

Dredging Keeps State Canal System Navigable

by Peter Weisbecker

Since the current Barge Canal, now referred to as the Canal System, opened in 1918, maintenance dredging of the navigation channel has been a necessity for the continued viability of the Canal as a commercial and recreational asset.

The State of New York has previously maintained and operated the Canal System under the authority of the NYS Department of Public Works and the NYS Department of Transportation. Currently, the state's responsibility for the Canal System's maintenance and operation is entrusted to the NYS Canal Corporation as a subsidiary of the NYS Thruway Authority. While the authority for maintenance and operation of the Canal System has changed over the years, the objective to provide a network of navigable inland waterways has been constant.

The Canal System has had a continuous program of maintenance dredging since the Barge Canal opened. In the early years, the State relied on hiring contractors to perform all dredging activities; however, in 1925 the State began to acquire its own equipment for the maintenance of the new Barge Canal. These initial purchases included tug boats, tender boats, mechanical dredges and hydraulic dredges which, as a group, are referred to as the "floating plant." By 1930, the floating plant was complete enough for State forces to perform all maintenance dredging without relying on private contractors.

Types of Dredging

The NYS Canal Corporation's responsibilities for maintenance dredging are restricted to the navigation channel. In the manmade sections of the canal, this responsibility is often bank to bank; however, in the canalized river sections, the channel may be far from shore. The vast majority of sediment in the canal originates in the many streams and creeks that flow into the canal. Erosion of the stream banks and adjacent land is the source of the sediment load and is a natural occurrence; however, human activities such as farming and land development have a significant impact on the volume of sediment. Once the sediment-laden water of the tributary reaches the canal, the reduction of velocity causes the sediment to drop out of suspension. Eventually, enough deposited sediment accumulates in the channel to necessitate dredging.

Once a site is identified for dredging, it is evaluated for the type of dredging needed and prioritized along with other dredge sites throughout the state. The Canal Corporation utilizes both mechanical and hydraulic dredging methods for its maintenance dredging needs. Hydraulic dredging is the preferred dredging method due to its efficiency. A hydraulic dredge basically vacuums the sediment off the canal bottom, moves it through a pipeline with water as the transport medium and deposits it into an onshore disposal facility, which can be up to a mile away. Once the water and sediment mixture reaches the disposal facility, it is pooled to allow the sediment to settle out of suspension and the water is then returned to the canal.

Mechanical dredging is used in areas where hydraulic dredging is not feasible, usually where the dredge site is far from a disposal site. Mechanical dredging is usually accomplished with a clamshell bucket, which removes the material from the canal bottom and places it in a barge for transport to a disposal site. The material is then transferred into the disposal site.



Photo courtesy of NYS Canal Corp.

A Canal Corporation hydraulic dredge operating on the Champlain Canal section

Fleet Upkeep

The Canal Corporation's current dredge fleet consists of five hydraulic dredges and six mechanical dredging vessels. These vessels are divided among the Canal Corporation's four floating plant sections, with each section responsible for a specific geographic area within the 524 miles of the Canal System. The majority of vessels have been in service for over 60 years, and many have been in service since the initial floating plant acquisitions of the 1920s. While some of these vessels are essentially museum pieces, they are still relied on to carry out their original mission of maintaining the navigation channel. The reliability of these vessels is a testament to the dedication of the Canal Corporation personnel who take great pride in maintaining these historic vessels.

Regulatory Coordination

The Canal Corporation works very closely with the United States Army Corps of Engineers (USACE) and the New York State Department of Environmental Conservation (NYSDEC) to ensure its dredging work will not negatively impact the environment. These regulating authorities review all proposed dredge activities and coordinate with the Canal Corporation to develop the most environmentally responsible, feasible solutions for the dredging needs.

Together with its partners, the Canal Corporation will help this valuable resource continue to function as an important inland waterway, growing also as a destination for those seeking a connection with Canal history and the environment along the Canal.

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Photo courtesy of NYS Canal Corp.

Hydraulically dredged material is being piped into a disposal site on the Champlain Canal. The bulldozer is moving accumulated gravel away from the pipe to make room for more material.