

Subject: HAB report review
From: "Rob Zisette" <rzisette@herrerainc.com>
Date: Mon, September 17, 2018 5:35 pm
To: "Lake Stintzi" <lake@blacklakespecialdistrict.org>
Priority: Normal
Status: answered

Hi Lake,

I reviewed the HAB report and calculated a treatment dose and cost based on their sediment core test results. I think the water column dose calculated using the bucket test is good. However, I think they overestimated the sediment inactivation amounts using 20:1 Al:P ratio for the mobile P fraction. That ratio was recommended when only mobile P was used to calculate dose to add extra Al to account, in part, for what we now call biogenic P. I think a ratio of 10:1 is more appropriate for the sum of mobile and biogenic P based on the literature I have read.

I recalculated the Al dose a little differently assuming no treatment from 0-5 ft depth for boat access and dock avoidance, shallow sediment from 5-15 feet to treat above the thermocline, and deep sediment deeper than 15 feet where oxygen declines below the thermocline. Based on the sediment P data for these areas and a 10:1 Al:P ratio, I get doses (in g Al/m²) of 27 for the water column (vs. 21 by HAB), 35 for shallow sediments (vs. 50 by HAB), and 50 for deep sediments (vs. 73 by HAB). This equates to 300,000 gallons of alum and 150 gallons of sodium aluminate, which is less than 468,764 and 234,382 gallons calculated by HAB, and about 5 times more than the 2016 treatment.

I think it would be reasonable to apply half of the total dose at two years apart as per Option 1, and potentially adjust the second half amount depending on the sediment test results and how the lake algae respond to the first half. It is unclear to me if HAB accounted for a whole water column dose for each half treatment, which they should so half the sediment dose and a whole water dose is applied each time. I estimate the total cost of each half treatment costs to be about \$900,000 (vs. \$1.1M by HAB).

Let me know if you have any questions,
Rob

[Description: <http://www.herrerainc.com/HerreraLogoES.gif>]

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