



Maintain Healthy Watersheds GIT Meeting

August 14, 2023

11:00 am-1:30 pm

[Meeting Materials](#)

Natahnee Miller -PA

Shane Kleiner- DEP

Alison Santoro- MD DNR

Andrew Szwak, Land Trust

Alliance

Angel Valdez MDE

Aurelia Gracia NPS

Bailey Bosley USGS

Cassie Davis NY DEC

Chris Guy USFS

Elise Turrietta EPA

Julia Wakeling DC

Katheryn Barnhart EPA

Kristin Saunders UMCES

Mark Hoffman CBC

Peter Claggett USGS

Sarah McDonald USGS

Sean Emmons, USGS

Steve Epting EPA

Lori Maloney

Greg Barranco

Jason Dubow

Debbie Herr Cornwall

Bo Williams

John Wolf

Nancy Roth

Holly Walker

Jackie Pickford

Introduction of New HWGIT Coordinator- Jeff Lerner, HWGIT Chair, Acting Branch Chief, Partnerships and Accountability Branch

Jeff introduced the HWGIT to Peter Claggett, the new coordinator of the GIT. Peter took some time to share his background and noted that he is excited to be the new GIT coordinator.

Updates- Sophie Waterman, CRC, Staffer

Sophie ran through some partnership updates, including the new Strategy Review System schedule and what that means for the GIT, the 2023 GIT funding schedule, the creation of the Indicator Action Team, the call for members to join the Community Response to Land Use Change GIT funding project steering committee, and request for jurisdictions to meet with the HWGIT team. To read the updates in detail, refer to this [presentation](#).

Results of the Chesapeake Healthy Watersheds Assessment 2.0 (CHWA 2.0) – Sarah McDonald, USGS

Sarah McDonald gave a presentation on the newly released CHWA 2.0 and talked about the functionality of the CHWA 2.0 tool. The visualization tool should be out by September.

Sarah reviewed the goals of the CHWA2.0 project: monitor change, identify vulnerability metrics that may help with early warning, support cross-connections to other CBP efforts, and create a visualization tool for users to access data for personal/jurisdictional needs.

Sarah then talked about how the workflow differs from 1.0 to 2.0. The CHWA2.0 used unique metrics as predictors in the random forest model to assess watershed health. While 1.0 combined metrics into an index of watershed health.

Chessie BIBI was used to evaluate the predictive ability of watershed metrics to predict watershed health. Chessie BIBI is a Standardized, continuous biological index score from 0 to 100 and a categorical score ranging from very poor to excellent. It is based on resampled diversity and species richness metrics driven by the sampled data for 1st-4th order streams at the 1:100k scale.

The overall accuracy is 0.59, with a Cohen's Kappa of 0.38 (fair agreement). Sarah talked about how the confusion matrix and ROC curves show that the largest confusion is the fair class being predicted as good, followed by fair being predicted as poor.

The results of this assessment show that the watershed is predicted to be 65% good and fair. Within state-identified healthy watersheds, the model predicted 80% good and fair.

Sarah then talked about metric importance and reviewed the top 5 most important metrics:

- % Tree Cover with Unmanaged Understory 2017/18 Watershed (% forest in the upstream watershed)
- % Natural Land in Riparian 2017/18 Watershed (% forest, wetlands, and succession in the upstream watershed)
- % Impervious Cover 2017/18 Watershed (% roads, structures, parking lots, etc. in the upstream watershed)
- Housing Unit Density 2020 Watershed (housing units per area in the upstream watershed)
- Road Density Watershed (road area per total area in the upstream watershed)

The random forest model measures metric importance by calculating how effective the metric is at reducing uncertainty when creating decision trees within the random forest. Over 100 metrics have been compiled into CHWA 2.0, 60 of which were included in the model as predictors. It was noted that these metrics take into account upstream watershed conditions. Meaning the watersheds upstream also have an impact on their health.

Sarah then showed folks around the draft visualization tool and walked through an example question a person may ask and use the tool to answer. Once the tool is available, GIT members will be asked to use the tool and provide feedback.

Some next steps include adding new USGS metrics, writing a journal article on the assessment, digging more into which metrics are most useful in predicting watershed health, and then incorporating visualization tool feedback.

Discussion

Cassie Davis (chat): This is very impressive! I appreciate the ability to generate a report of the catchment. Would it be possible to indicate in the report what drove the prediction to be good, fair, or poor? Maybe a color code?

Sarah McDonald: This is a need that has been identified that will hopefully be addressed in the paper and something that the group is exploring.

Kristin Saunders (chat): Are we considering how we might benefit from jurisdictions using this assessment in tandem with CAST to inform decisions?

Peter Claggett: The CAST team has attempted to incorporate co-benefits. This tool could be used in the future to inform the co-benefits. This would be something for phase 7, which is expected to come in 2028.

Peter Claggett: The tool is the Hallmark of the HWGIT. It is really important that it is useful! We want people to use this tool to try to understand it and be prepared to tell us if this would be used to inform decisions. If it is not informing decisions, we need to understand the why and what.

A more detailed how-to video will be shared. Jeff noted that in the next meeting, we will be talking about this, getting feedback from jurisdictions, and asking, "how would you use it for jurisdiction?"

Jason Dubow: A standard presentation for local governments would be useful. If that's not possible, what are other ways to get this out to our counties and municipalities? Is there a way to ensure this gets out to those who need it?

Jeff Learner: The Local Government Advisory Committee (LGAC) is meeting at the end of September; maybe we could present a draft standard presentation for them and get feedback. The Protect Local Waterways website is a good place for something like this to live.

Peter Claggett: As we go through the next year, communicating and understanding use cases is important. We want to build presentations that are pertinent to key audiences.

Cassie Davis (Chat): The Soil and Water Conservation Districts in NY may also be interested in a webinar on this, especially with grant funding opportunities.

Steve Epting: How did you feel about the .59 performance? Are you seeing better performance in different parts of the watershed?

Sarah McDonald: .7 is what other projects at this scale are reporting. We know that some metrics we used didn't exist for the whole watershed. We want to dig in more and do the next step of asking and answering questions (like this one); restricting the data will also impact this value.

Lori Maloney (chat): Along Cassandra's comment: How does this inform funding mechanisms and priorities? (I can imagine tie-ins but am not aware of how you already communicate to NFWF and state-level programs, etc)

Jeff Lerner: We could have a potential detailed conversation on mechanisms and properties for this tool in the fall.

Action: Explore the CHWA 2.0 application in September and provide formal feedback at the October meeting about the functionality of the application and whether or not you expect it will be used to inform state, local, or NGO decisions.

Chesapeake Bay Program's Land Use Strategy: Draft- Peter Claggett, USGS

Peter reviewed historic CBP concerns about the effects of growth and development. The Partnership has tried to address growth differently since the 1980s, with the 2000 agreement being the most ambitious and aggressive in reducing the rate of harmful sprawl. The Bay of the Future will not be like the Bay of the Past. The big question is how do we synergistically accommodate development and population growth with things like climate change? Peter then went on to talk about some of the accomplishments we have made in the world of growth and development:

- Reports (e.g., 2003 Tax Policy Study and state-specific derivative reports)
- Workshops (e.g., Mason-Dixon Summit, Alternative Futures to Account for Growth)

- Models (Valuing land conservation through alternative future land use scenarios)
- Tools (Conservation Land Use Policy Toolkit, Chesapeake Healthy Watersheds Assessment)
- Demonstration Projects (Healthy Watersheds Forest Retention Project)
- Data (Chesapeake Bay Land Cover Data Series, High-resolution Land Use/Land Cover)
- Legislation (Chesapeake Clean Water and Ecosystem Restoration Act (S. 1816), MD Forest Conservation Act, 2023)

Peter then posed the question: “Why do we need a new strategy?” and walked through his thought process of why he thinks we need one:

- Former strategies have included objectives outside the control and authority of most CBP state and federal partners.
- Past efforts to address growth and development have lacked resources and commitment to follow up and implement report and workshop recommendations.
- Past efforts have lacked local relevance and effective communication with local planners and decision-makers.

Not everything is a failure. There are some things that the partnership has gotten right and should continue.

- Commitment to mapping and monitoring land use change at high spatial, temporal, and categorical resolution.
- Quantification of the impacts of past, present, and future changes in land use on water quality, watershed health, and communities.
- Active engagement from state and local governments in the review and application of data and information.

While we have gotten some things correct, there is still a need for change. Some of those changes include:

- Relevance to local government and community needs and decisions.
- Effective communication through focused messaging and timely delivery of relevant information to decision-makers from trusted sources.
- Engagement of more diverse groups and organizations.
- Coordination across outcomes to address CBP and locally relevant needs.

Peter noted that he is not proposing a new strategy, but rather, he is documenting why we need a new strategy. Peter then talked about if we were writing a new strategy, might we include:

1. Monitor land use/land cover change at high spatial, temporal, and categorical resolution.
2. Communicate land-use characteristics and change as they relate to environmental metrics and other CBP outcomes (e.g., ecosystem services, healthy watersheds, DEIJ, urban heat island, climate resiliency, public access)
 - a. Consider relevance to additional issues: carbon sequestration and renewable energy production
3. Update and maintain land change forecasts and alternative future scenarios to quantify and value the benefits of infill and redevelopment, land conservation, and growth management and to inform state and federal policymakers and the public;

4. Package and communicate land-use characteristics and change to local governments and communities as actionable information (e.g., Tree Cover Status and Change Fact Sheets);
5. Utilize local and state organizations and NGO's as designated translators and trusted sources to communicate information to decision-makers at the right time and in the right format;
6. Solicit public participation to improve the accuracy and local relevance of the data and increase awareness and interest in local land use issues.

This presentation and document are both good background for conversations with jurisdictions that the HWGIT will be having and the Beyond 2025 discussion that are happening within the partnership.

Action: The HWGIT will be asked to provide feedback on what should be included in this strategy and think about how this can be used to influence GIT Funding projects.

Discussion

Jason Dubow (chat): My personal opinion is that we're at the point where we need to move beyond just incentives and need more land use mandates from the states in the watershed, e.g., prohibit major residential subdivisions in certain areas, in order to better control the types of development that can happen within local jurisdictions. Maryland will grow by about 800,000 people within the next 25 years - equivalent to a new city of Seattle. Thoughts?

There were no comments from the group, and Jason commented that this topic is very politically charged and understands why folks don't want to speak up.

Peter Claggett: Effective strategy has to be jurisdiction-specific. We need commitments from jurisdictions, and we need real accountability. We need quantitative commitments.

Jeff Lerner: Would the tools at our disposal give us the ability to start putting together some more quantifiable goals? We know the most cost-effective way to protect and conserve land is to do it before it is degraded. This land use planning process is another tool we can use, and this strategy gets at that, but then how do we get people to use this information to guide them? Is this about targeted outreach? Does it go beyond that? and are we quantifying commitments to how we use local land use tools to protect parts of our watershed that are still intact? This is what we would like to talk about with jurisdictions.

Cassie Davis: In NY, the Department of State has created model local laws in regard to outcomes related to climate change. Some of those laws include the management of flood plans and the development of stormwater control measures. But since NY is a home rule state, municipalities can create their own laws and regulations. One way that the GIT could be helpful is to help create model local laws that could be applied to municipalities. This will give them a starting point.

Lori Maloney(chat): Reaching way out of my lane here, but... the challenge of controlling growth in specific watersheds will get harder. Only poised to be more challenging with the lack of adequate housing for the US and this area and more pressure for detached housing. Multifamily is needed, too but it is less desirable in many places. A growth policy will be important.

Kristin Saunders: This might not be the place to ask this question, and it might want to get asked in the jurisdiction-specific meetings, but what is the appetite for tackling this right now? Traditionally, jurisdictions have wanted to avoid getting involved in land use decisions as they see it as something

more appropriately dealt with at the local level. It might be worth the partnership's time to support creating state-specific land use strategy plans, where states can make tangible commitments, much like the buffer and wetlands plans.

Jeff Learner: Technical support to local governments from watershed groups where they have helped develop local ordinances, setback buffers, etc., on streams and helping to secure money for direct land acquisition have resulted in hundreds of miles of additional protection along some stream corridors.

Andrew Szwak (chat): I'll second Jeff's comment about tapping more locally-focused NGOs - land trusts, watershed groups, friends groups, etc. - to provide targeted support to local governments. It is a very effective model in New Jersey and some Midwest states that has real potential here. (Although NGOs don't work for free and need serious support to do this work.)

Lori Maloney: Has any visualization been done that shows what the land would look like if it had not done any of the work over the last 30 years?

Peter Claggett: we have not retroactively looked at the past, but it is something that can be done. We have seen reductions even with massive change and population growth. It could be beneficial for communication.

Jason Dubow (chat): Or how much further along would we be with the Bay restoration effort if we had done more to prevent sprawl?

Steve Epting (chat): A lot of these examples are dated but may serve as a starting point for developing model ordinances: <https://www.epa.gov/nps/urban-runoff-model-ordinances-prevent-and-control-nonpoint-source-pollution>

Reaching and Beyond 2025 - Jeff Learner, EPA

Jeff discussed the Executive Council (EC) charge, which asked the Bay Program to assess progress and set expectations for reaching 2025 based on existing outcome targets. The EC also asked for recommendations for the program's future beyond 2025. Jeff noted that the draft report titled "Charting a Course to 2025" was released in July, which assesses each of the 31 outcomes. Some outcomes of where we are not meeting the goals set and are important to the HWGITs include forest buffers, wetlands, climate change, and environmental justice. This report includes an assessment of 31 different outcomes.

Jeff noted that the Reaching 2025 report shows that we are progressing in meeting the outcome for land protection, while the outlook for protecting healthy watersheds is uncertain. As our tools and science improve, we will have a clearer picture of what our watersheds actually look like.

The Beyond 2025 conversation is just getting started. A steering committee with representatives from jurisdictions, federal partners, and goal teams has been formed. They have begun to explore topics for the future. The steering committee is divided into temporary workgroups to identify evaluation questions, which will then lead to focus groups and interviews facilitated by a contractor ERG.

Jeff posed some questions to the group:

- What role do you see healthy watersheds playing in the future of this program?
- What role do you see for our tools and the work that we've done?

- What role do you see for land conservation going forward?
- What future goals do you think we should be setting?

Action: The HWGIT will be asked to provide feedback on the efforts.

Discussion

Andrew Szwak: We have heard from land trusts that they want to do more restoration work, such as implementing buffers. However, there is a reluctance to go forward with the work without a complementary, permanent protection mechanism to protect all that good work they've done to restore. So I think there could be an opportunity to articulate the sort of marriage of the land protection tools that we've used traditionally and some of the restoration tools in a way that creates that permanent canvas of protected, restored areas that contribute to the water quality goals.

Jeff Lerner: Strategic stewardship and restoration work is something we have talked about as a group. Understanding tipping points and what watersheds could use a little boost to stay healthy is something that we could examine further.

Jason Dubow: Will there be a future date against which you'll consider decisions? For example, 2050? Having a date could be useful for things like the Chesapeake Bay land change mode to look at possible different future scenarios.

Jeff Lerner: so far, there is yet to be a date as we have yet to agree on a new watershed agreement. We have talked with folks at DoD who are doing resiliency planning and basing their stuff off 2100, so that might be a date to consider.

Kristin Saunders (chat): The climate estimates are looking at scenarios for 2030 and 2050. We may want to align with the same timescales and perhaps even further out.

Peter Claggett: A new Bay agreement would probably go beyond 2030. A timeframe for a new agreement will impact what is done. There is an ecosystem response to reductions, which takes longer than just water quality response. I have been going to these Beyond 2025 conversations, and there seem to be two sides: one is more authoritarian and punitive and gets people to do what they said they would do. The other is broader, focusing on being more flexible with jurisdictions, so it's not just the reduction of nutrients and sediment that is being met, but it's also doing work to achieve many of the other outcomes.

Kristin Saunders (chat): And STAC has been encouraging us to consider how long we expect an ecosystem response to any intervention (as Peter just said) so we want to be thinking about response and lag times when we set our timescales. Of course, the faster we conserve what we have, the less likely it is to degrade so maybe we need to give ourselves less time.

Kristin: Is it your sense that the Beyond 2025 steering committee is going to be the place where these conversations start to happen? Or is it going to be divided up among some different subcommittees or working committees within the steering committee? It sounds like the Beyond 2025 flight path is not super clear.

Jeff: We have divided ourselves into working groups to address some evaluation questions for ERG. But that is not permanent and we are still trying to figure out what we want to look like. ERG will help with this as they dig into the questions and do interviews.