MINUTES OF REGULAR MEETING **DRAFT**

CHAMPAIGN COUNTY CARBON SEQUESTRATION ACTIVITIES TASK FORCE
102 East Main Street
Urbana, IL 61801

DATE:	**March 4th, 2026**	**PLACE:**	**Shields-Carter Meeting Room** **102 East Main Street**
TIME:	**5:30 p.m.**		**Urbana, IL 61801**

MEMBERS PRESENT: Christopher Stohr, Debra Feinen, Allen Wehrmann, Pam Richart, Bailey Conrady, Eric Thorsland, Jon Cagle

MEMBERS ABSENT: Andrew Rehn, Lucas Stark

STAFF PRESENT: John Hall, Jacob Hagman

OTHERS PRESENT: Kisa Mwakanyamale-Gilkie, Jason Thomason, Don Keefer, Ron Ragle.

1. **Call to Order**

Chris Stohr called the meeting to order at 5:31 p.m.

2. **Roll Call and Declaration of Quorum**

The roll was called, and a quorum was declared present.

3. **Approval of Agenda/Addendum**

Mr. Thorsland motioned to approve the agenda, seconded by Mr. Cagle. The motion passed via voice vote.

4. **Approval of Minutes of September 3rd, 2025**

Mr. Wehrmann made the motion, seconded by Mr. Cagle, to postpone approval of the minutes. The motion passed via voice vote.

5. **New Business:**
   A. Results of Helicopter-based Time-Domain Electromagnetics (HTEM) mapping of Mahomet Aquifer boundaries, and what is learned about water resources outside of the federally designated sole source aquifer

Dr. Stohr stated the next order of business was a presentation by Dr. Kisa Mwakanyamale-Gilkie on behalf of the Illinois State Geological Survey (ISGS). Dr. Stohr said that Dr. Mwakanyamale-Gilkie is a distinguished scientist who conducted the data analysis of the Helicopter Transient Electromagnetic (HTEM). Dr. Stohr also thanked Dr. Don Keefer, who helped with the interpretation and was one of the early HTEM users, and Dr. Jason Thomason, a hydrogeologist with ISGS.

Dr. Mwakanyamale-Gilkie thanked the Task Force for inviting the representatives from ISGS to share the HTEM data of the Mahomet Aquifer. Dr. Mwakanyamale-Gilkie said the data collection couldn't

have been possible without the help of Dr. Keefer and Dr. Thomason. Dr. Mwakanyamale-Gilkie also thanked Dr. Stephen Young, who is no longer with ISGS, and Dr. Stumpf for their assistance. Dr. Mwakanyamale-Gilkie said the five of them worked together to analyze and interpret the data. Dr. Mwakanyamale-Gilkie stated that this was originally a three-year project, but once data analysis began, they realized it was larger than expected; Dr. Keefer developed a new method for interpreting geophysical data in geology and the result was good data. Dr. Mwakanyamale-Gilkie said they asked Champaign County for additional time to complete the project, and they are before the Task Force today to present the results.

Dr. Mwakanyamale-Gilkie thanked Champaign County for the funding ISGS received for this project, and Dr. Stohr for his efforts to promote the HTEM and for its importance in mapping the Mahomet Aquifer. Dr. Mwakanyamale-Gilkie also thanked the mayors of Champaign and Urbana, as well as the local advocacy group, the Mahomet Aquifer Consortium. Dr. Mwakanyamale-Gilkie continued that scientists from the Prairie Research Institute (PRI), along with students from Illinois State University and the University of Illinois at Urbana-Champaign, helped with field data acquisition. Dr. Mwakanyamale-Gilkie also thanked Frasca Airport for allowing them to start and end helicopter operations at that location. Dr. Mwakanyamale-Gilkie also thanked the Flatville School District and a property owner in Sidney for allowing the team to use their land to drill boreholes. Dr. Mwakanyamale-Gilkie said many people came together to work on this project.

Dr. Mwakanyamale-Gilkie stated that her team isn't the first group to study the Mahomet Aquifer, as scientists at PRI and ISGS have been conducting such research for years. Dr. Mwakanyamale-Gilkie stated that the Mahomet Bedrock Valley was published in 1943 to show the aquifer's location in Champaign County. On slide 3 of her presentation, Dr. Mwakanyamale-Gilkie described the elevations within the Mahomet Aquifer, showing that the aquifer flows from the Northeast to the Southwest within Champaign County. Dr. Mwakanyamale-Gilkie added that at that time, the geological makeup of the Mahomet Aquifer was rather unknown. Dr. Mwakanyamale-Gilkie continued that scientists were studying the aquifer. Dr. Mwakanyamale-Gilkie said that originally, there might have been only two boreholes, but adding more boreholes and connecting them is how you determine what's in the bedrock valley. The bottom-left part of slide 4 of the presentation shows geological information from 1999, which indicates limited geological diversity, while the slide on the bottom right shows geological information from between 2012 & 2015, when 40 boreholes were used to obtain additional information about the Mahomet Aquifer, which allows the scientists to understand the materials of the aquifer better.

Dr. Mwakanyamale-Gilkie said that one of the problems with studying the Mahomet Aquifer is the materials that make up the ground. Dr. Mwakanyamale-Gilkie stated that they sought to determine whether "sand and gravel" formed the Aquifer or if other materials were part of it. Dr. Mwakanyamale-Gilkie said that Dr. Stumpf, with ISGS, worked to answer that question and created the geological framework of the Mahomet Aquifer, as shown on slide 5 of the presentation. Dr. Mwakanyamale-Gilkie said that Dr. Stumpf found six distinct layers. Dr. Mwakanyamale-Gilkie continued that the topmost layer is the tills, which are fine-grained, act as a confining layer, and cover most of Champaign County.

Dr. Mwakanyamale-Gilkie said the next layer is sand & gravel, which is rich in dolomite and carbonates. Dr. Mwakanyamale-Gilkie stated that the following layer is the Vandalia till, which is also fine-grained material. Dr. Mwakanyamale-Gilkie said that after the Vandalia till, the layers were bedrock, Sand & Gravel, silt, and clay. Dr. Mwakanyamale-Gilkie stated that these mixed layers prompt geologists to wonder how large the Mahomet Aquifer really is and what other aquifer materials are present in that area. Dr. Mwakanyamale-Gilkie said it's important to know the size of the Aquifer because scientists need to know whether it can support Champaign County given population growth and

climate change. Dr. Mwakanyamale-Gilkie said they have identified the problem and are working to provide answers.

Dr. Mwakanyamale-Gilkie stated that they first used HTEM to map the boundary of the Mahomet Aquifer by characterizing materials commonly found in aquifers and those commonly found in non-aquifer settings, which allowed them to see how far the Aquifer spread across the County. Dr. Mwakanyamale-Gilkie said they were first able to identify bedrock material because it forms the bottom of the Aquifer. Dr. Mwakanyamale-Gilkie stated that, using that bedrock information, they were able to create a 3D model of the geological framework of the material and shared it with the Illinois State Water Survey to improve their groundwater flow model. Dr. Mwakanyamale-Gilkie continued by sharing that geological information helps improve modeling and the sustainability of the Aquifer.

Dr. Mwakanyamale-Gilkie added that data collection was an integrated approach that included boreholes and HTEM. Slide 7 of the presentation showed how using HTEM and boreholes helps provide a better understanding of the subsurface. Dr. Mwakanyamale-Gilkie said that boreholes can only show points in space and are limited by the depth at which the samples were collected, and adding HTEM helps fill in the blanks between boreholes.

Dr. Mwakanyamale-Gilkie said they also used seismic testing with the Horizontal-to-Vertical Spectral Ratio (HSVR), which is very effective at measuring bedrock depth. Dr. Mwakanyamale-Gilkie continued that they also used Electrical Resistivity Tomography (ERT), which is similar to HTEM but uses metal prongs placed in the ground to measure voltage after passing current between the prongs. Dr. Mwakanyamale-Gilkie said they drilled two holes, one in Sidney and the other in Flatville (Compromise Township), along with the seismic reflection. Dr. Mwakanyamale-Gilkie explained that seismic reflection is measured by placing a source of noise on the ground, such as dropping a large weight, and recording the reflections of different wave modes, which indicate different layers. Dr. Mwakanyamale-Gilkie said these techniques might be familiar to members of the Task Force, but she wanted to provide additional information for those who are not.

Dr. Mwakanyamale-Gilkie said HTEM was done over about 2,000 miles of Champaign County, starting at the Champaign-Ford County line and ending north of Pesotum. Dr. Mwakanyamale-Gilkie stated that they didn't collect data for the entire county due to a lack of additional funds. Dr. Mwakanyamale-Gilkie continued that they believe most of the Aquifer within the County was mapped, and most of the Aquifer ends around Champaign-Urbana, but the additional data collection was to ensure a clearer southern boundary. Dr. Mwakanyamale-Gilkie added that she's glad they collected the additional data because it helped them learn more about the edges of the Aquifer. Dr. Mwakanyamale-Gilkie stated that the lines on Slide 9 of the presentation are about 650 meters apart and can record information to a depth of up to 300 meters.

Dr. Mwakanyamale-Gilkie showed Slide 10, which provided information on the methods used to collect additional data about the Aquifer. Dr. Mwakanyamale-Gilkie stated that in some locations in the County, they conducted seismic testing alongside HTEM to compare the data. Dr. Mwakanyamale-Gilkie continued that they also performed ERT in areas with HTEM data to corroborate the results. Dr. Mwakanyamale-Gilkie said that using the different collection methods allowed them to see if they were getting similar results.

Dr. Mwakanyamale-Gilkie said there were some areas they weren't able to collect data, such as Champaign, Urbana, Rantoul, and Mahomet. Dr. Mwakanyamale-Gilkie continued that they don't have HTEM data because the helicopters aren't allowed to fly over urbanized areas, but they did try to collect

data using other means. Dr. Mwakanyamale-Gilkie said they did borehole drilling in Flatville and Sidney, and those locations are indicated by the red dots on Slide 10 of the presentation.

Slide 11 of the presentation shows the depth and the geological information collected from the boreholes. Dr. Mwakanyamale-Gilkie said geologists looked at the information and could determine the materials at different depths. Dr. Mwakanyamale-Gilkie stated that the first borehole in Flatville was drilled 82 meters underground, and they hit bedrock at that depth and stopped drilling. Dr. Mwakanyamale-Gilkie said the Mahomet Aquifer is located where they drilled the borehole because the Sand & Gravel, represented by the orange section on Slide 11. Dr. Mwakanyamale-Gilkie continued that the yellow section of slide 11 shows a sand layer, which is a shallower aquifer they were able to map.

Dr. Mwakanyamale-Gilkie said the Sidney location, also shown on Slide 11, shows that the Mahomet Aquifer isn't present there. Dr. Mwakanyamale-Gilkie continued that the borehole in Sidney only went 60 meters underground before hitting bedrock. Dr. Mwakanyamale-Gilkie stated that the materials above the bedrock are silt and sand, but they are not the materials found in the Mahomet Aquifer. Dr. Mwakanyamale-Gilkie said that using borehole samples allows geologists to see specific details of the geological materials that they aren't able to see with HTEM. Dr. Mwakanyamale-Gilkie stated that the gamma measurements on Slide 11 are physical measurements: the higher the gamma count, the finer-grained the material. Dr. Mwakanyamale-Gilkie continued that gamma readings help scientists interpret HTEM results.

Dr. Mwakanyamale-Gilkie said the geophysics of HTEM results is that the signal measures resistivity, which is used to transition from geophysics to geology by looking at changes in resistivity values. Dr. Mwakanyamale-Gilkie continued that fine-grained materials are less resistive and allow more electric current to pass through, while coarse-grained materials are very resistive and don't allow electric current to pass. Dr. Mwakanyamale-Gilkie said these gamma readings help geologists better understand the materials underground, such as whether they are fine- or coarse-grained; boreholes can confirm the materials found. Dr. Mwakanyamale-Gilkie continued that water content can affect these readings, with high-ionic-content salt water being less resistive, while high-ionic-content fresh water is more resistive.

Slide 13 of the presentation shows the HTEM path through Champaign County. Dr. Mwakanyamale-Gilkie said this is called a Fence Diagram. Dr. Mwakanyamale-Gilkie stated that the different colors on the slide indicate how resistant the materials are underground. The yellow and red are coarser materials, while the blue is finer, such as shale and clay. Dr. Mwakanyamale-Gilkie pointed out the coarser materials in the central and northern parts of Champaign County. Dr. Mwakanyamale-Gilkie continued that you can see other underground material formations, such as the Middle Fork River, along with the Sangamon River Valley. Dr. Mwakanyamale-Gilkie said that these areas in the County were already known, but it's important to go into the details of the hydrological information, which is the goal of the HTEM study.

Slide 14 of the presentation shows a 3D view of the Fence Diagram. Dr. Mwakanyamale-Gilkie said the first step in interpreting the data is to create a 3D cube, which is done by using the 2D information. Dr. Mwakanyamale-Gilkie said using the 3D model allows geologists to see the different layers of shale, carbonates, and other materials. Dr. Mwakanyamale-Gilkie continued that you can also see the fine-grained materials.

Slide 15 of the presentation shows a horizontal slice of the HTEM results. Dr. Mwakanyamale-Gilkie said the slice is about 174 meters underground. Dr. Mwakanyamale-Gilkie continued that you can see the northeast to southwest flow pattern because of the presence of the very high resistive material, in this

case, it's Sand & Gravel. Dr. Mwakanyamale-Gilkie said this shows the Mahomet Aquifer. Dr. Mwakanyamale-Gilkie said you can see evidence of bedrock in the southeast corner of the slide, while in the northwest corner, you see highly resistive materials in channels. Dr. Mwakanyamale-Gilkie continued that seeing those channels prompts geologists to wonder whether there are buried channels and whether they connect to the Aquifer, depending on their depth. Dr. Mwakanyamale-Gilkie stated that the channels appear to be within the Mahomet Bedrock Valley, as indicated by the black-dashed lines on the slide.

Dr. Stohr asked whether the tributary valleys in the northwest, also near St. Joseph, are discoveries. Dr. Mwakanyamale-Gilkie said the answer is yes and no. Dr. Mwakanyamale-Gilkie stated the answer is yes because scientists didn't know how far they extended or in which direction, but they knew the tributary channels were there. Dr. Mwakanyamale-Gilkie said that boreholes have been drilled near St. Joseph, and they did produce water, which means they are getting water from there.

Slide 16 shows HTEM results on the seismic cross-section. Dr. Mwakanyamale-Gilkie said the information on the slide comes from the yellow and green lines. Dr. Mwakanyamale-Gilkie added that the right part of the slide shows the ERT results. Dr. Mwakanyamale-Gilkie continued that the ERT is limited in depth, meaning it can only map up to three ground layers. Dr. Mwakanyamale-Gilkie said that seismic testing is known to have a higher depth of investigation. Dr. Mwakanyamale-Gilkie stated that Slide 16 shows the bedrock, shale, and Sand & Gravel layers. Dr. Mwakanyamale-Gilkie continued that HTEM and HVSR testing in that area show high correlation, which adds confidence to what is being mapped.

Dr. Mwakanyamale-Gilkie said they have two points: one within the Mahomet Aquifer and one outside the Aquifer. Dr. Mwakanyamale-Gilkie continued that the slide shows where the Sand & Gravel heads further underground and ends up against the bedrock, as indicated by the yellow dots on Slide 16. Dr. Mwakanyamale-Gilkie said the yellow dots are where the HVSR indicates the bedrock is located.

Slide 17 shows the conversion used when collecting Electro Units and converting them to corresponding material types. Dr. Mwakanyamale-Gilkie said that using conversions enabled them to translate geology and digital physics into hydrology. Dr. Mwakanyamale-Gilkie pointed out that blues and reds represent different values because they correspond to different geological units. Dr. Mwakanyamale-Gilkie said that, given the low resistivity and the area's geological makeup, the conclusion is that the materials in that area are either shale or clay, which is the first sign of an aquifer. Dr. Mwakanyamale-Gilkie said that at greater depths, the high-resistance materials indicate the presence of Sand & Gravel or carbonate. Dr. Mwakanyamale-Gilkie said this information provides details on geological units.

Dr. Mwakanyamale-Gilkie said the following information (Slide 18) to collect is Hydrogeology or Hydrological units. Dr. Mwakanyamale-Gilkie continued that fine-grained materials aren't permeable, so water can't pass through them, making this a confining unit. Dr. Mwakanyamale-Gilkie said water can flow through coarse material. Dr. Mwakanyamale-Gilkie stated that Dan Keith designed the unit conversion method used for interpretation.

Dr. Mwakanyamale-Gilkie referenced slide 19 when discussing a cross-sectional view of the area where the data were collected. Dr. Mwakanyamale-Gilkie said they don't have data on what's underground in Champaign and Urbana because the cities are densely populated. Dr. Mwakanyamale-Gilkie stated that, starting with the electro units, six units depend on resistivity and can be converted into geological units. Dr. Mwakanyamale-Gilkie said the first example has low resistivity, and they know it's still the top layer in the area. Dr. Mwakanyamale-Gilkie said that, when going further underground, finding a high-

resistivity unit, depending on the elevation and what is known about the area, it's likely Sand & Gravel. Dr. Mwakanyamale-Gilkie stated that using this information allows them to map the aquifer and document its location based on the layers they find. Dr. Mwakanyamale-Gilkie continued that they map all aquifer levels. Dr. Mwakanyamale-Gilkie said you can see the names of all the geological layers, both aquifer and non-aquifer materials, on slide 19 in the Hydrologic Units infographic. Dr. Mwakanyamale-Gilkie continued that the dark orange layer is the Mahomet Aquifer, but on the Geological Units information graph, there are gray areas within the Aquifer, indicating non-aquifer materials. Dr. Mwakanyamale-Gilkie stated that the grayish area is shale.

Dr. Mwakanyamale-Gilkie said that once they had the material type and its location, they returned to the bedrock topography, as shown on slide 21. Dr. Mwakanyamale-Gilkie stated that bedrock topography is the bottom of the Mahomet Aquifer and is a key input for groundwater flow modeling. Dr. Mwakanyamale-Gilkie said the bedrock topography map was created by another team member and originally published in 2022. Dr. Mwakanyamale-Gilkie said that lower elevations in the deepest parts of the Mahomet Aquifer, while the higher elevations in the SE corner of the Aquifer are bedrock terraces. Dr. Mwakanyamale-Gilkie said that the bedrock topographic map isn't very detailed and was created from borehole data, which means it misses finer bedrock details. Dr. Mwakanyamale-Gilkie said the southeast corner of the slide shows the higher elevations of the bedrock layer.

Dr. Mwakanyamale-Gilkie referenced slide 22 of the presentation, which shows the boundary of the Mahomet Aquifer over the years. Dr. Mwakanyamale-Gilkie said there are two official boundaries of the Mahomet Aquifer: the sole-source aquifer boundary and the Dr. Roadcap boundary. Dr. Mwakanyamale-Gilkie stated that Dr. Roadcap published his boundary in 2011, which is used for groundwater flow modeling. Dr. Mwakanyamale-Gilkie continued that Dr. Roadcap used bore holes to mark the line, along with a 500-foot contour line as the boundary. Dr. Mwakanyamale-Gilkie stated that Dr. Roadcap claims the Mahomet Aquifer lies 500 feet below the surface. Dr. Mwakanyamale-Gilkie said that HTEM mapping shows the Mahomet Aquifer covers a larger area than Dr. Roadcap found in 2011. Dr. Mwakanyamale-Gilkie stated that the Aquifer is wider than originally thought, and the northwest corner of the county shows more of the Aquifer than Dr. Roadcap determined. Dr. Mwakanyamale-Gilkie continued that her team mapped the boundary of the Aquifer using a combination of multiple data sets (bore holes and HTEM), which helped them determine the layer of the bedrock, which is about 174 meters (570 feet) below the surface, where Sand & Gravel materials are found.

Dr. Mwakanyamale-Gilkie referenced slide 23, which shows the different aquifer and non-aquifer geological materials in the county. Dr. Mwakanyamale-Gilkie said that as you go deeper under the Aquifer, you find that both Aquifer and non-Aquifer materials change. Dr. Mwakanyamale-Gilkie stated that the orange color on the slide indicates the sand-and-gravel portion of the Mahomet Aquifer. Dr. Mwakanyamale-Gilkie continued and said that within the 150-meter layer of the Aquifer is a bunch of amygdaloidal, which is a mixture of fine- and coarse-grained material. Dr. Mwakanyamale-Gilkie stated that this shows the Aquifer's content is changing.

Dr. Mwakanyamale-Gilkie referred to slide 24, which also shows various Aquifer materials at different depths. Dr. Mwakanyamale-Gilkie said the 190-meter depth shows a mixture of fine- and coarse-grained materials. Dr. Mwakanyamale-Gilkie continued that this coarser material lies outside the Aquifer bedrock valley, as indicated by the yellow colors, while the blue colors are finer, confining materials. Dr. Mwakanyamale-Gilkie stated that at a depth of 160m, you are starting to see the wider distribution of the Mahomet Aquifer. Dr. Mwakanyamale-Gilkie continued that you can see the Aquifer materials changing at different elevations. Dr. Mwakanyamale-Gilkie gave the example of orange-

colored confining materials at a depth of 174 meters. On slide 25, Dr. Mwakanyamale-Gilkie said that going only a few meters deeper (176 meters) shows a much broader distribution of the Aquifer. Dr. Mwakanyamale-Gilkie said that scientists now know where there are aquifer and non-aquifer materials, where there are shallow aquifers for additional water resources in the area.

Dr. Mwakanyamale-Gilkie referenced slide 26, which shows the thickness of the Mahomet Aquifer, which indicates the thickness of the 4 core aquifers in Champaign County. Dr. Mwakanyamale-Gilkie stated that the four aquifers are the Mahomet Aquifer, the lower-middle aquifer, the upper-middle aquifer, and the shallow aquifer. Dr. Mwakanyamale-Gilkie continued that the upper-middle, lower-middle, and shallow aquifers all exist above the Mahomet Aquifer. Dr. Mwakanyamale-Gilkie said that it's thickest in the middle of the Aquifer, which is also the deepest section of the bedrock valley. Dr. Mwakanyamale-Gilkie stated that the lower-middle aquifer doesn't exist in places where the Aquifer is deeper.

Dr. Stohr asked if the bedrock valley and some of the Aquifer materials extend farther south, which is his interpretation. Dr. Mwakanyamale-Gilkie confirmed Dr. Stohr's interpretation and added that the materials may continue farther south, but there is no confirmation they go any farther south. Dr. Mwakanyamale-Gilkie stated that they have some boreholes to check for materials, but they are sparsely distributed.

Dr. Mwakanyamale-Gilkie brought up slide 27 of the presentation. Dr. Don Keefer, a member of the team led by Dr. Mwakanyamale-Gilkie studying the Mahomet Aquifer, said they found evidence of low valleys that extend into the eastern portion of Urbana. Dr. Keefer continued that, based on the information they have, they believe some connections are happening with the Aquifer. Dr. Keefer stated that fine-grained deposits are sitting on top of shale, but they don't have core data to confirm the connections. Dr. Keefer said he estimates this tributary connects to the valley and heads south, which was outside the boundary of the study area.

Dr. Keefer said the borehole diameter is about the same as that of a hockey puck. Dr. Keefer stated that one of the questions they had when they started was "Are there fine-grain deposits on top of the shales?" Dr. Keefer continued that, within the valley, people may have sampled fine-grained deposits and developed a conceptual model based on the core and previous hypotheses of the area. Dr. Keefer stated that this also suggests there's quite a bit of coarser grain deposits in the tributaries, but there's a little bit of question as to its thickness and occurrence, just because the nature of the resistivity and the fact that they already know about finer-grained deposits on top of the shale, but everything seems to fit together because there is significant sand that is consistent with how the Mahomet Aquifer is defined in the bedrock valley.

Mr. Wehrmann asked if the area with the carbon sequestration ban can be referred to as the Mahomet Aquifer. Dr. Keefer said that names in the geosciences are goofy. Dr. Keefer continued that the term "Mahomet Aquifer" has been used too many times for too many different things. Dr. Keefer said names such as Valley, Aquifer, and Sand Member are all used to describe the Mahomet Aquifer. Dr. Keefer said he is anal about terminology because trying to separate the named geological material leaves the issue of what to call the Mahomet Aquifer, because that is a big deal to policymakers and the public. Dr. Keefer said there are suggestions on what to call the Mahomet Aquifer in the detected locations. Dr. Keefer continued that there is some nuance in naming the Mahomet Aquifer, but the difficulty is that geologists have sparse data from borehole cores used in conceptual modeling of modern sedimentary systems to understand and predict what's going on. Dr. Keefer added that conceptual models are based on the core samples, which have sparse information. Dr. Keefer continued that the framework with

names is called lithostratigraphy.

Dr. Keefer said that there are the Mahomet Member, the Vandalia, and many others. Dr. Keefer added that the team found that they are going back to resistivity, which is a completely different property, and it's not a one-to-one with previous core samples descriptions. Dr. Keefer stated that this difference means they couldn't use the same names they had previously, which is another complicating factor for the project. Dr. Keefer said the amount of data collected is unprecedented and surreal, so the benefits outweigh the limitations. Dr. Keefer said that Dr. Mwakanyamale-Gilkie was correct in stating that a new method was needed to make sense of the data and to honor the resistivity method and the previous mapping of the area.

Dr. Mwakanyamale-Gilkie referred to slide 27 of the presentation and said that Dr. Keefer was discussing the connectivity among different aquifer units when describing the updated methodology. Dr. Mwakanyamale-Gilkie said the slide shows how different aquifers connect with the Mahomet Aquifer. Dr. Mwakanyamale-Gilkie continued that there are different areas in the County where only the Mahomet Aquifer exists, and there are parts of the County where multiple aquifers exist. Dr. Mwakanyamale-Gilkie said that where two aquifer bodies connect, there is an exchange, so drilling one aquifer will impact the other. Dr. Mwakanyamale-Gilkie added that even if the aquifers have different names, they're part of the same system, which will be affected by one aquifer withdrawing while the other recharges.

Dr. Mwakanyamale-Gilkie repeated that there are four known aquifers in the County. Dr. Mwakanyamale-Gilkie referred back to slide 27, which shows the aquifers. Dr. Mwakanyamale-Gilkie said the blue area is mostly the Mahomet Aquifer, which is thick and deep. Dr. Mwakanyamale-Gilkie continued that the red areas are where the lower-middle and shallow aquifers connect with the Mahomet Aquifer. Dr. Mwakanyamale-Gilkie stated that any impact in the red area will impact the Mahomet Aquifer because they are interconnected.

Dr. Stohr said that, at the risk of prolonging the patience of the task force, he believes the southwest corner of Champaign County is where the bedrock tributary valley extends, and it appears there is another connection in that area about mid-county. Dr. Stohr said he's excited to have this new data. Mr. Wehrmann asked what this information means for carbon storage, which is the task force's focus. Dr. Stohr agreed with Mr. Wehrmann and asked Dr. Mwakanyamale-Gilkie to continue her presentation.

Dr. Mwakanyamale-Gilkie referenced slide 29, which shows the thickness of the confining units of Champaign County. Dr. Mwakanyamale-Gilkie said the confining units are thick in the northwest part of the county, while other parts are thin, but all of this is within the Mahomet Aquifer boundary. Dr. Mwakanyamale-Gilkie referenced slide 30, which shows the distribution of bedrock. Dr. Mwakanyamale-Gilkie said the blue area is shale, which is protecting the Aquifer, and the red area is the carbonate aquifer. Dr. Mwakanyamale-Gilkie added that there can be connectivity between the carbonate and the Mahomet Aquifer. Dr. Mwakanyamale-Gilkie continued that they have a few boreholes in these locations to confirm if there is Sand & Gravel in those areas. Dr. Mwakanyamale-Gilkie said that some of the boreholes show Sand & Gravel while others don't. Dr. Mwakanyamale-Gilkie continued that only borehole data might lead geophysics to overestimate or underestimate the Sand & Gravel area. Dr. Mwakanyamale-Gilkie added that they generally believe that there is connectivity between the carbonate and Mahomet Aquifers.

Dr. Mwakanyamale-Gilkie referenced slide 31, which shows the buried channels in Champaign County. Dr. Mwakanyamale-Gilkie said that this slide shows what specific geophysical materials exist in the

County. Dr. Mwakanyamale-Gilkie added that, across the different elevations, the channels are visible in the bedrock materials, and those at 190 meters are Sand & Gravel; those at 180 meters are also present. Dr. Mwakanyamale-Gilkie added that the materials might be thinner, but they are still present. Dr. Mwakanyamale-Gilkie continued that at a depth of 174 meters, you can also see Sand & Gravel materials near St. Joseph. Dr. Mwakanyamale-Gilkie said that, since the area east of St. Joseph is outside the Mahomet Aquifer, the Sand & Gravel materials might indicate that this channel is a water source for this area.

Dr. Mwakanyamale-Gilkie shared slide 32 of the presentation. Dr. Mwakanyamale-Gilkie said that this project was the first high-resolution mapping of the Mahomet Aquifer, non-aquifer material, what's above and below the Aquifer, what can protect the Aquifer, and what kind of exchange we can allow. Dr. Mwakanyamale-Gilkie stated that the project also helped identify variability in materials within the Mahomet Aquifer, including the presence of non-aquifer material within the Aquifer. Dr. Mwakanyamale-Gilkie continued that this project helped identify additional water resources connected to the Aquifer, both shallowly and more deeply. Dr. Mwakanyamale-Gilkie stated that project information, along with the Water Survey 3D long overflow modeling, will provide critical information to support the sustainable management of groundwater resources in Champaign County.

Dr. Mwakanyamale-Gilkie said this information will help with redefining the boundary for the Mahomet Aquifer. Dr. Mwakanyamale-Gilkie said this changes the sole-source aquifer boundary, the 500-foot contour lines from Dr. Roadcap, and the watershed boundaries. Dr. Mwakanyamale-Gilkie added that the sole-source aquifer boundary underestimates the distribution and thickness of the Mahomet Aquifer, along with missing aquifer materials outside of the sole-source boundary.

Dr. Mwakanyamale-Gilkie said that when she makes it back to Chicago, she's going to start the interpretation of the data from the northeast portion of the Mahomet Aquifer. Dr. Mwakanyamale-Gilkie continued that they are still working on processing and interpreting the data from Vermilion and Ford Counties. Dr. Mwakanyamale-Gilkie added that the data from those counties will be more than what they got from Champaign County, which is exciting. Dr. Mwakanyamale-Gilkie said they are still seeking additional funding to map the rest of the Mahomet Aquifer outside Champaign County. Dr. Mwakanyamale-Gilkie ended her presentation by saying that all current and future findings will be available on their website for the public.

Dr. Stohr thanked Dr. Mwakanyamale-Gilkie for the presentation and asked the Task Force if they had any questions. Ms. Richart asked Dr. Mwakanyamale-Gilkie whether mapping the recharge area in the northwest portions of the county had already been done, or if that was what the additional funding would be for. Dr. Mwakanyamale-Gilkie said it hasn't been done and that they want to map from Piatt County down to Tazewell and Mason counties.

Dr. Stohr said the information was very complex, but he appreciated Dr. Mwakanyamale-Gilkie coming down and giving the presentation. Seeing no more questions, Dr. Stohr thanked Dr. Mwakanyamale-Gilkie for coming down from Chicago and the rest of her team for coming. Dr. Stohr said they were invited to the meeting because of questions raised over the past summer and fall about which areas in Champaign County merit the highest level of protection and which require a Special Use Permit. Dr. Stohr said he wanted to have that discussion, but he wasn't sure whether a decision would be made today.

Dr. Stohr said it is his opinion that areas within the blue boundary of the Mahomet Aquifer should be the prohibited area, and the rest of the County should require a Special Use Permit. Dr. Stohr said he saw a

few people agree with that idea. Mr. Wehrmann said that the task force's definition of the Mahomet Aquifer should be revised to incorporate modifications based on the HTEM data. Mr. Wehrmann continued that he's not sure how long it would take or what it would entail for the US EPA to update the boundary of the sole-source aquifer. Mr. Thorsland said he agreed with Dr. Wehrmann that the old definition needed to be updated to include the new border information the Task Force received. Mr. Thorsland continued that he would be very happy with an ordinance prohibiting any CCS within the newly defined Aquifer and requiring a Special Use Permit for the rest of the County. Dr. Stohr asked about what to do about the area in the southern part of the county that didn't get HTEM scanned. Mr. Thorsland said he doesn't think it should be a problem if the discovered aquifer area just north of Pesotum is extended down to the Champaign/Douglas County line. Mr. Thorsland said some words about how HTEM didn't cover this space, but there is a high probability that the Mahomet Aquifer is in this area, and a Special Use Permit would be needed. Mr. Thorsland expressed his trust in Mr. Hall and Mr. Hagman to come up with proper verbiage.

Dr. Stohr asked if other people had comments about Mr. Thorsland's proposal. Mr. Wehrmann said that, scientifically, we don't have information about what is in the southern portion of the County where no HTEM mapping was done. Mr. Wehrmann added that conceptually, it appears as the tributary valley goes down to the area, but making that distinction is a policy decision that the data doesn't currently support. Mr. Thorsland said he believes that Mr. Hall and the Task Force can come up with the proper words that say, "There's a high probability that this is an extension of the aquifer, therefore we're going to make it a prohibited area." Mr. Thorsland added that if a developer wants to pony up the money for more mapping and analysis, because they insist they have a perfect spot for carbon sequestration, let them pay for it. Dr. Wehrmann said that developers will likely avoid areas where securing a location is unlikely and will go to places with a better chance of success.

Mr. Cagle asked for clarification on the verbiage for the southern part of the County. Mr. Cagle continued and asked whether the Task Force wanted to include language in the ordinance about the unknown part of the County, basically stating that anything south of the HTEM boundary will require HTEM mapping before any permits are approved. Mr. Cagle said he doesn't see a reason why the proposed boundary would follow a specific path or even extend all the way to the Champaign/Douglas County line..

Dr. Stohr asked Mr. Hall whether there was enough information discussed to proceed to the final wording of the ordinance.

B. Final review of Draft Carbon Sequestration Amendment for Champaign County

Mr. Hall said he believed they had enough information, but the language describing the extension of the Mahomet Aquifer into the non-HTEM part of the county seems a little daunting, and support with drafting that language would be needed. Mr. Thorsland suggested prohibiting everything in the non-HTEM area of the County because there's no data. Mr. Thorsland continued that if a developer wants to do something in that area, they will have to pay for the data to be provided, and that new information would be used in determining whether the location is suitable. Mr. Cagle said he likes Mr. Thorsland's idea but believes there is a risk because that area isn't technically part of the Mahomet Aquifer, which could lead developers to view it as a good spot for sequestration projects, where, in reality, they would need to prove that the Aquifer isn't in the location and pony up the cash to do that.

Dr. Stohr said it sounds like the Task Force is close to ending the discussion.

6. Public Participation

Dr. Stohr asked Ron Ragle with Illinois American Water if he had any thoughts. Mr. Ragle said he found the presentation informative and liked how the conversation redefined the boundaries of the Mahomet Aquifer. Mr. Ragel also thanked Dr. Mwakanyamale-Gilkie and her team for compiling this information and helping the Task Force move forward. Ms. Richart said she agreed with everything Mr. Ragle said. Ms. Richart asked when the presentation would be available for the Task Force. Mr. Hagman said he would send the digital copies to Mr. Hall as soon as possible.

Dr. Stohr said he would be traveling the rest of March and part of April and May. Dr. Stohr said that as soon as the text of the ordinance is available, he'll contact the Task Force to schedule a meeting to vote on the proposed draft. Dr. Stohr thanked everyone for the time and trouble folks have had in contributing to the Task Force.

7. Adjournment – 6:50 pm