

MINUTES OF REGULAR MEETING

CHAMPAIGN COUNTY CARBON SEQUESTRATION ACTIVITIES TASK FORCE

**1776 East Washington Street
Urbana, IL 61802**

**DATE: April 21, 2025 PLACE: Shields-Carter Meeting Room
1776 East Washington Street
Urbana, IL 61802**

MEMBERS PRESENT: Christopher Stohr, Debra Feinen, Allen Wehrmann, Andrew Rehn, Pam Richart, Bailey Conrady, Lucas Stark, Eric Thorsland, Jon Cagle, Jen Locke, Steve Summers, Jeff Wilson, Julie Pryde

MEMBERS ABSENT:

STAFF PRESENT: John Hall, Jacob Hagman

OTHERS PRESENT: Randy Locke, George Roadcap, Lauren Luckins, Mohammad Khadrawi, Don Wuebbles

1. Call to Order

Chris Stohr called the meeting to order at 4:04 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. New Business – Overview of Carbon Capture and Storage (CCS) aka CO2 Sequestration
A. Introduction of CO2 Sequestration Task Force members.**

Mr. Stohr asked members of the task force to introduce themselves.

Andrew Rehn said he is the climate policy director at Prairie Rivers Network, a non-profit that works on water and energy issues.

Pam Richart said she works for Eco-Justice Collaborative and is a land planner and previously worked on the Carbon Capture and Sequestration regulatory with the state of Illinois.

Debra Feinen said she is the Mayor of Champaign.

Allen Wehrman said he was previously with the Water Survey and is now with a company called Intera (Environmental & Water Resource Consulting Firm) and helped writhe the petition for the sole source aquifer.

1
2 Lucas Stark said he is the Champaign County Farm Bureau Assistant Manager.

3
4 Bailey Conrady said she is the Champaign County Farm Bueaur Manager.

5
6 Eric Thorsland said he is the District 7 representative for the Champaign County Board.

7
8 John Cagle said he is the Champaign County Board.

9
10 **B. Mission and expected outcome for the CO2 Sequestration Task Force**

11
12 Mr. Stohr said the task force was assembled to establish why a CO2 Sequestration Activities ordinance
13 was needed for Champaign County. Ordinances are adapted and adopted to regulate human activity so
14 that public health, safety, and welfare are protected and promote economic growth and development
15 with sensitivity to surrounding prevailing activities. Mr. Stohr stated that these goals can conflict in a
16 complicated, crowded society. Mr. Stohr continued that the role of government in this body is to weigh
17 these aspirations, to decide what can be allowed, and to achieve harmony by consensus, if possible.

18
19 Mr. Stohr said the Illinois Senate passed Bill 1723, which prohibits a sequestration facility that overlies,
20 underlies, or passes through a sole source aquifer. The bill has been referred to the Illinois House Energy
21 and Environment Committee, chaired by Representative Carol Ammons, for passage by the house and
22 hopefully be expected to be signed into law by Governor Pritzker. Mr. Stohr said Bill 1723 would be
23 insufficient to protect the glacial melt water channels, which yield small quantities of potable water, that
24 are also a sole source for rural residents and regulate specific protections in Champaign County.

25
26 Mr. Stohr stated that the mission of this task force is to protect public health and safety by evaluating the
27 potential vulnerability of water resources from underground carbon dioxide storage and sequestration
28 and developing comprehensive ordinances to regulate carbon sequestration and gas storage activities
29 within Champaign County. Mr. Stohr thanked everyone for their service as they devised an ordinance to
30 accomplish this task. Mr. Stohr referred to Mr. Hall to go over what an ordinance is.

31
32 Mr. Hall said the main task of task force will be to develop a draft text amendment for carbon
33 sequestration activities. Mr. Hall continued that he anticipates requiring a Special Use Permit for any
34 carbon sequestration activities allowed in Champaign County. Mr. Hall said the Zoning Board of
35 Appeals (ZBA) first reviews a Special Use Permit and then makes a recommendation to the County
36 Board. Mr. Hall continued the ZBA can impose special conditions on a Special Use Permit. Mr. Hall
37 stated that this task force would recommend standard conditions, things we know should be required for
38 any sequestration activity, whether pipeline or actual sequestration. Mr. Hall continued that ZBA can
39 then add special conditions in case, in any particular instance, something out of the ordinary applies. Mr.
40 Hall stated this ordinance doesn't have to be perfect; it should be adequate for any foreseeable
41 circumstance.

42
43 Mr. Hall said the standard conditions for a sequestration ordinance might include documentation of
44 compliance with EPA requirements, design safety certification, compliance with required minimum
45 separations to dwellings and other principal structures, compliance with pollution control board noise
46 standards, compliance with any required road use agreement, compliance with coordination with local
47 fire protection districts, minimum required liability insurance, and minimum requirements for an
48 abandonment plan. Mr. Hall stated a draft text amendment would also include recommended application
49 fees, which for sequestration activities far exceed any application fees that we currently require.

1
2 Mr. Hall said he’s most interested in determining where sequestration activities could be allowed in
3 Champaign County and where they should not be allowed in Champaign County. Mr. Hall said he
4 explained to Mr. Stohr that he’s interested in seeing if they can identify and distinguish between those
5 two areas without resorting to a map amendment and having a map of some sort. Mr. Hall said this task
6 force will recommend all of these conditions, so they've got our work cut out. Mr. Hall stated that
7 completing this in four meetings is certainly doable.

8
9 Mr. Rehn asked about the difference between map and non-map amendments. Mr. Hall said a text
10 amendment would refer to the ordinance's text, and a zoning map amendment would refer to the zoning
11 districts. Mr. Hall stated that if you think about a zoning map amendment for the Mahomet Aquifer, it
12 could be almost every parcel in the county, but if it's that broad, then maybe you don't need a zoning
13 map amendment; perhaps you can specify in the text where these things apply. Mr. Stohr said the
14 boundaries of the Mahomet Aquifer are currently under study, and more will be known when the Illinois
15 State Geological Survey (ISGS) completes its helicopter transient electromagnetic geophysics study,
16 which should be by this fall.

17
18 **C. Why is CCS wanted w.r.t. climate change mitigation**

19
20 Mr. Stohr said the following item on the agenda is “Why is Carbon Capture & Storage (CCS) wanted?”
21 and the focus will be on climate change mitigation. Mr. Stohr welcomed Dr. Don Wuebbles to the
22 microphone. Mr. Stohr said that Don Wuebbles is a Nobel laureate and emeritus professor in the
23 atmospheric sciences department at the University of Illinois at Urbana-Champaign.

24
25 Mr. Wuebbles said he would give a quick overview on climate change and why geoengineering
26 approaches should be considered. Mr. Wuebbles stated to look at all the national, international
27 assessments of the science and the science is very clear: our climate is changing. Mr. Wuebbles
28 continued by saying we're seeing significant changes already, and it's about 10 times more rapidly than
29 nature tends to shift the climate. Mr. Wuebbles stated this is the most important issue humanity has ever
30 faced. Mr. Wuebbles said that severe weather is becoming more intense because the atmosphere's gasses
31 are driving the change and fossil fuels are making the air more energetic.

32
33 Mr. Wuebbles said when we have a heat wave, it’s more likely to be more intense than it was in the past.
34 Mr. Wuebbles continued that when there are precipitation events, they are likely to be larger than in the
35 past. Mr. Wuebbles stated that basic physics demonstrates that a warmer atmosphere holds more water
36 vapor and that if there is a major storm, it’s more likely to be more intense than it was in the past. Mr.
37 Wuebbles continued that unusual events are becoming more usual. Mr. Wuebbles said that sea levels are
38 rising because of ice melts and ocean expansion due to increasing water temperatures. Mr. Wuebbles
39 stated that while rising sea levels might not physically impact Illinois, it will financially impact the state.
40 Mr. Wuebbles said all this is happening because of human activities and associated pollution.

41
42 Mr. Wuebbles said he can tell you that the climate will continue to change over the coming decades, and
43 it's going to continue to get warmer, but more importantly, it's these extreme events that are likely to get
44 more extreme, and that drives the need and causes significant impacts on infrastructure and human lives,
45 bigger floods, bigger droughts, bigger heat waves, more wildfires, more severe in some regions of the
46 world and this drives the need for policy change. Mr. Wuebbles stated that the biggest concern in the
47 Midwest is the heatwaves. Mr. Wuebbles continued that the heat wave in 1995 resulted in 700 deaths in
48 the Chicago region alone, and while we are better prepared now, heat waves are still a problem because
49 they lead to droughts and drier soils. Mr. Wuebbles said he grew up a farm boy from Southern Illinois

1 and is worried about farmers. Mr. Wuebbles continued that increased precipitation in the winter and
2 spring leads to more flooding throughout the state. Mr. Wuebbles stated that climate change is
3 unnatural; human activities drive the changes.

4
5 Mr. Wuebbles said there are three primary and one minor choice for addressing climate change. Mr.
6 Wuebbles said the three major choices are mitigation, taking measures to reduce the pace and magnitude
7 of climate change, and reducing emissions. Mr. Wuebbles said this won't stop all the changes, so we
8 must adapt and be resilient. Mr. Wuebbles stated the importance of developing a resilient society to deal
9 with these changes. Mr. Wuebbles said that mitigation and adaptation must be done to minimize
10 suffering. Mr. Wuebbles said the fourth option is geoengineering.

11
12 Mr. Wuebbles stated there are two ways of doing geoengineering. Mr. Wuebbles continued that one way
13 is to put particles in the atmosphere to try and reflect sunlight and cause a cooling effect, but this has
14 ramifications that are still being studied and is not a good option now. Mr. Wuebbles said that the way is
15 by removing carbon dioxide from the atmosphere or the emissions that go into the atmosphere, such as
16 from an industrial operation or a coal-burning power plant. Mr. Wuebbles stated that removing CO2 is
17 prohibitively expensive and that a viable way of doing it hasn't been developed. Mr. Wuebbles said that
18 you would need to go through a lot of atmosphere to remove the CO2 from it, and that is to get to the
19 420 ppm, which is a lot of CO2. Mr. Wuebbles continued that CO2 is an effective absorber of infrared
20 radiation reemitted from the earth back into space and adding more CO2 creates the greenhouse effect,
21 like adding a blanket to the earth.

22
23 Mr. Wuebbles said various analyses show that the cost of inaction is greater than taking action. Mr.
24 Wuebbles referenced a Deloitte estimate that climate change will cost the US economy \$14.5 trillion by
25 2070 while reduction of US emissions by 80% would cost between \$1.2 and \$3.9 trillion by 2050. Mr.
26 Wuebbles stated these estimations underestimate the impact because they don't consider that climate
27 events are increasing in severity. Mr. Wuebble said that carbon emissions are still rising, but not at the
28 same rate as previously because many countries have turned energy and transportation systems over to
29 non-CO2 producing approaches.

30
31 Mr. Wuebbles said that while he was serving as President Obama's expert on climate change, countries
32 around the world came together to produce the Paris Agreement to reduce carbon dioxide and other
33 emissions. Mr. Wuebbles stated he viewed the Paris Agreement as a bridge between where we are now
34 and where we need to be. Mr. Wuebbles continued that the Paris Agreement also said that countries
35 should try to keep the temperature change below 1.5°C relative to the pre-industrial atmosphere if
36 possible and 2°C for sure. Mr. Wuebbles said that it is known what kinds of changes will happen at the
37 1.5°C threshold, and those changes will be impactful over centuries. Mr. Wuebbles said that the 1.5°C
38 threshold will be surpassed within the next few years and the 2°C will likely be reached within the next
39 decade.

40
41 Mr. Wuebbles said that to achieve the temperature and emissions goals, we must significantly reduce the
42 amount of carbon dioxide in the atmosphere. Mr. Wuebbles said the three ways to do that are to move
43 away from fossil fuels, to remove carbon dioxide from the atmosphere, and the third is not to allow the
44 carbon dioxide being produced to get into the atmosphere by capturing and storing it.

45
46 Mr. Wuebbles said he would answer any questions people might have.

47
48 Mohammad Khadhrawi, the ISGS's chief scientist, asked Mr. Wuebbles about the 1.5° and 2°
49 temperature benchmarks related to extreme weather events' amplitude and frequency. Mr. Khadhrawi

1 stated he wanted to know how to use modeling to predict extreme weather events in the future. Mr.
2 Wuebbles said the extreme weather events keep rising steadily as temperatures increase. Mr. Wuebbles
3 continued that events like flooding rely on where one is in specific regions where rainfall occurs, but the
4 probability of flooding will increase significantly. Mr. Wuebbles said it is similar to heat waves, and the
5 Midwest has been lucky because the increased precipitation has led to wetter soils and has kept us from
6 having the 100°F days seen in many other parts of the country. Mr. Wuebbles continued that, eventually,
7 evaporation will overcome the wetness, and we're likely to start seeing a lot more concern about heat
8 waves than we've had in the last few decades.

9
10 Mr. Khadhravi asked about aerosols and how they contribute to scenarios around severe weather. Mr.
11 Wuebbles said some particles can reflect sunlight, and many particles come from burning coal, but he
12 emphasized that coal burning is going away, and in recent years, he's seen a significant decrease in the
13 amount of reflective aerosol in the atmosphere. Mr. Wuebbles continued that the earth is warming at a
14 faster rate than even a decade ago, and that is, in part, because of the reduction in aerosols. Mr.
15 Wuebbles stated that aerosols have a short lifespan in the atmosphere, lasting less than a year, whereas
16 CO2 has multiple lifetimes; the first lifetime is 100 years, and the second lifetime is thousands of years.
17 Mr. Stohr said he hated to cut Mr. Khadhravi's questions short, but the meeting needed to move to the
18 following speakers.

19
20 Mr. Stohr said the agenda would change slightly to allow a smooth transition from the Archer Daniels
21 Midland (ADM) site to the Manlove Gas Leak to the Mahomet Aquifer.

22 23 **E. History and current operations at the ADM plan, Decatur, IL.**

24
25 Mr. Stohr said that Randy Locke is a professional geologist and chief scientist with the ISGS for
26 research and development, and he's prepared a presentation to provide some general information and
27 intends to be a technical resource for the task force.

28
29 Mr. Locke said today's presentation is about carbon storage, giving some context around carbon storage
30 evaluations within the region, how carbon storage fits into the national context, technical details about
31 the ADM site, and a little bit on natural gas storage. Mr. Locke said ISGS is a non-voting technical
32 advisor and a neutral research organization. Mr. Locke said that ISGS supports the protection of
33 environmental quality, environmental development, economic development, and public safety for
34 Illinois.

35
36 Mr. Locke stated that in evaluating what the expected climate change repercussions would be, the US
37 Department of Energy, back in the 90s, created a carbon management strategy that in part, was to
38 develop regional deployment of assessment of carbon storage options throughout different parts of the
39 US. Mr. Locke continued that the carbon management strategy originally started with seven other
40 regional carbon sequestration partnerships, and it's currently at four partnerships. Mr. Locke said the
41 Department of Energy published the most recent version of the carbon management strategy in October
42 2014. Mr. Locke stated all of these partners were intended to help evaluate the sources, the sinks, the
43 geologic conditions, and aspects around: How do we manage carbon? How do we deal with it? How do
44 we not allow it to get into the atmosphere? And what are the opportunities for that?

45
46 Mr. Locke stated that the Illinois General Assembly tasked the Prairie Research Institute (PRI) locally
47 with preparing information about Carbon Capture and Sequestration (CCS) within Illinois, and he would
48 happily provide a copy of the report for anyone who wanted to read it. Mr. Locke stated the report's
49 scope covers point sources in this area within Illinois and carbon capture options, including direct air

1 capture.

2
3 Mr. Locke said storage in the subsurface requires specific rock characteristics. Mr. Locke continued that
4 a very thick sequence of sedimentary rocks approximately two kilometers or 7,100 feet thick creates a
5 range of layers with different rock characteristics. Mr. Locke stated some of the main concepts to
6 evaluate a site as to whether or not it's suitable for storage, including the following: What's the
7 injectivity? What are the pore spaces like in between the rock grains? Are they connected? How much
8 pore space is there?

9
10 Mr. Locke said the question asked is: Can you put CO2 into the rock? Mr. Locke stated there are some
11 rocks where you can't do that, or you can't do it effectively, because they are very tight and are not as
12 permeable because they don't allow fluids to move through them as much. Mr. Locke said what to look
13 for in evaluating a suitable site or materials is porous and permeable materials; that is, the pore spaces
14 are connected, allowing fluid to move into and out of the reservoir so it can be stored there. Mr. Locke
15 continued explaining that capacity is how much CO2 could be put into those spaces, into the rock,
16 because it's not actually in the solid portion but in the spaces between the grains. Mr. Locke said
17 containment is verifying that the CO2 is going to stay in the place where you put it.

18
19 Mr. Locke stated that typically, all storage scenarios worldwide, but especially in the US, must be
20 greater than 3,000 feet below ground because that provides a certain way the CO2 behaves because it's
21 in a denser phase and not a gas as it would be on the surface. Mr. Locke continued that there can be
22 different ways in which it's isolated and stored in a reservoir using sedimentary or geologic traps. Mr.
23 Locke explained a slide in his presentation, showing a cross-section of rock from the Mt. Simon
24 Sandstone, how porous it is, and the space available for carbon storage.

25
26 Mr. Locke said the earth typically already has freshwater or saline water, which is mineralized like
27 ocean water, up to five and six times as salty as ocean water, oil, or natural gas within the pore spaces.
28 Mr. Locke stated that before a site can be considered, it has to go through the Underground Injection
29 Control (UIC) federal permitting process. Mr. Locke continued that the site would also need to go
30 through an Illinois facility permitting process as part of the Safe CCS Act. Mr. Locke said that before
31 any sites can be developed, a project's proponent has to gather information, prepare plans, and put all of
32 that information into an application that goes to the federal permitting authority, which for this area is
33 Region 5 of the US EPA. Mr. Locke stated that Illinois doesn't have primacy, which means the state
34 doesn't control the Class VI permitting process. Mr. Locke continued that Illinois does have primacy
35 control on permitting Classes I through V, and Class VI is a specific type of permitting class for carbon
36 dioxide injection wells. Mr. Locke stated that Class VI is a new permitting class developed around 2010
37 and enacted at the federal level in 2014.

38
39 Mr. Locke said all the plans for a proposed site as part of that application have to be reviewed and
40 approved by the permitting authority before any construction occurs. Mr. Locke explained that a person
41 or entity wanting to store CO2 can't just go out, put a well in, and then find CO2 and put it in the ground
42 without getting this permit.

43
44 Mr. Locke continued that after construction occurs, additional information is gathered, additional
45 monitoring may be conducted, and wells may be put into the subsurface to evaluate the subsurface
46 geology; then extra information is submitted to the regulatory agency, followed by a review and the
47 approval process has to happen before authorization to injection would occur.

48
49 Mr. Locke stated that after injection stops, permit conditions have been met, the total amount or time of

1 injection has been met, and a monitoring period occurs. Mr. Locke continued that after all that
2 happened, there is still a conversation between the owner/operator and the federal regulatory agency that
3 the owner/operator must continue monitoring the site. Mr. Locke stated that the owner/operator cannot
4 walk away without a letter of non-endangerment from the federal regulatory authority, and the
5 owner/operator must prove to the Federal Regulatory Authority that they deserve that letter by showing
6 that there is no endangerment to underground drinking water sources. Mr. Locke said the purpose of the
7 federal regulatory process is to protect groundwater and ensure that underground drinking water sources
8 are not contaminated by carbon dioxide, which is the purpose of the class six permitting process.
9

10 Mr. Locke said the key requirement is a process that helps select geologically suitable sites and will
11 protect groundwater given the conditions of the permit, with the expectations that are written into the
12 permit; well construction standards are part of that permit, as well as monitoring protocols throughout
13 the life of the project.
14

15 Mr. Locke said the Illinois State Geological Survey was part of one of the first demonstration projects in
16 Decatur that stored a million tons of CO2 underground. Mr. Locke continued that the demonstration
17 project injection occurred between 2011 and 2014, and an extensive risk assessment process related to
18 the project was conducted and published. Mr. Locke stated the information has informed all of the
19 subsequent processes and our federal regulator's review of projects, and we've given all that information
20 to Region Five and other colleagues.
21

22 Mr. Locke said that as the conversation pivots to the well integrity issues in Decatur, the monitoring
23 wells used have a unique design that is not used in any other project. Mr. Locke said that the well
24 construction indicator is not used elsewhere, doesn't exist now, and has been modified so that there's no
25 longer the same type of construction that existed there previously. Mr. Locke continued that monitoring
26 occurs before injection throughout the length of the project, as well as after injection is concluded. Mr.
27 Locke said a wide range of technologies are used, and ISGS evaluated over 20 different technologies in
28 Decatur when we were beginning in 2008/2009 to set up for the injection of ADM CO2 because ADM is
29 the permit holder. Mr. Locke stated that a wide range of technologies are used for monitoring, which is
30 dictated within the permit to better understand if CO2 is underneath the cap rock or has moved to
31 different places because those functional assessments are part of the permit.
32

33 Mr. Locke said injection-well design is required to follow national and international standards. Mr.
34 Locke showed a schematic of the injection well that shows the scale and distance underground the wells
35 go. Mr. Locke said the schematic is to scale, which allows people to see the distances between different
36 zones. Mr. Locke said the freshwater sources within the Decatur area are within the upper 200 feet,
37 which means the well must have three distinct layers of steel tubing or casing, along with three layers of
38 cement between the casing, to protect the freshwater from possible CO2 injections. Mr. Locke said the
39 construction is a telescoping design, so as you go down, it goes into smaller and smaller types of pipes,
40 which must be made of particular materials and have certain types of cement that would be CO2
41 resistant.
42

43 Mr. Locke stated the bottom of the base of the well was about two kilometers (over 7,000 feet) deep, the
44 Mt. Simon is 1,500 feet thick, and there is a 500-foot thick cap rock above the staging zone for the well.
45 Mr. Locke said there are other cap rocks and intervening geologic layers. Mr. Locke said this is a plan
46 view of the infrastructure at the Decatur storage site. Mr. Locke said the first project was a one million-
47 ton storage project. Mr. Locke continued that the project is no longer an injection well; it is now a
48 monitoring well. Mr. Locke stated that injection site VM1 is a deep monitoring well, and GM 1 is a
49 geophysical monitoring well.

1
2 Mr. Locke said the second Illinois Industrial Sources CCS project had a configuration similar to that of
3 the ADM project. Mr. Locke stated the project had a CCS 2 injection well, a VW 2 monitoring well, and
4 GM 2 geophysical monitoring. Mr. Locke said the difference is the CCS 2 site has been active since
5 2017 and is the first permitted Class VI as part of an operational and active storage site. Mr. Locke
6 continued that CCS 2 has about 4.5 million tons of CO2 stored.

7
8 Mr. Locke said integrity issues have occurred with VW 1 and VW 2. Mr. Locke continued that the VW
9 2 had CO2 and brine move 6,800 feet from the storage reservoir to above the Eau Claire primary cap
10 rock, while VW 1 had brine move above the same primary cap rock. Mr. Locke stated that the Eau
11 Claire zone is used for gas storage in other places within Illinois, but it is not a permitted CO2 storage
12 zone at that site, so it is out of the permit condition to have CO2 in that zone. Mr. Locke said
13 approximately 4,000 tons of CO2 moved through the well but not through the geology. Mr. Locke stated
14 when the leak was discovered, it was reported to the US EPA and ADM, and the US EPA has been
15 communicating about alternative monitoring, alternative design, and remedial actions for the site. Mr.
16 Locke said people can check out adm.com/ccs for more information about the site.

17
18 Mr. Locke said the Illinois Basin is so sought after as a potential storage location because it's about
19 60,000 square miles of thick sandstone in a bowl-shaped depression made of porous and permeable
20 material. Mr. Locke stated the Illinois Basin has been identified as able to store decades to centuries of
21 emissions within the Basin. Mr. Locke stated that over 300 million tons of CO2 emissions occur within
22 the basin annually, which is only stationary sources.

23
24 Mr. Locke said that to reduce climate change impacts, the Global CCS Institute says by 2030, a gigaton,
25 which is 1,000 million tons, of CO2 must be sequestered somewhere. Mr. Locke continued that a
26 gigaton is 250 times the second CCS project and all of the storage that has occurred in Decatur, and the
27 2030 deadline is to meet the 1.5° to 2°C heating target. Mr. Locke said meeting that goal is a big
28 challenge, which is why the Illinois Basin is seen as a resource.

29
30 Mr. Locke said within the context of the Mahomet Aquifer, CCS can be done safely, with properly
31 located and operational sites. Mr. Locke continued that understanding holistic risk assessment and not
32 any one of those potential sources of risk needs to be focused on. Mr. Locke said the Mahomet Aquifer
33 has a little over 24,000 wells that either penetrate into or through the Aquifer, and 95% of these wells
34 are less than 400 feet deep, and there are no CCS wells within the footprint, but there are natural gas
35 storage wells as well as other test wells along with project wells.

36
37 Mr. Locke said the wells have been constructed to particular construction standards, some more
38 stringent than others. Mr. Locke continued that considering the Illinois Water Well Code, Class II
39 permitting & Class VI permits, in my opinion, are the most stringent because they require specific types
40 of materials and design construction requirements in addition to additional monitoring requirements. Mr.
41 Locke stated that private wells and water wells require sampling and monitoring. Mr. Wehrmann asked
42 if the number of wells was data pulled from the Illinois Water and Oil database. Mr. Locke said that was
43 where he got the data, but it is an incomplete source of information, which means the actual number of
44 wells might be higher. Mr. Wehrmann said that many of the wells have likely been abandoned, and Mr.
45 Locke said abandoned wells are removed from the data set.

46
47 Mr. Rehn said he wanted to know the breakdown of the types of wells and what kinds are greater than
48 400 feet deep. Mr. Locke referred to the table in his presentation, showing that water wells make up
49 81.5% of the wells in the data set, and most don't go deeper than 400 feet because once they hit the

1 water, they stop. Mr. Locke continued that the only wells usually deeper than 400 feet are oil or gas
2 storage wells. Mr. Locke stated those types of wells make up 2.5% to 4% of the wells.

3
4 **D. Manlove Field Gas Leak 2016 Gas Storage**

5
6 Mr. Locke pivoted to the Manlove Field and said a gas leak was reported in 2016 and the company
7 responsible for the leak was ordered to resolve the problem, including maintaining separators at seven
8 households, distributing bottled water to impacted families, and monitoring residential indoors for
9 methane.

10
11 Mr. Locke said Illinois has the largest amount of natural gas storage in the nation at over 1 trillion cubic
12 feet, and that's because we don't have a natural gas source locally. Mr. Locke continued that natural gas
13 storage within the basin has been happening for over 70 years. Mr. Locke said he was done with his
14 presentation. Mr. Stohr thanked Mr. Locke and acknowledged that this was a lot of information.

15
16 **F. Mahomet Aquifer, a federally designated sole source aquifer for E. Central Illinois.**

17
18 Mr. Stohr called Mr. Roadcap to provide testimony. Mr. Roadcap said he is retired from the Illinois
19 State Water Survey. Mr. Roadcap stated that he spent much time working on the Mahomet Aquifer,
20 along with oil well contamination of shallow ground waters. Mr. Roadcap said the locations being
21 discussed for CCS don't have any oil in them.

22
23 Mr. Roadcap said that without the Mahomet Aquifer, you wouldn't have Champaign-Urbana. Mr.
24 Roadcap continued that you need to store water between rainfalls to have a public water supply. Mr.
25 Roadcap stated this could be done via cistern or a dug well at a farmhouse, but for a community the size
26 of Champaign-Urbana, you need an aquifer or a reservoir. Mr. Roadcap said that Decatur, Danville,
27 Bloomington, Peoria, and most of Springfield have reservoirs. Mr. Roadcap stated those cities have
28 reservoir locations, but reservoirs are even iffy during dry periods.

29
30 Mr. Roadcap said the Water Survey and Geological Survey have been studying the Mahomet Aquifer
31 for a long time, like a giant puzzle, and they are trying to put together different pieces using the geology
32 data and water levels, analyze the aquifer's properties, do water quality testing, and construct numerical
33 models.

34
35 Mr. Roadcap showed a slide of a well network for the Mahomet Aquifer, and this is to help figure out
36 what's going on with the aquifer and how it responds to rain events, droughts, and irrigation. Mr.
37 Roadcap stated that all the water level data is combined to create a potentiometric (pressure) surface of
38 how the water flows. Mr. Roadcap said the highest water levels are near Paxton, and the water radiates
39 in all directions and slowly flows towards the west until you get closer to the Illinois River. Mr. Roadcap
40 stated that the Champaign-Urbana portion of the aquifer pumps 25 million gallons of water a day and
41 creates a cone of depression, which means water is being sucked from other areas to the Champaign-
42 Urbana wells. Mr. Roadcap said this monitoring has been happening since the 1950s and shows the
43 pressure level dropping about 50 feet in Champaign-Urbana. Mr. Roadcap continued that the aquifer is
44 still fully saturated despite the pressure drop.

45
46 Mr. Roadcap showed a chloride map of the Aquifer. In Champaign-Urbana, the chloride values are less
47 than 10 and often under one, which experts believe indicates glacial melt in the aquifer. Mr. Roadcap
48 continued that the edges of the aquifer have higher chloride values, which indicates bedrock water. Mr.
49 Rehn asked if the high chloride numbers were from below the aquifer or from the surface. Mr. Roadcap

1 said that, for the most part, the chloride is from below, but some northern parts of the state are
2 contaminated by road salt.

3
4 Mr. Rehn asked what makes up the edge of the aquifer. Mr. Roadcap said there is a big bedrock valley
5 that the ancient Ohio River used to flow through what is now the Mahomet bedrock valley, followed by
6 three waves of glaciers that deposited sand into the bedrock valley, and the resulting edge of the aquifer
7 is along the sand and bedrock valley walls.

8
9 Ms. Richart asked about the chloride's pathways to get into the aquifer. Mr. Roadcap said the chloride
10 takes any path possible to get close to the surface, which includes going through shale and natural coal
11 seams.

12
13 Ms. Richart asked for clarification on the pathways Mr. Roadcap mentioned. Mr. Roadcap said that
14 when the glaciers came and went, they left 100 to 150 feet of sand down the valley's center, followed by
15 the Banner Formation, the Glasford Formation, and the Wedron Formation, and glacial events created
16 each formation.

17
18 Mr. Roadcap said the Mahomet Aquifer isn't at the surface itself, but there are stack sands and a variety
19 of shallower sands that provide recharge to the Aquifer, but finding them is complicated. Mr. Roadcap
20 gave an example of Illinois American Water drilling seven new wells for the Bradley Avenue water
21 treatment plant. Mr. Roadcap continued that 6 of those wells had textbook layer cake geology, while the
22 seventh showed a channel cutting through everything; this indicates that the glaciers are violent and not
23 smooth or consistent. Mr. Roadcap said the Mt. Simon Sandstone was deposited slowly, but the glaciers
24 moved quickly. Mr. Roadcap explained that gasses move through the aquifer with no respect to how
25 groundwater flows; it follows the geometry of the clay zones.

26
27 Mr. Roadcap showed a slide of the 20-year record of water levels in northern Champaign County, in
28 what he called the "big ditch." Mr. Roadcap said water-levels are fairly consistent through the year
29 except when irrigation is happening and the water levels drop. Mr. Roadcap stated that no irrigation is
30 needed during wet years, while dry years, such as 2011-2012, require more irrigation. Mr. Roadcap
31 continued that most of the irrigation happens on the west end of the aquifer and in northern Champaign
32 County. Mr. Roadcap said that related to climate change and increased drier and wetter years, irrigation
33 is going to be necessary, and farm ground over the aquifer will be much more valuable in 8 to 10 years.

34
35 Mr. Roadcap pivoted to discuss the Manlove Gas Storage Field. Mr. Roadcap said anomalous water
36 levels were noticed before the leak was discovered, specifically at Mattis Ave, which is 7 miles from the
37 leak. Mr. Roadcap stated water level changes were caught at a well near Dewey and another at the
38 Champaign County Forest Preserve. Mr. Roadcap continued by showing water levels from 2005 to 2018
39 from a highpoint in the Aquifer and suddenly had a 50-foot rise in water levels. Mr. Roadcap said they
40 first thought the change was an instrument malfunction, but upon further inspection, the equipment was
41 fine. Mr. Roadcap stated that it couldn't be confirmed that the leak caused the spike in water levels, but
42 the evidence points to that being the cause. Mr. Roadcap continued that the leak occurred over 1,000 feet
43 below the surface but was registered near the surface. Mr. Roadcap said the testing showed no
44 thermogenic gas was recorded, which was good. Mr. Roadcap said the pressure response was from the
45 gas getting trapped in isolated sand, causing the pressure change.

46
47 Mr. Rehn asked if 50 feet of water pressure was a lot of pressure. Mr. Roadcap said it was about 22 PSI.

48
49 Mr. Rehn stated that Mr. Roadcap was describing a large amount of gas being released, and that caused

1 the water to go up in the well; so what actually happened underground? Mr. Roadcap said it was hard to
2 say what happened because the deeper wells didn't show any pressure change, which might mean the
3 pressure change is happening in shallower systems. Mr. Roadcap continued that the opposite happened
4 at the monitoring well in Dewey, which is 7 miles in the opposite direction of Mattis Avenue, where the
5 deeper levels showed a 30-foot spike and the shallow levels didn't change.

6
7 Mr. Roadcap stated he had another graph from a well located at the Manlove site. Mr. Roadcap said the
8 data showed a spike about a year before the leak was discovered. Mr. Roadcap continued that typically,
9 they would look at the data and think something was wrong because transducers don't act that way, so it
10 could be an indicator that something went wrong. Mr. Roadcap stated that even though the spike was
11 only a foot or two, it was unusual. Ms. Stohr said he wanted to verify this reporting before the leak was
12 reported, and Mr. Roadcap confirmed that. Mr. Roadcap said the water level changes were only reported
13 in 3 of the 16 wells. Mr. Roadcap said none of the leaks had thermogenic gas.

14
15 Ms. Richart said she wanted to know where Mr. Roadcap got his graphs. Mr. Roadcap said a natural gas
16 working group at Prairie Research Institute wrote the report and posted it on their website for viewing.
17 Mr. Locke said he wanted to clarify that Mr. Roadcap noted that no gas was present in the observation
18 wells when the leak was discovered; it was that the gas was near the leak, and the buildup of pressure
19 was causing the water levels to change. Mr. Locke said any monitoring plan should include shallow,
20 intermediate, and deep wells.

21
22 Ms. Conrady said she wanted to confirm that the leak at the ADM site was caused by the gas moving
23 along the well and not through the cap rock and, if it was a construction failure, what happened to cause
24 that failure? Mr. Locke said it was not a geologic leak because the cap rock integrity was maintained
25 because it's 500 feet of solid material, and there were known well issues, such as issues with sensors and
26 gauges. Mr. Locke said there was some retrieval of well components to try and identify integrity or
27 material issues.

28
29 Mr. Roadcap and Mr. Locke returned to their seats since there were no more questions.

30
31 Mr. Stohr said he did some investigation into the engineering failures of the Manlove gas leak. Mr. Stohr
32 stated he obtained materials from the Illinois Department of Natural Resources (IDNR). Mr. Stohr said
33 the monitoring failure was at the McCord 2 well, and the tubing used for the withdrawal well was
34 typical for of the 1970s. Mr. Stohr stated the engineers involved with the site attributed the leakage to
35 corrosion by a slurry of fluids and particles. Mr. Stohr continued that the sand and corrosion likely
36 started on the inside of the tubing and not the exterior. Mr. Stohr stated that the well wall was breached
37 at two locations that were several feet apart. Mr. Stohr said the IEPA and the IDNR have had some
38 communication issues with each other since there are overlapping responsibilities when it comes to the
39 well.

40
41 Mr. Stohr said testing is happening monthly for dissolved methane and the testing is being done by firms
42 Mr. Stohr trusts to do the work. Mr. Stohr continued that the testing found the highest levels of methane
43 was between 23 & 29 parts per million (PPM) while the lowest were under 1 PPM. Mr. Stohr said work
44 will continue at 10 wells impacted by the leak, and they will continue to receive bottled water, a
45 gas/water separator, and filters on their wells. Mr. Stohr said additional measures might be required if
46 testing excides 10 PPM in the water. Mr. Stohr continued that he could share the IDNR report with
47 anyone who wanted to see it. Mr. Wehrmann said he wasn't following the purpose of the relief wells.
48 Mr. Stohr said the relief wells are in place to try and remove any methane from the Mahomet Aquifer
49 because methane is a serious greenhouse gas but it isn't concentrated enough to burn off.

1
2 Mr. Stohr said with the presentations completed, they would move to public participation.

3
4 **5. Public Participation - NONE**

5
6 **6. New meetings, TDB. Tentatively 5/12/25, 6/9/25, 6/30/25**

7
8 Mr. Stohr said he knows the upcoming tentative schedule has meetings crammed together. Mr. Stohr
9 continued that he tried to spread the meetings three weeks apart and scheduled for Mondays. Ms. Feinen
10 said she couldn't attend the May 12th or June 20th meeting and wondered if someone else from the city
11 of Champaign could sit in her place. Mr. Thorsland said he would be late to the May 12th meeting and
12 will miss the June 30th meeting due to vacation. Mr. Stohr said he would send out a Doodle poll to see
13 about changing the meetings. Mr. Stohr continued that if the task force can't meet in June, they might
14 have to miss July and schedule for August. Ms. Feinen said she couldn't commit to August because she
15 needs to move her child for college.

16
17 Mr. Stohr said the next meeting will be more specifically about the Mahomet Aquifer and water
18 resources in Champaign County.

19
20 **7. Adjournment – 5:48 pm**