

# MINUTES OF THE STORMWATER MANAGEMENT COMMITTEE

Meeting of: Wednesday, April 30, 2014  
Leawood City Hall, Main Conference Room

## COMMITTEE MEMBERS PRESENT:

Jim Rawlings, CHAIR and Councilmember Ward 2  
Julie Cain, Councilmember Ward 4  
Pat Dunn  
Debra Filla, Councilmember Ward 1  
John Kahl  
Carole Lechevin  
Thomas Robinett, VICE CHAIR and Councilmember Ward 3  
Curt Talcott

## COMMITTEE MEMBERS ABSENT:

Skip Johnson  
Alec Weinberg

## STAFF PRESENT:

Joe Johnson,  
David Ley  
Julie Stasi

- Chair Rawlings called the meeting to order at 7:30 AM.  
Introductions of members.
- FIRST ITEM OF BUSINESS: Previous Meeting Minutes  
Carole Lechevin Motioned to approve the Minutes from January 29, 2014.  
Debra Filla seconded the Motion; all attending members in favor.  
Motion passed.

There were no assignments to the Stormwater Management Committee this month. Committee Members chose to use this meeting time to listen to a Guest Speaker. Chair Rawlings asked Carole Lechevin to introduce the Guest Speaker for today's presentation.

- SECOND ITEM: Item of Interest--Guest Speaker: Lisa Treese, RLA, LEED<sup>®</sup>, AP  
Senior Landscape Architect  
Kansas City Water Services

Carole Lechevin introduced Ms. Treese and advised Lisa is an employee of Kansas City Water Services. Lisa is a Landscape Architect. Carole advised she and Lisa know each other from what is now known as Verio (what used to be Patty Banks & Associates). Ms. Treese is a K-State Grad and is very knowledgeable about sustainability, and stormwater management practices.

Lisa Treese-Thank you for having me today to speak with you. Lisa said she has been with the Water Services Department for a year and a half. Lisa's role is to help advise on Capital Projects as a green infrastructure resource. Lisa helps with vegetation questions. One of her roles is to build connections in efforts to advance the general knowledge level in the City; building best practices in efforts to make

the department more efficient. Kansas City has a federal consent decree to reduce their combined sewer overflow. Ms. Treese manages green infrastructure, pilot projects and the maintenance contract and does general trouble shooting. Their Department provides water, wastewater and stormsewer services. Now they also have leaf and brush pick up. Every year they get a few new things because they generate water rates and then those projects are transferred to their office to coordinate. They do the household hazardous waste program. Their two major drivers that make them take their green infrastructure very seriously are their MS4 Permits; general non-point source discharge elimination goals and also their Overflow Program Consent Decree.

Carole Lechevin-Advised in Johnson County, Hazardous Waste is handled by the County. Leave pickup is by neighborhood.

Lisa Treese-Again said the main regulatory drivers are the MS4 Permits-the general non-point elimination goals and also their overflow consent decree. Lisa gave an overview of her work on Projects in the Overflow Control Program (OCP). The Overflow Control Program is a commitment by the Water Services Division of the Water Services Department of Kansas City, Missouri to meet regulatory requirements to reduce overflows from combined sewer systems and prevent overflows from separate sewer systems.

Deb Filla-Who came up with National Pollutant Discharge Elimination System?

Group: The Environmental Protection Agency (EPA).

Lisa Treese-Our council is very supportive of things that can bring additional benefit. So anything that can get a social and environmental benefit from the same dollar that they would have just been spending on something that might not have provided those, they are always in favor of. The triple bottom line approach is that it gets financial, social and environmental benefits. That is a big part of our thought process.

Joe Johnson-What is the cost of the consent decree? 3.2 billion dollars?

Lisa Treese- The total that will be spent? Thinks it is a total to be spent of around 4 to 5 billion dollars over a 25 year program. There is a lot of information on their website that will give some of that information.

Lisa Treese-The green approach to projects: They try to reduce the amount of stormwater runoff, to keep the water out of the sewer system. That is the big goal. Keep the water out of the combined sewers and the separate sewers. Keep the water out of the system as much as possible. Creating amenities for the area they are always trying to be a national green model and have measured effectiveness. On the Consent projects, they have monitoring. The data on their long term monitoring of the pilot project is showing efforts in keeping the overflows down is working very well. The report is called "Middle Blue River Green Infrastructure Pilot Project (Final Report)".

Curt Talcott-Could not find the report on Kansas City's website, check Burns & McDonnell web site for it.

Lisa Treese-For detailed information on the Program please visit [www.kcwaterservices.org/overflow-control-program](http://www.kcwaterservices.org/overflow-control-program).

Deb Filla-What prompted this decree? What was the crisis that happened? Before you realized you had this overflow combined system that was critical?

Lisa Treese-There are over 200 communities that have these Overflow reduction decrees. Usually a

lawsuit drives it. By different groups that know there is a problem. You do not have to be by Brush Creek very long to know there is an issue. For Cities that have this issue it is a matter of time before each one has a Federal Consent Decree and has to reduce their overflow. Violations of the Clean Water Act.

Curt Talcott-Almost all older cities have combined sewers.

Joe Johnson- The sewers get filled and flood the wastewater treatment plants, and then they release raw sewage because they cannot treat it all and then it goes into the creeks. And they exceed all the clean water requirements.

John Kahl-You do it once. Okay. You do it a second time, now it's a worse fee. You do it a third time, now it's a Consent Decree.

Curt Talcott-Kansas City has sewers that overflow, maybe over 40 times a year.

Carole Lechevan-Wyandotte County just got under a consent decree as well.

Lisa Treese-There is about two-hundred other communities that have a Decree and this same issue; Independence, Omaha, St. Louis, Springfield, Wyandotte Co. Many cities built before the 1940s and 1950's that have combined systems.

Carole Lechevan-That is not just isolated to older cities. In Old Leawood (I've talked to Johnson County Wastewater about it) groundwater seeps into existing sewer lines in my neighborhood. I have a manhole in my back yard and that is groundwater seeping in-whatever, so it's not just older systems, its somewhat newer systems.

Jim Rawlings-Old pipes.

Joe Johnson-Leawood does not have combined sewers.

Carole Lechevin-That's right but the stormsewer in my back yard (and I've talked to Water/Sewer about it, is-does get combined).

Curt Talcott-There are several citizens that have overflows out of their sanitarys too; which is what you have here.

John Kahl-Leawood does not have to deal with all of that because the County (Johnson County) handles the wastewater and the water issues.

Curt Talcott-In older communities, the wastewater and stormsewer would go to the same pipe. So in KCMO in your older neighborhoods, the curb drains and the roof drains are all connected to the same pipe, the toilets and sinks and everything else. They go down to a point and then it's called a diversion structure. The very low flows continue on to the treatment plant. When they have very high flows, it dumps out into the creek.

Deb Filla-And what Carole is talking about...

Curt Talcott-That is just sanitary sewer, it has too much inflow and infiltration where ground water gets into a system that was only designed to carry waste.

John Kahl-The pipes are leaking.

Curt Talcott-The pipes are leaking or there is some kind of illicit connection.

Lisa Treese-Kansas City has separate sewer overflows as well. We have inflow and infiltration into the sewer as well and then there is too much for the water treatment plant to handle so they have to discharge some of it. The overflow control plan includes improvements to the wastewater treatment

plant, I & I reduction (Inflow and Infiltration) in the separate sewers. In the end they will have a much better system and in better condition. In the long term it will be a good thing but it is the most expensive infrastructure project that Kansas City has ever undertaken at one time.

Carole Lechevin-How is it being paid for?

Lisa Treese-Payment will be through the waste water fee on the water bill. The bills will be going up every year that they have approved a certain increase. It is significant. Something like 15% per year for 5 years.

Curt Talcott-They are anticipating double digit increases for at least ten years.

Julie Cain-What amount do you need to raise?

Lisa Treese-4 to 5 Billion Dollars. Just for KCMO.

Julie Cain-Are they hitting the corporations even harder?

Curt Talcott-Straight Increase based on water usage.

Lisa Treese-There will be many water saving incentives that we might start seeing more interest in. Our water rates have been pretty low for a long time. The services have been underfunded for many years. We have about 45 projects in the ground that have been built by Water Services. One project might include 9 rain gardens or it might include 135 rain gardens; it is considered one project. We have a curriculum in our schools for 4<sup>th</sup> thru 6<sup>th</sup> Graders. We have had about 4 to 5 thousand children go through this. Teaching children about where the stormwater goes and raising awareness with them. The Blue River Watershed Organization helps us administer this.

We have a 319 square mile City limit. The Marlborough area is a 100 acre piece pilot. The design is being done for the 644 acre area. Hopefully those will be finalized in design this year and bid in 2015. Water Services is responsible on a case by case method. Water Services or Public Works, Parks, Neighborhoods and housing or Land Development. They are all maintained case by case. All the projects under the decent decree, we maintain (Water Services). We are liable for the performance of them making sure they are fully functional. For the most part we take care of under contracted service agreements. Started with 100 acres eventually be a total of 744 acres. That is the watershed size. About 50 to 60% of that drainage area will be routed to some type of green infrastructure in the end.

We have very specific volume targets we are given and we have to prove through our modeling that we are meeting those volumes. We are learning a lot and trying to share information so we can help the whole area. The long term is volume reduction. (Lisa Treese showed some pilot project pictures/Troost area one controlled area) Goal to capture 4.7 million gallons of stormwater including some strategic sewer separation.

Julie Cain-4.7 million gallons over what period of time?

Curt Talcott-In the overflow control program- in the models of the program, there are what they call the A Storm through the H Storm. The storm they are trying to meet in the decent decree is the D Storm; which is 1.37 inches in 16.75 hours. Which is basically what we call the water quality storm in Johnson County that our BMP (Best Management Practices) is based off which is a 1.4" rainfall.

Lisa Treese-In the Marlboro Neighborhood we have 32 overflows a year. The Consent Decree tells us we have to reduce that to 7.

Curt Talcott The D storm is exceeded six times a year. So they have two more E storms two F storms,

one G and one H year. So that there is a probability of having that storm, or a storm greater of that storm 6 times year. So by getting to that storm (in theory) reduce their overflows to 6 or less a year; from over 40, 1.37 inches.

Lisa Treese-there are many watersheds in Kansas City.

Carole Lechevin-So the goal is not to get to zero overflows.

Lisa Treese-Correct.

Deb Filla-Has heard it said that 85% of the water that just goes into hard surface keeps on moving and it doesn't get down in the ground. We just move it on down and pump it into our river; never getting to seep. Any comments on the hard-scaping and

Carole Lechevin-The BMP's put that natural process back into place.

Curt Talcott/Lisa Treese-That number is probably a little high. But yes this will help accomplish that and get the water back into the ground.

Lisa Treese-This presentation hits on some of the lessons learned. Of the projects, Community Feedback is something we cannot stress that enough. Public involvement is extremely robust on these projects. It involves knocking on every single door talking to almost every single resident. It has been continued through our next phases and has helped us a lot. We have raised the overall awareness of the neighborhoods. We do have challenges. Some of these neighborhoods are about 80% rental homes, so there are many coming in and out of the neighborhood. We re-introduce the project each year with information and phone numbers. We have a lot of public involvement listening to their comments.

Also learned when you get to the point of presenting the final renderings to the public of what the project is going to be, they need to be accurate. They need to show what people are going to see on day 1. Traditionally you show an image of what it will be 5 to 10 years down the road with all the plants grown in and in their maturity. But the first installment, it is these tiny little plants, mulch, an erosion control blanket and the residents are confused and thinking that is not what you showed them. You have to show photographs of a brand new installation and then what it will appear over time. If you give them an honest representation in what you show them in pictures. Give the community an accurate idea of what they will see. Stay connected to them also through the construction period. There will be constant noise and activity and the public will want to speak to someone during the construction.

Deb Filla-Did you have connection with social media for the projects?

Lisa Treese-This was in 2010; and many of the residents in our area did not have internet connections. Although now a better method might be the use of Twitter, as many now have mobile phones that connect to that media. Also in some areas, to retro fit new with old that just wasn't working and if there was ponding or an icy condition, the Council decided to install all new sidewalks. That normally is not done in Kansas City. But to finish off the project was better than to put chunks of good area to portions of old bad area. Where the projects are being so scrutinized, it is better to have it all look nice. About 2/3<sup>rds</sup> of the BMP's are rain gardens and about 1/3 have underground detention where the water slowly flows back to the system. Also in porous pavement you must watch your location selection. Do not pick an area at the bottom of the hill as there will always be clogging. We have one on a very steep slope and it erodes and we should have looked for a different solution at this spot. If porous pavement, have it more in the middle of the block-maybe near parking areas maybe where there is less sediment washing in.

Carole Lechevin-Looking at the Troost area project-there are a lot of utilities there. How did that go, did it increase your costs?

Lisa Treese-Utilities were a major challenge. Originally improvements were planned for both sides of the street. They found a utility duct on the east side when they started digging that was not on the survey. It was very significant, so they were not able to do any improvements on one side of our project along Troost. The west side was where they concentrated more. We used plastic cubes in some areas and formed it around many locations. There is quite a maze of applications. We had some businesses that were impacted and they were called a lot wanting to know when we would be done.

Joe Johnson-What does the City do when there are utilities there and now the utility company has to come in and work or relocate?

Lisa Treese-It is case by case. We assess the damage and we fix it. Water Services goes back out and fixes it. One of the biggest challenges has been water service lines to homes. They have the curb stump and in some cases those over time get buried. Most were raised up and discovered and clearly marked. A few homes had to have emergency shut offs in the middle of the night. Turns out it some had a rain garden around it and the rain garden had to be dug up. Out of 135 we have taken care of for a year and half now we have only had 2 in the pilot that were impacted by a Utility repair. It will be ongoing. We also have Google Fiber coming in in a few places. We know it is coming. Many times they just come in and do their thing and act first and do not contact us. We discover the next day the fiber company was there. Sometimes it is difficult to contact them and sometimes easier to just go out and fix it. We do not want the utility to be down, so we just go out.

Joe Johnson-We are getting ready to experience that.

Carole Lechevin-Didn't Google get some kind of waiver too?

Lisa Treese-Yes. From her understanding, they do not attend utility coordination meetings and were given a general guideline of what is out there.

Deb Filla-Curt, you seem so knowledgeable about this. Are you working with this in your firm?

Curt Talcott-We just completed a big study that is part of the overflow program and are getting ready to start another. One of the projects is to go back and rehab all the small sewer lines in the combined sewer areas. We were looking at Town Fork Creek Watershed (with boundaries of Swope Parkway on the north, 63<sup>rd</sup> Street on the south; between Swope Parkway/Cleveland Avenue on the east and Prospect Avenue on the West). Leaky pipes, we also took a different look from the stormwater side instead of the wastewater side. There are different solutions in different areas.

Deb Filla-What she is taking away from this is that there are many solutions used with the application. There is no one size fits all type answer.

Lisa Treese-Yes, correct.

Curt Talcott-In order to meet the EPA'S requirements, every City is having to come up with some Green Infrastructure. In most cases the green infrastructure is more costly than the tanks and tunnels underground.

Lisa Treese-Yes and No; it is a watershed by watershed basis. The Middle Blue Watershed-When they did the cost comparisons of doing the storage tanks at the bottom of the watershed verses the green infrastructure, because the tanks were going to be so costly (they were quite small, so there was not as much of a volume discount) they said it was a very close cost comparison between the tanks and the

green infrastructure. It really is watershed by watershed. They look at the options. Originally Kansas City's Consent Decree was to be a 20 year program, but at the Wet Weather Panel, they essentially said we need to also include green investment improvements for people. They then started looking at where they could apply green infrastructure. Because we included green infrastructure, the EPA gave us a 5 year extension. So now we have a 25 year period. Green infrastructure projects are all up front so we have some time to review them and see how they work. The data we collect will be important in determining how the design will help other projects. Some cities, like Philadelphia, have gone entirely Green Infrastructure, so it is a case by case decision. Each City comes up with a plan and submits it to the EPA, hoping for approval. Sometimes it is negotiated many times until they come up with a final plan. One other cost item is every gallon that goes to the treatment plant has a cost associated with it for treatment. So anything that can be kept out of the system and can drain to the ground; the reduced cost to treat is a savings as well.

Curt Talcott-One of the big challenges in the pilot project was when they started out going to build these BMP's they ended up having to do a lot more than just the BMP's. They built a little over 300,000 gallons of storage in the pilot project in 100 acres. That is an average of just over 3,000 gallons per acre. That cost in itself when they were done broke out and it ended up being about 6 million dollars for the 300,000 gallons of storage. I think the final cost was almost \$17 a gallon. But then they did more than twice that amount of infrastructure improvements inside that. A lot of these were streets that didn't have curbs, didn't have sidewalks.

Lisa Treese-They completely transformed a big part of the neighborhood. So there was a very visible change. For the upcoming projects, we need to reduce those dollars per gallon. So the approach being taken in the upcoming project (because there were some parcels available in these other ones). We were able to do a better volume discount.

A couple more lessons learned. Anticipate utility conflicts, theft and vandalism can go on. Minding intersection sight distances if you are working near the right-of-way plantings. Keep a nice site clear triangle. Double check the infiltration before planting. Out of 135 beds we have about 5 that drain slower than the target of 48 hours. They take about five days. Depending on who I talk to, that's long enough for a mosquito to hatch and others say it is not. So we put mosquito prevention in those five BMP's that do hold water too long. We are giving the plants a chance to increase the infiltration rate. We are doing mosquito prevention these first couple seasons. It has increased the draining, our hope is in one more year, they will drain fast enough where we won't have to put treatment in them or dig them up and totally replace them. If they had double checked infiltration on those, they could have used a simple infiltrometer tool to double check after they dug and before they put the plants in. If they would have done that, they would have known there was an issue.

Deb Filla-What plants are you using?

Lisa Treese-We have tried a good amount of different plants. BMPs can be droughty. The plants have to be incredibly adaptable to take both dry and wet. We tried about 20 species of grasses, perennials and shrubs. We also did tree replacements. We had to shift around a lot of street trees to keep that canopy. We used about 6 species of different trees. There are about 3 or 4 types of plants that Lisa would switch out. We looked at what was popular in the neighborhood. We had a goal of 75% of deep rooted/new plants and 25% garden plants. Day lilies, familiar garden plants, and the heavy hitting hardware plants that are more sturdy downstream. A lot of boxwood shrubs were at every home so we

tried to use them and get the neighbors comfort level. Also bid with the project was a three year service agreement to maintain the plantings. We have had a very good contractor and they have held up their end of the contract very well. They are great to work with.

Q: Who was the contractor?

Lisa Treese-The General Contractor was Mega. The landscape contractor is Stonegate. It is a small company. There are four people on the crew and it is always the four same people. They have really held up their costs and have much appreciation for the work they have done. If you are looking at the pilot and design, do not do the 4 bays. The 4-bay one is not a good design because they hold water and are a real problem. They do catch some of the debris and silt. Once a month, we have to shovel out the four bays. It is like a pre-treatment box before it flows to the next. One other factor was a door hanger. For the most part, out of 135 residents, we have had 1 that has dumped 2 times his brush pile and one has dumped their grass in the rain garden feature. (Only 2 residents have been an issue out of 135.). We notify them with a door hanger when we find un-allowed items in their feature. We give them a freebie the first time and pick it up. If they do it again (after the door hanger) reach out to them with a conversation or turn it over to Neighborhoods and Housing to issue a citation. That would be illegal dumping/trash placed on a non-trash day violation.

Lisa Treese- In summary: We have service agreements and also our own crew which is led by a Landscape Technician and three (3) crew workers. They have helped us with curb markers on the streets where we have a bump out or a flat curb. We alert people not to drive into them. Our crew straightens them and repair services maybe with a dug up utility. Picture of a worker vacuuming the porous sidewalk; they do that twice a year. There is a vacuum made just for that. The Project Manager needs to establish the service level. Convey expectations of the performance expectations. If it is in a commercial area with a lot of people, there will be litter that needs to be picked up. For areas that are out of the way, such as an industrial district, they will not need to be serviced or visited as frequently. The neighbors have a large expectation of what it looks like. Taylor your service level to the context of where the structure is placed. If you are maintaining them all to the top level and you do not need to for function, you can bump down some of the service levels of the basic ones in a further out area. New plantings also need more attention so later after 3 years or so, they can stay on their own without as much maintenance. Show pictures of what the people can expect to see.

Carole Lechevin-Are you thinking about using the data base system Lenexa uses?

Lisa Treese-We will not use that system because we already have an asset management system. We use the system for our sewer, and water for maintenance. We are building a module that will have our BMP's in it. Lisa has been working with the I.S. Department on the program. The system will be able to show where they are on the map. The system then has ques that can make service work orders and routine work orders with the maintenance schedules.

Deb Filla-So how do you coordinate with Parks & Rec? OR with the people who may be doing that in the field?

Lisa Treese-Parks and Rec has their own that they take care of. Right now we do not share maintenance responsibilities. Long term, there is real potential to have inter-agency agreements where they could take care of some of ours for a fee. They are under-funded, so they are not looking for more things to take care of. There is a perception that we have a lot of money. Our stormwater program is incredibly under-funded. A lot of this maintenance comes out of our stormwater maintenance fee. So really we can't draw money from one pool and spend it on another. We are all city departments, but we have

different things we work on and different funding. We are looking at other communities and what they do. Parks does not use the same asset management system, they probably use one.

Lisa Treese-Curb extensions has a 5' radius. Our street sweeper cannot get in there. It needs a 10' radius. Some plants were imposters and were really weeds. The contractor had to replant about 600 plants that were not correct. The pervious pavers get bristle-broomed twice a year. Manual removal has taken care of most of the weed removal. Some we use a blow torch on and they burn them out. Properly identify the weeds, many are annual so you can pull them and they won't come back. You don't need to spray. Others we use Round-Up on but that is minimal use. Document the BMP in the GIS System. We need this information with driveway permits. Sometimes they issue a driveway permit and there is a rain garden there. So GIS input is very important early on. We are glad to help if you have questions. Laura Isch is our coordinator that helps with our educational part; OCP Road Show. Overflow Control Project. You can reach her at [Lara.isch@kcmo.org](mailto:Lara.isch@kcmo.org).

We have had some residents really embrace the project and plant extra plants. That is okay. We welcome extra plants, we just do not want them to take any out. Many retirees love the green projects. Of course some residents do not like the infrastructure plantings. One resident has told her that her cat hates it and turns it's back to the window now; refusing to look out because it is so ugly.

Carole Lechevin-Thank you for taking time out of your work day. Your personal time and work time to come see us across the State Line.

Lisa Treese-Our leadership supports us going out to share and speaking with you and others.

Pat Dunn-Lisa someday I don't know if it would be you or somebody else, but I would like to have the discussion about what impact the fact that we don't deal with wastewater and stormwater on a metropolitan area basis as opposed to these individual community basis has on our ability to deal with it effectively. Because my sense of it is one it's really stupid that we don't do that. And two that we should. But I don't know how that really impacts things, so I'd like to understand to figure out whether I need to get more actively involved in the political side of this issue. Intuitively it seems like we should but practically if it would make that much difference. I don't want the difficulty of the test to stop me from doing something if there is a benefit to it. I would like to understand it better, I do not know the benefit.

Curt Talcott-The EPA will force you to do it eventually if you do not do it.

Joe Johnson-The Federal Government wants water quality-that it has to be treated. The hard part is we have two different States. It is more efficient to use a watershed basis and deal with it that way. We have many players in two different states. It is hard to get all of the players together to develop some sort of a commission. A lot of them have it as a water quality and then make it a watershed basis. The EPA is making the communities look at it. The wastewater treatment plant expansion here in Johnson County, in Leawood. That is being spurred because of rate increases of Kansas City's wastewater treatment. It is cheaper for Johnson County to spend \$280 million dollars and expand their plant because if not all that bypasses it and gets treated by KCMO. It's cost effective to do that in lieu of Johnson County having to pay KCMO to treat that water.

Julie Cain-What is the "Or What" with the EPA? I know everyone is doing this because the EPA and no one is doing it on their own, so what happens if in 25 years we don't?. What is the penalty if it is not done?

Lisa Treese-Every year we do not meet it, we get fined on a daily basis. It is hundreds of dollars of fines.  
Curt Talcott- Major financial impacts. There is an 80 page decree with a couple of appendices. Every deadline that is not met, there is a fine/penalty applied.

Jim Rawlings-How far west is our watershed? Where is it divided where it goes one way or the other?  
John Kahl-I-35 is kind of the ridge line. It goes between the Kaw River Basin and the Blue River Basin. If you go south then it goes to Marais des Cygnes. Leawood does not have anything in the Kaw Basin. Everything we've got is basically in the Blue Basin. I-35 is kind of at least in the area of the drain of the Blue that comes thru Leawood, is kind of the dividing line/sort of. Turkey Creek actually goes to the Kaw. I-35 for a while goes down the Turkey Creek Corridor but then as you get out into Olathe it kind of gets up on a ridge. So as you get south of 435, the highway is more on a ridge than on a valley. So that is kind of the ridge line between the Kaw and the Blue/sort of.

Joe Johnson-Indian Creek when it comes into Leawood, there's 57 square miles. And then it drains into Leawood, wraps around the wastewater treatment plant and then out it goes. And then from there it goes down into Brush Creek.

END OF PRESENTATION.

No further business.

- Chair Rawlings adjourned the meeting at 9:03AM.

Minutes transcribed by Julie Stasi, Leawood Public Works Department