

Collaborative Adaptive Management (CAM) Progress Report
Stakeholder Committee
January 1, 2024– December 31, 2024

Committee Members

Jodi Harper, EPA CAM Facilitator

Members	Representing
Betsy Peters	City of Columbia
Justin Aldred	Boone County Commission
Jon White	University of Missouri
Tim Rielly	Missouri Department of Natural Resources
	Chamber of Commerce
Leanne Tippet Mosby	“Smart Growth” Perspective
Susan Hart	Builder/Developer
	Columbia School Board
Dee Dokken	Sierra Club
Diane Oerly	Stream Teams
Jeanine Pagan	Property Owner
Scott Hamilton	Property Owner
Jeff DeShon	Soil & Water Conservation Board
Rob Wolverton	Large Scale Commercial Representative
	Agricultural Community

In 2011 the U.S. Environmental Protection Agency (EPA) established the Hinkson Creek TMDL calling for a substantial reduction in peak flow for specified design storm events. An alternate plan was negotiated in 2012 among the EPA, Missouri Department of Natural Resources (MDNR), Boone County, the City of Columbia, and the University of Missouri which involved Collaborative Adaptive Management (CAM.) “Collaborative adaptive management is a science-driven, stakeholder-based process for decision-making while dealing with the scientific unknowns inherent in many physical and biological systems. It uses an iterative process to make changes and then to determine the effect of those changes.”

The EPA provides a facilitator, MDNR provided three years of testing and participates in CAM committees, and the local entities share costs and provide support for the CAM committees. The standing committees are Stakeholder Committee, Action Team, and Science Team. The stakeholders were selected to represent a broad spectrum of local interests who make recommendations to Boone County, the City of Columbia, and the University of Missouri. The Action Team provides professionals associated with Boone County, the City of Columbia, the University of Missouri, Boone County Regional Sewer District, and Missouri Department of

Transportation who provide support to the Stakeholder Committee. The Science Team members are volunteer scientists and a stormwater engineer. This team makes recommendations to the stakeholders about projects to learn more about Hinkson Creek and ways to improve its water quality. To date, Stakeholder Committee recommendations have been based on recommendations from the Science and Action Teams.

The goal of the CAM process is to improve the water quality of Hinkson Creek so it can be removed from an impaired status. Hinkson Creek will continue to be categorized as impaired until the overall percentage of MSCI scores greater than 16 meets Missouri's Listing Methodology definition of an unimpaired water. This determination incorporates all the macroinvertebrate data collected from Hinkson Creek. As more and more projects are implemented in the watershed, DNR will target periodic future data collection, then analyze the data to determine if the instream effects from these projects have reached the point where more recent data indicates attainment. As an aside, dissolving CAM would reinstate the EPA TMDL process.

The following is a summary of the CAM Stakeholder Committee activities for 2024 with appropriate online links. The CAM Stakeholder Committee met three (3) times. Minutes exist for these meetings and can be found at <http://www.helpthehinkson.org/CAMStakeholders.asp>.

- I. Presentations and Reports
 - a. David Carani and Lacey Hirschvogel, HDR. Columbia's Wastewater and Stormwater Integrated Management Plan presentation. December 10, 2024.
- II. Publications
 - a. Hinkson Creek: Collaborative Adaptive Management/Riparian Corridor Restoration brochure. March 2024
- III. Field Trips and Special Meetings
 - a. East Campus Neighborhood Riparian Corridor Workshop on May 18, 2024 (See IV.a. below)
- IV. Riparian Sub-Committee met eight (8) times in 2024. Minutes are at: <http://www.helpthehinkson.org/RiparianSub-committee.asp>
 - a. East Campus Neighborhood Riparian Corridor Workshop was held May 18, 2024. The subcommittee partnered with the US Fish and Wildlife Service to host a workshop for residents in the East Campus neighborhood. The residents looked at some yards that had done invasive species removal, the park, and discussed various aspects of riparian corridor maintenance and water quality benefits.
 - b. Grindstone Nature Area Riparian Corridor Restoration – City of Columbia Parks and Recreation has been working with the subcommittee to do a small riparian corridor restoration. The City has provided a tentative site plan. The anticipated restoration will take place in Spring 2025. Signage discussing the importance of riparian corridor is also planned.

V. Recommendations and Actions

a. Actions:

- i. USGS Comprehensive Sampling – This project was approved for funding in 2021. The United States Geological Survey/Columbia Environmental Research Center (USGS/CERC) collected water and sediment samples from Hinkson Creek and major tributaries in the spring and fall of 2022. Samples were analyzed for the presence of various chemical compounds that may be contributing to the impairment of aquatic life communities in Hinkson Creek in 2023. A full report is expected in 2025.
- ii. Synoptic Sampling – Sampling began in 2019. Funding was approved in 2019 to continue sampling for two (2) additional years. Five (5) events were completed in 2021. Two (2) events were completed in 2022. Dr. Argerich's PhD student is analyzing the data collected and will provide a presentation to Stakeholders once completed.
- iii. Lincoln University Gauging Stations – Dr. Shawn Zeiger installed stage samplers at Dr. Hubbard's old gauging station sites along Hinkson Creek in 2021. In 2024, Dr. Zeiger turned these sites over to Dr. Argerich, University of Missouri. These sites have been worked into the Additional Hinkson Creek Surface Water Sampling proposal.
- iv. Chloride Task Force - This task force was created to analyze current salt usage and application methods in the watershed; recommend practices, policies, and incentives for applying salt wisely; and explore other deicing alternatives for sodium chloride. A final report has been submitted. The Chloride Task Force met one (1) time in 2024.
- v. Continuous Water Quality Monitoring – This project was approved for funding in 2022 to perform continuous water level, water temperature and specific conductance monitoring at six (6) sites along Hinkson Creek and its tributaries. Monitoring equipment was installed in the fall of 2023 and will continue for three (3) years.
- vi. Additional Hinkson Creek Surface Water Sampling – This project was approved for funding in 2024 to collect ten (10) grab samples at each of the six (6) Hinkson Creek and tributary stations established in the Continuous Water Quality Monitoring project. As part of this project, regression models will be developed for each monitoring station to predict chloride concentrations from specific conductance data collected in the Continuous Water Quality Monitoring project. Sampling will conclude in 2026.
- vii. Riparian Restoration – Grindstone Nature Area (See IV.b. above)

b. Recommendations:

- i. Stakeholder member replacement for resigned and non-active members.
- ii. Stakeholder volunteers were requested to serve on the Riparian Subcommittee.
- iii. CAM website redesign.

iv. CAM logo redesign.

c. Proposals:

- i. A motion to approve additional Hinkson Creek Surface Water Sampling was unanimously approved on September 26, 2024. [chrome-extension://efaidnbmnnnibpcajpcgiclfndmkaj/https://helpthehinkson.boonemo.gov/WebPublish/stakeholders/20240327/Water_Quality_Sampling_Proposal.pdf](https://helpthehinkson.boonemo.gov/WebPublish/stakeholders/20240327/Water_Quality_Sampling_Proposal.pdf)

VI. Macroinvertebrate Results

- a. Macroinvertebrate results through 2017 are presented in tabular form at: [2017 Hinkson Creek MSCI Table](#). The last nine test periods produced mixed results. The best results were in the Fall of 2014 (8 of 11 sites fully supporting) and Spring of 2016 (8 of 11 fully supporting). In the Fall of 2014 seven supporting sites were at stations HC 4-8 while in Spring 2016 seven supporting sites were at stations HC 1-5.5. The worst results were the Spring of 2017 (3 of 11 supporting) and the Fall of 2017 (2 of 8 supporting). Every site was fully supporting at least three times (3-6) and not fully supporting at least two times (2-6). Very dry weather probably was a factor for some of the poor results.
- b. Due to the mixed results and cost of testing, the Action Team decided not to sample for the next 1-3 years until they know where to target their sampling.
- c. The Hinkson Creek Aquatic Macroinvertebrate Data Mining Project (IV.a.i. above) introduced a Request for a Statement of Qualifications (RSQ) on March 1, 2019. A Consultant was selected in July and their findings were presented at the first Science Team meeting after the contract ended in late July 2020. Findings were presented at the All Team Meeting on April 15, 2021. The recommendation of the study is “to preserve and improve the aquatic life in Hinson Creek (to) revolve around holistic watershed management, planning, best management practice (BMP), and monitoring tools to assess performance.” An area of focus identified in the study is to address Chlorides through implementation of non-structural BMPs. A list of recommendations specific to the results of this study can be found in Section 6 of the Aquatic Macroinvertebrate Data Mining Report. The report can be found at [Hinkson Creek Aquatic Macroinvertebrate Data Mining Report](#).

2024 Appendix

The City of Columbia, Boone County, and the University of Missouri completed additional stormwater projects that were independent of CAM. Below are some of these projects.

City of Columbia

Stormwater and Sanitary Sewer Utility Work:

Stormwater:

- Ross St. Storm Sewer Extension

Sanitary Sewer:

- PCCE #29 Sunset Lane
- Court Hickory Sewer Relocation
- Annual Sanitary Sewer Rehab

University of Missouri

- A rain garden, located at the Thermal Plant.
- A stormwater detention facility at the Middlebush Farm Influenza Research Center.
- A stormwater detention facility at the South Farm Swine Research Facility.
- A stormwater detention basin as part of Phase 1 of the National Swine Research and Resource Center construction.
- Underground stormwater detention under the driveway north of the parking garage at Children's Hospital.

Boone County

- A 5-foot arch x 45-foot-long crossroad storm culvert was replaced at Low Crossings Rd.
- A 36-inch arch x 50-foot-long storm culvert was replaced at Hague Rd.
- A 24-inch arch x 38-foot-long crossroad storm culvert was replaced at Mexico Gravel Rd.
- A new crossroad storm culvert was installed on Rustic Rd.
- A 15-inch arch x 42-foot-long crossroad storm culvert was replaced at Mt. Zion Church Rd.
- A 18-inch arch x 36-foot-long crossroad storm culvert was replaced at Hecht Rd.
- Maintenance was performed on an additional 14 storm culverts in the watershed.
- Maintenance was performed on one (1) bridge in the watershed.
- Eight (8) driveway culverts were replaced in the watershed.
- One (1) new driveway culvert was installed in the watershed.