

02/19/2019 Lake Carmi Coordination Team Meeting Minutes

FELCO room, Frankin , VT

1. Introductory Points

Attendees: ANR staff: Oliver Pierson, Angela Shambaugh, Karen Bates, Jon Kim, Graham Bradley, Brock Freyer; also Shaina Kasper, Toxic Action committee, Jeff Sanders UVM extension; Kris Stepenuck, UVM Sea Grant; Andrew Schroth, UVM Dept. of Geology; Dave Bennion, Selectboard; Rob Evans, Franklin Watershed Committee; Ryan Patch, AAFM; Amanda Holland, NRPC; Roland Rainville, Dan Larabee; Peter Kittell;

Housekeeping: Regarding meeting publicity, Rob said that information about the meeting could benefit from additional publicity through various websites, including the Town of Franklin, FWC and LCC. Rob noted that VTrans was not present but confirmed that they were invited.

Review of last meeting: Decisions included change focus of group to communication, rename as Lake Carmi Coordination Team. ANR will take on coordination and Oliver is the contact person on behalf of ANR. If necessary, subcommittees can be pulled together to work on development of specific projects or initiatives.

Ice Cream Social - Rob Evans: Huge success. Hosted by Lake Carmi Campers association. Good participation by partners including farmers, DEC, Franklin Selectboard, Good conversations with legislators.

2. Presentations:

Aeration Performance for 2019 – Oliver Pierson

The aeration system achieved its 2019 objective of mixing the lake, keeping dissolved oxygen at above 2.5 ug/l, and keeping temperatures uniform from top to bottom. As a result of aeration in 2019, oxygen levels stayed high enough near bottom sediments to keep sediments from releasing phosphorus into the water column. Both dissolved oxygen and phosphorus levels measurements support this conclusion. The system was not able to run entire season, as could be expected when new system started. When system wasn't working, saw oxygen levels decline and P levels increase at lake bottom. Needed to work out kinks. Improved performance expected for 2020. Temperature and precipitation patterns led to significant surface water / external loading of phosphorus into Lake Carmi from July to October 2019, in turn leading to some blooms. More info can be found [here](#).

Cyanobacteria monitoring – Angela Shambaugh

Detection of blooms conducted by volunteers, DEC and State Park through visual observations and sampling since 2013. Focus of the monitoring effort is recreational safety. Information provided to VDH to help them inform community about current conditions and any health concerns, as well as reminding

everyone to avoid contact with cyanobacteria blooms. Monitoring occurs on Lake Champlain and several inland lakes including Lake Carmi.

Observations for 2019: State Park Beach area was worst, perhaps wind was a factor; however, other areas like Dewing Road, similar to previous years. Blooms were common throughout Vermont in 2019. Hot and wet weather conditions may have supported blooms by creating water conditions that cyanobacteria love – warm water with abundant food (aka phosphorus).

Expectation: aeration should cut off food supply for Cyanobacteria by reducing internal release of phosphorus during the summer.

Health Issues: DEC and VDH will schedule an informational meeting on cyanobacteria in early summer to Lake Carmi community. In regard to pesticide sampling (which was brought up during discussion), AAFM samples for pesticides in groundwater and surface waters around state. Link to AAFM ground water pesticide monitoring program : <https://agriculture.vermont.gov/pharm/pesticide/groundwater-monitoring>. Jeff Sanders said that because corn acreage is low, limited pesticides would be used in watershed. Discussion about bringing more info to community.

Preliminary report on Lake Carmi tributary phosphorus concentrations in 2019 – Karen Bates, DEC

Samples taken by the Franklin Watershed Committee, analysis and support by DEC LaRosa Partnership Program. The entire report for the 2019 season will be written by the Franklin Natural Resources Conservation District. Discussed phosphorus results from samples taken at mouths of 8 tributaries.. Showed graph of tributaries arranged from largest to smallest watershed, which is a rough proxy for expected flows. Outside of Sandy Bay Brook, phosphorus concentrations at mouths of tributaries averaged over all dates sampled is similar to averages combined for 2015-2017 time period (see [Fritz Gerhardt 2018 study](#)). Average for Sandy Bay Brook showed greatest reduction and suggests that work in watershed may have resulted in a decrease in phosphorus loading from this stream. Reports for previous years are found at the [DEC LaRosa Volunteer Monitoring webpage](#), see reports and Franklin Watershed Committee. Results are meant to help community and partner understand where they could focus remediation or protection works in efforts to be most effective in reducing p loading to lake

Ground water study – Jon Kim and Graham Bradley - DEC

Jon Kim, Vermont Geologic Survey, discussed the hydrogeological study planned for the Lake Carmi watershed. The first objective is to physically characterize the aquifer in 3-d through bedrock and surficial mapping and the computer analysis of domestic well logs. The second objective is to characterize the ground and surface water chemistry throughout the watershed, using phosphorous and nitrate, major and trace elements, and stable isotopes and integrate this chemical data with the 3-d model. Since ground and surface water are a system, the study will seek is to understand how they interact to influence phosphorous in the Lake Carmi basin. They will look at installing ground water wells to look at ground water characteristics in surficial geology (glacial deposits). Will be asking landowners for permission to sample their wells to look at glacial deposits and at bedrocks

Grahame's study will look at range of P concentrations in shallow groundwater, as well as speed of travel to Lake. Will drill monitoring wells in areas where landowners are willing.

Graham will get locations needed for monitoring wells to Rob Evans who will provide to shoreland community. Jon will provide a poster describing the project to Rob to circulate or post.

UVM Lake Carmi Water Chemistry Monitoring to Assess Impact of Aeration – Andrew Schroth, UVM

A multi-disciplinary group is working on project to understand how lake is responding to aeration and to also model how changes to aeration will affect lake as well as lake sediment. Study uses sensors (on platform on lake) and automated water sampling, biological sampling and modeling. Data collection started before aeration to allow them to compare before and after conditions. Study will also identify environmental triggers that support algal blooms as part of a larger project in Northwest Vermont. They will continue to interact with community.

Private & Park Road Inventory - Amanda Holland, NRPC

LCBP administered grant awarded to Northwest Regional Planning Commission. Partners include Friends of Northern Lake Champlain and Franklin NRPC. Focus of work will be to develop an inventory of private and park road conditions that result in road erosion to surface waters, identify remediation projects, and outreach to private landowners for implementation. The inventory work will include reviewing previous assessment work completed as well as enabling prioritization of projects. The inventory will utilize a new DEC tool adapted from the municipal road assessments. The inventory and workshops will occur in summer 2020 with project construction scheduled for 2021. Will provide updates at the next meeting.

Aeration operation – John Tucci, EverBlue

His team will arrive in May, a month before expected aeration system startup date. Will focus on maintenance and upgrades to reduce potential for compressor shutdowns. Will work to create natural shade around compressors. Working with DEC fisheries biologists and lake scientists, a 'system activation' temperature of 55 degrees F was identified. Once water temperatures reach 55 degrees F, young walleye that hatched earlier in the spring should be far enough along in development to tolerate the increased water turbulence created by the diffusers. Strong stratification is not likely before water reaches this temperature, so internal loading is also not likely until water temperature passes 55 degrees.

Additionally, Oliver mentioned that DEC is providing a grant to the town of Franklin to cover 50% of the aeration system operation and maintenance costs in 2020 and 2021 (approximately \$20,000).

Replacement of two culverts on State road 236 – Oliver Pierson

2 culverts failing and sink hole resulting in sedimentation to stream. Mr. Kittell described that flow out of culvert was creating eroded area downstream. Preliminary designs are complete, but funds are needed to construct the replacement culverts. DEC is proposing that town take on a loan through the Clean Water State Revolving Funds to cover construction and project management costs, that would then be forgiven at 100% with no payments from town required. Oliver, Tom Brown from the Water Finance Division of DEC, and Jim Cota, the regional VTrans engineer, will present the idea to Franklin residents in a public meeting on March 2, followed by a bond vote on March 3. The project is expected to be completed this year if bond vote passes. Meeting attendees from town impressed on Oliver the importance of getting town citizens to understand the need for the culvert replacement project, the water quality benefits, the specifications for the replacement culverts, and the fact that town will not pay for it. Also important for them to know that VTrans would not fix the culverts at this time because infrastructure is not in immediate need for replacement, even if it would benefit water quality.

The informational meeting on March 2 regarding this project will take place at the Franklin Central School at 7 PM.

UVM Extension Work – Jeff Sanders

UVM Ag Extension team has decided to focus work in Lake Carmi watershed as follows:

Manure injector – will meet in March with partners to discuss spring application to keep process on track. Goal is about 750 acres injected with manure, with prioritization for those acres closest to shoreline, but in end, whoever is ready first gets it. It does allow a wider window for application (from 5 to 14 days). There will be publicity in community.

Mass nutrient balance completed on 3 farms, teaming with Steven Roy, UVM. Also looking at reducing nutrient balance by substituting on farm practices with would otherwise require importation of nutrients. Working with 3 farms in watershed

Received million-dollar CIG grant for cover cropping statewide. He will work with any interested farm to establish cover crops earlier in season with innovative practices.

Continuing to be liaison to help farmers get cost share for BMP implementations.

3. **Next meeting:** Thursday, May 14, 2020, 4:45 PM, Franklin Homestead FELCO Room