

MEETING NOTES
of the
STORMWATER STAKEHOLDER ADVISORY COMMITTEE (SSAC)
Lexington-Fayette Urban County Government (LFUCG)

Meeting: March 1, 2024
Time of Meeting: 9:07 a.m.
Location of Meeting: Phoenix Building – 3rd Floor Conference Room

Attendees:

COMMITTEE MEMBERS

Doug Burton – LFUCG Division of Engineering
Jennifer Carey – LFUCG Division of Environmental Services
Jim Conner – Cane Run Watershed At-Large
Ken Cooke – Friends of Wolf Run
Steve Garland – East Hickman Watershed At-Large
Jim Griggs – Boone Creek Watershed At-Large
Don Hill – Fayette County Neighborhood Council
Amy Sohner – Chair, Bluegrass Greensource
Russ Turpin – Wolf Run Watershed At-Large
Tom Martin – LFUCG Division of Planning (for Jim Duncan)
Jerry Weisenfluh – Kentucky River Watershed Watch

LFUCG STAFF AND REPRESENTATIVES

Denise Bullock – LFUCG Division of Water Quality
Sarah Donaldson – LFUCG Division of Environmental Services
Jason Drew – LFUCG Division of Water Quality
Jared Gabbard – LFUCG Division of Water Quality
Brian Hayes – LFUCG Division of Engineering
Gabe Hensley – LFUCG Division of Water Quality
Becky Irwin – LFUCG Division of Water Quality
Greg Lubeck – LFUCG Division of Water Quality
Frank Mabson – LFUCG Division of Water Quality
Craig Morgan – LFUCG Division of Water Quality
Jennifer Myatt – LFUCG Division of Environmental Services
Mark Sanders – LFUCG Division of Water Quality
Abby Terry – Tetra Tech, LFUCG MS4 Program Management
Richard Walker – Tetra Tech, LFUCG MS4 Program Management
Heather Wilson – LFUCG Division of Environmental Services

OTHER ATTENDEES

Jerry Davis – Friends of Wolf Run
Nathan Krebs – Stantec
Lee Moser – University of Kentucky Research Foundation
John Pike – Hickman Creek Conservancy
Andrea Drayer – University of Kentucky, KWRI
Steve Vogel – Strand Associates
Jack Wilson – NUSEC
Rachel Patton – Bluegrass Greensource
Wes Morris – BCTC
Scott Southall – ECD/West Hickman
Eileen Burk – Kentucky American Water

Opening Remarks

Amy Sohner opened the March meeting at 9:07 a.m. and asked those in attendance to introduce themselves and their organization when speaking.

Approval of 12/18/23 Minutes

Ms. Sohner asked if there were any additions or corrections to the December minutes. There were none.

A motion was made by Jennifer Carey, seconded by Russ Turpin, and carried unanimously to approve the minutes of the December 1, 2023, meeting.

UK Research Foundation Class BE Incentive Grant Steam Weed Eat Project

Lee Moser, the University of Kentucky Research Foundation, presented a PowerPoint presentation on the Class BE Incentive Grant Steam Weed Eat Project.

The PowerPoint presentation touched on the following:

The original team

UK College of Agriculture, Food and Environment

- Carmen Agouridis
- Gregg Munshaw
- Dwayne Edwards
- Ellen Crocker
- Lee Moser

UKY Arboretum

Emily Ellingson

Jesse Dahl

UK Physical Plan Division

Stacy Borden

Jerry Hart

Ritchie Katko

Mr. Moser said that the purpose of the project is to evaluate the efficacy of using steam in weed management as well as ground personnel knowledge, attitudes, and operational experiences with steam weeding to develop and pilot training materials.

Weed management is a challenging task that crosses multiple target audiences from professional grounds crews to homeowners. A common method of managing weeds is using various herbicides that can have a potential impact on water quality and human and environmental health.

Steam weeding control has been identified as far as the 1890s in agricultural settings and was commercially available starting 40 years ago. A device was mounted on or pulled behind a tractor that generated steam to be applied to undesirable weeds in various settings. It can be beneficial in organic cropping systems as an alternative to chemical weed suppression techniques. The Class BE Incentive Grant Steam Weed Eat Project allowed the team to study and look at a scaled-down version of the technology for use in an urban landscape. For this research project, the specific device tested was the Weedtechnics SW800 Saturated-Steam Weed Control Machine. It operates at 230-250 F in the machine; and 205-218 F at the point of application. It uses a diesel burner to create steam, and gas to pump steam out. The design allows shallow penetration into soil to reduce harm to microbiota and it can stimulate seed bank germination. Steam weed control may require multiple treatments, but it can help exhaust regrowth. It is safe for application near ornamentals and trees.

The PowerPoint presentation touched on the following:

Project Overview

1. Demonstration Plots (wintercreeper)
2. Demonstration Plots (ornamental beds)
3. Knowledge and Attitude Assessment (Weed Management and Water Quality)
4. User Satisfaction Survey
5. Training Materials and Pilot Workshop
6. Website Development
7. Public Involvement

Wintercreeper Management Treatments included:

- Control
- Manual removal
- Glyphosate herbicide
- Triclopyr herbicide
- Steam 1x
- Steam 2x
- Steam + herbicide

The design included the following:

1. Steam treatment at the preferred pace established by UK Grounds (2 s/ft)
2. Steam treatment at twice the exposure length of the preferred pace established UK Grounds (4s/ft)
3. Steam treatment at the preferred pace established by UK Grounds (2s) with a follow-up triclopyr treatment
4. Treatment with Round-up ®
5. Treatment with triclopyr
6. Control plots
7. Manual control plots

Summary of Analysis:

- Steam weeding is highly effective at killing wintercreeper.
- Effects were visible immediately.
- At 28 weeks post-treatment, plots that were steam weeded had almost no wintercreeper while control plots had near complete wintercreeper cover.
- No significant differences between 1x steam, 2x steam; Roundup herbicide foliar spray; Triclopyr herbicide foliar spray
- Steaming followed by herbicide or manual removal treatments were less effective at 28 weeks post-treatment.

Dr. Crocker's Summary of Analysis

- There was no serious damage of nearby steam weeding to non-treated foliage, or plants immediately adjacent to the steam weeding hood
- The percentage of healthy foliage (Lily and Taxus/Yew) did not vary much between treatments and suggests there is little danger of serious non-target damage by steam weeding. (This was not a statistical study, but an observational data).

Knowledge and Attitudes Assessment

Goal: assess background knowledge related to weed management and water quality to aid in training development.

Survey participants: UK Grounds staff and applicable LFUCG groups/divisions

- 94.11% were concerned (58.8%) or very concerned (35.29%) about the water quality of rivers, streams, ponds, and lakes in the area (n=34).
- 93.34% felt that what people do on land affects the quality of water in rivers, streams, ponds, and lakes in the area (n=33).

When asked where stormwater runoff goes, once it enters a storm drain:

- 66.67% correctly identified that in Lexington, stormwater runoff goes to the nearest river, stream, or lake (untreated) while 33.33% indicated that they thought it went to the sewage treatment plant (n=30).
- 91.66% were concerned (45.83%) or very concerned (45.83%) about their health when applying herbicides (n=24).
- 95.84% were concerned (41.67%) or very concerned (54.17%) about the health of other people when applying herbicides (n=24).
- 100% were concerned (41.67%) or very concerned (58.33) about the health of animals, fish, plants, and other parts of our ecosystem when applying herbicides (n=24).

User Satisfaction Survey

- Consisted of user responses on their perception of the steam weeder, its use, and overall usefulness as a tool for weed management on campus.
- Inherently low number of responses due to the low number of users (n=5)
- Areas where respondents used device:
 - Lawns (3/5)
 - Near flowers (1/5)
 - Near trees and shrubs (4/5)
 - Hard surfaces (1/5)

What factors do you consider before using the steam weed control unit?

- Noise, traffic, temperature, is steamer available (wait time)
- I consider the steamer functionality and my area I'm steaming
- Use of the unit in the correct way; if the unit has any flaws in it as of making sure the unit is properly working.
- Ability to schedule repeat/follow-up treatment sessions; vehicular access (truck & trailer, will it fit?); weather conditions

How concerned are you about your health when using the steam weed control unit?

- Very concerned - 0
- Concerned - 2
- Not concerned - 2

How concerned are you about the health of other people when using the steam weed control unit? n=4

- Very concerned - 0
- Concerned - 0
- Not concerned - 0

How concerned are you about the health of animals, fish, plants, and other parts of our ecosystem when using the steam weed control unit?

- Very concerned - 0
- Concerned - 1
- Not concerned - 3

How likely are you to want to continue using the steam weed control unit? n=5

- Extremely unlikely - 0
- Somewhat unlikely - 1
- Neither likely or unlikely - 1
- Somewhat likely - 1
- Extremely likely - 2

Describe any challenges or provide general feedback regarding the use of the steam weed control unit:

- Seems safe and effective
- Takes a long time to get going, and a long process to control weeds
- The lugging of the entire unit could always be easier
- Unit with trailer and water tank is difficult

Training workshop held on 6/29/22 at UK CAFÉ Good Barn Consisted of:

- Panel discussion on current issues in campus and landscape weed management, including:
- Current ornamental and landscape vegetation practices (herbicides) and interest in Steam Weeder device in addition to pesticide usage
- Stormwater issues
- Safety
- Live demonstration and introduction to the steam weeder machine and its operation and maintenance
- Sharing of results from the project trials and other uses on campus
- Q & A with presenters
- 2 hours of pesticide applicators CEUs were awarded to those that participated and needed them through KDA
- ~30 people attended; attendees from UK & LFUCG
- 71% of attendees reported that they felt this was a valuable or very valuable tool with some or many potential applications in their work
- Before training, attendees reported little knowledge of the steam weeder (1.88 on 4-point scale) or potential use scenarios (1.8 on 4-point scale)
- After training, attendees reported increased knowledge of the steam weeder (3.13 on 4-point scale) and potential use scenarios (3.13 on 4-point scale)

Public Involvement and Resources

- UK Department of Forestry and Natural Resources
- "From the Woods Today" podcast
- UK Department of Forestry and Natural Resources website

- “From the Woods Today” podcast
- Signage at demonstration plots with web links and QR codes to direct public to more information on the project
- Nov-Dec 2021 Arboretum Newsletter

Comments and questions – In response to a question from the audience, Mr. Moser replied that the operating decibel level of the machine is unknown, but ear protection is required while using it.

Russ Turpin asked if the machine was utilized at South Farm. Mr. Moser was unaware of it being used.

Mr. Turpin then asked if there were any indications that South Farm was interested in using the machine. Mr. Moser replied that he was unaware.

Ken Cooke asked about the cost of the trailer, the equipment, and the tank. Mr. Moser replied the cost is around \$12,000 with an additional \$3,500 cost in additional attachments and parts to maintain the machine.

Mr. Cooke said that the two different fuel types are gasoline for the compressor and diesel for the burner. Mr. Moser confirmed that was the case and said that each one has its potential environmental impact.

Heather Wilson asked about the Steam 1x application having better results than the Steam 2x application. Mr. Moser replied they did not know why the results were different. It could be the small sample size. It could have been something in the soil influencing the result.

Frank Mabson asked if the machine would be more effective at killing weeds if it had bristles to penetrate the ground. Mr. Moser replied that it would depend on the species of plant that is being treated. The machine could potentially disrupt the soil microorganisms further down thereby generating a negative outcome.

Eileen Burk said that this would be a great option for the Kentucky American Water Company since herbicides cannot be used at their facilities. She asked if there were any contractors currently using the machine. Mr. Moser said that this is a new concept so it could be an opportunity for a contractor, indicating he did not know of any contractors using it yet.

Frank Mabson said that this would be beneficial for areas with pavers to control vegetation. Mr. Moser replied it would be worth trying.

Russ Turpin asked what time of year the treatments and the 28-week and 60-week assessments were performed. Mr. Moser said that the treatment for Wintercreeper was performed in late fall, early winter. Mr. Moser replied that he would have to get back with Mr. Turpin on the exact dates of the treatment and assessments.

Bluegrass Greensource Incentive Grants Update

Rachel Patton, Bluegrass Greensource, Environmental Educator, presented a PowerPoint presentation on the Class B Education Stormwater Quality Projects Incentive Grants.

The PowerPoint presentation touched on the following:

Environmental Education

- Environmental Education (EE) is a subset of science education, although it is very interdisciplinary.
- The goal of EE is “to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively towards solutions of current problems and the prevention of new ones,” according to the Belgrade Charter (UNESCO, 1976, p. 2).
- Ultimately, EE seeks to develop environmentally literate citizens.
- EE is proven to have many academic, social-emotional, and physical benefits for children, especially in the early childhood years.
- Bluegrass Greensource’s professionally certified environmental educators facilitate EE with students in preschool through high school throughout the Bluegrass. Our programs center on water, ecology, waste reduction, and energy.

Ms. Patton demonstrated the Junior Nature Explore Programs with volunteers from the audience.

Preschool Outreach Programs include

- K-12 Outreach Program
- Junior Nature Explorers
 - The JNE program invites preschool teachers and students to view nature as a living classroom.
 - Students learn about water, plants, and animals through hands-on discovery.
 - Classes participate in 4 lessons at their school with Bluegrass Greensource.

In 2023 there were 29 preschool classes in Fayette County that participated in the JNE program through the help of the Lexington Stormwater Quality Incentive Grant Program. BGGS facilitated 98 JNE lessons in Fayette County, for a total of 1,131 student engagements. Teacher surveys indicated that 82% of students demonstrated more interest in nature and showed growth in relation to KY Early Childhood science standards.

The Creek Days Program connects students with nearby waterways and helps them understand their impact on water quality. Students conduct a biological assessment, chemical tests, and a habitat survey to make a claim about the water quality.

In 2023 there were 62 K-12 classes at 10 schools in Fayette County that participated in a Creek Day through the help of the Lexington Stormwater Quality Incentive Grant Program. 1,154 students participated in Creek Days.

In the fall of 2023, Bluegrass Greensource offered programming to help students celebrate Tree Week. Students calculated the benefits of trees on their campuses, identified trees, observed and modeled tree structures, planted trees, and more.

Also, in 2023 there were 28 K-12 classes at 7 schools in Fayette County that participated in Tree Week activities with BGGS. Teachers borrowed BGGS tree lessons and resource kits to use with an additional 11 classes. BGGS saw 1,294 student engagements in our Tree Week programming, thanks to a Lexington Stormwater Quality Incentive Grants Program.

Comments and questions - Russ Turpin asked if there are accessible locations for the younger people to approach creeks. Ms. Patton said that the program works with schools that are within walking distances of a creek, but for the students that are not within walking distances, BGGS is applying for funding to transport them.

John Pike asked what the student feedback was. Ms. Patton replied that the student feedback varies with the age of the student but noted they are excited and curious. The students are excited about the program because it is hands-on and interactive.

Andrea Drayer asked if the resources were available to check out for use or specifically for BGGS's use for K-12. Ms. Patton replied that the resource library is open to the public and as for the kits, BGGS does allow the public to use them. She indicated that the resource library is online, and the kits can be checked out by visiting <https://bggreensource.org/>.

Stormwater Manual (2020) and Procedures Manual (2016) Amendments

Doug Burton, Division of Engineering, presented a PowerPoint presentation on the Stormwater Manual (2020) and Procedures Manual (2016) Amendments.

Mr. Burton explained that the Composite Drainage Plan is a plan intended to aid homebuilders and commercial/industrial builders in preparing their sites so that overland flow is directed from an area to a conveyance system.

The PowerPoint presentation touched on the following:

Issues that can lead to drainage problems resulting in flooding:

- No ground elevations
- Requires coordination among homebuilders
- Timing
- Post-occupancy construction
 - Fences, sheds, planting beds, utilities, etc.

Proposed Solution

- Developer/Developer's Engineer
 - Develop the Final Composite Drainage Plan with the record drawings of the roads, sanitary sewers, and storm sewers.
 - Critical flow point elevations
 - The critical flow points will be (1) the rear corners of each lot in the subdivision, (2) the flow line elevation of swales where they cross property lines, and (3) the elevation of surface inlets.
 - Revise and republish the Composite Drainage Plan after the plat is recorded to ensure proper drainage in the subdivision.
- Builder
 - Submit a copy of the Composite Drainage Plan with each lot.
 - Submit to the Division of Engineering a survey/certification from a Registered Land Surveyor stating that the elevations of the critical flow points are within 4" of the critical flow points on the Engineer's Final Composite Drainage Plan.
- Requirements will be in effect for Development Plans submitted after January 1, 2024.

Comments and questions - Scott Southall asked if the 4-inch requirement was flexible (plus or minus). Mr. Burton replied yes, and explained how the four-inch requirement was determined. He noted that Engineer's judgment would need to be used based on the area's slope and the size of the lot.

Russ Turpin commented that working on the downstream end for some developments, as stormwater runoff increases, there is parallel damage to the waterways.

In looking at the slide of the standing water at the back of the houses, there is a flat horizon, no elevation changes or trees planted and perhaps the soil is compacted. He said that elevations were mentioned in the presentation but the ability to design some properties to have greater capacity in reducing the runoff was not mentioned. Increasing infiltration or increasing the capacity of the soil could mitigate small flows, not flooding, but small flows. Also having the option of a green infrastructure could play a key role.

Mr. Burton replied that it could be an option but in the development community, it depends on the cost and whether or not it will make them money or not.

Mr. Turpin asked if LFUCG would be interested in looking at the drainage in a more comprehensive way.

Mr. Burton replied that LFUCG are the regulators, not the market drivers. The city does give the developers the option to do things better than just the basics, but the market establishes what is or what is not viable. As regulators, there is a fine line between being a regulator and an advocate.

In looking at the slide with the standing water, Steve Garland said that not knowing the location of bedrock until it was probed would have an impact on the slope in that area.

Mr. Burton agreed and said that when the minimum slope is used the 4-inch requirement can become tricky, which is why it was difficult to pinpoint that number.

Frank Mabson said that the Stormwater Incentive Grants Program are starting to see more Class A Neighborhood applications due to flooding issues, especially in the Ellerslie development. The Water Quality Fees Board has asked if the flooding problem was an engineering problem, a developer problem, a builder problem or related to other issues.

Mr. Burton replied that it is all the above. Regulations are not a fixed thing and it has changed since the Ellerslie Neighborhood was developed. Another thing to ask is whether the developer and builder did a poor job of developing the area. Everyone can be blamed but the regulations can be changed to address future developments. The drainage problems in older areas will not be fixed, but future developments can be designed to address drainage problems, which is the goal.

Heather Wilson asked if a certain percentage of infiltration could be added to the regulations. Mr. Burton indicated that the Planning Commission, the developers, and staff would need to agree before anything is done. It's not that it can't be done but it would be an uphill battle.

Ken Cooke said relating to the hydrology requirements, the new development discharge value is not supposed to change from the existing value.

Mr. Burton said that ideally if it does then it is accounted for through the facilities downstream.

Mr. Cooke said that the developer can use infiltration or some other storage system to recapture the water.

Mr. Cooke indicated that he was impressed with the regulatory development process and how the different parties are brought together to update the Stormwater Manual. There has not been a comprehensive update since 2020. He asked if the Ordinance must be changed to update the Stormwater Manual or if was it done through the existing authority.

Mr. Burton replied it was updated under the existing authority.

Steve Garland explained that, as a development engineer, the water quality volume and runoff reduction volume already exist in the current standards/procedures, and credit can be given for the infiltration practices.

Potential Topics for the Next Meeting

Ken Cooke requested a meet and greet session with the new stormwater coordinator.

Announcements

- March 2nd, 9th, 16th, and 24th - The City of Lexington is hosting its third round of home composting workshops. There will be two-hour presentations that will cover what can be composted; different ways to home compost; basic troubleshooting, plus hands-on demonstrations.
- March 12th - Solarize Lexington program kick-off
- March 16th – Bluegrass Greensource Rain Garden and Riparian Buffer Workshop.
- March 16th-23rd - Water Week events will be in-person, self-guided, or virtual anytime during the week.
- We're keeping the Water Week event submission form open until Monday, so if you haven't submitted your event yet, you have a couple of extra days.
- If your organization is interested in tabling at Reforest the Bluegrass on April 13, please make sure you register as an exhibitor. If you didn't receive the exhibitor email and you're interested, email livegreen@lexingtonky.gov
- March 18th – Stormwater Incentive Grant Q&A is open to the public and will be held over Zoom at 6 PM
- March 20th – Stormwater Incentive Grant Q&A is open to the public and will be held over Zoom at 1 PM
- May 3rd – FY25 Class A Neighborhood and Class B Education Stormwater Quality Projects Incentive Grants application deadline is 4 PM, Friday.
- What's New with the Stormwater Quality Projects Incentive Grants?
- April 10th - Kentucky's 4th annual Sustainability Summit will be at the University of Kentucky Gatton Student Center.
- Bluegrass Greensource's inaugural Green Business Innovation Forum will allow businesses big and small to spend a day diving deep into the essential topics of renewable energy, waste management, and sustainability strategy.
- April 1st - a text amendment to the Zoning Ordinance will be filed on tree protection and landscaping.

Adjournment

The meeting concluded at 10:38 a.m.