**Lake Champlain Basin Program**
**Technical Advisory Committee meeting**
**Wednesday, November 12, 2025, 10:45 AM – 12:30 PM**
**Remote meeting via Microsoft Teams**

**Approved TAC meeting summary**

**TAC Members**: Jennifer Callahan, Laura DiPietro, Karyn Hanson, Peter Isles, Neil Kamman, Steve Kramer, Margaret Murphy, Andrew Schroth, Daniel Tremblay

**LCBP + Lake Champlain Staff**: Mae Kate Campbell, Emma Janson, Corrie Miller, Meg Modley, Matthew Vaughan, Sonya Vogel, Anna Vold, Erin Vennie-Vollrath, Colette Ward, Sarita Croce

**Guests**: Jody Stryker, Hannah Rubin, Foster Valle, Wade Bastian, Tim Koch, Ben Luskins

1. **Updates, announcements, public comments**
   ● Neil (VTDEC): Our friends from the US Geological Survey (USGS), Environmental Protection Agency (EPA), and other federal agencies are not with us today due to the ongoing shutdown.
   ● Matt (LCBP): Thanks to everyone for their flexibility with rescheduling this meeting. Unfortunately, that extra time did not result in our federal partners being able to join still. As a reminder, the request for pre-proposals (RFPP) for research projects closed on Friday. We received a lot of ideas! We are working to get those out to TAC for review. This will be your homework between this meeting and December's meeting. We will target an in-person/hybrid meeting for that discussion. The focus of that meeting will be on forming a recommendation to the Steering Committee on which proposals should advance to the full proposal stage. Thank you to the many New York State Department of Environmental Conservation (NYSDEC) team members who joined today. Registration is open for the Lake Champlain Research Conference - we encourage everyone to register early.
   ● Meg (LCBP): The boat launch steward field season ended in October. We are working on quality assurance and will be advertising for next year's field positions shortly.

   *Review and approve summary of previous TAC meeting*

   <u>Motion</u>: To approve the October 2025 TAC meeting summary
   <u>By</u>: Jenn
   <u>Second</u>: Peter
   <u>Discussion</u>: Neil: Look good to me.
   <u>Vote</u>: All in favor

2. **Workplan review: Sediment release index to support dam removal projects** (Dr. Jody Stryker, Stone Environmental)
   - Jody introduced the project and shared a presentation. The project aims to characterize the tradeoffs between impounded sediment release versus removal as part of the dam removal and site restoration process. The project will develop a screening level approach for known dams in the Lake Champlain Basin. Project outputs include a publicly available geospatial dataset to provide information on critical factors impacting sediment management associated with dam removal projects, including an overall index rating for known dams.

   *Discussion*
   - Karyn: I was wondering about known dams. What's the universe of dams, is there a particular database or a minimum size of structures that will be examined in this project?
     - Jody: There are a couple of databases we will look at. We will combine datasets of known dams from NY and VT. I don't believe we will exclude dams from that database based on size.
   - Tim: I'm really excited about this project and think it will be useful. One of the factors with sediment is contamination. Can you expand on how that factor will be characterized?
     - Jody: Our thoughts were to approach it by examining known point locations of contaminant sources. The method development to develop this indicator will be part of the project.
     - Tim: There are some contaminants that do not seem to be related to point sources, such as PAHs, that you should keep in mind as well.
   - Tim: How will you remotely assess stream geomorphic characteristics, such as stream power, and also sediment volume?
     - Jody: We will build on work from the functioning floodplain initiative (FFI) or similar initiatives to characterize the geomorphic components. For sediment volume, we will build on screening-level guidance from other states.
   - Neil: FFI will be a great data source, especially for geomorphic characterization. There's less available data in NY, so hopefully NYSDEC can help provide other sources. To the degree that you could pair LiDAR data with the setting of the impounded stream, I'm sure geometry could be developed. The other thing I'd offer is that in applying to recently completed dam removals if feasible, I think that ground truthing would be super useful.
     - Jody: I agree. We'll need to coordinate with other organizations to get those data, so the language is a bit tentative in the workplan, but we intend to make that happen.

   Motion: To approve the workplan pending the submission of comments from point people
   By: Jenn
   Second: Karyn
   Vote: All in favor

3. **Workplan review: Aquatic Organism Passage Barrier Mapping and Connectivity Assessments using LiDAR Flow Networks** (Dr. Jody Stryker and Dr. Hannah Rubin, Stone Environmental)
    - Jody introduced the project and shared a presentation. One aspect to consider with aquatic organism passage (AOP) projects is how much of a stream network is restored. Practitioners are aware that there are many currently unknown and unmapped barriers across the landscape. This project aims to develop a machine learning approach to predict the locations of unmapped AOP barriers within the watershed. The project goal is to create a public dataset of AOP barriers, including known and previously unmapped barriers. Having this dataset would provide critical information to support agencies and stakeholders. This approach could also be scalable to other watersheds.

    *Discussion*
    - Margaret: How many unknown barriers do you expect to find from this process?
        - Jody: We won't know until we complete the analysis, but a recent paper estimated that barriers are underestimated by 80%. I think that figure is high for VT, since the state has done work to find those unmapped barriers, but I still imagine there are quite a few out there.
    - Margaret: How will you distinguish between culverts and dams, and for culverts, if they're functioning or acting as a barrier? How can you see that with a computer model?
        - Jody: We are hoping that using high-resolution LiDAR data, we can get to that elevation drop and elevation in areas to help pick up on those factors. That idea of being able to tell if a culvert is perched gets to severity piece of the analysis. That's where the exploratory analysis comes into play; we will see how accurately we can characterize elevation drops and other factors that speak to severity. Culverts might be easier features to identify in the landscape due to other factors like roads etc.
    - Karyn: I'd like to pass along some perspective from fisheries managers in our agency. They think that the value in this project is really understanding the extent of the severity of passage blocks; that information would be of the most value to resource managers. Task 7 and the initial field verification data will be very meaningful to DEC staff.
        - Jody: As we do data acquisition, we will keep that mind. If we can find a way to incorporate to machine learning to better characterize that point, we will try.
    - Karyn: Are these models open source or proprietary?
        - Jody: The models are not proprietary. We will develop and write a lot of the code to support this analysis.
        - Hannah: The information is publicly available, but there isn't really open source code supporting this project. We have found data from available papers and translated those analyses into code.

- Neil: I haven't heard of some of the analyses proposed for use in this project, including gradient boosting and convolutional neural networks. Can you provide a lay-scientist's overview of what those do?
    - Hannah: Gradient boosting uses decision trees and each tree builds on the previous tree, which results in a similar output to a random forest analysis approach. Convolutional neural networks are a bit more complicated – they have hidden layers that work together to produce outputs. It's somewhat of a black box, but they build on non-linear relationships to build model outputs. They build analyses based on performance outputs like error, etc. It's a non-linear way of trying to minimize error and pool all these separate trees together to refine outputs.
    - Jody: Convolutional neural networks are pretty complex, but they perform well with remote sensing analysis data, which is one of the reasons we considered using it.
- Niel: What about automated hyper parameter tuning?
    - Jody: That approach refers to parameters that are not a result of the machine learning but the data that you are providing as a starting point for the model.
    - Hannah: We will have to set how many trees we want to look at that will work together to create final outputs. That number will affect computation time and how good the model is.


Motion: To approve the workplan pending additional input
By: Margaret
Second: Jenn
Discussion: MKC: Margaret wanted more time to look at this, some federal partners as well haven't been able too. Do we feel we want more time or do we want to move forward with workplan?
    - Neil: I don't want to hold up Stone, but I do think Laurie Earlie's feedback would be good. We can use the same process as the previous approval - generally approve the workplan, but be able to take more input.
Vote: All in favor