

**Lake Champlain Basin Program
Technical Advisory Committee meeting
54 West Shore Rd, Grand Isle, VT
Wednesday, February 5, 2020, 9 AM – 12 PM**

Approved TAC meeting summary

Attendance: Neil Kamman, Leigh Walrath, Jamie Shanley, Mark Malchoff, Fred Dunlap, Eric Perkins, Angela Shambaugh, Andrew Schroth, Bridget O'Brien, Ryan Patch,

Phone: Stéfanos Bitzakidis, James Jutras, Bernie Pientka, Bryan Dore, Ryan Cunningham, Bill Ardren, Steve Kramer, Breck Bowden

Guests: Diana Butler, Alli Lewis, Dave Braun

LCBP Staff: Matthew Vaughan, Lauren Jenness, Mae Kate Campbell, Meg Modley

Updates, announcements, and public comments

- Andrew Schroth: funds for UVM's new research vessel came through and they are in process of hiring a new captain.
- Mark Malchoff: there will be a State of Lake Champlain Fisheries meeting on March 7th. An announcement of the meeting will be sent to TAC members. Bernie Pientka added that this meeting will cover a lot of items including what is in the Fish Tech Committee annual report.
- Neil Kamman: water quality related legislative activity is low key this year in Vermont with some movement on Act 250. Legislation passed last year will be stood up this year including Act 76. An RFP for the formation of clean water service provider organizations will be released very soon.
- Ryan Patch: Agency of Ag is working on updates to CAFO program, which includes food processing residuals and manure pits. Budget discussions around clean water investments in agriculture for next fiscal year are taking place. The Agency is looking at the possibility of releasing a new capital equipment assistance grant program which includes manure injection technology in the next fiscal year. The Ag BMP rule is being amended (last updated 1996). The updated rule will include technical corrections, language about wetland protection, and a new custom manure technical service provider rule.
- Alli Lewis announced her new role as the Vermont Agricultural Water Quality Partnership Coordinator at the Vermont Association of Conservation Districts (VACD). She hopes to be involved more in the work of the TAC and will be sending out to TAC members more information about the work of the Partnership including links to their website and strategic plan. The VACD Annual meeting is March 10th at Norwich University. The agenda will include both presentations and break-out sessions.
- Diana Butler announced her new role as a source water specialist at the Vermont Rural Water Association. She took Liz Royer's position as Liz has moved to be the Executive Director. She expressed her interest in being involved with TAC.

Review and approve summary of previous TAC meeting

- James Jutras provided written updates for the December 2019 TAC meeting which Matthew Vaughan incorporated into meeting minutes.

- Motion to approve: Angela. Seconded by Leigh. All in favor, none opposed. Neil abstained.

LCBP updates

- LCBP welcomed Mae Kate Campbell to our organization as the Technical Associate. Mae Kate attended Oberlin College for her undergraduate degree and has completed tile drain research, briefly worked for the EPA GROW program. She is completing a Masters in Geology at UVM, where her thesis focuses on erosion in Cuba.
- Several LCBP technical projects are wrapping up.
 - The Farm-PREP expansion project is looking at analytical tools applicable to farms for TMDL implementation. Matt asked TAC members for their opinion if they want to see the finished project and provide input. Ryan Patch said he would like TAC input. Matt will add their final report review as an agenda item.
 - The tile drain project with Newtrient which is modeling BMP management scenarios on tile drained fields.
 - Phase 2 of the project to monitor tile drains and test media filters on drain pipes will continue to monitor sites on Jewett brook and expanded to Addison county.
 - Second filter project with Watershed Consulting Associates has been stalled, get field data starting this season.
- The Missisquoi Bay TMDL project was awarded to Stone Environmental and UVM. The Lake Carmi TMDL project was awarded to the Northwest Regional Planning Commission. A press release for these two projects will be sent out soon.
- The Lake Champlain Steering Committee met in December and approved the technical pre-proposals as recommended by TAC. Applicants were notified and full proposals are due Feb 14. The full proposals need to be reviewed by TAC members prior to the March meeting. Neil Kamman added that today's TAC meeting is short, and to plan on March, April, May meetings being packed. He thanked TAC members for their work in advance.
- Angela, Fred and Matt are working on creating proposals to modernize capabilities of the LTMP, currently working on details. Matt recommends forming a subcommittee for those interested in reviewing options as LCBP would like to present the options to the EC on March 24th. Neil added that boosting the budget of the LTMP may decrease the Tech budget in another area.
 - Subcommittee volunteers: Andrew, Jamie Shanley, Mark Malchoff, Bridget Obrien, Leigh Walrath.
 - Matt will provide to entire TAC
 - Charge of review committee is to review and provide feedback for list of options
- BLS hiring position is soon to be open
- IJC Flood Study Board meeting March 24-25th at UVM
- Nonpoint Source Conference will be held on April 23-24 at the Woodstock Inn.

Review: Watershed Innovation Team proposals for FY20 Vermont TMDL implementation projects, Neil Kamman (VTDEC)

- Neil presented the six proposals for FY20 Vermont TMDL Implementation projects which total roughly \$6.39 million.

Project #	Project	Cost
1	Deer Brook Restoration Project	\$400,000
2	Winooski Headwaters Targeted Intervention	\$825,000
3	Lake Carmi Watershed Restoration	\$600,000
6	Green Schools Initiative to Support Stormwater Compliance	\$1,765,000
7	Priority Wetland Acquisition, Restoration, and Conservation to Improve Water Quality in Vermont's Lake Champlain Basin	\$1,650,000
8	Enhanced Agricultural Practice Implementation	\$1,150,000

- Alli Lewis questioned the participation of NVU-Johnson State College within the “Green Schools Initiative to Support Stormwater Compliance” proposal. She asked if the campus plan would be a subset of the Johnson Town SWMP as the campus was hesitant to sign on when that was being completed. Neil answered that Jim Pease at VTDEC, who would know more about that, didn’t express concern.
- Angela Shambaugh stated that the possibility of focusing on the Rock River watershed in the ‘Enhanced Agricultural Practice Implementation’ proposal would be beneficial as there is a Rock River BMP monitoring project already in place.
- Stéfanos questioned if silage leachate is a common problem. Ryan Patch answered that this would be a holistic study to see how much of a problem it is and would tie into a broader conversation about how the Agency recommends treating stormwater on farms. Angela asked if there were any parallels to composting requirements. Ryan Patch said they have very different permitting requirements.
- Jamie asked why a solution to silage leachate wouldn’t be to put a rubber liner down. Ryan Patch answered that he would have to ask the engineers. Because the Agency doesn’t have a cost share for rubber liners they can’t require them to be installed. They are currently testing to see if that is most effective method or look to other options. The plan is to identify the most cost-effective BMP.
- Stéfanos asked if each project has an established cost per pound of phosphorus removed. Neil answered that there is for projects where VTDEC has the known efficiencies calculated.
- Andrew asked who submits the proposals for the “Green Schools Initiative to Support Stormwater Compliance” project. Neil answered that they are working primarily with the District Superintendents with their partnership with Sea Grant being leveraged.

- Meg Modley asked if there was a student/teacher outreach component within the proposals. Neil answered that there was last year, but the WIT decided to take it out because they didn't want the funding to be restrictive.
- Neil announced that the Vermont Coordinator position is in the hiring process.

Drivers of internal and external loading of phosphorus in Lake Champlain and its watershed,
Andrew Schroth (UVM)

- Andrew provided an outline of his team's work with watershed monitoring with optical sensors, synthesis of drivers of internal loading in Missisquoi Bay, drivers of loading using sediment core manipulation and synchrotron spectroscopy experiments, modeling internal loading and management insight, and exciting new work in Missisquoi Bay and Lake Carmi.
- Angela: how do you define an event (referring to a precipitation event)? Matt answered: Humans are best at looking at a hydrograph and deciding when a storm begins and ends. We used a recursive digital filter (similar to SWAT model) to emulate what a human would choose. This make it a reproducible method.
- Neil: would you conjecture that the baseflow N in the urban landscape would be wastewater? Andrew: Yes, that is possible.
- Angela: can you put stratification in Missisquoi Bay in context? Most of the time long-term monitoring data don't show any stratification, but Andrew's data show differently. Andrew: using sensors we can see a huge gradient in redox sensitive agents at cm to mm scaled that allow a lot of phosphorus to be released.
 - Neil: this gradient in redox is happening within a cm of the bottom and a mm of sediment? Andrew: within a few centimeters, but at a scale we have only been able to measure with these sensors.

Meg: do you have another year that's similar to 2012 that wasn't preceded by 2011 with the large floods to bring in those nutrients [referring to graph showing high concentration of blooms in 2012]? Andrew: spring 2012 started with a very typical amount of P in the water at the beginning of the season, water residence time in Missisquoi Bay is very short so couldn't have been dissolved loads.

- Angela: Carmi aeration results are available on VTDEC website. Aeration didn't get rid of blooms but did reduce internal phosphorus loading.
- Eric Perkins: from your take away messages, earlier on you talked about temp including coldness of winters and there were a few factors contributing to greater release in colder winters. Is it fair to say as a general rule colder winters lead to greater phosphorus release? Andrew: that's what it looks like from our time series, thaw will also impact it, couldn't say it broadly for other water bodies but it's what we see in Missisquoi Bay.

Development and implementation of a citizen scientist lake management tracker program for aquatic invasive species management and Assessment and utilization of drone and BioBase technologies to inform the presence of wetlands, *Leigh Walrath (APA)*

- Leigh presented his team's work on using drones to identify the presence of wetlands and to aid in permit administration, and by using sonar BioBase technology to assess biovolume of native and invasive species.
- Ryan: can you help me understand what makes a wetland jurisdictional? Leigh: Open wetlands associated with open water are high priority (at least 3), those wetlands can only be impacted if it has public benefit (like moving a road).

- Angela: how does sun angle affect drone imaging? Leigh: it does end up being problematic, some images won't composite properly.
- Ryan: do you envision that the drone work would negate the need for a site visit if someone's asking to put a dock in and you can determine there's no surface vegetation? Leigh: we use as much info as we can to make a decision.
- Matt: are you mosaicing the images in the field? If you are missing something because it's open area can you put something out in the water to help it index? Leigh: Back in the office, we talked about that but the drone flies so quickly and it would take a long time to set things up. If we can force a drone to fly a straight line through a polygon that's super narrow it wouldn't need to fly a back and forth path and that could help.
- Breck: Have you tried flying on overcast days so that you might reduce the sunspot issue making stitching easier, or do you then lose depth definition? Leigh: we had a couple days to fly, one of the days the sun went in and out, but if we initiate a program we have a short window to fly when vegetation is at its peak, and we can't fly on windy days because of the choppiness of the surface of the lake, limits our ability to take these images. We need to fly whenever we can so we don't always get to choose bright days vs. overcast days.

Brief Lake Champlain Sea Grant update, Breck Bowden (UVM, LC Sea Grant)

- Update document distributed to TAC
- Breck: Emerging opportunity with a short timeline for developing a federal partnership liaison position—do we want to try to go for one that would be associated with the Basin Program? Not a whole lot of info on this, looks like pre-proposals due March 2nd. The simple question is does the TAC think this is worth pursuing?
 - Neil asks what federal liaison position would do. Breck: We could define it, focus on an area that the TAC identifies as a particular need and this person could work on a project that's the will of the TAC.
 - LCBP staff will follow up with Eric to see if this is something we will want to pursue.
- Second item on NOAA habitat focus areas—they are wanting to entertain additional areas that would be designated as focus areas, maybe won't be much money but could make connections that would allow for funding flows, does the TAC think this is something we'd want to pursue? TAC members will follow up with Breck or Matt if they have further thoughts.

12:00 PM Adjourn