERY**

ProjectID: 02-09

Last Name: KEY CONTACT INFORMATION NOT RELEASED

Contact ID:

First Name:

Title:

Company:

Address:

City:

State:

Postal Code:

Work Phone # :

Other Phone #:

Fax # :

Email Address:

REFERENCES

Project Name MARATHON BATTERY

ProjectID: 02-09

Reference Type: A

ReferenceID: 79

Title: *Superfund Record of Decision: Marathon Battery Company Site Cold Spring, Putnam County, New York (EPA Region 2) (PB87-190096)*

Location: AEM

Category: ROD/Proposed Plan/Action Memo/Decision Document

Prepared by/Author: US EPA HQ

Preparer/Author Address: Washington D.C.

Prepared For: General Public

Date Published: September 1986

Key Words and Phrases:

Reference Type: A

ReferenceID: 80

Title: *Superfund Record of Decision: Marathon Battery Company Site Cold Spring, Putnam County, New York. (EPA Region 2) (Third Remedial Action) (PB90-178849)*

Location: AEM

Category: ROD/Proposed Plan/Action Memo/Decision Document

Prepared by/Author: US EPA HQ

Preparer/Author Address: Washington D.C.

Prepared For: General Public

Date Published: September 1989

Key Words and Phrases:

Reference Type: A

ReferenceID: 179

Title: *Superfund Site Close-Out Report*

Location: AEM

Category: Site Update

Prepared by/Author: US EPA Region II

Preparer/Author Address: 290 Broadway
New York, NY 10007

Prepared For: General Public

Date Published: September 28, 1995

Key Words and Phrases:

REFERENCES

Project Name MARATHON BATTERY

ProjectID: 02-09

Reference Type: A

ReferenceID: 532

Title: *Long Term Monitoring Plan for the Marathon Remediation Site, Cold Spring, New York*

Location: AEM

Category: Monitoring Plan/Report

Prepared by/Author: Advanced GeoServices Corporation

Preparer/Author Address: Chadds Ford Business Campus
Rts 202 & 1, Brandywine One - Suite 202
Chadds Ford, PA 19317-9676

Prepared For: Gould Electronics, Inc.

Date Published: December 20, 1995

Key Words and Phrases:

Reference Type: A

ReferenceID: 533

Title: *Annual Report, November 1995 - December 1996, Long Term Monitoring Program, Marathon Remediation Site*

Location: AEM

Category: Monitoring Plan/Report

Prepared by/Author: Advanced GeoServices Corporation

Preparer/Author Address: Chadds Ford Business Campus
Rts 202 & 1, Brandywine One - Suite 202
Chadds Ford, PA 19317-9676

Prepared For: Gould Electronics, Inc.

Date Published: June 20, 1997

Key Words and Phrases:

REFERENCES

Project Name MARATHON BATTERY

ProjectID: 02-09

Reference Type: A

ReferenceID: 534

Title: ***1997 Annual Report, Long Term Monitoring Program, Marathon Remediation Site***

Location: AEM

Category: Monitoring Plan/Report

Prepared by/Author: Advanced GeoServices Corporation

Preparer/Author Address: Chadds Ford Business Campus
Rts 202 & 1, Brandywine One - Suite 202
Chadds Ford, PA 19317-9676

Prepared For: Gould Electronics, Inc.

Date Published: September 1, 1998

Key Words and Phrases:

Reference Type: A

ReferenceID: 982

Title: ***2000 Annual Report: Long-Term Monitoring Program: Marathon Remediation Site***

Location: AEM

Category: Monitoring, Post

Prepared by/Author: Advanced GeoServices Corporation

Preparer/Author Address: Chadds Ford Business Campus
Rts 202 & 1, Brandywine One - Suite 202
Chadds Ford, PA 19317-9676

Prepared For: Gould Electronics, Inc
34929 Curtis Boulevard
Eastlake, OH 44095

Date Published: April 2001

Key Words and Phrases:

REFERENCES

Project Name MARATHON BATTERY

ProjectID: 02-09

Reference Type: A

ReferenceID: 983

Title: *Remedial Action Report for the East Foundry Cove, East Foundry Cove Marsh, Hudson River in the Vicinity of the Cold Spring Pier, Former Battery Facility, and Plant Grounds Portions of the Marathon Battery Company Site Cold Spring, Putnam County, New York*

Location: AEM

Category: Close-Out Report

Prepared by/Author: US EPA

**Preparer/Author
Address:**

Prepared For: General Public

Date Published: Undated

**Key Words and
Phrases:**

Reference Type: B

ReferenceID: 283

Title: *Marathon Battery; NYSDEC Inactive Hazardous Waste Disposal Report*

Location: AEM

Category: Site Update

Prepared by/Author: New York State Department of Environmental Conservation

**Preparer/Author
Address:** Albany, NY

Prepared For: General Public

Date Published: April 1998

**Key Words and
Phrases:**

REFERENCES

Project Name MARATHON BATTERY

ProjectID: 02-09

Reference Type: B

ReferenceID: 345

Title: *Marathon Battery Co. Fact Sheet*

Location: AEM

Category: Site Update

Prepared by/Author: US EPA Region II

Preparer/Author Address: http://www.epa.gov/region02/superfund/site_sum/0201644c.htm

Prepared For: General Public

Date Published: April 1998

Key Words and Phrases:

Reference Type: B

ReferenceID: 979

Title: *e-mail re: Manchak Case Against Severson (re: solidification of sludge)*

Location: AEM

Category: Contaminated Sediments: Treatment Technologies

Prepared by/Author: AEM, Inc.

Preparer/Author Address: Malvern, PA 19355

Prepared For: Client

Date Published: September 24, 1998

Key Words and Phrases: Maectite process

Reference Type: C

ReferenceID: 117

Title: *Severson wins Marathon bid*

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author Address:

Prepared For: Superfund Week

Date Published: April 9, 1993

Key Words and Phrases:

REFERENCES

Project Name MARATHON BATTERY

ProjectID: 02-09

Reference Type: C

ReferenceID: 118

Title: *Gould Inc. to pay for Marathon Battery fix*

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Superfund Week

Date Published: January 22, 1992

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 119

Title: *Marathon Battery Company - Settlement for former Army site*

Location: AEM

Category: Miscellaneous

Prepared by/Author: News Release

Preparer/Author

Address:

Prepared For: Unknown

Date Published: May 1992, circa

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 120

Title: *EPA solicits bids for Civil War site fix*

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Superfund Week

Date Published: March 20, 1992

**Key Words and
Phrases:**

REFERENCES

Project Name MARATHON BATTERY

ProjectID: 02-09

Reference Type: C
Title: *Cleanup firms shortlist for Marathon Battery site*
Location: AEM
Category: Site Update
Prepared by/Author: Mary Buckner Powers
Preparer/Author Address:
Prepared For: Engineering News-Record (ENR)
Date Published: February 1, 1993
Key Words and Phrases:

ReferenceID: 121

Reference Type: C
Title: *\$75 million remedy to be bid at Marathon*
Location: AEM
Category: Site Update
Prepared by/Author:
Preparer/Author Address:
Prepared For: Superfund Week
Date Published: December 13, 1991
Key Words and Phrases:

ReferenceID: 124

Reference Type: C
Title: *EPA to drop two more NPL sites*
Location: AEM
Category: Site Update
Prepared by/Author:
Preparer/Author Address:
Prepared For: Superfund Week
Date Published: May 24, 1996
Key Words and Phrases:

ReferenceID: 131

REFERENCES

Project Name MARATHON BATTERY

ProjectID: 02-09

Reference Type: C

ReferenceID: 202

Title: *Marathon Battery dropped from NPL*

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Superfund Week

Date Published: October 25, 1996

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 347

Title: *Hudson River Restoration Slows to Trickle as Assumptions
Challenged*

Location: AEM

Category: Site Update

Prepared by/Author: Michael A Rivlin

Preparer/Author

Address:

Prepared For: Unknown

Date Published: Undated

**Key Words and
Phrases:**

Reference Type: D

ReferenceID: 35

Title: *Foundry Cove revitalized - \$112 million spent cleaning up mess
in Hudson Inlet*

Location: AEM

Category: Site Update

Prepared by/Author: Wayne Hall

Preparer/Author

Address:

Prepared For: The Times Herald Record

Date Published: December 17, 1996

**Key Words and
Phrases:**

REFERENCES

Project Name MARATHON BATTERY

ProjectID: 02-09

Reference Type: D
Title: *Cleanup will help polluted Hudson*
Location: AEM
Category: Site Update
Prepared by/Author: Wayne A. Hall
Preparer/Author Address:
Prepared For: The Times Herald Record
Date Published: December 17, 1996
Key Words and Phrases:

ReferenceID: 36

Reference Type: D
Title: *Hooked on Hudson's murky past*
Location: AEM
Category: Miscellaneous
Prepared by/Author: Paul Grondahl
Preparer/Author Address:
Prepared For: The Albany (NY) Times Union
Date Published: September 30, 1998
Key Words and Phrases:

ReferenceID: 45

Reference Type: D
Title: *Researchers say dredging works in Hudson*
Location: AEM
Category: Site Update
Prepared by/Author: Michael Hill (Associated Press)
Preparer/Author Address:
Prepared For: The Saratoga Springs (NY) Saratogian
Date Published: August 5, 2003
Key Words and Phrases:

ReferenceID: 480

REFERENCES

Project Name MARATHON BATTERY

ProjectID: 02-09

Reference Type: D
Title: *Scientists See Success in Dredging Downstate*
Location: AEM
Category: Site Update
Prepared by/Author: Erin Duggan
Preparer/Author Address:
Prepared For: The Albany (NY) Times Union
Date Published: August 5, 2003
Key Words and Phrases:

ReferenceID: 481

Reference Type: D
Title: *Study: Hudson River Ecosystems Can Recover*
Location: AEM
Category: Site Update
Prepared by/Author: Roger Witherspoon
Preparer/Author Address:
Prepared For: The White Plains (NY) Journal News
Date Published: August 5, 2003
Key Words and Phrases:

ReferenceID: 482

Reference Type: E
Title: *Preparation of Bid Documents for Dredging/Excavating Contaminated Sediments, Soils and Marsh Deposits at the Marathon Battery Superfund Site, Cold Spring, New York*
Location: AEM
Category: Dredging: Miscellaneous
Prepared by/Author: (1) Thomas M. Simmons, (2) Gregory P. Matthews, and (3) Nick Multari
Preparer/Author Address: (1 and 3) U.S. Army Corps of Engineers,
(2) Malcom Pirnie, Inc.
Prepared For: Dredging 1994 - Proceedings of the Second International Conference on Dredging and Dredged Material Placement Volumes 1 & 2
Date Published: 1994
Key Words and Phrases:

ReferenceID: 11

REFERENCES

Project Name MARATHON BATTERY

ProjectID: 02-09

Reference Type: E

ReferenceID: 13

Title: *Marathon Battery Superfund Project - A Review of Design, Construction and Lessons Learned*

Location: AEM

Category: Dredging: Miscellaneous

Prepared by/Author: (1) Michael P. Taylor, (2) Pamela N. Tames, and (3) Alan R. Elia

Preparer/Author Address: (1) Malcom Pirnie, Inc.
(2) US EPA Region II, and
(3) Severson Environmental Services, Inc.

Prepared For: Dredging 1994 - Proceedings of the Second International Conference on Dredging and Dredged Material Placement
Volumes 1 & 2

Date Published: 1994

Key Words and Phrases:

Reference Type: E

ReferenceID: 14

Title: *Development of an Excavation Plan for Heavy Metal Contaminated Marsh Deposits*

Location: AEM

Category: Contaminated Sediments: Remedial Options/Guidance

Prepared by/Author: (1) John J. Nocera and (2) Thomas M. Simmons

Preparer/Author Address: (1) Malcom Pirnie, Inc. and
(2) U.S. Army Corps of Engineers

Prepared For: Dredging 1994 - Proceedings of the Second International Conference on Dredging and Dredged Material Placement
Volumes 1 & 2

Date Published: 1994

Key Words and Phrases:

REFERENCES

Project Name MARATHON BATTERY

ProjectID: 02-09

Reference Type: E

ReferenceID: 15

Title: *Design of Dredge Containment and Dewatering Facilities*

Location: AEM

Category: Contaminated Sediments: Management Issues

Prepared by/Author: (1) John M. Logigian, (2) Edward A. Dudek, Jr., and (3) Michael R. Palermo

Preparer/Author (1 and 2) Malcom Pirnie, Inc. and

Address: (3) U.S. Army Corps of Engineers

Prepared For: Dredging 1994 - Proceedings of the Second International Conference on
Dredging and Dredged Material Placement
Volumes 1 & 2

Date Published: 1994

**Key Words and
Phrases:**

Reference Type: E

ReferenceID: 16

Title: *Delineating Limits of Remediation for Heavy Metal Contaminated
Sediments in River and Cove Areas*

Location: AEM

Category: Contaminated Sediments: Remedial Options/Guidance

Prepared by/Author: (1) Gregory P. Matthews and (2) Thomas M. Simmons

Preparer/Author (1) Malcom Pirnie, Inc. and

Address: (2) U.S. Army Corps of Engineers

Prepared For: Dredging 1994 - Proceedings of the Second International Conference on
Dredging and Dredged Material Placement
Volumes 1 & 2

Date Published: 1994

**Key Words and
Phrases:**

REFERENCES

Project Name MARATHON BATTERY

ProjectID: 02-09

Reference Type: E

ReferenceID: 30

Title: *Full-Scale Sediment Remediation in North America: A Survey of Recently Completed Projects*

Location: AEM

Category: Site Update

Prepared by/Author: (1) S. Garbaciak and (2) D. Averett

Preparer/Author Address: (1) Hart Crowser, Inc. and
(2) U.S. Army Corps of Engineers

Prepared For: Proceedings of the Western Dredging Association 18th Technical Conference, Charleston, SC

Date Published: June 29 - July 2, 1997

Key Words and Phrases:

Reference Type: E

ReferenceID: 33

Title: *The Utility of AVS/EqP in Hazardous Waste Site Evaluations (NOAA Technical Memo NOS ORCA 87)*

Location: AEM

Category: Site Update

Prepared by/Author: (1) Donald A. MacDonald and (2) Sandra M. Salazar

Preparer/Author Address: (1) NOAA and
(2) EVS Consultants

Prepared For: NOAA

Date Published: September 13 - 15, 1995

Key Words and Phrases:

Reference Type: E

ReferenceID: 243

Title: *Remediation of Sediments by Dredging: Methods and Case Histories*

Location: AEM

Category: Dredging: Remedial (Contaminated Sediments)

Prepared by/Author: Bradford S. Cushing

Preparer/Author Address: AEM, Inc.

Prepared For: WODCON XV Conference, Las Vegas, NV

Date Published: June 28 - July 2, 1998

Key Words and Phrases:

REFERENCES

Project Name MARATHON BATTERY

ProjectID: 02-09

Reference Type: I

ReferenceID: 26

Title: *Clear Water Review, Vol. 5, No. 11 (Ellicott International)*

Location: AEM

Category: Site Update

Prepared by/Author: Ellicott International (Mud Cat Division)

Preparer/Author Address: 1611 Bush Street
Baltimore, MD 21230

Prepared For: Potential Clients

Date Published: 1995 - 1996 Winter

Key Words and Phrases:

Reference Type: I

ReferenceID: 27

Title: *Clear Water Review (Page 2)*

Location: AEM

Category: Site Update

Prepared by/Author: Ellicott International (Mud Cat Division)

Preparer/Author Address: 1611 Bush Street
Baltimore, MD 21230

Prepared For: Potential Clients

Date Published: 1994 Fall

Key Words and Phrases:

Reference Type: I

ReferenceID: 34

Title: *The MAECTITE Process: Chemical Treatment for Heavy Metals*

Location: AEM

Category: Contaminated Sediments: Treatment Technologies

Prepared by/Author: Sevensen Environmental Services, Inc.

Preparer/Author Address: 9245 Calumet Avenue, Suite 101
Munster, IN 46321

Prepared For: General Public

Date Published: Undated (1997 circa)

Key Words and Phrases:

REFERENCES

Project Name MARATHON BATTERY

ProjectID: 02-09

Reference Type: I

ReferenceID: 46

Title: *Environmental Dredging: New Techniques from the USA - Ellicott Case Studies*

Location: AEM

Category: Site Update

Prepared by/Author: Port Engineering Management

**Preparer/Author
Address:**

Prepared For: Ellicott International

Date Published: 2000

**Key Words and
Phrases:**

Reference Type: L

ReferenceID: 27

Title: *General Notations re: Phone Call with Advanced GeoServices*

Location: AEM

Category: Site Update

Prepared by/Author: AEM, Inc.

**Preparer/Author
Address:** Malvern, PA 19355

Prepared For: Internal file

Date Published: December 28, 1995

**Key Words and
Phrases:**

Reference Type: L

ReferenceID: 28

Title: *General Notations re: Meeting with Advanced GeoServices*

Location: AEM

Category: Site Update

Prepared by/Author: AEM, Inc.

**Preparer/Author
Address:** Malvern, PA 19355

Prepared For: Internal file

Date Published: August 10, 1994

**Key Words and
Phrases:**

REFERENCES

Project Name MARATHON BATTERY

ProjectID: 02-09

Reference Type: L

ReferenceID: 125

Title: *Contaminated Sediment Projects in the U.S. Using Monitored Natural Recovery*

Location: AEM

Category: Capping/Placement

Prepared by/Author: AEM, Inc.

**Preparer/Author
Address:**

Prepared For: Distribution

Date Published: September 25, 2001

**Key Words and
Phrases:**

Reference Type: L

ReferenceID: 174

Title: *EPA's Evolving Position on Remedial Dredging*

Location: AEM

Category: ROD/Proposed Plan/Action Memo/Decision Document

Prepared by/Author: AEM, Inc.

**Preparer/Author
Address:** Malvern, PA 19355

Prepared For: Internal Distribution

Date Published: Undated

**Key Words and
Phrases:**

Reference Type: M

ReferenceID: 42

Title: *Contaminated Sediment Dredging in a Tidal Estuary*

Location: AEM

Category: Site Update

Prepared by/Author: Paul F. Marano and Teddy W. Russell

**Preparer/Author
Address:** Advanced GeoServices Corporation
Chadds Ford, PA 19317

Prepared For: Manuscript, Draft

Date Published: July 18, 1994

**Key Words and
Phrases:**

REFERENCES

Project Name MARATHON BATTERY

ProjectID: 02-09

Reference Type: M
Title: *Marathon Battery Remediation Site*
Location: AEM
Category: Site Update
Prepared by/Author: Advanced GeoServices Corporation
Preparer/Author Address: Chadds Ford Business Campus
Rts 202 & 1, Brandywine One - Suite 202
Chadds Ford, PA 19317-9676
Prepared For: Corporate Literature
Date Published: Unknown
Key Words and Phrases:

ReferenceID: 196

Reference Type: M
Title: *In-Situ Contaminated Sediment Management: Unique Case Studies*
Location: AEM
Category: Capping/Placement
Prepared by/Author: Paul A. Hagerty and Todd D. Trotman
Preparer/Author Address: Advanced GeoServices Corporation
Chadds Ford Business Campus
Brandywine One, Suite 202
Chadds Ford, PA 19317
Prepared For: Conference Presentation, Amherst, MA
Date Published: 2000
Key Words and Phrases:

ReferenceID: 375

REFERENCES

Project Name MARATHON BATTERY

ProjectID: 02-09

Reference Type: M

ReferenceID: 443

Title: *Rapid loss of genetically based resistance to metals after the cleanup of a Superfund site*

Location: AEM

Category: Fish/Biota

Prepared by/Author: (1) Jeffrey S. Levinton, (2) E. Suatoni, (3) William Wallace, (4) Ruth Junkins, (5) Brendan Kelaheer, (6) Benjt J. Allen

Preparer/Author Address: (1), (4), (5), (6) Department of Ecology and Evolution
Stony Brook University
Stony Brook, NY 11794
(2) Department of Ecology and Evolutionary Biology
Yale University
New Haven, CT 06520
(3) Center for Environmental Science
College of Staten Island
Staten Island, NY 10314

Prepared For: Proceedings of the National Academy of Sciences Online

Date Published: August 19, 2003

Key Words and Phrases:

Reference Type: R

ReferenceID: 20

Title: *Letter to PRP re: Case Histories: Contaminated Sediment Sites (with response from Gould)*

Location: AEM

Category: Site Update

Prepared by/Author: AEM, Inc. with response from Gould

Preparer/Author Address: Malvern, PA 19355

Prepared For: Gould Electronics, Inc., submitted to

Date Published: August 19, 1998

Key Words and Phrases:

FISH ADVISORIES

Project Name **MARATHON BATTERY**

ProjectID: 02-09

| | | |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| <i>Advisory:</i> | Hudson River | <i>AdvisoryID:</i> 476 |
| <i>Extent:</i> | Bridge at Catskill south to and including the New York Harbor area | |
| <i>Pollutant:</i> | cadmium | |
| <i>Species:</i> | shellfish-crab-blue | |
| <i>Population:</i> | NCSP | |
| <i>Population Definition:</i> | No Consumption-Subpopulation(s): Advises against consumption for populations that are potentially at greater risk, e.g., pregnant or nursing women, and small children. | |
| <i>Advisory Type:</i> | Estuary | <i>Advisory Number:</i> 115 |
| <i>Status (Active or Rescinded):</i> | Rescinded | <i>Date Rescinded:</i> |
| <i>Contact Name:</i> | Tony Forti | <i>Contact Number:</i> 518-402-7815 |
| <hr/> | | |
| <i>Advisory:</i> | Hudson River | <i>AdvisoryID:</i> 477 |
| <i>Extent:</i> | Bridge at Catskill south to and including the New York Harbor area | |
| <i>Pollutant:</i> | cadmium | |
| <i>Species:</i> | shellfish-crab-blue | |
| <i>Population:</i> | RGP | |
| <i>Population Definition:</i> | Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed. | |
| <i>Advisory Type:</i> | Estuary | <i>Advisory Number:</i> 115 |
| <i>Status (Active or Rescinded):</i> | Rescinded | <i>Date Rescinded:</i> |
| <i>Contact Name:</i> | Tony Forti | <i>Contact Number:</i> 518-402-7815 |
| <hr/> | | |
| <i>Advisory:</i> | Hudson River | <i>AdvisoryID:</i> 478 |
| <i>Extent:</i> | Bridge at Catskill south to and including the New York Harbor area | |
| <i>Pollutant:</i> | cadmium | |
| <i>Species:</i> | shellfish-crab-blue (hepatopancreas) | |
| <i>Population:</i> | NCGP | |
| <i>Population Definition:</i> | No Consumption-General Population: Advise against consumption by the general population. | |
| <i>Advisory Type:</i> | Estuary | <i>Advisory Number:</i> 115 |
| <i>Status (Active or Rescinded):</i> | Rescinded | <i>Date Rescinded:</i> |
| <i>Contact Name:</i> | Tony Forti | <i>Contact Number:</i> 518-402-7815 |

FISH ADVISORIES

Project Name **MARATHON BATTERY**

ProjectID: 02-09

| | | |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| <i>Advisory:</i> | Hudson River | <i>AdvisoryID:</i> 479 |
| <i>Extent:</i> | Bridge at Catskill south to and including the New York Harbor area | |
| <i>Pollutant:</i> | cadmium | |
| <i>Species:</i> | shellfish-crab-blue (hepatopancreas) | |
| <i>Population:</i> | NCSP | |
| <i>Population Definition:</i> | No Consumption-Subpopulation(s): Advises against consumption for populations that are potentially at greater risk, e.g., pregnant or nursing women, and small children. | |
| <i>Advisory Type:</i> | Estuary | <i>Advisory Number:</i> 115 |
| <i>Status (Active or Rescinded):</i> | Rescinded | <i>Date Rescinded:</i> |
| <i>Contact Name:</i> | Tony Forti | <i>Contact Number:</i> 518-402-7815 |
| <hr/> | | |
| <i>Advisory:</i> | Hudson River | <i>AdvisoryID:</i> 480 |
| <i>Extent:</i> | Bridge at Catskill south to and including the Upper Bay of New York Harbor (north of Verrazano Narrows Bridge) | |
| <i>Pollutant:</i> | cadmium | |
| <i>Species:</i> | shellfish-crab-blue | |
| <i>Population:</i> | RGP | |
| <i>Population Definition:</i> | Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed. | |
| <i>Advisory Type:</i> | River | <i>Advisory Number:</i> 121 |
| <i>Status (Active or Rescinded):</i> | Active | <i>Date Rescinded:</i> |
| <i>Contact Name:</i> | Tony Forti | <i>Contact Number:</i> 518-402-7815 |
| <hr/> | | |
| <i>Advisory:</i> | Hudson River | <i>AdvisoryID:</i> 481 |
| <i>Extent:</i> | Bridge at Catskill south to and including the Upper Bay of New York Harbor (north of Verrazano Narrows Bridge) | |
| <i>Pollutant:</i> | cadmium | |
| <i>Species:</i> | shellfish-crab-blue (hepatopancreas) | |
| <i>Population:</i> | NCGP | |
| <i>Population Definition:</i> | No Consumption-General Population: Advise against consumption by the general population. | |
| <i>Advisory Type:</i> | River | <i>Advisory Number:</i> 3519 |
| <i>Status (Active or Rescinded):</i> | Active | <i>Date Rescinded:</i> |
| <i>Contact Name:</i> | Tony Forti | <i>Contact Number:</i> 518-402-7815 |

FISH ADVISORIES

Project Name **MARATHON BATTERY**

ProjectID: 02-09

| | | |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| <i>Advisory:</i> | Hudson River | <i>AdvisoryID:</i> 718 |
| <i>Extent:</i> | Federal Dam at Troy south to and including portions of New York Harbor | |
| <i>Pollutant:</i> | cadmium | |
| <i>Species:</i> | shellfish-crab-blue | |
| <i>Population:</i> | NCSP | |
| <i>Population Definition:</i> | No Consumption-Subpopulation(s): Advises against consumption for populations that are potentially at greater risk, e.g., pregnant or nursing women, and small children. | |
| <i>Advisory Type:</i> | Estuary | <i>Advisory Number:</i> |
| <i>Status (Active or Rescinded):</i> | Rescinded | <i>Date Rescinded:</i> |
| <i>Contact Name:</i> | Tony Forti | <i>Contact Number:</i> 518-402-7815 |
| <hr/> | | |
| <i>Advisory:</i> | Hudson River | <i>AdvisoryID:</i> 719 |
| <i>Extent:</i> | Federal Dam at Troy south to and including portions of New York Harbor | |
| <i>Pollutant:</i> | cadmium | |
| <i>Species:</i> | shellfish-crab-blue | |
| <i>Population:</i> | RGP | |
| <i>Population Definition:</i> | Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed. | |
| <i>Advisory Type:</i> | Estuary | <i>Advisory Number:</i> |
| <i>Status (Active or Rescinded):</i> | Rescinded | <i>Date Rescinded:</i> |
| <i>Contact Name:</i> | Tony Forti | <i>Contact Number:</i> 518-402-7815 |
| <hr/> | | |
| <i>Advisory:</i> | Hudson River | <i>AdvisoryID:</i> 720 |
| <i>Extent:</i> | Federal Dam at Troy south to and including portions of New York Harbor | |
| <i>Pollutant:</i> | cadmium | |
| <i>Species:</i> | shellfish-crab-blue (hepatopancreas) | |
| <i>Population:</i> | NCGP | |
| <i>Population Definition:</i> | No Consumption-General Population: Advise against consumption by the general population. | |
| <i>Advisory Type:</i> | Estuary | <i>Advisory Number:</i> |
| <i>Status (Active or Rescinded):</i> | Rescinded | <i>Date Rescinded:</i> |
| <i>Contact Name:</i> | Tony Forti | <i>Contact Number:</i> 518-402-7815 |
