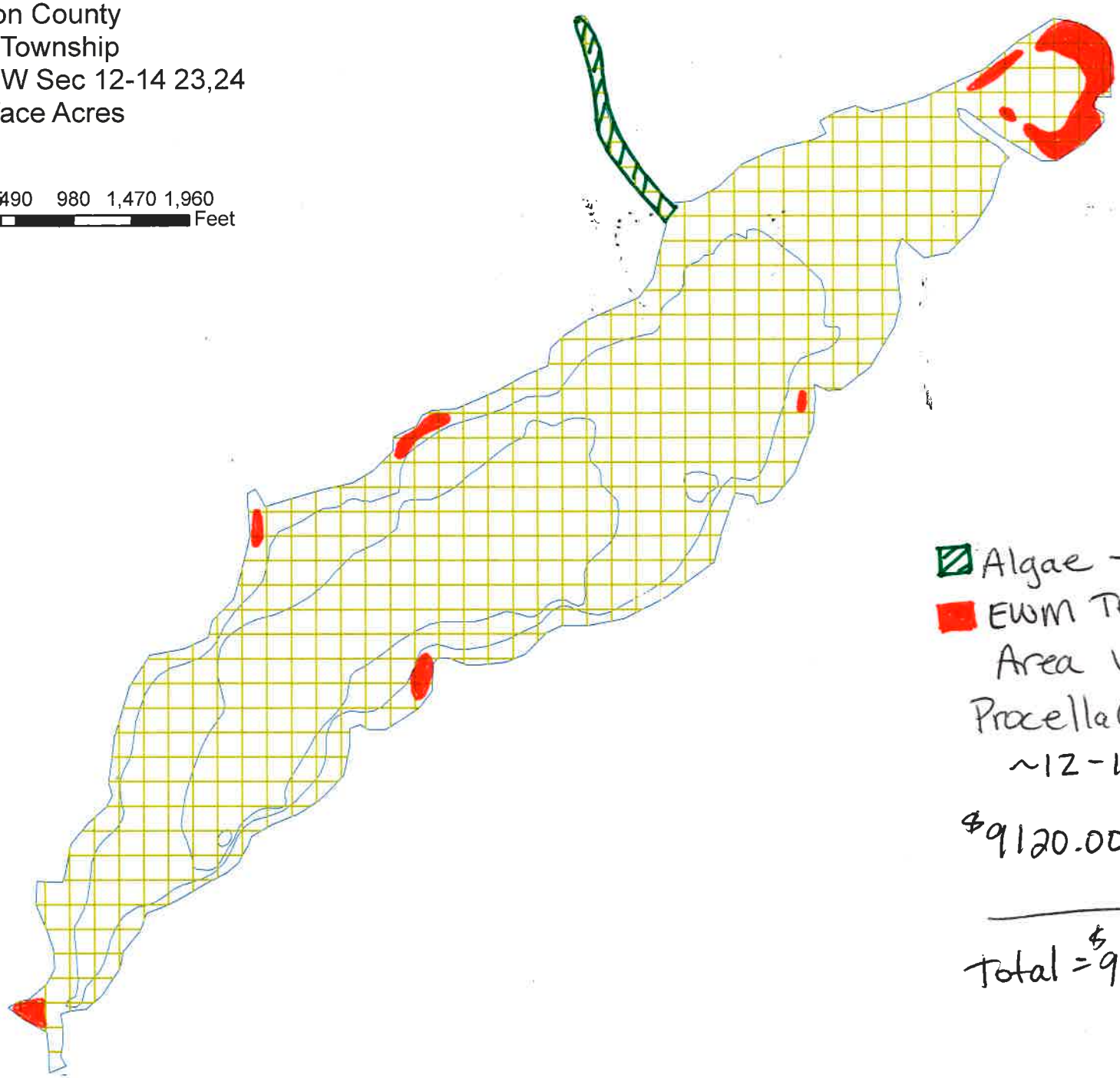
Bear Lake
Muskegon County
Laketon Township
T10 R17W Sec 12-14 23,24
455 Surface Acres

N

0 245490 980 1,470 1,960
Feet



Algae - 4ac = $240.00
EWM Treatment Area using Procella COR & Diquat ~12-15acres =
$9120.00 - $11,400.00

Total = $9360.00 - $11,640.00

Hello Darrell, PLM's Treatment Comments/Next Steps)

Jason surveyed the lake on Wednesday and although growth overall appeared to be a bit behind schedule, he did find some areas of dense Eurasian watermilfoil growth. Attached is our treatment recommendations with associated costs. We are recommending using a combination of ProcellaCOR (systemic herbicide) with Diquat (contact herbicide) for EWM control. This is the same combination we used last year in a few limited areas and it worked very well. The lake is currently on the schedule for treatment next week Thursday. Please let me know if we are ok to proceed with the recommended plan.

Thank you,
Jaimee Desjardins, Environmental Scientist
West MI Regional Manager

 A/ Steinman's Feedback to P.L.M. Fenner's Bayou Proposal

1. **Major Comment 1: Is chemical inactivation needed?**

The TP (and SRP) concentrations in Fenners Ditch in both May and July, 2021, are very similar to each other according to the tables in RLS' annual report (TP at the 2 lake sites ranged from 20 to 57 ppb in May and 35 to 50 ppb in July. Fenner's Ditch TP concentrations were 12 in May and 52 in July. All sites at both times had SRP concentrations below their detection limit of 10 ppb, most likely due to uptake by phytoplankton.

Hence, there is little difference in phosphorus concentration between the Ditch and open water of Bear Lake. The big difference between the two sites is circulation (and hydrocarbons, but that should not be responsible for blooms), based at least on my observations. The applying of Phoslock is likely to do some good by binding available phosphorus, and the cost is relatively low. However, it is a short-term solution because even if the Phoslock lowers the P concentration in the ditch, new P will be entering the ditch from external sources.

If the BLLB decides on chemical inactivation, I certainly agree with PLM that Phoslock is a better choice than Alum, at this point in time, although Phoslock does not always have a huge effect on P concentrations (*Lürling and van Oosterhout 2013. Case study on the efficacy of a lanthanum-enriched clay (Phoslock®) in controlling eutrophication in Lake Het Groene Eiland (The Netherlands). Hydrobiologia 710: 253-263*). I would recommend that PLM consider including sediment injection of Phoslock in addition to the P stripping approach. This has been proven to be far more effective in controlling internal P loading than the water column application.

2. **What about circulation?**

While I agree with EGLE that aeration may create more problems than it solves, gentle circulation, either on its own or in combination with a chemical inactivation treatment, may be another option to be considered by the BLLB. Most of the cyanoHAB taxa grow in response to warm temperatures, ample nutrients, and stagnant water. The main genus responsible for many blooms, Microcystis, forms surface scums – natural disruptions, such as storms or strong winds, can break up the surface accumulation before it forms dense blooms. Hence, surface-dominated circulation may help keep big blooms from forming.

3. **Bottom Line**

Either or both of the treatments (chemical inactivation and/or circulation) have the potential to provide short-term relief at relatively low cost. What I need to emphasize is that regardless of what option (if any) is selected, the Lake Board is treating the symptom, not the disease. Ultimately, the phosphorus entering Bear Lake needs to be controlled to make the Lake as high quality as possible. This should involve education on management practices that homeowners can take, proactive responses to potential issues, and a holistic approach to lake management.

Hi Darrell, PLM's Feedback to GVSU-AWRI comments on Fenner's Bayou Options

Jason will be out Thursday morning, June 9th to conduct the treatment.

Yes, I read Al's response and I agree that the Phoslock treatments would be a band-aid and not a permanent fix. Controlling nutrients coming into the lake is key to long term improvements. Although the phosphorus may not be significantly elevated apart from the lake, using Phoslock in the ditch would be a good starting point and an example of its capabilities. I am not familiar with his comments regarding directly treating the sediment through injection with Phoslock. I spoke with Jason and he was confused as well. I am going to reach out to SePRO the manufacturer of Phoslock and inquire about this approach. More to come…

Al's idea of circulation is one that we have also discussed with RLS and residents. The addition of a couple AquaSweeps, dock mounted circulators, would help to prevent stagnant conditions from forming in the canal. This would be a benefit and could be used in combination with the Phoslock treatments.

Thank you,
Jaimee Desjardins, Environmental Scientist
West MI Regional Manager