

Office Memorandum

To: File
From: David Wright
Date: September 6, 2003
Re: Dredging

Some dredging numbers and calculations, for the file.

1. How much sediment needs to be taken out of the lake?

We don't exactly know. In many areas of the lake, we have taken core samples down 10 to 20 feet into the sediments, and still not found a "true" bottom. Therefore, we have started from the data that we do know, and tried to ask, within our budget, what could we afford?

The lake is 105 acres, with an average depth of about 8.3 feet and a maximum depth of 18 feet. These numbers are circa 1980, however, and ought to be updated before any project is started.

The North, South and Chalet inlet areas of the lake are probably about 3 to 4 feet deep. I assume this to be about 50 acres. Let's assume this all gets dredged down to an average of 10 feet, i.e. remove about 7 feet of sediments from 50 acres, which equals 350 acre-feet, or about 52,000 cubic yards.

The large open expanses of the lake are probably 10 to 15 deep. I assume this to be about 50 acres. Let's assume we merely attempt to remove 10 feet of sediment layer (though 20 feet would be far better). 10 feet times 50 acres is 500 acre-feet, or about 75,000 cubic yard.

The total cubic yardage on this project would be about 125,000 cubic yards.

A better project, i.e. removing fully 20 feet of sediments from the deep areas, would result in total cubic yardage of about 200,000 cubic yards.

2. What would be the cost of a dredging project?

We have been told that \$10 per cubic yard is a fair working estimate. Add to this the "soft costs," and removal of the sediments, i.e. trucking and on-site work to construct a temporary containment area. Just for a working estimate, assume the following costs.

Permit process, engineering	500,000.00
Dredging	1,250,000.00 to \$2,000,000.00
Trucking sediments	100,000.00
On site construction	100,000.00
TOTAL	approx. \$2.2 million

Of course, if concentrations of hazardous substances are discovered, the trucking costs could be much higher, and the wastes might be required to be disposed of as hazardous materials.

If this cost were bonded over 30 years, we could estimate the cost at \$75,000 per year to re-pay the principal alone. Adding interest and bonding costs, the actual annual cost would probably be about \$100,000 per year – roughly double the entire current annual budget. Currently, the District collects about \$48,000 per year, which translates to about \$33 per household (more for houses, less for condos). Thus, dredging would increase the tax rate from \$33 to about \$100 a year. However, some district expenses would probably decline – especially weed harvesting, which we assume would be a far less significant expense – probably saving about \$20,000 per year.

The average home pays about \$10,000 in property taxes, so this would result in an increase of about 1%.

A Cheaper Method?

An alternative and cheaper method would be for the District to purchase a small dredge and do the dredging “in house” with District personnel and volunteers. This could eliminate 90% of the major cost (“Dredging” in the itemization above), reducing the cost to potentially be within the current budget, but it would not be accomplished immediately, but rather would take 10 years. Keen Engineering sells a small dredge comparable in size to our weed harvester, which can dredge down to 30 feet. This costs under \$100,000 at last check.

This small dredge could do 10 yards an hour, or about 500 yards a day. Working from after Labor Day until Thanksgiving, about 10 weeks, it could do 40,000 cubic yards. The limitation would probably be the size and availability of suitable detention basins where the spoils can de-water. I see the following potential areas:

Holland Club - Decatur Street	2,000 cubic yards
Section 3 beach	300 cubic yards
Mohegan Colony	45,000 cubic yards
Alpine Woods	20,000 cubic yards
Total	67,300

Since 90% of the dredged material is liquid, and needs time to drain, the limited detention areas would probably limit us to 20,000 cubic yards of solids per year.

Assuming one person working full-time, and a couple volunteers to assist, the labor component should be about \$5,000 per year. On-site construction of the detention areas, mobilization of the dredge, trucking, and clean-up will easily add triple that sum. I feel that we can dredge 10,000 to 20,000 cubic yards per year, for less than \$25,000 (net), including amortizing the cost of the dredge. The problem is the cost of DEC permit, which may render the entire concept academic.