

Newport Restoration Advisory Board
Project Committee Report-Environmental Dredging
January 15, 2003

This month's report covers the topic of "Environmental Dredging", which is quite different from dredging used for navigational and construction purposes. It is used to remove contaminated sediment from targeted areas, with the use of a hydraulic dredge that acts like a vacuum cleaner.

The environmental dredges are fitted with Global Positioning Systems to locate the hot spots, video and/or sonar equipment to monitor the progress.

The success of the use of this technique in Lake Champlain, New York reveals that sediment containing thousands of pounds of PCBs was removed over three summers without any significant impact on the surrounding environment and habitat.

It is hopeful that "environmental dredging" will be employed in the clean-up of the Hudson River as mandated by the EPA of the General Electric Company.

Submitted by:

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Emmet E. Turley, Chairperson

Enclosure (3)

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Environmental Dredging

Clearwater has created this webpage to provide background on environmental dredging, which is distinctly different from dredging used for navigational and construction purposes.

Navigation and Construction Dredging

This technology is used to remove accumulated sediment and debris from waterway channels in order to improve navigation and also used for construction projects. Large open clamshell dredges fall into this category. These dredges are NOT used for cleaning up toxic materials like PCBs, as GE has portrayed in its intentionally misleading, multi-million dollar advertising ``blitz``.

Environmental Dredging

Environmental dredging is used to remove contamination from targeted areas. This technology is very precise and is designed to minimize resuspension of small sediment particles that may be contaminated with PCBs, heavy metals, or other toxic materials. This process is much more controlled than navigational dredging, using technologies like the hydraulic dredge, which



This little dredge boat removed tons of sediment containing 25,000 pounds of PCBs - about one quarter the amount to be removed from the Hudson - over three summers. The Hudson River cleanup may require several boats like this, and a small number of attendant barges - hardly the vast destructive armada envisioned by GE.

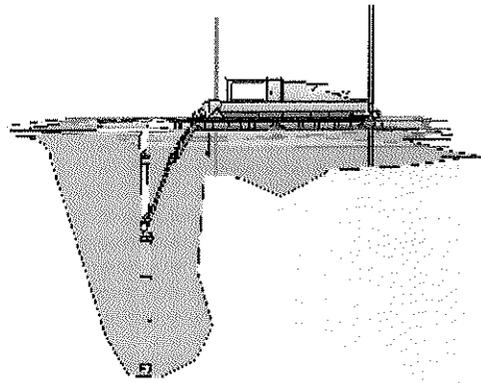
-- Photo by Jim Gordon

functions like a large vacuum cleaner to remove contaminated sediments with strong suction pumps.

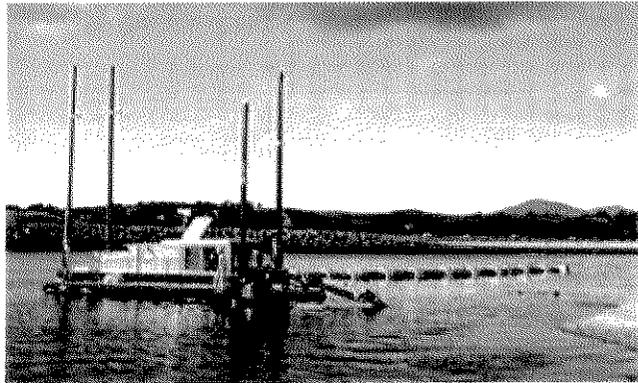
Examples of hydraulic dredges include the cutterhead and the eddy pump. Most hydraulic dredges have a cutting head to dislodge the contaminated sediment which is immediately suctioned into a pipe. This diluted sediment, or 'slurry', is pumped through a flexible, floating pipe to a covered floating barge, or directly to an on-land dewatering facility, where the sediment is allowed to settle out of the water. PCBs will then be separated from the water by a multi-stage sand and carbon filter system. The purified water is released back into the river cleaner than the river water itself.

The sediment that accumulates at the bottom of the settling basin is removed, dried, immobilized with cement-kiln dust, and shipped by rail to a landfill near Buffalo, NY, that has been built to specifications outlined in the Toxic Substances Control Act. Some of the 'hotter' sediments may be treated to remove and destroy PCBs before shipment. These processes must occur in an enclosed environment to prevent volatilization of PCBs.

Environmental dredging is much more precise than navigational dredging. Environmental dredges are often fitted with GPS, video and/or sonar equipment to monitor the process. During hydraulic



Environmental dredge graphics courtesy of Keene Engineering



Photos of environmental dredges courtesy of Keene Engineering

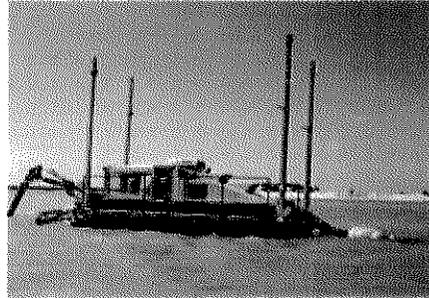


Photos of environmental dredges courtesy of Keene Engineering

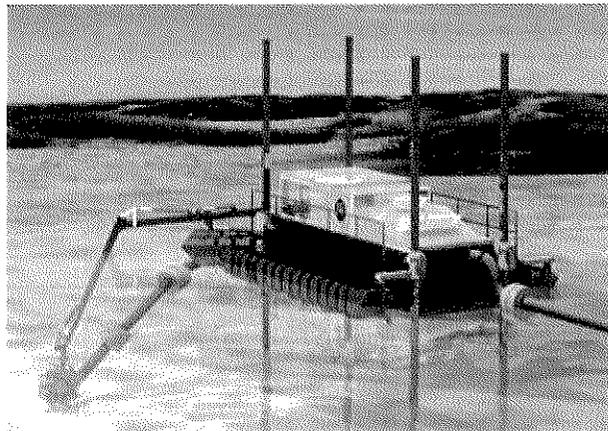
dredging the river remains clear enough to allow underwater cameras to guide the operations. Multiple water testing sites are set up in the vicinity of dredging so that if a problem should arise, it will be immediately detected and the operation can be quickly shut down. Safety precautions include silt curtains, which are used to surround the work area to contain any loose sediment.

There is nothing new, untried, or experimental about environmental dredging. Environmental dredges are proven effective. EPA has used environmental dredging at many sites around the country, and state environmental agencies also make wide use of these technologies. One recent success story occurred in Cumberland Bay, part of Lake Champlain near Plattsburgh, NY. In a cleanup ordered by the NYS DEC, one small dredge boat removed sediment containing 25,000 pounds of PCBs over the course of three summers. Two nearby swimming beaches remained open and a paper mill process-water intake limited to 2 ppb sediment content remained open despite being within 50 feet of the dredging operation. Property values in Plattsburgh are reported to be rising. Waterfront property owners observed ducks resting on the dredge vessel.

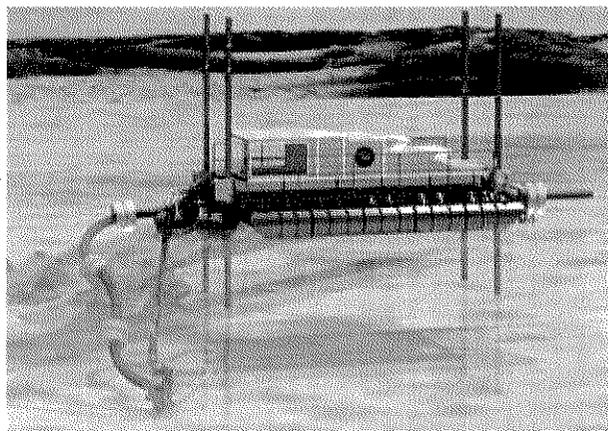
We expect the Hudson River to be another success story. There is no data to support GE's contention that the river will be closed to swimming or navigation.



Photos of environmental dredges courtesy of Keene Engineering



Environmental dredge graphics courtesy of Keene Engineering

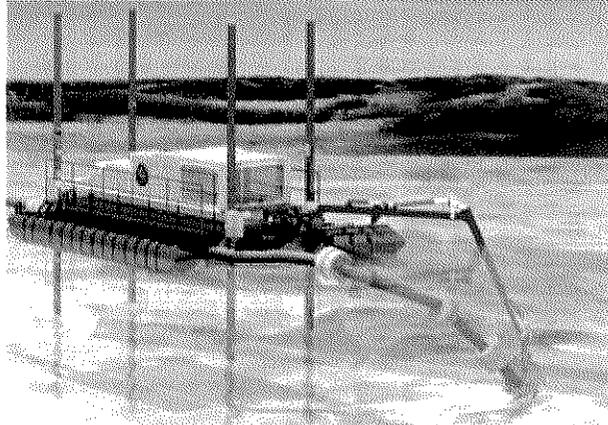


Environmental dredge graphics courtesy of Keene Engineering

These photographs and graphics are examples of environmental dredges which will be used in the clean up of the Upper Hudson River hotspots. The examples shown are hydraulic cutterhead dredges. Once the PCB-containing sediments have been removed by environmental dredging, navigational dredges may be used to further open channels to boat traffic. Snags, rocks, and sunken logs may have to be removed by clamshell.

Thanks to Jim Gordon for his photograph of the dredge used in the Lake Champlain clean-up. More details about the Plattsburgh cleanup are available in Jim's article, '[Dredging Works](#)'. Thanks also to Keene Engineering, a manufacturer of dredging equipment, for allowing use of photos and graphics from [their website](#).

Additional diagrams and photographs and a current report on dredging technologies entitled, 'Results of Contaminated Sediment Cleanups Relevant to the Hudson River', technologies are available on the [Scenic Hudson website](#). Descriptions of environmental dredging are available on [EPA's website](#).



Environmental dredge graphics courtesy of Keene Engineering

These [high resolution images](#) are available for use by the press courtesy of [Keene Engineering](#).

THE HUDSON RIVER PCB STORY

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Send comments and questions to Mannajo@mail.clearwater.org