

5/18/26 Black Earth Creek Groundwater Study Follow-up Meeting Notes

Attendees

- CARPC: Melissa Michaud, Nick Bower
- USGS: Nic Buer, Martha Nielsen, Steve Westernbroek, Nic Corson-Dorsch, Andrew Leaf, Randy Hunt
- Dane County: Kyle Minks, James Brodzeller
- BECWA: John Donaldson

Meeting Purpose

The group convened to discuss next steps for evaluating hydrologic and water-quality impacts related to the proposed Marchstone development near Cross Plains. The intent is to balance:

- immediate, development-specific questions from stakeholders
- longer-term needs for a refreshed watershed-scale tool for Dane County and partners

Participants emphasized that the modeling effort is not regulatory in nature but is meant to address stakeholder concerns and clarify potential impacts on Black Earth Creek and the Festge Springs complex.

Discussion

Two-phase approach

Phase 1 (“easy path”)

- Use existing models (USGS 2016 Black Earth Creek GSFLOW model and/or the 2016 Dane County groundwater model) without altering their structure.
- Run particle tracking to delineate capture zones for Fescue Springs and nearby municipal wells.
- Use those results to assess whether the proposed development lies within contributing areas.
- Provide general statements about expected directionality of impacts (e.g., reduction in baseflow if recharge decreases).

- Could potentially be completed relatively quickly if agency capacity allows.

Phase 2 (“hard path”)

- A full or partial update/recalibration of the 2016 GSFLOW model using:
 - 10+ years of new monitoring data (discharge, temperature, conductivity, water quality)
 - New geological data (e.g., passive seismic)
 - Updated climate forcings and current code base
- This phase is estimated to cost several hundred thousand dollars (possibly up to ~\$500k) and would serve long-term countywide planning needs.
- Needs broad stakeholder partnerships and funding.

Clarifying watershed extent

Participants agreed the study should consider the entire HUC-10 watershed rather than only the “Upper Black Earth Creek,” especially because Cross Plains is not fully within that upper subwatershed.

Technical notes about the existing model

- The GSFLOW model simulates groundwater, surface water, and includes an SMTemp module for stream temperature.
- The model performs best downstream (near Black Earth). Upstream reaches and the spring complex east of Cross Plains are less precise due to complex geology and historical lack of data. Data acquired for that area in recent years through USGS monitoring could be used to update the model.
- Updating the model would improve representation of:
 - Festge Springs
 - Upstream low-flow conditions
 - Interactions with stormwater outfalls
- Updating is technically straightforward, but documentation requirements make it time- and cost-intensive.

Water quality considerations

- Temperature is the most feasible water-quality parameter to assess with available modeling tools.
- Thermal impacts are primarily driven by stormwater from impervious surfaces (parking lots, roads) rather than single-family residential areas.

- Other constituents (e.g., chlorides, nutrients) are more challenging and would require additional data/analysis.

Literature review needs

- A collaboratively developed literature/resource inventory is needed to determine how many stakeholder questions can be answered without new modeling.
- Historic datasets and past initiatives (e.g., the Water Quality Corridor task force 20 years ago) may contain relevant findings.

Coordination with WGNHS

- USGS and WGNHS will discuss what modeling support the survey/s can still provide.
- Some stakeholders (e.g., Dave Hart, Ken Bradbury) may still be available informally due to past involvement.

Funding and partnership expectations

- Any USGS project will require local cost-share.
- The previous watershed model was successful because many municipalities and DNR were contributors—group suggested revisiting this model of shared ownership.
- Amendment of an existing JFA might simplify contracting.

Next Steps

- USGS (Martha, Randy, others) to confer internally and with WGNHS about:
 - feasibility of Phase 1 model runs
 - timeline and staff availability
- CARPC (Nick, Melissa) to continue refining the work plan, especially the literature review component.
- Check in with USGS within the next couple of weeks (Martha has upcoming leave in June).
- Stakeholders to track down specific past documents, especially the Water Quality Corridor report.