Minutes of the Bonne Femme Watershed Project, Technical Advisory Team meeting, December 2, 2016

Team members in attendance: Tom Wellman, Amy Meier, Lynne Hooper, John Rustige, Lyn Woolford, Ann Koenig, Tom Ratermann, Nicki Fuemmeler, Roxie Campbell, Mike Powell, David O'Brien

The meeting was held at the Central Bank location in Ashland, Missouri. Introductions were made at the beginning of the meeting so that everyone could meet Lyn Woolford who had been unable to attend previously.

Lynne opened the meeting up for team members to discuss activities that are currently going on in the watershed. Lynne started by talking about the Stream Team Blitz that happened on October 22nd at Rock Bridge Memorial State Park. Thirty volunteers showed up at 7:00 a.m. to monitor stream sites within the park using Stream Team protocols. The down side was that having the stream monitoring activity on the same day as the park cleanup may have reduced the number of volunteers available to pick up trash in the park (only 8 volunteers stayed after the stream monitoring to clean the park, and an additional 3 volunteers helped Roxie with some invasive species removal). Lynne believes that we inspired some new Stream Team volunteers. Roxie reported stream conditions based upon macroinvertebrate sampling as follows: Gans Creek upstream near Highway 63 was fair, Gans Creek downstream was good, Little Bonne Femme was excellent, Clear Creek was fair.

Roxie passed around a picture of "geology in action" where an area of ground adjacent to Hogs Graveyard Cave recently collapsed. Roxie is concerned about the old cave gate caving in and park staff members are working on a plan to remove the old gate. A pink planarian research trip was conducted in October and 4 planarians were counted. This number seems a bit low, as numbers have been higher than that since a die-off event that occurred in 2009. The numbers of pink planarians counted on these trips are not intended as a full census but rather certain locations are surveyed for trend data over time. A bat monitoring trip is planned for the near future to follow up on the number of bats hibernating in the Devil's Icebox Cave after a serious decline last year due to white-nose syndrome.

Roxie then shifted her focus to invasive species as she has been working on invasive plant removal in the park for the last several weeks. Roxie mentioned that invasive species removal is increasingly becoming associated with water quality work, including Missouri Stream Teams activities. Roxie handed out fact sheets for several types of invasive species. Amy mentioned an article that she read that discussed deleterious effects of bush honeysuckle. Amy will share the article with the team. Roxie mentioned that the invasive species task force that she is working with is developing a ranking system for various invasive plants. Mike mentioned that the Pulling Together Initiative offers grant funds for invasive species control if the team decides to move forward with plant management as part of our water quality efforts. Mike added how difficult it is to keep ahead of bush honeysuckle invasion with volunteers rather than dedicated staff. Roxie noted that the State Parks Youth Corps will no longer be able to help with invasive species removal at Rock Bridge Memorial State Park. Amy suggested that she could get the word out for a "Honeysuckle Hack" through Missouri Stream Teams if we want to start up an invasive species

removal project in the Greater Bonne Femme Watershed. David wondered how many people in the community really understand the potential hazards of invasive species to water quality and ecosystem health. The consensus of the group was that maybe 20% (or less) of the general public understands these issues but that awareness seems to be increasing in recent years.

Ann provided an update on the Chronic Wasting Disease (CWD) mandatory deer sampling that occurred on opening weekend of deer season (November 12th and 13th). MDC staff collected lymph nodes from the deer and mailed them to a testing laboratory in Colorado. CWD is a disease that affects the deer population. In recent years there have been approximately 21 deer sampled that have the disease, including one in Cole County last year. The Missouri Department of Conservation is trying to get a better idea of where CWD is emerging in the state. It should be approximately 4 to 6 weeks after November 13th before the results come in from the lab. Amy mentioned that over 19,000 samples were collected statewide that weekend in 29 counties (at 75 stations). Overall the deer harvest went well – number were high opening weekend but then dropped off a bit the following week with the full moon and warmer temperatures – total numbers on deer harvested during the firearms season were similar to last year.

Mike mentioned that small prescribed burns are planned for the Big Sky Nature Preserve in the savannah and prairie habitats. The preserve property is about 15.34 acres, located close to where the Bonne Femme Creek empties into the Missouri River. Roxie asked whether the preserve is open to the public. Mike replied that the public may visit with permission only due to the dangerous bluff on the property and the fragility of the habitat.

The next category on the agenda was project updates. Lynne said that the water quality monitoring at Bob Lerch's 10 sites had started up again in October. Lynne learned how to test water samples for *E. coli* – a couple of the samples tested were above the EPA criteria threshold but not far. The next samples will be collected in January. The County's gauging station at Turkey Creek is ready to start up as the conduit has been run to the creek. Funds are still available for heavy metals water quality testing in the Greater Bonne Femme Watershed in 2016 if we have a suitable precipitation event. The testing locations would be Turkey Creek at Highway 63, Little Bonne Femme Creek at Woodie Proctor Road, and Bonne Femme Creek at Nashville Church Road. Tom Wellman asked if there were rain gauges associated with the stage monitoring sites and there are not at this time.

The next topic was a discussion of what regulations and ordinances we have in effect currently at various levels of government and how those mesh with our vision for the watershed. Lyn Woolford went first to talk about development in Ashland and Ashland's resource management safeguards. Lyn opened by mentioning that bat protection was a new thing to him and that Ashland had run into the issue when working on the sewer line that will run from Ashland up to Route H. In one area, they had to stop work for the season because the sewer line crossed paths with bat habitat. The area on Route H consists of 477 acres that are being developed by Larry Potterfield. Ashland officials are still unsure what will be constructed at the site although they know that this will certainly be a commercial site. Potterfield will install the sewer lines at the commercial development that will connect to the line that is being run from Ashland. To manage the increased wasteload, Ashland is in the process of planning a mechanical wastewater treatment plant. The current lagoon system is out of compliance for ammonia and the state has

agreed that the exceedance may continue for a short time while the City works toward the mechanical plant solution. Lyn expects that construction on the new plant will start in July 2017 and take approximately one year to complete. The plant will include ultraviolet treatment for *E. coli*. Several large housing developments and the Baptist Home are expected to begin construction soon as well. The Baptist Home will be built in phases. Lyn noted that there is a stream running through the Baptist Home property that will require some attention. A borehole was run under Highway 63 to connect the Baptist Home with the extended sewer system. Property near the intersection of Highway 63 and Route H (in addition to the Potterfield property) is being annexed to the City of Ashland and there may be commercial development occurring in that area. Thus far, Potterfield's Phase I plat has been approved. Ashland passed a bond issue for 7 million dollars to finance the sewer expansion (with funds contributed by Potterfield and the Baptist Home for their portion of the impact fees). Expansion of the commercial base will be good for the City of Ashland. As the population expands, the City will need to increase the police force and the number of public works employees. Ashland is in discussions with MoDOT to solve the traffic backup at Henry Clay and Broadway when 5:00 p.m. traffic comes into town from Highway 63 – Ashland will need to raise funds to deal with this issue.

A brief discussion of water quality constituents followed, including a discussion of possible sources of heavy metals in stormwater or wastewater.

Lyn mentioned that there is a stream in Ashland that has so much sediment deposition that the arch culvert under the bridge has become clogged and the stream floods the road during periods of high water – this will be remedied soon. He also said that Ashland will be calling for bids for sludge removal from the city lagoon in a few days – this should extend the life of the lagoon until the mechanical plant is up and running. Ashland plans to keep the lagoon as a backup holding basin in conjunction with the mechanical plant.

Nicki followed with a discussion of the Boone County stream buffer and stormwater ordinances. In April, 2009 the Boone County stream buffer ordinance went into effect. Streams are classified as perennial, intermittent or ephemeral. The buffer ordinance applies to all streams with a drainage area of 50 acres or more. Perennial streams (Perche Creek as an example) have a 100 foot buffer zone – inner zone 50 feet, outer zone 50 feet. The inner zone for all three stream types is to remain undisturbed except for removal of dead brush or noxious weeds, utility crossings and a few other items. For the perennial streams, the outer zone is also to remain undisturbed. Intermittent streams have a 50 foot buffer – inner zone 25 feet, outer zone 25 feet. Ephemeral streams have a 30 foot buffer – inner zone 15 feet, outer zone 15 feet. The outer zones of intermittent and ephemeral streams can be used as managed lawns (mowed) and there are other allowable uses and restrictions for both categories. Stream buffers must be shown on plats submitted by developers and are mapped on the Boone County internal zoning viewer. Roxie asked what kind of accountability landowners have for activities within the stream buffer. Nicki answered that if someone is building something on their property, then Boone County inspectors require that the property owners mark the setbacks and make sure that development does not encroach into the buffer. Investigations after the building phase is complete are complaint-driven. Tom Wellman mentioned that for the City of Columbia, which essentially has the same stream buffer ordinance, non-compliance with the ordinance is handled with a

ratcheting schedule of notices and ultimately fines. Nicki indicated that the Boone County ordinance has the same method of handling non-compliance. Neither the City nor the County has sufficient staff to monitor all properties with a stream buffer to ensure compliance with the ordinances. Properties with steeper slopes along the stream (measured from the ordinary high-water mark) may be required to have a wider buffer in the outer zone. Buffer setbacks are required for adjoining wetlands. Fertilizers and fuels must be stored at a minimum distance from streams. Tom Wellman mentioned that in the City of Columbia, soil stockpiles have to be setback from the edge of streams.

Roxie asked about regulation of sewage discharge into sinkholes. The County stormwater ordinance considers sewage entering a storm drain an illicit discharge. The County would respond to a complaint about sewage in a storm drain by working with the Health Department to verify the source of the sewage and remedy the situation. This process is complaint-driven. Tom Ratermann added that wastewater discharge into sinkholes is regulated by the Health Department. If new construction is occurring in an area with sinkholes, the Health Department requires that engineers design the on-site wastewater system. If a wastewater system were failing, the Health Department would also require that the upgraded system be engineered. Newly engineered systems are typically drip-irrigation systems, which function much better that the traditional septic system and leach-field.

The County stormwater ordinance requires a land disturbance permit for projects that disturb one acre or more of land, unless the project is occurring in an environmentally sensitive area (near a sinkhole, wetland, spring, cave, etc.) and then the threshold for disturbance is lowered to 3000 square feet. The environmentally sensitive areas are identified on the Boone County internal zoning viewer. The minimum sinkhole buffer required is 150 feet (measured from the highest point of the rim), but not to exceed 300 feet from the eye of the sinkhole. Landowners can seek a variance from these requirements. The County requires that wastewater be engineered before a landowner submits a permit application or plan for development in an environmentally sensitive area. Roxie mentioned that the Village of Pierpont is exempt from the County ordinances. This is because Pierpont is incorporated and the government there has not adopted the County ordinances. Nicki mentioned that the City of Ashland, although incorporated, contracts with the County for building inspection services. Lynne added that the County internal zoning viewer has been updated with contours showing potential sinkholes based upon LiDAR analysis – this means that we show more sinkholes than those mapped by the State of Missouri. Large developments require a geological evaluation and sinkhole assessment. Landowners with building construction projects over $20,000 are required to post a security deposit of 150% of their erosion and sediment controls – the deposit is refundable after the project is completed. Pollution prevention and control measures (materials storage, for example) are also inspected on-site. State land-disturbance permits require a 25-foot buffer around any stream, even if it does not meet the County's 50-acre drainage area requirement.

A brief discussion followed of a County abeyance requirement for landowners that is not yet in effect. If the provision is implemented, if an agricultural landowner in the County cleared land, and then sold it to a developer, the land could not be developed for 6 years. The County did not implement the provision because they are waiting for the City to adopt a similar provision so that a landowner cannot circumvent the rule by clearing the land and selling to a developer who

would then ask that the land be annexed into the City of Columbia. Tom Wellman suggested that the simplest language for the City to use would be to say that if the County has an abeyance the City cannot annex the property.

Nicki added that the County ordinances have a stormwater discharge permit provision. If stormwater runoff leaving a property will impact the separate municipal stormwater system (including road ditches or other infrastructure), the landowner must perform water quality treatment. The treatment could include tree preservation for infiltration of runoff or other post-construction best management practices (detention basins as an example). In conjunction with the stormwater treatment, the landowner is required to have a recorded maintenance agreement tied to the property. The County follows up with landowners annually with a letter requiring self-inspection and reporting of maintenance of the treatment methods. The report must include photographs of the treatment inlet, outlet, and overall best management practice.

Tom Wellman said that the City of Columbia has essentially the same ordinance for stream buffers that the County has. The City's rules for stormwater discharges are quite a bit different. The City followed the APWA model from the Kansas City, Missouri area beginning in 2007. Flood prevention detention and water quality treatment are required on new developments. Tree preservation has been required for a long time. All of these elements, including the stream buffers, work together. Tree preservation and native vegetation are strongly encouraged because they improve water quality (points are awarded, see below). An NRCS curve number is initially assigned to a piece of property and that is compared to the curve number after development. The difference between the two numbers is viewed as an "intensity of development" metric – the more intense the development is, the more water quality treatment is required. Tom said that 60% of water quality best management practices that are installed are bioretention cells (essentially rain gardens with an under drain) that do a good job cleaning the water and reducing the volume of runoff. The City awards points for the different practices that are installed, and the better job that a practice does the more points it scores. The more intense the development, the more points are required to mitigate stormwater runoff. Tom would like to see channel protection detention (in addition to water quality protection and flood prevention detention) for every development. The City's rules for redevelopment are not as stringent as those for green field development. However, with each redevelopment of a piece of property over time, the requirements are closer to those for green field development. Tom mentioned that the City of Springfield is using a different storm event for planning the size of best management practices. Springfield formerly used the same storm (NRCS, Type II) that the City of Columbia is using and that storm is not very realistic and may not be producing the best bioretention cell plans. Similar to the County, the City requires that landowners submit follow-up inspections of best management practices covered by maintenance agreements. If the follow-up is not received, the City will declare the property a nuisance and will move toward legal action. Tom said that more points are required for developments in the Bonne Femme Watershed (developer must meet a higher standard). Tom will be coming up with the City's karst area plan as a part of his annual employee evaluation next year.

David asked whether anyone had ever done a study of the cost of failing to properly manage stormwater and natural resources. A brief conversation ensued. John mentioned that a cost-benefit analysis must accompany proposed state regulations and how difficult it can be to put the

analysis together. Legislators also must consider fiscal ramifications for any changes to state statutes.

John next spoke about the role of the Department of Natural Resources (DNR) with respect to regulations. Agricultural practices such as row cropping are not regulated by DNR even though these practices likely have a significant effect on streams. DNR does offer incentives to farmers for conservation practices such as soil protection. Under the Housing Development Rule (7 homes or more), a developer has to obtain approval from the State in advance for where the wastewater from the homes is going to go. The most common (roughly 1500 per year) discharging permit issued by the State is a land disturbance permit – this is required every time someone disturbs more than an acre of land and the activity is not agriculture-related. John provided everyone with a sample land disturbance permit that contains all of the conditions. The process for obtaining a land disturbance permit is now completely electronic – even the fees can be paid electronically. This expedites the process for issuing the permit and frees up time for staff to get out to the site location. The permit requires development of a stormwater prevention plan that includes best management practices appropriate to the specific site. Instructions are given with the permit application as to what elements must be considered in preparing the permit and the stormwater prevention plan. Phasing of the development process is recommended and monitoring and inspection are required. The permit includes a maximum discharge provision – if the site is discharging more than 2.5 milliliters of sediment per liter of water, the landowner is in violation. Permittees are also told that they cannot violate water quality standards. Nicki mentioned that the County requires that a landowner have a state land disturbance permit before the County will issue a similar permit. The County will review the state permit and the stormwater management plan and make sure that these documents meet the County's requirements.