Lake Champlain Basin Program
Technical Advisory Committee Meeting
Wednesday May 3rd 2017
10:00 AM – 3:00 PM

Draft TAC Meeting Summary

Attendance:
Members: Mike Winslow, Martin Mimeault, Fred Dunlap, Laura DiPietro, Andrew Schroth, Ed Snizek, Breck Bowden, Mark Malchoff, Kip Potter, MaryJo Feuerbach, Eric Perkins, Tim Clear (rep. Neil Kamman), Bill Ardren (phone), Bob Brower (phone), Eric Young, Dennis Deweese (phone), Bernie Pientka
Staff: Ellen Kujawa, Meg Modley, Matt Vaughan, Eric Howe
Guests: Marli Rupe (phone), Dave Braun (Stone Environmental), Michael Winchell (Stone Environmental), Jody Stryker (Stone Environmental), David Borthwick-Leslie

I. 10:00 AM Executive Session: P Loss from Tile-Drained Fields ROD Review

Kip moves to approve record of decision with revisions as discussed. Laura seconds. 10 members approve, 4 oppose.

II. 10:30 AM Updates, Announcements, and Public Comments

Breck: Federal register announcement: establishing a Lake Champlain Sea Grant Institute. Responded and preparing a proposal for submission in June, expect to hear a decision in the last quarter of the year. Purpose is to move the Lake Champlain Sea Grant to an elevated status within the overall Sea Grant program. Site review July 11-12, may ask for some TAC members to attend. Also, the Great Lake Sea Grant Program in alliance with partners is facilitating a symposium on the transport of crude oil (this is an issue in Lake Champlain and elsewhere, and there are concerns on what would happen if there was a transport accident). Website for symposium will be up next week.

Mark Malchoff: put together a list of possible participants, anyone should feel free to submit potential participants to Mark and he will invite them. Gulf of Mexico Sea Grant Program will attend and talk about lessons learned. Also, flood resilience workshop on May 10th. It will include a workshop by the NY DEC. The target audience is code enforcement officers.

Ed S. The 24th annual conference on the Adirondacks will be held May 24th and 25th. Copy of agenda will be circulated.

Martin – Meeting recently on long-term water quality monitoring; hope that we will be able to present to the TAC in June or September. The data show some decrease in concentration and loading of nutrients since 1999; if we look at 2007-now, more of an increase.

Breck – Andrew Schroth was promoted to associate professor. Congrats, Andrew!

III. 10:45 AM Summary of Previous TAC meeting

a. Review and approve minutes from the April 5th TAC meeting

Motion to approve by Martin M., second by Mark M. Abstention from Breck. Motion is carried.

IV. 10:50 AM LCBP updates, *Matt Vaughan, LCBP*

a. Updates on LCBP activities since the last meeting

Eric – Basin Program updates:

- Army Corps section 542 program is being revived, first workshop on Monday the 8th, all are welcome.
- *Opportunities for Action* is close to done, wrapping up final edits and will shift to EPA soon. Release date is June 19th, 1 PM at the Champlain Memorial Lighthouse at Crown Point.
- LCBP has a new phone system (will save approximately $10,000 a year).
- Agreement went through the IJC on flood resilience in the LC/RR, 5-year study, our contract is for the next 18 months.

Jim Brangan provided an update on the Gunboat Spitfire. One of Benedict Arnold's gunboats, the ship sank in deep water and has been perfectly preserved *in situ*. Quagga mussels will arrive soon and destroy the wreck, so there is a proposal to raise it, restore it in a shipwreck restoration lab in Burlington, and displayed in a new museum in New York.

Eric – a few more updates: FY17 budget is all but signed by President Trump, so we expect to be level-funded for next year.

Meg – completed interview process for Boat Launch Stewards program; Paul Smith's college will be covering the majority of the NY shore, so we will have 2 there, 7 in VT, and 2 in QC. Decontamination training on the 18th, and training May 22nd-24th. 120 total stewards training in the Adirondacks. New York fishing magazine focuses on Lake Champlain and mentions BLS program.

V. 11:00 AM Interim Report for Edge of Field Grassed Waterway Project and Jewett Brook Tile Drainage Project Update, *Dave Braun (Stone Environmental)*

David Braun presented an update on the Edge of Field study and Jewett Brook Tile Drainage Project. Summary: In Franklin, treatment changed very little except that total dissolved phosphorus increased (about 12%). Williston, not enough data. Shelburne, flow increased, TN, TDN, TSS decreased, Cl, TPx, TDPx, TDNx, CLx increased. Ferrisburgh, TP, TN, TDN increased. In Shoreham, TDP, TPx TdPx TNx, TDNx, TSSx, Clx decreased, and in Pawlet, Tss, TPx, and TSSx increased. Why didn't we see a better response to treatment? Possibilities: practices were poorly implemented or misapplied, learning curve (takes farmers time to get up to speed), certain practices are not expected to yield full benefits until they have been applied over longer timespans, statistical analysis included data gathered year-round and some practices should be most effective shortly after installation, confounding environmental conditions, heaved flumes and attendant ponding (significant at SHE). Need for data stratification and exploratory analysis (incorporate additional monitoring data at selected sites, stratifying data by time (value of considering immediate and longer term effects of treatment practices), stratifying data by flow.

Assessment of the Tile Drainage system update: Secondary data QAPP, monitoring and assessment of tile drainage systems, P load estimation of tile drainage systems in the Jewett Brook watershed all done. Literature review written by Don Meals and Julie Moore, used as a basis for VTANR's required tile drain report to the VT Legislature (January 2017), reviewed by TAC and revised.

Characterization report describes construction of tile drainage systems, surface inlets to tile drains, crop production in study fields, field soil types, soil test P in study fields, and manure and fertilizer applications.

Tile drainage system constructions: all 12 systems are standard corrugated drain pipe, most were installed within the last decade, the outfalls range in diameter from 4-12 inches, and 9 out of 12 discharge to ditches (the 3 drain directly to Jewett Brook).

Equipment installation has been completed and data is being collected. As flow decreases, sampling interval does too. Soil moisture was not measured and will vary over time. The TAC was curious about how full the tile drains might have been and it was estimated that they were half full in the comparison tables.

As of today 10 out of the 12 drains are in excellent condition. Dave will likely have to replace some of the models. The only significant problem is that one of the great big meters was installed and it does not appear to be working and it was shipped from overseas.

VI. 11:30 AM Workplan for Treatment Train Project, *Dave Braun (Stone Environmental)*

The reason why we are talking about Jewett Brook is because highly agricultural watershed and we have put in a lot of BMPs and have not seen enough progress. Unless we are radically changing inputs it will be hard to change. We can take a reasonable percentage of the flow out of the Brook somewhere over 5% to treat and then return to the brook. We will never treat the peak flow but we can treat sizable portion of the stream. This project is for regulatory assessment only – more detailed plans and budgeting could be the next step.

Kip – how does Jewett brook compare to Prairie Creek in Ohio? David – bigger than Prairie Creek, comparable to Coldwater Creek.

Laura – wasn't it part of the proposal that we would connect with Ohio on this project? David – yes, talked to someone at EPA, they want to cooperate. We will get more information from them about this. EPA representative was impressed with treatment train and unimpressed with most other treatments that have been tried, including in-lake treatment and farm-based conservation.

Project objective: to evaluate the feasibility, from a regulatory standpoint, of developing an "engineered ecosystem" treatment train to remove phosphorus from Jewett Brook before it flows into St. Albans Bay. Workplan tasks: Establish evaluation criteria and

project advisory report (summary report), secondary data QAPP preparation, analysis of regulatory acceptability (summary report).

Need direct input from TAC and LCBP as this project moves along, as this is a more collaborative project than other Stone Environmental projects.

No immediate comments from TAC on workplan. David asks how the TAC responded to the workplan. Breck admits that he was critical of the project (it's an in-pipe solution rather than source solution, akin to treating the symptoms rather than the disease).

There was concern that the project may not actually be permittable. Discussing with Ohio people about treatment capabilities under regulatory limitations. Also noticed that wetland is a wildlife management area, which goes into Black Creek and acts as a filter.

Motion to approve workplan by Kip Potter, second from Mark Malchoff. No abstentions. Motion is carried.

VII. 12:15 PM Lunch

VIII. 1:00 PM Workplan for Phosphorus Management Tool Project, *Mike Winchell (Stone Environmental)*

Development of an Approach and Tool to Optimize Farm-Scale Phosphorus Management and Achieve Watershed-Scale Loading Targets. Background: the EPA's phosphorus TMDL for Lake Champlain has derived P load allocations and reduction requirements for P sources by lake segment (based on SWAT and BMP tool, determined what is achievable). The P load reduction requirements at the lake segment level have not yet been translated to a farm-level water quality target (are there different targets based on crops or land characteristics?). How can farmers optimize their operations to achieve targets?

Project goal: To successfully demonstrate an innovate approach and tool designed to identify optimal land and nutrient management options at the farm scale that meet watershed-scale water quality metrics required to achieve the phosphorus load reductions established in the lake Champlain Phosphorus TMDL. Primary components: establishment of farm-scale load-based P targets, development of a farm P management optimization modeling approach, integration of the farm optimization model into a web-based tool. Tool will provide a set of possible solutions that will help to meet load targets, then farmer will be able to decide which solution makes the most sense for their particular needs.

Task 1: Establishment of Loading-based P targets. Overall goal is to determine per-acre P loading targets for agricultural lands in St. Albans Bay watershed (sub-tasks: Review previous modeling and spatial analysis efforts produced as part of the P TMDL – review reports and compile datasets; determination of P loading rate targets – analysis with compiled datasets and development of pilot P load reduction target strategy).

Task 2: Development of a Farm P management optimization modeling approach. Overall goal is to develop a methodology to optimize farm management operations to achieve the per-acre P loading target at the farm scale, while also meeting production objectives (sub-tasks: establish P management practice alternatives – prioritize management alternative to simulate, determine which to simulate with APEX versus empirically; determination of additional farm operation constraints modeled – identify additional constraints to consider, such as field/farm yield; development of Apex-Based Farm Optimization Model – develop field-level input requirements, determine and design automated input acquisition, design and implement optimization algorithm, specify outputs; pilot testing of the farm optimization model.

Kip – question on the timing of the Project Advisory Committees. Will there be a meeting before the project optimization model is developed? Mike Winchell – yes, probably one before constraints are set and then in the middle of the development and pilot testing.

Task 3: Integration of the Farm Optimization Model into a Web-Based Tool. Overall goal: integrate the farm P management optimization model into a use-friendly web-based tool. Sub tasks: user interface design – strive for a simple interface; integration of pilot modeling framework into web application – migration of APEX optimization modeling to a web front end, user testing; reporting and model output delivery – generate output in a useable format and structure.

Timing for key feedback and Project Advisory Committee involvement – Late July/August, completion of Task1 and Tasks 2.1-2.2. October/November 2017, completion of 2.3-2.4, January/February 2018, completion of Task 3. Three Project Advisory Committee meetings for this project, approximately three months apart.

Potential project challenges:

- Professional agreement concerning farm-level P reduction strategies – likely multiple valid approaches, and may not be the most critical element to this pilot project.
- Implementation of some field/farm management within the APEX optimization framework – may need to omit some desirable options from the optimization, but some options could be implemented outside APEX.
- Balancing flexibility with simplicity – a tool that is too complex may be difficult to use, and something that is too simple may produce less meaningful guidance.
- Short project duration: much to be accomplished, and will need timely feedback at critical points in the project.

There was some discussion regarding the flexibility of the model to incorporate new input information from other data sources. Mike Winchell said that when they proposed this project, they had not planned on integrating with the partner database, but that seems to be the right way to go.

Mark M. – This project does not include the continued hosting of the web-based tool. What happens when the contract is done? Mike Winchell – there needs to be some limited maintenance and IT funding for this tool after the contract is over. Breck – that is the adoption piece that I was referring to. The state needs to adopt the tool and so do farmers. The important thing here is that the farmers buy into this model as the truth. Laura – it's about the data and how it can be used. It needs to be as farm-specific as possible. The adoption by farmers would be not be difficult if farmers can use it fairly easily to see results. Incentives may be useful.

Andrew S. – Earlier, Dave essentially showed that good practices can have very unpredictable impacts on water quality. We would need to get out in front of that uncertainty. Mike Winchell – we've thought a lot about how to handle uncertainty. Modeling may be a useful tool in calculating uncertainty, but may be too much information for some users. Need to balance complexity and robustness of model.

Matt V. – Question on ongoing maintenance: could you develop a cost estimate for that maintenance and transference? Mike Winchell – yes, certainly.

Eric P. – Important to note in section about Missisquoi bay – there's so much reduction needed in some areas that we need to focus everywhere, not just the critical areas. In Task 1 – assuming you will be calculating deviations from TMDL. Mike Winchell – yes. Eric – would it be possible to translate this to a larger watershed? Mike Winchell – Yes. Eric – may consider the DEC's roadmap data in addition to your TMDL data, as it is at a higher resolution. May save time.

There was discussion on whether the team will use APEX to incorporate tile drainage effects. Mike Winchell confirmed that they would.

Changes to be made: develop a cost estimate for the maintenance and transference of the web-based tool. Qualify statement in Missisquoi Bay section about needing to target everywhere in super high nutrient producing areas, not just large producers as Eric P. mentioned. Consider how this project may link with others (like Jewett Brook, etc.) as well.

Motion to approve workplan as discussed and amended? Eric Young moves, second by Martin Mimeault. Motion is carried. No abstentions.

IX. 1:45 PM Priorities for FY18 Request for Pre-Proposals

The TAC discussed which priorities they would like to recommend for the FY18 Request for Pre-proposals. This would not exclude projects that don't fit into these priority areas, but would give projects that address the priorities a boost in the review process.

Matt suggested using tasks or strategies pulled directly from the new *Opportunities for Action*. The TAC liked this idea and agreed that the strategy level would be best for this

purpose. After some deliberation and brainstorming, the TAC recommended the following four priorities:

1. Research or implementation projects that use existing LCBP or other available data to improve water quality in the Lake Champlain Basin.
    a. There are numerous opportunities to better understand the challenges we face using LCBP-funded and other publicly available datasets.
2. Innovative pilot or demonstrations projects that reduce nutrient loading to Lake Champlain.
    a. For FY16, this was RFP for innovative agriculture projects in St. Albans Bay watershed. FY17 we will expand to innovative agriculture project basin-wide. The TAC now recommends expanding this basin-wide, non-land use specific, and to be part of the Request for Pre-Proposals
3. Projects that improve diversity of aquatic and riparian species in the Basin (OFA Strategy II.B.1)
    a. Any task under this strategy can be addressed.
4. Projects that research or control sources of contaminants in the Basin. (OFA Strategy I.B.1)
    a. Any task under this strategy can be addressed.

If the TAC has an idea that needs to be addressed, it can go into pot of core funding ideas for the year. What we will not have is a process of soliciting ideas within the TAC – TAC members can bring forward ideas to Matt, Matt can talk with the TAC about this on an annual basis. We will put a range of project budgets for each priority (or one for all projects), including a floor so we don't see small projects in this process. Smaller projects will still be eligible for the local implementation categories.

TAC also recommended the following core projects remain separate from the call for pre-proposals:

1. Local grants
    a. Pollution Prevention and Habitat Conservation
    b. Aquatic Invasive Species Spread Prevention
    c. (Organizational Support)
    d. (Education and Outreach)
2. Long-term monitoring
3. Cyanobacteria monitoring
4. Water chestnut
5. Boat launch stewards
6. Enhanced BMP

X. 2:30 PM Tile Drainage project discussion

Matt explained that FY17 budget has $200,000 for tile drainage project. Instead of an hour-long discussion like last meeting, two questions: 1. Is this an appropriate amount of money to get valuable information? 2. Would you like to form a sub-committee on this subject?

The TAC ultimately decided to hold off until December to develop focus and scope of project, but will look at using some funds for Lake Champlain conference. This way the project can be informed by the follow-up December meeting held by the VT Agency of Agriculture

XI. 3:15 PM Adjourn