

TERM OF COMMISSION: December Session of the November Adjourned Term

PLACE OF MEETING: Boone County Government Center Commission Chambers

PRESENT WERE: Presiding Commissioner Don Stamper
District I Commissioner Karen M. Miller
District II Commissioner Linda Vogt
County Counsel John Patton
Deputy County Clerk Helen Sheehan

The meeting was called to order by the Presiding Commissioner at 1:40pm.

{Deputy’s note: There was a problem with the recording device at the time of this meeting. There is no audio tape recording of this Commission meeting.}

Subject: BearCreek Stormwater Report

Jeff Barrow, Greenbelt Coalition gave a presentation on the BearCreek Stormwater presentation. (Please see report submitted as part of the public record for more details). The report is listed on pages 628A-D.

Subject: Utility Relocation Agreement

Frank Abart stated that this is standard utility relocation agreement. He stated that the agreement is with Public Water Supply District #7 for work on Creasy Springs/Mauller Rd.

Commissioner Miller moved to approve a Utility Relocation Agreement between Boone County and Public Water Supply District #7 to relocate lines on Creasy Springs/Mauller Rd in the contract amount of \$33,400. And further authorize the Presiding Commissioner to sign the agreement.

Commissioner Vogt seconded the motion.

There was no discussion.

The motion passed 3-0. **Order 490-99**

Subject: Budget Revision and Consultants Services Agreement with Kevin Allemann

Bob Ormiston reported that the CERF retirement program required additional programming. He noted that a past employee (Information Technology) possessed the skills to aid the County with this programming and possible Y2K related problems. He also noted that a budget revision was necessary to cover the cost of the agreement.

Commissioner Stamper moved to authorize a budget revision as follows:

AMOUNT	(increasing) ACCOUNT	(decreasing) ACCOUNT
\$7500	1170-71101 Professional Services	1170-10100 Salaries & Wages

Said revision is to cover the (proposed) cost of the County’s Consultant Services Agreement with Kevin Allemann.

Commissioner Miller seconded the motion.

There was no discussion.

The motion passed 3-0. **Order 491-99**

Commissioner Miller moved to authorize a Consultant Services Agreement between Boone County and Kevin Allemann and authorize the Presiding Commissioner to sign the agreement.

Commissioner Vogt seconded the motion.

There was no discussion.

The motion passed 3-0. **Order 492-99**

Subject: Office Lease between Heartland Investments, L. L. C. and Boone County

John Patton brought this issue forward for approval.

Commissioner Vogt moved to approve an Office Lease Agreement between Heartland Investments, L. L. C. and Boone County with terms as outlined and authorize the Presiding Commissioner to sign the agreement.

Commissioner Miller seconded the motion.

There was no discussion.

The motion passed 3-0. **Order 491A-99**

Commissioner Reports

Commissioner Miller

Commissioner Miller stated that the MO Department of Natural Resources requested access to Boone Count’s GIS maps. She asked the County Commission to consider whether they wanted to handle this matter in the same way that they handled the Boone County Regional Sewer District’s use of the GIS maps.

Commissioner Vogt

Commissioner Vogt did not give reports.

Commissioner Stamper

Commissioner Stamper did not give reports.

There was no public comment.

The meeting was adjourned at 2:09pm.

Attest:

Don Stamper
Presiding Commissioner

Wendy S. Noren
Clerk of the County Commission

Karen M. Miller
District I Commissioner

Linda Vogt
District II Commissioner

BEAR CREEK STORMWATER REPORT

**Jeff Barrow, Greenbelt Coalition
December 16, 1999
Boone County Commission Meeting**

Greetings Commissioners,

Thank you for letting me speak to you today.

I represent the Greenbelt Coalition of Mid-Missouri—a not-for-profit organization made up of 18 organizations representing 2,500 households in Boone County—Our Mission is to protect open space.

Since 1997, I've been working with two other non-profit groups on a stormwater monitoring project on BearCreek. We attempted to see whether volunteers who were trained and equipped to measure water quality could successfully test storm-water in local streams.

Today, I'm going to tell you what we did not and what we found.

SLIDE 1= TITLE

This project was funded by a grant from the federal Environmental Protection Agency and administered by the Missouri Department of Natural Resources. These agencies wanted a pilot project using volunteers because many small towns can't afford the expense of monitoring or simply don't have the personnel to do it.

This project was a way to prepare for the current EPA regulations under Phase II of the Clean Water Act. These regulations focus on "non-point" pollution—that is, rainwater flushing pollutants from urban and suburban lands into river, lakes, and oceans. The regulations under Phase II also apply to small towns and urbanizing counties such as Boone.

The Missouri River Communities Network won the grant and led the project. The Network is a non-profit group with the mission of protecting and developing the Missouri River corridor.

SLIDE 2 = WATERSHED LOCATOR

Through a steering committee made up of 12 people with water-quality and storm-water expertise, the Bear Creek watershed was chosen as the study site.

SLIDE 3 = CONTOURS

Bear Creek was the perfect choice because it is contained in an area of about 10 square miles. This size of watershed meant that we could map it with available resources.

SLIDE 4 = WATERSHED DEFINITION

We took a watershed approach because we believed that water quality results from the quality of the land that surrounds it. The land that drains into a body of water is called a watershed.

SLIDE 5 - SHADED RELIEF

Another reason Bear Creek was a good choice is because it flows through a variety of landscapes. It starts in rolling prairies and ends in hills-and-hollows. The land use includes agriculture and open space; industrial and commercial sites; and both old and new residential areas.

SLIDE 6 – POPULATION DENSITIES from census

The Greenbelt Coalition worked with the University of Missouri Geography Department to develop a map of the watershed. The advanced computer-mapping class and its instructors made a GIS map. GIS stands for Geographic Information System, and each layer of data in GIS map is embedded with tons of information.

SLIDE 7 – HYDROGRAPHY – main stems of creek

SLIDE 8 - STREAM NETWORK after rain fills the intermittent branches.

SLIDE 9 - SRAHLER STREAM ORDERS

SLIDE 10 - FLOOD ZONES from FEMA maps

SLIDE 11- COLUMBIA ZONING

SLIDE 12 - BOONE COUNTY ZONING

SLIDE 13- SOILS

SLIDE 14 – SOILS BY INFILTRATION RATE

SLIDE 15 – TOXIC SITE INVENTORY,

Each dot includes the name and address of landowner and includes the particular potential pollutant on the site.

Example: Gregory Heights subdivision's sewage lagoon.

Now, the GIS maps can do more than display the land and its characteristics. It can also be used for analysis and modeling.

SLIDE 16 – DNR TECHNICIANS

For example, the senior research assistant developed a model to predict what would happen if there was a toxic spill in the headwaters of Bear Creek during a quarter-inch rain event. Based on land-cover and digital elevation models, the computer was able to show the path and the rate of the chemical in the stream system.

SLIDE 17 – FLOW PATH and INTERVALS

SLIDE 18 – ELAPSED TIME: 30 minutes

SLIDE 19 – 60 minutes (1 hour)

SLIDE 20 – 90 minutes

SLIDE 21 – 120 minutes (2 hours)

SLIDE 22 – 150 minutes

SLIDE 23 - 180 minutes (3 hours)

SLIDE 24 – 240 minutes (4 hours)

SLIDE 25 – 300 minutes (5 hours)

This model could also be done in reverse—that is if you found a contaminant in the stream, the GIS map could help determine its source.

Other useful models would include doing a “build-out” map of the watershed. This would show the location of 100-year floodplains under future conditions, and could help show high-water elevations, volumes and velocities in floodways.

SLIDE 26 – FLOOD ZONES from FEMA maps

The FEMA flood-plain maps are derived from existing conditions and do not accurately show how flooding will occur in the future. However, by predicting the future condition and characteristics of stream and its floodplain, decision-makers such as yourselves would be better informed in making land-use decisions—including locating building and roads, and sizing culverts and bridges.

In Tulsa, Oklahoma, for example, city officials have implemented a nationally recognized stormwater management policy. They deal with flooding by allowing room for rivers during high-

water events. When a river floods, the water re-establishes ownership of the land. So instead of fighting its rivers and streams, the city accommodates it.

Tulsa has determined the 100-year floodplain based on total development within the watershed. Once the floodplains are mapped, the city won't permit development to occur within this area (except for parks and trails).

SLIDE 27 – VOLUNTEERS

Now back to the Bear Creek stormwater study. Show-Me Clean Streams recruited, trained and collected data from 18 volunteers. Show-Me Clean Streams is a local coalition of stream teams in Boone County.

Volunteers ranged from city engineers and retired professionals to junior high school and high school students.

SLIDE 28 – VOLUNTEER TRAINING

1. First, we learned you should recruit more volunteers than you need to account for attrition—move away or get other interest.

- High school students, good
- Retired people best, flexible schedule
- Junior high, not good

SLIDE 29 – ACQUATIC SAMPLING

Second, the timing of training is important

- Summer's not good, students are out of school and working; vacations
- Need water in creeks, and summer is the dry season for Missouri creeks
- Volunteers need to get accustomed to testing

SLIDE 30 – ACID TEST

Problems with stormwater (as opposed to base flows)

- Dangerous conditions during high-water
- Hard to sample due to high-water
- Can't schedule it

SLIDE 31 – SAMPLING SITES

We chose our sampling sites to get test water from several land uses:

- 1 - Upstream, rural site
- 2 - Upstream, industrial site
- 3 - New developing subdivision
- 4 - Older, established neighborhood
- 5 - Commercial area
- 6 - Downstream combination of all sites

SLIDE 32 – SAMPLING PARAMETERS

Chemical// Physical// Biological

SLIDE 33 – ORGANIZING SAMPLES

Lessons of the pilot project:

It's important to have a Quality Assurance Plan

It's crucial to have equipment for volunteers

Volunteers need a year to train and get used to routine of testing

SLIDE 34 – ON-SITE TESTING

A coordinator and quality-control person is needed to ensure the quality of the data and to sustain the project over time.

MOST PROBLEMS CAN BE OVERCOME with Careful Planning and Management

SLIDE 35 – SUCCESSES

#Formation of six monitoring teams

#Establishing six formal sites with stream cross-sections and depth gauges on bridge abutments

#Monitoring 18 events across all six sites over 7 months

SLIDE 36 – FINDINGS

1. Substantial algae build-up (possible cause=excess nutrients from residential lawns and landscaping)
2. High fecal coliform readings at commercial and residential sites (possible cause=pet droppings, homeless campsites, leaky sewer lines)
3. High turbidity and settleable solids, especially near developing subdivisions.
4. Low water quality ratings indicated by aquatic invertebrate sampling
5. Detection of one point-source pollution event (creamy water, but we were unable to determine the source).

SLIDE 37 – CREDITS

Finally, we successfully worked together as three separate groups with different but similar missions. This collaboration continues: We are now sharing offices and we're continuing to work on land-use and water-quality issues in Columbia and Boone County.

We hope to continue working with public officials and private citizens to improve storm-water management in our community.

SLIDE 38 – LAND-USE COLORS

Thank you for you time and attention.