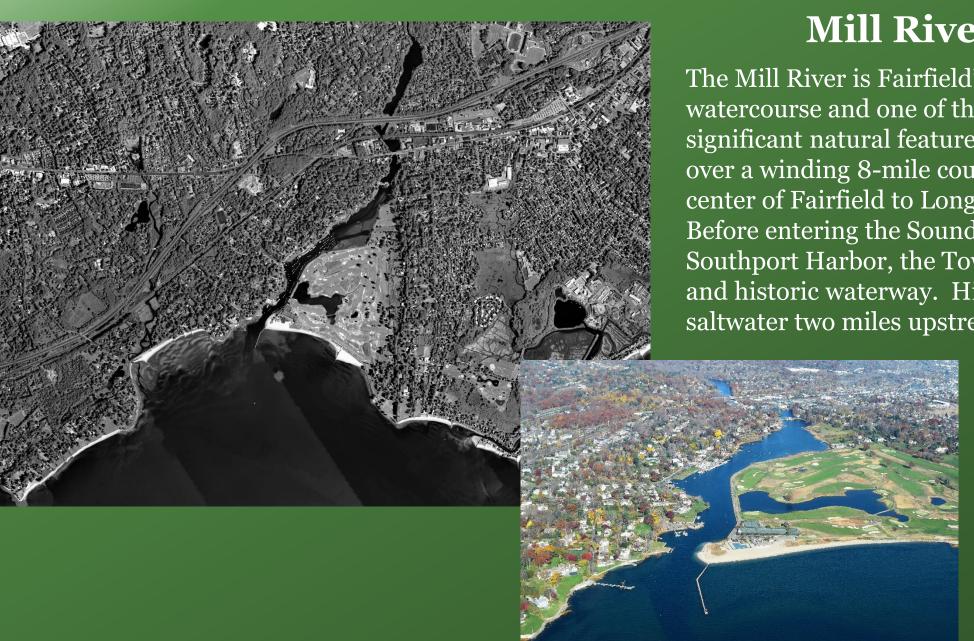


The Town of Fairfield in Southwest Connecticut



Fairfield is a coastal community on the north shore of Long Island Sound. The town has a long and successful history of environmental stewardship, on the part of its officials, agencies, and citizens.

Much of Fairfield's character and quality of life is intrinsically tied to the water and shoreline resources of Long Island Sound and the town's several estuaries, including the Mill River/Southport Harbor estuary.



Mill River

The Mill River is Fairfield's largest watercourse and one of the Town's most significant natural features. The river flows over a winding 8-mile course through the center of Fairfield to Long Island Sound. Before entering the Sound, it gives shape to Southport Harbor, the Town's most scenic and historic waterway. High tides carry saltwater two miles upstream in the river.

Southport Harbor

Southport Harbor at the mouth of the Mill River is one of Fairfield's most valuable natural resources — a center of boating activity in western Long Island Sound and one of the most scenic and historic locations on the Connecticut coast.

The harbor played a prominent role in the development of Fairfield and continues to have a significant influence on the Town's quality of life.

Since 1986, the **Fairfield Harbor Management Commission (FHMC)** has principal responsibility for guiding the harbor's beneficial use and conservation.



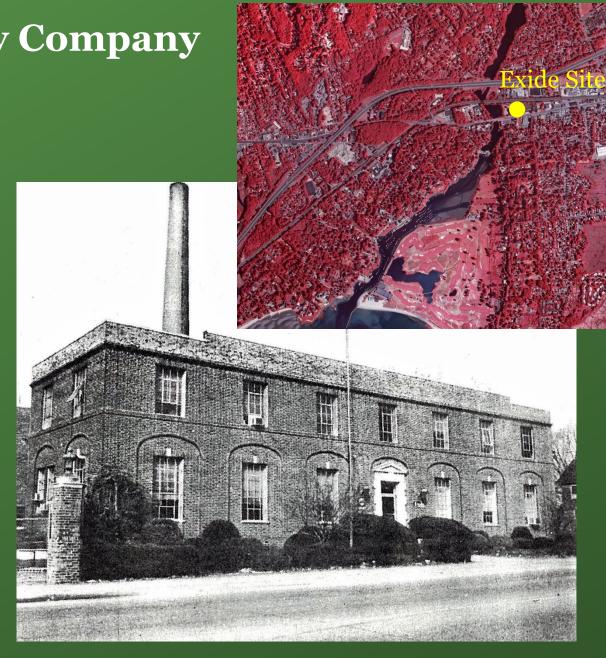
Google Earth

Electric Storage Battery Company

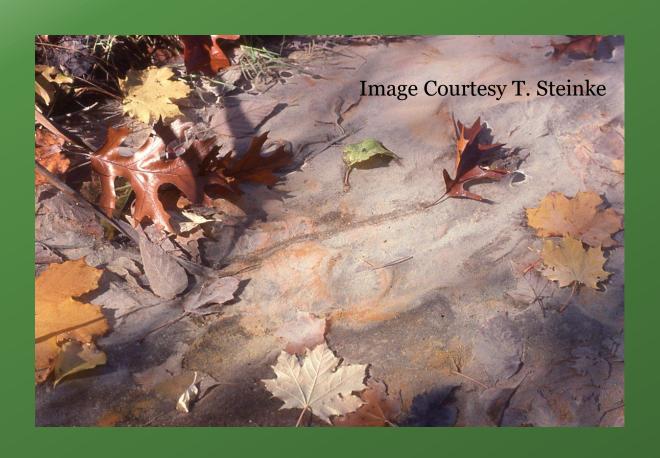
In 1951, the Electric Storage Battery Company opened a factory in Fairfield on a site adjoining the Mill River at 2190 Post Road. The company manufactured car batteries using acids and lead and assured the Town it would not discharge industrial waste into the river.

When the plant closed in 1981, it left behind a severely damaged ecosystem and an estimated 37 tons of lead in the Mill River.

Successful cleanup of the Exide site and Mill River over many years with much controversy is an important chapter in the history of Fairfield. There's much to learn from what happened here.



Early Discharge Standards at Battery Plant Site



1951-1967: Little or no treatment

1967: CT Water Resources Commission issues order to treat lead-bearing discharges with "accepted" technology; level of treatment intended to reduce lead concentration to about 5 ppm

1972: Federal Water Pollution Control Act Amendments establish nationwide discharge permit program

1974: CT DEP begins CT discharge permit program and issues permit requiring lead concentration of 1 ppm

1979: CT DEP re-issues discharge permit and requires lead concentration of 0.5 ppm

Mill River

pollution

study set

The town's Conservati

on the scope of an en-vironmental report which will

of the lead problem in the Mill

River, according to a Con servation Departmen

Conservation Director Thomas Steinke in a report is

April last year accused ESB of "having knowingly" con-taminated the Mill River with

taminated the Mill River with lead pollution. The state Department of Environmental Protection conducted tests last Summer which confirmed

deposited in the river. ESB chose York

Wastewater to prepare the study which will consider "high/low pH alarm and in

creased recycle of wastewaters to the process to reduce the quantity of lead in

the discharge," according to June 27 correspondence the DEP and the Conservation

Commission:
The DEP correspondence
indicates that "some type of
effluent moniforing system
should be installed," and also
suggested a settling tank be
used "when cloudiness is
apparent" in the plant's
discharge.

The York study also would consider sediment removal, dewatering and disposal pulse, orce samples. The DEP correspondence said the report "implies a two-month extension" in the August 31, 1980 deadline. However, according to a Conservation Department spokesman, the two-month extension will not a conservation the conservation of the conservation

effect the August 31, 1981, deadline for the im-

elementation of a system

minimize the effect of th

"We don't know when the

it spread out on the water. But we're satisfied with the

progress and the guideline for the report," the Con

Asked when the lead would

be cleaned out of the Mil River so that peeple could

contaminated

River tests ominous

A report on wide-ranging tests for pollution in the Mill River and elsewhere in Fairfield, reported underway last Summer, is expected to be presented this week to the Conservation Commission-and not all the news will be good, it was learned last week.

"We found some problems," Conservation Director Thomas Steinke said Thursday. He declined to comment on specific findings until the matter was presented to the commission, but the testing is known to include analysis of heavy metal content in the Mill River. In July, while noting that results were incomplete, Steinke said that the data could have "legal implications."

At that time, he also said some of the tests might relate to the Exide Storage Battery plant on the Post Road, where collution of the river with lead and acid has been alleged

a decade. Steinke accused the nuing to release lead-containing pe into the water, although plant aid that the factory, which

minnows, for chromium, iron, and cadmium, as well as lead. Wiggins declined to characterize the results of those tests, saying that while the state at one time had tentative standards for metal in shellfish, they were never adopted

The DOH test results, while reported out of the laboratory on Sigust 23, 1978, were not obtained by the town until last

Wiggins said the precise geographical origin of marine life tamples submitted to his division was not indicated by

"River Tests Ominous"

By the 1960s, the effects of lead pollution in the river were obvious. A long and contentious process ensued to clean up the site and river at the insistence of the Town's citizens and elected officials. In 1965, the Fairfield Conservation Commission was established and took a leadership role.

State sets Mill River testing

Mill River test results

bottled as incomplete

accurate. Bell pseudo anistarian engineer for the Water Ed Parker, DEP seudo anistarian engineer for the Water Compliance Department commented: "I'm sending a list of teating procedures to the Conservation Continuition and ESB. We're trying to much all bases to notice these texts to meet everyone's demands. We're testing the Mill Rivor

FAIRFIELD CITIZEN-NEWS, Wednesday, February 25, 1981

chain. violation spokesma

State to probe 'mystery' pollution DEC 33 1380

HARTORD. An official of estate Water Resources of the Marton of the State Water Resources and the State Water are coming to the Mill River are considered to the Mill River state of the Mill River state of

see dys Leats if necessary to find femoltone to water the waste is concerned, having the control of the control

Pollution report

By FREDERICK REISS

The Conservation Commission announced last Thurs state Department of Environmental Protection will engineering study at the end of this month which will c tent of the lead pollution deposited into the Mill River Corporation, 2190 Post Road.

The engineering study, conducted by York Wastews ford engineering firm, will define the pollution prob pose methods to prevent lead discharge into the Mil Exide's outfall pipe, according to Wetlands Compli Richard Jacobson

Jacobson informed commission members tha Wastewater study would be sent to the Department of tal Protection, and then the study would be released the town.

The study is the end result of an environmental rep by Conservation Director Thomas Steinke in April determined ESB was dumping lead into the Mill Riv acting on Steinke's report, conducted a study during t 1979 that revealed tons of lead had "historically acc

state verifies lead data

The state Department of Enpliance Department of the agency vironment of Protection has The DEP began testing the area received raw data from the state leadth. Bepartment, which indicates that there are levels of lead contamination in sediment, plant

ife, and fish in the Mill River.
"The level of contamination the high impact area — the area in which the greatest concentration of outfall where the Electric Storage Battery pipeline enters the river - is very high. The control area taken 1,000 feet upstream from the I-95 bridge indicated less lead," said Ed Parker, DEP

on ESB which claimed lead con-Parker stated that the raw data verifies Steinke's findings of lead concentrations in fish, sediment, but that the lead count in plant-life was in a much more moderate

concentration than Steinke's finding concluded in the report. According to Parket, con-centrations of lead in fish sampled at the impacted area were 30 to 40 milligrams per kilograms, com-

ording to Parker. What we are plan anize all the raw ress recomme sinate the lead to

r. We will be un inlete informatio ent of the lead pro CZ ort is compiled," s

pared to 4 to 5 milligrams ber kilograms in the controlled area. The plant life did show the centrations of lead and the follows sediments showed medical concentrations, of lead in con the controlled upsteam area.

The DEP Water Compliance staff feels that the lead in the river cummulation which had been i the river before ESB had been issued its permit. The leading the

water hasn't been neglected water tree with the dischar

along the river.

At issue is whether ESB will assume the full cost of

bypassing the factory's treatment system

The DEP report suggested that ESB conduct study to determine the exact area and extent of contamination along the river.

Corporation may close down its plant at 219 on official commented: Exide has a legal obility on the MIR IREV.

The DEP's Water Compliance Department study reported the approximate extent of lead deposit dumped into the river during a number of years to be an area 100 square years and one and one-half fee

The DEP study begun last Summer following a similar report by the local Conservation Department. urged the dredging of the area as a most desirable ong-term solution but raised the possibility that the action could resurface lead deposits in the water and contaminate other areas along the riverway.

As a result of the town Conservation report, local health officials banned fishing, swimming and other recreational activities in the lower part of the river

Representatives from the town, the state Department of Environmental Protection and Exide Storage Battery Company met last Wednesday to discuss implications of the DEP report that said tons of lead deposited in Mill River from the factory have con-taminated fish, wildlife and the vegetative food chain

ITIZEN-NEWS, Wednesday, December 12, 1979

First Selectman John Sullivan, one of those who participated in the meeting, said another meeting will be scheduled between ESB and DEP officials to discuss ways in which to clean up the river and ad-

removing the lead or otherwise cleaning up the contaminated ground and restoring the area.

The battery manufacturing company and DEP are scheduled in the near future to conduct further tests of discharge pipes leading into the river that may be

compilation of everespond compilation of every compilation over that would part I project every compilation contributed by the every compilation over that would part I project every compilation contributed by the every contributed by the every

Clean-up of Mill River lead could take years

Getting the Exide Corporation to agree to remove 37 tons of lead wastes deposited in the Mill River could take as long as three years, according to Conservation

"Unless the Department of Environmental Protection Director Thomas Steinke. order—which states the Exide must clean up the lead in the Mill River by this Summer—can override permit channels to begin the work, the work won't be done for

three years," Steinke indicated last week. DEP engineering report released last January at 2190 Post Road had

Wesley Winterbottom, DEP principal sanitarian, la week indicated DEP order could not override the regular process to obtain a permit for the dredging operation. "The DEP order could speed up the process. But our order doesn't enable us to tell other agencies what to do. We could process a review in weeks. But the Army Corps of Engineers have a more time consuming Army Corps of Engineers have a more time-consuming. Steffine has indicated that the commis-process. But if the Corps knows the DEP feels strongly in initiate legal action if Exide Corporation about a problem, they are very expedient, but I really can't be specific on how long that would be."

ther problem which the Conservation Department

representative from Exide and the DEP results of the DEP engineering report extent of the pollution problem At the Conservation Commission meet the panel asked Town Attorney Noel Nev

the group on possible legal actions which press Exide to clean up the lead in the Mi Steinke has indicated that the commi

Steinke said last week that no meeti own, the DEP, and Exide has been arr he "didn't rule out the month of April."

company. She was yell consideration move that would put II people and work.

In the letter is the stage of the letter is the l

DEP 'loaned' sensitive files

on river pollution to ESB

FAIRFIELD CITIZEN-NEWS, Wednesday, April 8, 1981



Early Remediation Efforts

1979: Conservation Commission report describes significant lead pollution in Mill River; CT DEP tests confirm report.

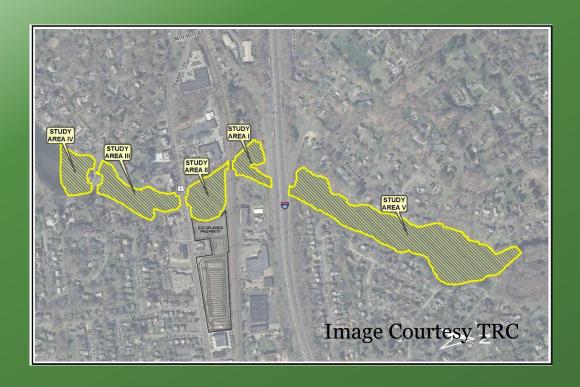
1981: Battery factory shuts down.

1982: CT DEP issues Consent Order requiring Exide Corporation (then-owner of the site) to remove 4,100 cy of contaminated sediment from the river.

1983: Exide dredges 4,400 cy yards of contaminated sediment from river; some lead found at 600,000 ppm; factory site remediation begins.

1983-1989: Follow-up studies show increased lead pollution in river, likely additional discharges from the factory site.

1989: DEP Administrative Order requires Exide to determine source and degree of pollution.



Remediation: 1990s to Present

1992: Exide submits engineering report to DEP.

1998: DEP requires additional studies.

2008: DEP and Exide sign Consent Order for environmental cleanup; Exide begins sediment mapping; cleanup levels of 220 mg/kg to 400 mg/kg of lead are set.

2012: Draft Sediment Remedial Action Plan (SedRAP) presented by DEEP and Exide to Town at public meeting; Town agencies, citizens, and organizations object to lack of Town input.

2012-2013: Collaborative meetings and consultations involving Town agencies and stakeholders, DEEP, and Exide; Town and stakeholder intervention in NPDES permit process; resolution of conflicts; completion of SedRAP and issuance of environmental permits.

2014-2017: River cleanup and successful remediation in compliance with SedRAP and permits.

Exide/Mill River Remediation Project: A Model for Environmental Cleanup



Project included: hydraulic dredging of lead-contaminated sediment from 5 river project areas; sediment pumped via floating pipeline to temporary processing facility on former battery plant site; dredged sediment de-watered on-site; filtrate water treated and discharged back into river; dewatered sediment trucked to landfills for proper disposal.



Photo Courtesy TRC

To Mitigate Water Quality Impacts:

- 1. Pre-construction baseline monitoring of water quality conditions, including turbidity conditions.
- 2. Establishment of threshold water quality values to be maintained throughout the project, including acceptable Nephelometric Turbidity Units (NTUs).
- 3. Design and employment of BMPs during all operations, including double-wall dredge pipe and turbidity curtains.
- 4. River monitoring, including turbidity monitoring, 24/7 during operations; dredging suspended at 10 NTUs over background.
- 5. Discharge monitoring at water treatment facility.
- 6. Post-construction confirmation monitoring of river conditions and groundwater.

Photo Courtesy TRC

Hydraulic Dredging of Lead-Contaminated Sediment

Precision dredging guided by GPS removed contaminated sediment and pumped it in slurry to processing plant. 11+ acres dredged to average depth of 2.3 feet; restrictions imposed to protect fisheries; BMPs for water quality.



Sediment Processing Facility



Sediment processing facility established on former battery factory site; sediment de-watered in geotextile bags ("geotubes"); filtrate water collected in sump and directed to onsite water treatment plant; 39 bags used to de-water approximately 27,000 cy of sediment.



Water Treatment System



On-site water treatment system treated more than 100 million gallons of filtrate from the geotubes prior to discharging water back to river. Water treatment monitoring conducted according to NPDES permit; lead amounts in treated water significantly below permitted limits (7-11% of permitted limits).

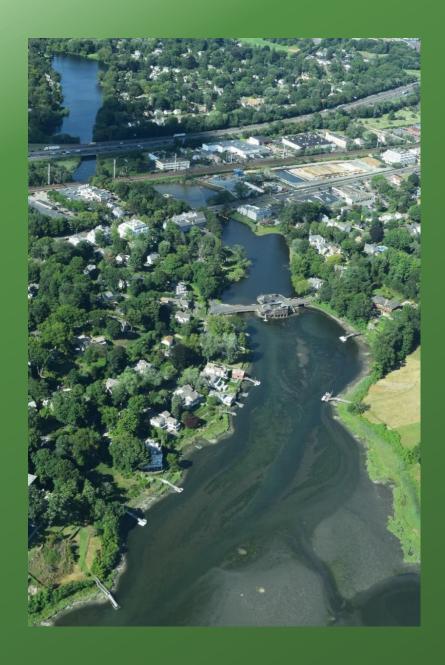


Project Completion

Following de-watering process, sediment was tested and classified for disposal as solid or hazardous waste and trucked to four different out-of-state landfills; sediment load-out involved 1,154 truck loads and 32,000 tons of de-watered sediment. All aquatic and upland confirmation samples met SedRAP and permit requirements; final Implementation Report submitted to DEEP and approved in 2017.







Lessons and Conclusions

- Community groups and individuals can make a difference.
- Laws and regulations are not sufficient to solve complex environmental problems; public interest and involvement are essential.
- Legal intervention and a public hearing may be necessary
 be aggressive in getting a place at the table.
- Trust and respect among stakeholders and credibility of participants is essential.
- Long-term commitment is needed to advance stewardship initiatives and must be sustained when controversy, other obstacles, and frustrations occur.
- Continued community outreach and expansion of knowledge and understanding are critical.

Lessons and Conclusions (Cont.)

- Involving the community, its agencies and people, in the remediation planning process was critical.
- Dialogue instead of presentations; "people to people" communication contributed to project success.
- Technical information transmitted to the public in an understandable way was most helpful.
- Ability to communicate and work with people is just as important as technical knowledge.
- The Harbor Management Plan is an important tool for advancing water quality initiatives.







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Acknowledgments

Town of Fairfield

Board of Selectmen, First Selectman Michael Tetreau
Fairfield Delegation, CT General Assembly
Harbor Management Commission
Conservation Commission
Shellfish Commission

CT Department of Energy & Environmental Protection

Remediation Division
Water Permitting and Enforcement Division
Land and Water Resources Division

Fairfielders Protecting Land and Neighborhoods (FairPLAN)

Mill River Wetland Committee

Exide Group Incorporated and its engineers and consultants

Special thanks and recognition to Thomas J. Steinke, Town Conservation Director from 1971 to 2014. Successful cleanup of the Exide site and Mill River is due in large part to his meticulous and unrelenting research, analysis, and advocacy.